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DEEPENING EAST ASIAN ECONOMIC INTEGRATION

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EXECUTIVE SUMMARY

1. Background and Objectives

De facto economic integration through the development of international production and distribution networks in East Asia is one of the key factors behind the remarkable economic growth in the region. East Asian countries have now come to the stage of deepening regional economic integration by actively forming bilateral and plurilateral FTAs. In the process, ASEAN has been emerging as the hub of both aspects, *de facto* and *de jure*, of economic integration in East Asia. The ASEAN Economic Community (AEC), in particular, is a new and innovative initiative, and its successful establishment is regarded as a vital step to maintain the economic dynamism in East Asia as a whole.

The first part of the project was devoted to developing quantitative measures to provide several snapshots of the progress in selected key policy pillars in the AEC Blueprint, namely services liberalization, trade facilitation and investment liberalization, with the objective of facilitating on-schedule implementation of the AEC Blueprint. The quantitative measures were designed (1) to visualize the process of policy reforms consistent with the AEC Blueprint, (2) to provide a framework under which milestones and end goals for each element can be defined, and (3) to evaluate the current status and the progress towards the milestones and end goals. In the second part, we conducted econometric studies on the impacts of economic integration on the performance of firms using micro data from manufacturing surveys in selected East Asian countries, to provide policymakers with valuable implications in designing effective and efficient policies for deepening economic integration and to narrow development gaps. The issues investigated include key aspects of economic integration such as the impact of fragmentation, learning-by-exporting, vertical and horizontal spillovers, and firms' response to policy reforms.

2. Findings and Conclusions

In *medical professional services*, there are (1) considerable variations in the frequency of restrictions across countries but there is a broad tendency for countries with more transparent regulatory regimes to have lower prevalence of restrictions, (2) relatively little variation within countries across the different categories of medical profession, and (3)

considerable variation in restrictions by mode of delivery. For *health services* the pattern of restrictions is similar to those for medical professional services. In *banking* the most prevalent restrictions are on foreign ownership and the movement of intra-corporate transferees and on commercial presence. As a result, restrictions in the banking services are still discriminatory against foreigners. In *insurance* there is little variation of restrictions across different insurance products while the pattern across countries is similar to that in banking. Foreign ownership restrictions are not as prevalent in insurance as they are in banking, though cross-border trade in insurance is widely restricted.

The extent of restrictions on trade in *logistics services* is linked to the perceived performance of the logistics sector as expressed in survey data. The additional discriminatory barriers against foreign suppliers are high in Indonesia, Philippines, China, and Malaysia. The degree of restrictiveness falls as per capita income rises, but even at lower levels of income there is a range of values of the scores. 'Customs documents' is identified as the major impediment to trade facilitation. The trade costs in ASEAN countries have been converging towards the best practice level set by Singapore, though there remains large variation.

Although ASEAN countries have been making significant progress in investment liberalization, there remain relatively higher restrictions in: (1) *market access* in Myanmar, Thailand, Malaysia, and Lao PDR; (2) *screening and appraisal* in Indonesia, Cambodia, Myanmar, and Lao PDR; (3) *national treatment* in Brunei and Malaysia; and (4) the services sector.

Conclusions from micro data studies include (1) the larger the gap in capital-labor ratios between MNE's home and overseas activities, the higher their profitability and labor productivity, implying the benefit of production fragmentation; (2) 'absorptive capacity' matters to enhance the learning-by-exporting effects; (3) positive horizontal spillovers are found only in an industry operating in sectors with relatively liberal trade policy; and (4) the utilization of FTAs is positively related to firm size, implying that the opportunity to enjoy the benefits of FTAs is uneven and skewed in favor of large firms.

3. Policy Recommendations

- Tracing the progress in the ASEAN Economic Community building by updating and expanding the quantitative measures developed in this project. This would enable

policymakers (1) to capture the current status of remaining barriers to trade by country, by mode, and by sector, (2) to define the detailed target and milestones in each policy action with reference to the regional best practice, and (3) to facilitate the implementation process through peer pressure.

- Beyond taking up the suggestions in the Singapore Roadmap in health services, the ASEAN countries should work together to establish satisfactory regimes for regulating and enforcing acceptable quality standards, both for individual medical professionals and for healthcare institutions. The aim would be to establish minimum acceptable quality standards. Having a "ladder" of quality standards across the region would (1) put a floor under standards, providing a benchmark for standards that were not more burdensome than necessary, and (2) also provide a viable alternative for the replacement of standards that were discriminatory against foreign providers.
- Significant barriers to cross-border trade (Mode 1) still exist in financial services and removing them would be an important mechanism to facilitate trade. The most likely platform for Mode 1 trade is the internet so encouraging trade of this kind does require improved consumer protection coordination between countries and education of consumers about the risks and their rights.
- Make the best use of the existing FTAs. In particular, special attention should be paid for SMEs to facilitate the utilization, e.g., by preparing modules and templates for value-added accounting.
- Accelerate the efforts toward streamlining and harmonize customs procedures, starting with the Customs declaration form. ASEAN Customs authorities should report regularly and in a comparable manner on clearance time through customs, noting the target of 30 minutes. In addition, a web-based databank of trade regulations, that is regularly updated, should be established.
- Regional cooperation in statistical policy should be strengthened to improve both rule-based access to micro data for researchers and the quality of the data.

CHAPTER 1

Overview: Deepening East Asian Economic Integration

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The objective of this paper is to present an overview of the studies under an ERIA Research Project "Deepening East Asian Economic Integration" conducted FY2008, mainly with the aim to support ASEAN's endeavor to establish the ASEAN Economic Community (AEC). The first part of the project was devoted to develop quantitative measures to provide several snapshots of the progress in selected key policy pillars in the AEC Blueprint, namely services liberalization, trade facilitation and investment liberalization. In order to facilitate the on schedule implementation of the AEC Blueprint, it is highly recommended to maintain, update and expand these quantitative measures as they are effective tools to visualize the progress in policy reforms consistent with the AEC Blueprint. The second part of the project consists of econometric studies on the impacts of globalization/economic integration on the performance of firms using micro data from manufacturing surveys in selected East Asian countries. The issues investigated include key aspects of economic integration such as the impact of fragmentation, learning-by-exporting, vertical and horizontal spillovers, and firms' response to policy reforms. Based on the findings in this project, we present several policy recommendations and future research agenda to further the economic integration in East Asia.

1. Introduction

1.1. Deepening East Asian Economic Integration in the Midst of the Global Economic Crisis

The current economic climate, in which the financial crisis in the United States triggered a global economic crisis, carries the risk that there will be renewed questioning of the benefits of open, liberal trading regimes and of pursuing integration of economies with the global or regional trading system. Virtually no single country can avoid this global economic downturn. East Asia is no exception. The export markets in the United States and Europe have shrunk rapidly and dramatically and the sudden decline of exports has been severely undermining economic growth of East Asia. This rapid expansion of economic crisis is a negative aspect of globalization, and unfortunately we are observing a rise of protectionist arguments. This is an important juncture at which to recall the very significant benefits accruing to East Asia from past globalization and to find new ways to demonstrate and confirm those benefits.

The remarkable economic growth in East Asia during the last decades has been underpinned by the development of international production networks. During the process, the huge demand in the United States has undeniably been an indispensable driving force for East Asian economies, especially in the recovery process from the Asian financial crisis. Although intraregional trade in East Asia has been increasing (Ozeki 2008), the US economy is still too influential to be underestimated. Since the economic crisis has spread all over the world, global collective actions are necessary and this was the urgent agenda in G20 summit in London in April 2009.

Against this backdrop, East Asia, as a region of close economic linkage, should

collectively take urgent actions to cope with the global economic crisis. It is crucially important that such short-term measures should be designed consistently with medium and long term goals toward deepening economic integration in East Asia as a whole. The reduction of barriers to trade in goods and services will facilitate more efficient use of economic resources partly through further development of production networks in the region. This in turn is expected to generate employment opportunities in less developed countries, have positive effects to narrow development gaps, and pave the way for East Asia to be a seamless business space with growing regional demand.

East Asia has already been making significant progress in *de jure* economic integration using a number of instruments including trade agreements between subsets of members and the initiatives toward the ASEAN Economic Community for the ASEAN member countries. Most of the trade agreements in the region include elements that go beyond trade and look toward 'deep' economic integration in the sense that virtually all of them intend to include provisions on trade facilitation, services liberalization, investment liberalization and facilitation, economic cooperation, and reforms and harmonization of domestic rules and regulations, in addition to the reduction and elimination of tariffs. This momentum toward a more liberal and open economic regime should be maintained or accelerated.

1.2. The ASEAN Economic Community

ASEAN has been emerging as the hub of both the production networks and the trade agreement networks in East Asia (Soesastro, 2008). The ASEAN Economic Community (AEC), in particular, is a new and innovative initiative to deepen the degree of economic integration within the hub. With the goal of establishing AEC by 2015,

ASEAN member countries adopted the AEC Blueprint as a binding document on 20 November 2007. This is a very significant step for ASEAN in the sense that ASEAN has moved from an integration driven by de facto economic processes to an integration driven by clearly defined end goals and timelines.

The AEC Blueprint is organized along AEC's four main characteristics, namely: (a) a single market and production base; (b) a highly competitive economic region; (c) a region of equitable economic development; and (d) a region fully integrated into the global economy. The fourth characteristic indicates the "open" nature of ASEAN's pursuit of regional economic integration (open regionalism). The AEC Blueprint, therefore, provides a useful and operational basis for developing the agenda of deepening economic integration in the wider East Asian region as well. In this regard, the successful establishment of the AEC can be a significant step toward deeper economic integration in East Asia as a whole.

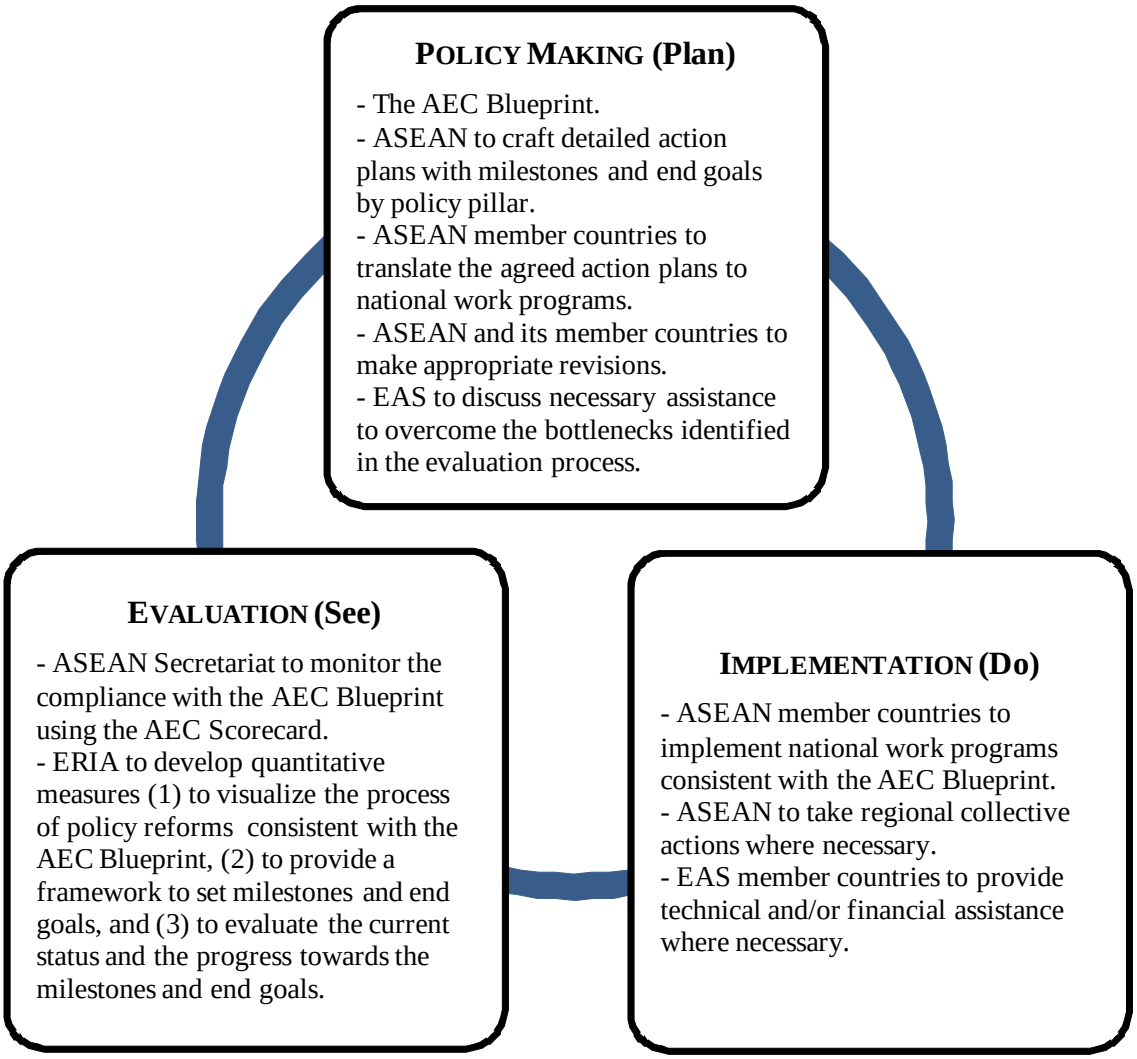
The AEC Blueprint is comprehensive. It identifies 17 "core elements" of the AEC and delineates 176 priority actions to be undertaken within a strategic schedule of four implementation periods (2008-2009, 2010-2011, 2012-2013, and 2014-2015). The implementation mechanism as envisaged in the AEC Blueprint consists of the following elements: (a) relevant sectoral Ministerial bodies to be responsible for the implementation of the Blueprint and for the monitoring of commitments under their respective purview; (b) the ASEAN Economic Ministers (AEM) to be in charge of economic integration in the newly established Council of ASEAN Economic Community (as stipulated in the ASEAN Charter) and also accountable for overall implementation; (c) the High Level Task Force (HLTF) to assist the AEM; (d) regular consultation meetings with stakeholders to be organized by the AEM; (e) a progress

report on the implementation of the AEC to be prepared by the ASEAN Secretary General for relevant Ministerial meetings and the Summit; and (f) the ASEAN Secretariat to review and monitor the compliance with the AEC Blueprint. Of key importance to the successful implementation of the AEC Blueprint is the clear separation between policy making (HLTF and AEM) and the monitoring of implementation (ASEAN Secretariat). For this purpose, the ASEAN Secretariat has been tasked with developing the AEC Scorecard to monitor the progress of the AEC Blueprint, covering all provisions in the AEC Blueprint.[1]

Such an approach is highly valuable in itself but in addition it will be important to complement this AEC Scorecard with quantitative measures in order to facilitate the on-schedule implementation of the AEC Blueprint. Figure 1 illustrates a cyclical process consisting of policymaking, implementation, and evaluation. As of now, ASEAN has already adopted the AEC Blueprint as a binding document. However, a feature of the AEC Blueprint at this stage is that some goals remain vaguely defined, and "milestones" are still missing (Soesastro 2008). In addition, the comprehensiveness of the AEC Blueprint, though a desirable feature in itself, makes it difficult to visualize the current status of member countries with respect to each element of the AEC Blueprint. In order to address these shortcomings, quantitative measures can be a useful tool as they would facilitate the visualization of the wide-ranging initiatives in the AEC Blueprint and provide stakeholders with a common and objective information base on the current status of each member country, the milestones and end goals for key elements of the AEC Blueprint.

[1] The AEC Scorecard is being developed as a check list of actions that are specified in the AEC Blueprint, and the first version is planned to be reported to the ASEAN Economic Ministers' Meeting in 2009.

Figure 1. A Cyclical Process toward Establishing the AEC



Source: Authors.

The quantitative measures presented in this report are designed (1) to visualize the process of policy reforms consistent with the AEC Blueprint, (2) to provide a framework under which milestones and end goals for each element can be defined, and (3) to evaluate the current status and the progress towards the milestones and end goals. Of crucial importance is to visualize the whole process in a consistent framework, for example, an axis starting with "the current status" and ending with "the end goal", with appropriate "milestones" in between. This visualization would enable the ASEAN

Secretariat to monitor effectively the compliance with the AEC Blueprint by member countries. In addition, quantitative measures can be used for econometric studies to investigate the impact of policy reforms implied by the AEC Blueprint, and thereby provide important indications of how to prioritize the wide-ranging policy reforms in the AEC Blueprint.

1.3. The Outline of the Project

This project has two key purposes. First it aims to illustrate how quantitative measures can complement the AEC Scorecard being developed by the ASEAN Secretariat.[2] Building on the studies in the previous phase of this project (2007-8), we focus here on three key elements of the Blueprint: services liberalization, trade facilitation, and investment liberalization[3] and describe how to capture the current state of policy across countries and the over-time change within countries. A second aim is to show, using microeconomic data at firm and industry level, the impact of integration and liberalization of the basic units of the economy.

In Part I of the study, financial services (banking and insurance), healthcare and medical professional services are selected for in-depth investigation to develop restrictiveness indexes (Chapter 2 of this report, Dee 2009). Healthcare is one of the priority sectors identified in the AEC Blueprint[4] and has never been analyzed

[2] This attempt is one of the core missions of ERIA, to "support ASEAN's endeavor to build the ASEAN Economic Community and support its role as the driver of the wider economic integration," (The Statement on the Establishment of ERIA), in the inaugural meeting of the Governing Board of ERIA, June 3, 2008.

[3] These quantitative measures as a whole can be termed as an ERIA version of the AEC Scorecard (ERIA/AEC Scorecard). However, in order to distinguish our measures with the AEC Scorecard being developed by the ASEAN Secretariat, we refrain from emphasizing the term in this report.

[4] The twelve sectors are: (1) agro-based products; (2) automotive; (3) e-ASEAN; (4) electronics; (5) fisheries; (6) healthcare and healthcare products; (7) textiles and apparel; (8) wood-based products; (9) rubber-based products; (10) tourism; (11) air travel; and, (12) logistics.

previously while financial services are supposed to be liberalized by 2015 using the ASEAN minus X formula[5]. In the trade facilitation field, we develop restrictiveness indexes for customs procedures and for logistics. We also indirectly estimate the efficiency of trade facilitation regimes using an index of trade costs based on cif/fob differentials (Chapter 3, Findlay 2009). For investment liberalization, Urata and Ando (2009) developed a quantitative measure to assess the restrictiveness of FDI policy by sector and by mode of restriction (Chapter 4). Chapter 5 presents detailed tables which contain background information to develop quantitative measures in Chapters 2 to 4.

To explore the second purpose of the study, the research presented in Part II of this report gives new and detailed views of how important closer integration can be. Based on innovative micro-data analyses on selected East Asian countries, the chapters demonstrate the tangible benefits at the level of firms, from engaging in export trade and from being part of networks of inward FDI. It is recommended that this line of study should be conducted more intensively to deepen understanding of the impacts of economic integration on corporate activities, and thereby to design more effective and efficient policy reforms.

The remainder of this chapter is organized as follows. Section 2 provides snapshots of ASEAN member countries with respect to key elements in the AEC Blueprint; services liberalization, trade facilitation, and investment liberalization, using a summary of findings from Part I (Chapters 2 to 5) of this project. Section 3 summarizes key findings in Part II (Chapters 6 to 12) of this project. Based on the discussion in Sections 2 and 3, we present policy recommendations and future research agenda in Sections 4 and 5.

[5] See Article 22 and Annex 1 'Financial Services Sub-sectors Identified for Liberalisation by 2015' of the AEC Blueprint (ASEAN 2008).

2. Snapshots of ASEAN Member Countries Heading for the AEC

Quantitative measures presented in this section make a contribution to ASEAN by providing evaluation mechanisms of policy progress that are designed to ensure objectivity and comparability[6]. Our quantitative measures visualize the current status of ASEAN member countries in selected key elements of the AEC Blueprint, enable identification of policy areas where additional policy reforms and resource allocation is required and, thereby, facilitate the successful and on-schedule implementation of the AEC Blueprint. One very basic recommendation emerging from our work on developing the quantitative measures is that the cyclical process of 'policymaking-implementation-evaluation' as illustrated in Figure 1 should be continued until the successful establishment of the AEC by 2015.

2.1. Services Liberalization

Regarding services liberalization, we developed quantitative measures regarding the restrictions on trade in (1) medical professional services, (2) health services, and (3) financial services (banking and insurance). In an ERIA test-run project in FY2007, background studies on financial services, logistics, distribution, business services, postal/courier, and maritime services were carried out largely based on detailed analysis of official sources on regulations and trade policies (AJRC-ANU 2008; NZIER 2008). The important innovation in the present studies is that data were collected using questionnaires that were completed by researchers in each of the ASEAN countries.

[6] Detailed discussion, including the method of construction, and policy implications are presented in the papers collected in this volume (Dee 2009; Findlay 2009; and Urata and Ando 2009). Further details are reported in Chapter 5 of this report, Dee and Dinh (2009), Sourdin and Pomfret (2009), Hollweg and Wong (2009), and de Dios (2009).

For this purpose we drew on the network of research institutes that support ERIA and were able to bring in-country expertise to the task. This provides information based on policies that are actually being implemented in each country rather than only information contained in published versions of legislation and regulations. In the concluding section we are therefore able to bring out policy conclusions not only from the content of the research but also from the method and to make recommendations on how to carry this work forward in the future.

The health services sector is one of the thirteen priority integration sectors (PIS) in the AEC Blueprint but is an area in which it is intrinsically difficult to design milestones or benchmarks to measure progress. Our approach has been to separate medical services (broadly covering services provided by individual health professionals including medical and dental professionals, midwives, nurses, physiotherapists and paramedics) and health services provided in an institutional setting (including hospital services, medical laboratories, ambulance and residential health care other than hospitals). Questionnaires were designed to enquire about the actual implementation in areas that broadly match the types of barriers that were used in previous studies. This allows a description of the frequency of restrictions by ownership (foreign or domestic) and by mode of delivery (Mode 1 to 4).[7] Note that the indexes presented below show higher numbers for more restrictive regimes and that they capture a simple measure of the prevalence, or frequency, of restrictions.

[7] GATS (General Agreement on Trade in Services) defines the 4 modes of services supply as follows. In Mode 1 (cross border), a user in country X receives services from abroad through its telecommunications or postal infrastructure. In Mode 2 (consumption abroad), nationals of country X have moved abroad as tourists, students, or patients to consume respective services. In Mode 3 (commercial presence), the service is provided within country X by locally established affiliates, subsidiary, or representative office of a foreign-owned and foreign-controlled company. In Mode 4 (movement of natural persons), a foreign national provides a service within country X as an independent supplier or employee of a service supplier.

2.1.1. Medical Professionals

Table 1 presents the restrictiveness indexes regarding medical professional services.

Table 1. Restrictions on Trade in Medical Services by Profession and Mode of Delivery (%)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Consumption abroad (Mode 2)	0	0	0	0	0	50	0	0	0	0	**5**
MEDICAL (TOTAL)	**31**	**21**	**36**	**33**	**50**	**64**	**38**	**7**	**14**	**15**	**31**
Commercial presence (Mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	**16**
Inward movement of natural persons (Mode 4) – Individual professionals	75	25	50	75	50	75	75	0	50	0	**48**
Outward movement of natural persons (Mode 4) – Individual professionals	0	50	0	50	50	50	50	0	0	50	**30**
Inward movement of natural persons (Mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	**50**
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	**30**
Ownership	25	0	7	25	10	33	25	0	17	0	**14**
Regulation – licensing	25	50	100	25	25	75	25	25	38	50	**44**
Regulation – restrictions on operation	44	22	44	0	72	61	44	11	0	0	**30**
DENTAL (TOTAL)	**31**	**21**	**36**	**33**	**50**	**64**	**29**	**7**	**14**	**15**	**30**
Commercial presence (Mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	**16**
Inward movement of natural persons (Mode 4) – Individual professionals	75	25	50	75	50	75	75	0	50	0	**48**
Outward movement of natural persons (Mode 4) – Individual professionals	0	50	0	50	50	50	0	0	0	50	**25**
Inward movement of natural persons (Mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	**50**
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	**30**
Ownership	25	0	7	25	10	33	25	0	17	0	**14**
Regulation – licensing	25	50	100	25	25	75	25	25	38	50	**44**
Regulation – restrictions on operation	44	22	44	0	72	61	22	11	0	0	**28**
PARA-MEDICAL (TOTAL)	**31**	**21**	**36**	**33**	**50**	**64**	**29**	**7**	**17**	**15**	**30**
Commercial presence (Mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	**16**
Inward movement of natural persons (Mode 4) – Individual professionals	75	25	75	75	50	75	75	0	50	0	**50**
Outward movement of natural persons (Mode 4) – Individual professionals	0	50	0	50	50	50	0	0	0	50	**25**
Inward movement of natural persons (Mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	**50**
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	**30**
Ownership	25	0	7	25	10	33	25	0	17	0	**14**
Regulation – licensing	25	50	50	25	25	75	25	25	38	50	**39**
Regulation – restrictions on operation	44	22	44	0	72	61	22	11	11	0	**29**

Source: Excerpt from Table 1 in Dee (2009).

From the table it can be observed that there is considerable variation in the frequency of restrictions for *medical professional services* across countries but there is a broad tendency for countries with more transparent regulatory regimes to have lower prevalence of restrictions. There is relatively little variation within countries across the different categories of medical profession, that is similar restrictions appear to cover

many categories. This should make progress in liberalization easier to achieve since there is less need for case-by-case consideration across the different medical services.

On the other hand, there is considerable variation in restrictions by mode of delivery with Mode 4 the most restricted and Mode 1 also frequently restricted. Mode 4 restrictions need to be addressed by extending and redesigning mutual recognition agreements on foreign professional qualifications while Mode 1 (and to some extent Mode 2) restrictions could be made less problematic if the mobility of health insurance could be addressed. This might also be tackled by consultation and coordination on international recognition of standards.

There is significant scope to remove discrimination against foreign suppliers but also scope to remove restrictions that impact both domestic and foreign suppliers. As argued elsewhere (AJRC-ANU, 2008), the economic impact of non-discriminatory barriers is very significant and needs to be the focus of policy attention just as much as those affecting only foreign entrants.

2.1.2. Healthcare Services

For institutionally provided health services the pattern of restrictions is similar to those for medical professional services (Table 2). By comparison with medical professional services, the regulatory barriers are skewed to penalizing foreign suppliers rather than affecting domestic and foreigners equally.[8] Across both medical services and health services most ASEAN countries have come close to achieving the AEC Blueprint objective of allowing 70% foreign ownership (with some country exceptions)

[8] See tables 2 and 4 in Dee (2009). The average indexes of medical professional services are 12 for domestic providers and 34 for foreign providers; whereas comparable indexes for healthcare services are 3 and 38 respectively.

but there are restrictions on commercial presence limiting entry, legal form and scope of operations of foreign firms. Dee (2009) points out that there are other mechanisms for establishing quality control (discussed further below) and these entry barriers are inefficient and economically costly.

Table 2. Restrictions on Trade in Health Services by Service and Mode of Delivery (%)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Consumption abroad (Mode 2)	0	0	0	0	0	50	0	0	0	0	**5**
HOSPITAL (TOTAL)	**31**	**13**	**45**	**30**	**48**	**77**	**39**	**0**	**31**	**9**	**32**
Commercial presence (Mode 3)	43	0	29	29	14	71	57	0	43	0	**29**
Movement of natural persons (Mode 4) – intra-corporate transferees	20	40	60	60	100	100	60	0	60	40	**54**
Cross-border trade (Mode 1)	67	0	100	0	33	67	0	0	0	0	**27**
Ownership	38	0	10	0	15	50	0	0	26	0	**14**
Regulation	17	17	67	33	67	83	33	0	0	0	**32**
MEDICAL LABORATORY (TOTAL)	**28**	**13**	**45**	**26**	**48**	**77**	**30**	**4**	**22**	**9**	**30**
Commercial presence (Mode 3)	43	0	29	14	14	71	57	0	43	0	**27**
Movement of natural persons (Mode 4) – intra-corporate transferees	20	40	60	60	100	100	60	20	20	40	**52**
Cross-border trade (Mode 1)	0	0	100	0	33	67	0	0	0	0	**20**
Ownership	38	0	10	0	15	50	0	0	26	0	**14**
Regulation	17	17	67	33	67	83	0	0	0	0	**28**
AMBULANCE	**28**	**13**	**74**	**22**	**46**	**77**	**22**	**4**	**22**	**9**	**32**
Commercial presence (Mode 3)	43	0	71	0	14	71	29	0	43	0	**27**
Movement of natural persons (Mode 4) – intra-corporate transferees	20	40	100	60	100	100	60	20	20	40	**56**
Cross-border trade (Mode 1)	0	0	0	0	0	67	0	0	0	0	**7**
Ownership	38	0	50	0	15	50	0	0	26	0	**18**
Regulation	17	17	83	33	67	83	0	0	0	0	**30**

Source: Excerpt from Table 3 in Dee (2009).

2.1.3. Financial Services

In financial services, there is again variation across countries (Table 3). In *banking* the most prevalent restrictions are on foreign ownership and the movement of intra-corporate transferees and on commercial presence. As a result, restrictions in the banking services fields are still discriminatory against foreigners. Dee (2009) discusses other research that suggests that some regulations may actually have been

raised over the period since the Asian financial crisis although the main factor driving this has been some increase in restrictions on the scope of activities permitted to banks. Policy discussion on the region-wide views of the appropriate limitation on the scope of activities for banks will, no doubt, be required as a response to the G20 proposals for new bank regulations in the aftermath of the global financial crisis and this would be an opportunity to establish benchmarks in this area.

In *insurance* there is little variation of restrictions across different insurance products while the pattern across countries is similar to that in banking. Foreign ownership restrictions are not as prevalent in insurance as they are in banking, though cross-border trade in insurance is widely restricted. Dee (2009) shows that the costs of these restrictions are very significant and the benefits of removing them would be considerable.

Table 3. Restrictions on Trade in Financial Services by Service and Mode of Delivery (%)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Average
Macroeconomic policies	0	0	0	0	0	50	25	0	50	0	**13**
BANKING (TOTAL)	**35**	**21**	**20**	**41**	**44**	**88**	**36**	**11**	**42**	**46**	**39**
Consumption abroad (Mode 2)	0	0	0	0	0	100	100	0	0	50	**25**
Commercial presence (mode 3)	17	14	25	38	52	90	36	9	49	49	**38**
Cross-border trade (Mode 1)	50	17	8	75	33	72	33	0	0	50	**34**
Movement of natural persons (Mode 4)	59	64	38	25	6	89	50	28	51	41	**45**
Ownership	8	8	17	50	80	100	57	17	67	55	**46**
Regulation	67	17	0	0	50	100	0	17	67	22	**34**
LIFE INSURANCE (TOTAL)	**31**	**16**	**21**	**29**	**20**	**85**	**21**	**7**	**37**	**31**	**30**
Commercial presence (mode 3)	26	3	23	6	9	71	18	0	33	25	**21**
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	**65**
Consumption abroad (Mode 2)	0	0	0	50	0	100	50	0	0	0	**20**
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	**46**
Ownership	0	0	10	35	35	100	0	0	26	0	**21**
Regulation	50	25	0	75	25	100	0	25	50	50	**40**
MEDICAL INSURANCE (TOTAL)	**31**	**22**	**21**	**29**	**20**	**85**	**22**	**7**	**37**	**34**	**31**
Commercial presence (mode 3)	26	3	23	6	9	77	18	0	33	25	**22**
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	**65**
Consumption abroad (Mode 2)	0	0	0	50	0	100	100	0	0	0	**25**
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	**46**
Ownership	0	0	10	35	35	100	0	0	26	0	**21**
Regulation	50	75	0	75	25	75	0	25	50	75	**45**
PROPERTY INSURANCE (TOTAL)	**31**	**22**	**27**	**30**	**20**	**85**	**21**	**7**	**37**	**31**	**31**
Commercial presence (mode 3)	26	3	23	6	9	71	18	0	33	25	**21**
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	**65**
Consumption abroad (Mode 2)	0	0	0	100	0	100	50	0	0	0	**25**
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	**46**
Ownership	0	0	10	35	35	100	0	0	26	0	**21**
Regulation	50	75	50	75	25	100	0	25	50	50	**50**
REINSURANCE (TOTAL)	**31**	**22**	**21**	**52**	**20**	**82**	**19**	**7**	**37**	**31**	**32**
Commercial presence (mode 3)	26	3	23	31	9	71	18	0	33	25	**24**
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	**65**
Consumption abroad (Mode 2)	0	0	0	100	0	100	0	0	0	0	**20**
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	**46**
Ownership	0	0	10	100	35	100	0	0	26	0	**27**
Regulation	50	75	0	75	25	75	0	25	50	50	**43**
BROKING (TOTAL)	**31**	**22**	**24**	**63**	**20**	**82**	**19**	**7**	**32**	**31**	**33**
Commercial presence (mode 3)	26	3	23	50	9	71	18	0	24	25	**25**
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	**65**
Consumption abroad (Mode 2)	0	0	0	100	0	100	0	0	0	0	**20**
Movement of natural persons (Mode 4)	59	64	63	100	6	100	50	28	51	41	**56**
Ownership	0	0	10	50	35	100	0	0	26	0	**22**
Regulation	50	75	0	63	25	75	0	25	50	50	**41**

Source: Compiled from Tables 5 and 6 in Dee (2009).

Note: Macroeconomic policy refers to whether there are capital controls or not.

2.2. Trade Facilitation

Trade facilitation has been a vital topic of policy concern for many years. It is

clear that improving efficiency in the range of areas broadly captured by trade facilitation is an unambiguous gain to the trade efficiency and competitiveness of countries. While the East Asian region has made improvements, there is much more that can be done.

The research conducted for this study contributes important ideas for the development of simple, effective measures of progress in achieving ASEAN's goals, and they offer important snapshots of ASEAN member countries regarding several aspects of trade facilitation (Findlay 2009; Sourdin and Pomfret 2009; Hollweg and Wong 2009). In addition, Findlay (2009) presents valuable additional evidence from business surveys that identify the frequency and severity of a list of common border barriers in the priority goods and services sectors (de Dios 2009). A separate survey of logistics providers also identified frequent and significant border barriers relating specifically to the logistics industry.

The quantitative measures on trade facilitation developed in this project consist of several elements: (1) a restrictiveness index in logistics (indicating the extent to which there are barriers to the entry into and efficient operation of the logistics industry itself), (2) an index giving the extent to which customs procedures present barriers to business and (3) an overall index relating to the efficiency of trade facilitation derived from the gap between cif (customs insurance and freight) inclusive prices at the point of import and fob (free-on-board) prices at the point of departure.

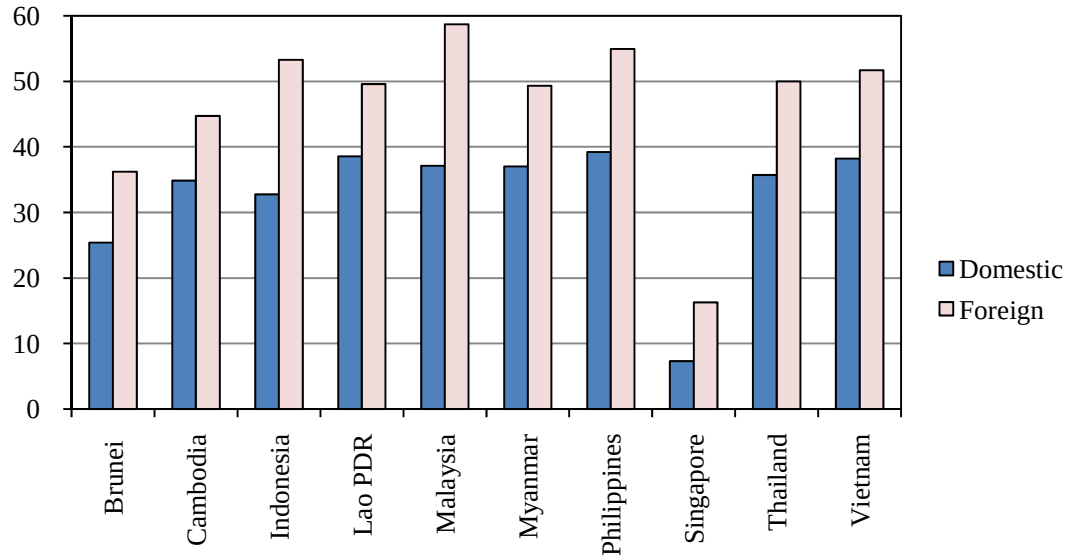
2.2.1. Logistics Restrictiveness Index

Figure 2 gives a snapshot relating to restrictiveness in the logistics sector (one of the priority services sectors) and the barriers that exist to the entry into and operation of

logistics services. This is the first time an overall index has been developed to cover all the sections of the logistics industry (maritime, aviation and road transport). This index is conceptually similar to those compiled for other service sectors (e.g. in Dee (2009), although it has been compiled using desk-based research on available statements of regulations and policy, not on in-country information. In the case of the logistics restrictiveness index the different elements of barriers to cross-border trade and to domestic entry are weighted to create a domestic index and foreign index including the *additional* elements for discriminatory barriers against foreigners. The "foreign" bar in Figure 2 shows the total of all the elements applying to domestic entrants as well as the additional ones applying only to foreigners.

Findlay (2009) shows that the extent of restrictions on trade in logistics services, and particularly those that apply in a discriminatory fashion to foreign logistics providers, is linked to the perceived performance of the logistics sector so reduction in restrictiveness should be linked to an improvement in performance. Large differences exist in the regulatory environment for logistics of the ASEAN+6 economies. Many of these economies are open to trade in logistics services, while others are relatively restrictive. The average score for the domestic index is 29 and for the foreign index it is 41 so regulations are still discriminatory. Vietnam, Laos, India, the Philippines and to a lesser extent Thailand have relatively high scores on the domestic index (over 30% above the mean). While all countries have higher indexes on foreign participants, Indonesia, Philippines, China, and Malaysia have particularly high scores on additional discriminatory barriers. Findlay (2009) also points out that "the degree of restrictiveness falls as per capita income rises, but even at lower levels of income there is a range of values of the scores."

Figure 2. Logistic Restrictiveness Index



Sources: Findlay (2009) and Hollweg and Wong (2009).

Using the detail of the components of the index, Findlay (2009) is able to identify areas where particular countries could focus attention: Malaysia on investment; Indonesia, Vietnam, Philippines and Malaysia on maritime services; Indonesia, Philippines and Malaysia on aviation; and Thailand and Malaysia on road transport.

One element of the logistics restrictiveness index is so important for all aspects of trade facilitation that it is separately presented here in Table 4.[9] Table 4 again shows a large variation across countries, with the exceptionally low score for Singapore (15) indicating the regional best practice in customs procedures. Higher income ASEAN countries show better performance than CLMV countries. This index also shows a strong negative correlation with the customs sub-index of the Logistic Performance

[9] The data in Table 4 is a subset of the data used in compiling the logistics restrictiveness index in Figure 2. See Hollweg and Wong (2009) for details.

Index (LPI) by World Bank, indicating that the fewer customs restrictions faced by logistic suppliers, the better the perceived customs performance within that country (Findlay 2009, Figure 4 in particular).

Table 4. Logistics Restrictiveness Index on Customs Procedures

	Weights	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Average
Overall Index	**1.000**	**46**	**57**	**50**	**65**	**45**	**64**	**53**	**15**	**49**	**53**	**50**
Customs documents	0.082	63	116	58	100	74	100	84	42	37	74	**75**
Customs signatures	0.082	29	57	18	92	16	n.a.	24	8	41	55	**38**
Import licensing	0.082	50	50	50	100	50	100	100	0	50	100	**65**
Local language	0.014	0	100	0	100	0	0	0	0	0	100	**30**
Customs inspections	0.082	1	12	12	1	6	56	32	3	9	14	**15**
Import restrictions	0.014	25	25	25	25	25	100	25	25	50	25	**35**
Customs Electronic Data Interchange	0.082	50	100	50	100	50	50	50	0	50	50	**55**
Harmonized Commodity Description and Coding Syster	0.075	50	50	50	50	50	100	50	0	50	50	**50**
Possibility of a review for imports	0.068	50	50	62	50	25	100	50	33	100	43	**56**
Customs operating hours	0.041	50	50	50	50	100	50	100	0	100	50	**60**
Customs brokerage services	0.027	50	50	100	100	100	100	100	0	100	50	**75**
Customs clearance	0.068	100	20	32	0	34	90	36	22	38	29	**40**
Customs procedures time	0.068	47	52	48	100	32	25	32	8	27	47	**42**
Customs charges or fees	0.041	34	41	35	100	23	n.a.	42	23	36	42	**42**
Improper penalties or fees	0.054	0	50	100	0	50	50	0	0	0	0	**25**
Discriminatory fees or inspection practices	0.041	0	0	50	0	50	0	0	0	50	50	**20**
DeMinimis level	0.082	100	100	94	100	82	100	100	67	96	100	**94**

Source: Findlay (2009) and Hollweg and Wong (2009).

Note: Re-calculated based on the data from Hollweg and Wong (2009). Unavailable data (n.a.) are excluded in calculating 'overall index' and 'average'.

The logistic restrictiveness index in Figure 2 and customs procedures index in Table 4 are compiled from the information on the policy environment, whereas LPI is based on a survey of operators such as global freight forwarders and express carriers. The strong correlation between the two indexes supports the validity of our logistic restrictiveness indexes. A reduction in the restrictiveness indexes, by relaxing customs regulations and liberalizing the logistics sector, can reasonably be expected to improve the business perception of the performance of customs and logistic services. There is a large difference in the cost of developing our indexes compared with the LPI, since the

latter requires large scale business surveys so it is strongly recommended that the ASEAN Secretariat maintains and updates the logistic restrictiveness index to monitor the progress in trade facilitation initiatives as required by the AEC Blueprint.

2.2.2. Trade Cost Estimates

The research framework underlying much of ERIA's research, developed in Kimura (2008), emphasizes the importance of reducing services link costs to further the development of production networks in East Asia, because these are seen as promising ways to pursue deepening economic integration and narrowing development gaps in the region. Despite the conceptual significance, it is difficult to measure services link costs in a comparable fashion. Services link costs include all the costs incurred to connect fragmented production blocks, including transportation costs (both domestic and international), insurance, tariffs, other regulatory charges, and so on.

In this project, Sourdin and Pomfret (2009) developed a useful measure of trade costs, which is conceptually close to services link costs. They first compute an 'unadjusted index' of trade costs based on the raw cif/fob import data available from Australian trade statistics with partner countries, then estimate an 'adjusted index' by controlling for the changes in commodity composition of trade by running a regression with exporter-commodity fixed effects (Table 5).

Here, a significant decline of trade costs and their standard deviations can be observed since 1990. This implies that trade costs have been converging towards the best practice level set by Singapore.

Table 5. Trade Costs (Adjusted Index) in Terms of cif/fob Differences

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Average	Standard Deviation
1990-94	524.0	313.6	428.6	346.2	339.6	606.0	415.0	272.2	351.2	611.4	420.8	148.3
1995-99	410.2	487.2	358.8	377.0	263.2	404.8	311.2	225.4	300.8	394.6	353.3	111.5
2000-04	226.0	323.4	277.0	234.4	195.0	224.2	189.6	157.0	237.4	233.0	229.7	71.0
2005-07	135.0	283.0	232.0	136.0	172.3	98.7	203.7	130.3	223.0	166.7	178.1	69.3

Source: Sourdin and Pomfret (2009).
Note: The indexes use the estimates for Singapore in 2007 as the basis (100.0). Standard deviation is calculated annually across countries, and then averaged over the period.

An advantage of this index is that it provides a useful single-number measure of trade costs. In addition, this index is easy to update when new statistics are released and it is possible to expand the coverage of countries as necessary. There are, however, some drawbacks. First, this approach cannot capture trade costs in terms of time or possible behind-the-border restrictions, both of which are key aspects of trade facilitation. By contrast with the logistics restrictiveness index, this index cannot be linked to specific policies. Despite these shortcomings, it is recommended that this index should be maintained and updated as a quick measure of the progress in trade facilitation. In addition, by conducting similar exercises using trade statistics from other countries, we can check the robustness of the proposed index and refine the index further.

2.2.3. Implications from Business Surveys

In addition to the above analyses, Findlay (2009) and de Dios (2009) discuss key issues for trade facilitation in ASEAN based on a business survey conducted by the ASEAN Secretariat in cooperation with the Australian government (AADCP-REPSF Project No.06/001).

The main conclusion is that border procedures continue to be pervasive and cumbersome and critically affect both goods and services businesses across ASEAN. The procedures themselves are numerous and must be reduced, rationalized and streamlined, a need that has been enunciated for years now, and acted upon only slowly. The ASEAN Single Window program illustrates this difficulty, since at this stage national Single Windows have still not been fully realized in all member countries[10]. The completion of the national Single Window program is obviously a priority.

Aside from the procedures per se, the manner of implementation has transformed certain procedures into formidable barriers, particularly those that allow wide discretion in application. Traders who have more to gain from unofficial payments favor this environment, and Customs personnel benefit privately from the arrangement but the total welfare loss to the community is likely to far exceed these private gains and these practices should be ended.

2.3. Investment Climate in ASEAN

Foreign direct investment (FDI) has contributed to enabling East Asian countries to achieve high economic growth through enabling various networks such as production, sales, procurement, and information networks of foreign multinational corporations (MNCs). Attracting FDI has therefore become an important policy priority for the governments of many countries. ASEAN has been quite successful in attracting FDI after the slowdown following the Asian financial crisis, though it lags behind China.

[10] Singapore has completed the implementation of its National Single Window (NSW). Malaysia, Philippines, Indonesia, Thailand and Brunei are expected to complete the NSW in 2009. Other ASEAN members are expected to complete by 2012. Pilot projects are underway to test the connections between National Single Windows (http://www.miti.gov.my/storage/documents/bb6/com.tms.cms.document.Document_49a3fec9-c0a81573-84808480-1cdc005c/1/MITI%20WEEKLY%20BULLETIN%20(Vol.%2030)%2004%20Februari%202009.pdf).

Various factors influence the attractiveness of the host country for FDI inflows[11] but one of the most important factors is a country's FDI policy regime. The chapter by Urata and Ando (2009) analyzes the FDI environment of the ASEAN countries on the grounds that identifying impediments to FDI would provide useful information to policy makers interested in attracting FDI. The coverage of impediments to FDI in their study includes not only the FDI policies, but also the elements of implementation and enforcement of these policies that are critical to FDI facilitation.

2.3.1. An Assessment of FDI Policy

In order to evaluate the FDI policy regime, Urata and Ando (2009) examine documented FDI policies using information such as FDI Laws focusing on six aspects: market access or right of establishment, national treatment, screening and approval procedure, restrictions on boards of directors as well as foreign investors, and performance requirements (Table 6) and by sector (21 sectors, Table 7) [12]. To shed more light on the actual FDI policy environment, the study adds information on barriers to FDI, available from the survey compiled by the Japan Machinery Center for Trade and Investment (JMC). Use of information provided by companies reveals the true impediments to FDI rather than merely the statements of policy in official documents.

Tables 6 and 7 illustrate wide variations in the restrictiveness of FDI policies among the ASEAN countries, ranging from Singapore (12.5), the least restrictive country, to Myanmar (48.3), the most restrictive country, with the average score of 31.5. We observe a negative correlation between income levels and the restrictiveness of FDI

[11] For example, see Urata (2006) for the determinants of FDI inflows in East Asian countries.

[12] Original data are compiled through close collaboration with project members from research institutes in ASEAN member countries and provided in Table A3.1 in Urata and Ando (2009).

policy, albeit there are notable exceptions in Malaysia and Brunei. Compared with a similar study by Urata and Sasuya (2007), the average score for ASEAN countries (31.5) implies that ASEAN countries have reasonably liberalized FDI policy regimes[13].

Table 6. Restrictions on FDI Policy by Mode

	Weight	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Average
Overall Index	**1.0**	**39.4**	**29.7**	**27.3**	**38.7**	**41.0**	**48.3**	**21.9**	**12.5**	**25.2**	**31.5**	**31.5**
Market access	0.4	24.3	14.0	31.0	40.1	40.6	45.3	25.7	16.5	42.2	33.8	**31.4**
National treatment	0.2	79.5	39.5	5.0	29.8	82.8	39.2	18.8	5.2	0.0	26.2	**32.6**
Screening & appraisal	0.1	43.4	75.0	76.2	66.5	23.6	69.6	11.2	13.7	8.5	36.4	**42.4**
Board of directors	0.1	59.0	0.0	5.0	32.9	37.7	39.2	51.9	25.0	2.4	28.6	**28.2**
Movement of investors	0.1	18.0	75.0	52.5	46.3	10.9	75.7	4.3	4.8	62.7	46.9	**39.7**
Performance requirement	0.1	18.0	11.7	5.0	21.4	9.5	39.2	10.7	4.8	10.0	15.2	**14.5**

Source: Urata and Ando (2009).

Note: Original data are transformed so that the higher the numbers, the higher the restrictions, and vice versa, in order to facilitate the comparison with other elements of our quantitative measures.

By mode of restrictions, the most serious impediments are found to be the lack of transparency and complicated/delayed processing in screening and appraisal procedures regarding FDI application, particularly in Indonesia, Cambodia, Myanmar, and Lao PDR. Regarding market access, which is considered the most important part of FDI policy, Myanmar, Thailand, Malaysia, and Lao PDR impose tighter restrictions. The lack of national treatment is a serious problem in Malaysia and Brunei.

[13] The results from the investment provisions in signed FTAs for selected countries are, after converting to the comparable format, 11.9 for the United States, 22.2 for Singapore, 23.0 for Australia, 24.8 for Japan, 30.1 for Korea, 32.7 for Chile, 37.3 for Mexico, and 38.0 for Canada. See Table 3 in Urata and Susaya (2007).

Table 7. Restrictions on FDI Policy by Sector

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Average
All sectors	**39.4**	**29.7**	**27.3**	**38.7**	**41.0**	**48.3**	**21.9**	**12.5**	**25.2**	**31.5**	**31.5**
Agriculture, forestry and fishing	24.0	20.0	25.7	11.0	26.0	100.0	37.5	2.5	32.0	19.0	**29.8**
Mining and quarrying	22.6	40.5	38.1	11.0	39.0	100.0	35.5	2.5	21.7	17.5	**32.8**
Manufacturing	23.9	20.0	44.8	31.4	23.2	57.5	13.5	5.0	14.3	7.0	**24.1**
Electricity, gas, steam and air conditioning supply	100.0	35.0	20.5	58.0	52.5	100.0	19.5	100.0	28.0	37.5	**55.1**
Water supply; sewerage, waste management and remediation activities	100.0	27.5	20.5	11.0	64.3	15.0	22.0	2.5	28.0	13.5	**30.4**
Construction	34.3	35.0	20.5	100.0	25.7	15.0	11.0	2.5	28.0	49.5	**32.2**
Wholesale and retail trade; repair of motor vehicles and motorcycles	20.0	35.0	12.5	11.0	36.5	15.0	13.0	6.5	28.0	61.5	**23.9**
Transportation and storage	36.0	32.0	32.5	22.8	40.0	49.0	37.5	16.0	28.0	34.0	**32.8**
Accommodation and food service activities	20.0	20.0	12.5	11.0	74.2	100.0	9.5	2.5	28.0	8.5	**28.6**
Information and communication	24.5	31.0	21.3	42.2	52.5	100.0	23.0	10.4	28.0	45.0	**37.8**
Financial and insurance activities	29.0	30.0	19.3	26.0	44.5	100.0	14.5	10.0	33.0	16.0	**32.2**
Real estate activities	20.0	62.5	16.5	26.0	70.0	15.0	40.0	32.5	28.0	8.5	**31.9**
Professional, scientific and technical activities	28.1	28.0	38.1	26.0	25.1	15.0	47.5	9.6	28.0	26.0	**27.1**
Administrative and support service activities	20.0	22.0	14.5	22.6	23.3	43.3	25.0	3.2	28.0	13.0	**21.5**
Public administration and defence; compulsory social security	100.0	20.0	100.0	70.0	47.5	100.0	26.0	2.5	28.0	100.0	**59.4**
Education	29.0	35.0	32.5	11.0	47.5	15.0	40.0	42.5	28.0	19.0	**30.0**
Human health and social work activities	29.0	35.0	32.5	11.0	47.5	15.0	15.0	5.0	28.0	63.0	**28.1**
Arts, entertainment and recreation	46.8	35.0	20.5	100.0	73.7	15.0	14.0	2.5	22.8	100.0	**43.0**
Other service activities	46.7	20.0	24.5	100.0	47.5	15.0	5.0	6.3	28.0	18.5	**31.2**
Activities of households as employers; undifferentiated goods and services producing activities of households for own use	24.5	20.0	12.5	100.0	0.0	15.0	5.0	2.5	7.0	2.0	**18.9**
Activities of extraterritorial organizations and bodies	50.0	20.0	12.5	11.0	0.0	15.0	5.0	2.5	7.0	2.0	**12.5**

Source and Note: Same as Table 6.

A sectoral comparison reveals the expected result that public administration (59.4) and energy related sectors (55.1) are the most restricted sectors. Compared with the manufacturing sector (24.1), services sectors are characterized by higher restrictions, for example, information and communication (37.8), transport and storage (32.8), and finance and insurance (32.2). Based on these findings and the importance of services sectors in ASEAN countries, Urata and Ando (2009) stress "the provision of greater market access to foreign companies can contribute to an improvement of allocative and technical efficiency in these countries. A fear of market domination by competitive foreign companies, which is justified, should be dealt with by appropriate competition policy."

2.3.2. Importance of FDI Facilitation

Although Tables 6 and 7 provide a useful snapshot of FDI policy regimes in ASEAN countries, it cannot by itself capture all elements of the overall investment climate in the region. To fill the gap, Urata and Ando (2009) also analyze the FDI environment by referring to business surveys conducted on Japanese firms in 2005 and 2008 to capture the important aspect of FDI facilitation.

The key findings are that ASEAN countries as a whole have improved their investment climates, shown in the decline in the number of incidents reported as preventing FDI. However greater improvement is observed in issues related to FDI liberalization, than in the issues on FDI facilitation. In general the barriers to FDI facilitation are regarded as more numerous and more than half the problems are in the two categories of "institutional problems (lack of transparency in policies and regulations)" and "implementation problems" such as delayed or complicated procedures. Underdeveloped infrastructure, inflexible labor market conditions, and taxation problems are also identified as problems. There is a clear message that consistency, clarity and simplicity in design and implementation of regulations and policies would make a major improvement to the investment climate. The data from the Japanese survey is consistent with the picture derived from the broader Doing Business data and points to the need to improve the FDI facilitation climate. It would be useful to have similar survey data from other country's firms also.

2.4. Discussion

We have presented several snapshots of ASEAN member countries (Tables 1 to 7) based on the underlying detailed work reported in separate chapters. Except for Table

5 these are all snapshots, at one point in time, giving only current cross-country comparisons. The most important aspect of the quantitative measures is, however, their use as an indication of progress towards goals, not as a ranking across countries. To facilitate implementation of the AEC Blueprint it will be necessary to update these tables so as to check the progress over time. In a sense, the studies presented in this report are the beginning of a process.

The advantage of our quantitative measures is that they are transparent and verifiable and can be used publicly as a tracking device for policymakers. They add additional value to any internal verification that might be done in ASEAN which is likely to focus on tracking compliance with agreed policy changes. Such tracking is useful in itself but cannot provide individual country policymakers with easy to interpret indicators of how much progress they are making.

There is still much to be done to expand the scope, and improve the quality of our quantitative measures, in addition to the regular updating work that is needed to make the indexes useful for tracking progress. The coverage of services sector should be expanded in consultation with the ASEAN Secretariat. In addition, to fill the gap between the policy reforms required by the AEC Blueprint and the actual outcomes perceived by firms, a well-designed business survey could be an important tool and that is one of the policy recommendations discussed below. There is also important value that can be added for policymakers by using our quantitative measures as part of econometric studies to investigate the economic impact of the policy reforms included in the AEC Blueprint. At present our quantitative measures provide only a rough guide to which areas of liberalization should be tackled first. The indexes mainly represent the frequency of restrictions and do not capture fully the economic

significance of restrictions. In more detailed studies some judgments have been made about the severity of restrictions, and this is included in the weighting applied to the different restrictions. However, a much more accurate view of the economic cost of restrictions (and the benefit of the removal thereof) requires estimation of the impact that restrictions have on costs and prices. Such studies can then provide a well-informed guide to prioritize policy measures. This would be an important step to facilitate the on-schedule establishment of the AEC along the Blueprint.

3. Micro-data Analyses on the Impacts of Economic Integration on the Performance of Firms

Part II of this report contains surveys of micro-data analyses and four original econometric studies using micro-data in selected East Asian countries.

The nature of corporate activities has changed rapidly in this era of globalization. Although the development experience of East Asia provides reasonable evidence of the benefit of economic integration, and there is a widely accepted view that a more open trade and investment regime is desirable, there still remains persistent negative argument against economic integration and globalization. Such argument claims that the benefits of economic integration tend to be distributed unevenly among economic agents in favor of big players. The result of that argument can be a tendency towards protectionism. The risk of protectionism is again rising against the backdrop of the global financial crisis.

In order to further economic integration in East Asia in this difficult time it is

important to address squarely negative arguments against globalization. In designing policy reforms that would enable deepening economic integration it is useful to clarify the impact of economic integration on corporate activities. There is no one-size-fits-all prescription. The key word here is *heterogeneity*. East Asian countries vary significantly in many aspects; the level of economic and institutional development, the size of their economies, factor endowments, and so forth. Even within a single country, firms are heterogeneous in many aspects; products, sizes, factor intensities, management skills, and market orientation. It is, therefore, natural to expect the impacts of, and the attitudes toward, globalization or economic integration to differ significantly among countries and even among firms in a country.

This is the reason for the importance of micro-data analyses. Compared to other regions such as OECD countries, micro-data for East Asian countries have not yet been fully investigated. This is in part because of their confidential nature and in part because of the quality of the data but the available literature, though still limited, reveals interesting characteristics of East Asia. These studies can be a rich source of policy implications for the effective design of policy measures to pursue deepening economic integration and to narrow development gaps.

Hayakawa *et al*. (2009) provides an extensive survey of the literature on the impact of globalization or economic integration on the performance of corporate activities, classifying the literature into 13 categories[14]. These studies indicate that the issues of immediate interest can differ by country, depending on the industrial structure and the

[14] (1) Selection in investing and exporting, (2) to which countries/regions, (3) entry mode choice, (4) selection in dead or surviving firms, (5) selection in the number of varieties, (6) from what products to what products, (7) from what resources to what resources, (8) impacts of exporting and outward FDI, (9) impacts of inward FDI, (10) impacts of agglomeration, (11) decomposition of production, (12) decomposition of resources, and (13) decomposition of productivity.

stages of economic development. To provide more detail for the ASEAN group of countries Part II of this project conducted 5 econometric studies, summarized in sections 3.1 to 3.4. In addition, country-based surveys of micro-data analyses were compiled for Indonesia, Vietnam, and Australia, as a basis for future extensions of micro-data analyses[15].

3.1. Gains from Fragmentation

The remarkable economic growth of East Asia has been accompanied by the development of international production networks. International production networks in turn have been developed through the expansion of international trade and FDI in the region. In particular, production fragmentation[16] has been a key phenomenon in the process. However, the benefits of production fragmentation have never been directly measured empirically at a detailed level. Kimura *et al* (2009) make the very first attempt to capture empirically the gains from fragmentation at a firm-level.

By using firm-level data of the manufacturing sector in Japan, Kimura *et al* (2009) first present some facts on capital-labor ratios (KL ratios) in Japanese MNEs. They find that Japanese affiliates in developed countries have higher KL ratios than those in East Asian countries, while KL ratios in Japanese MNEs' home activities do not show clear differences between those with affiliates in East Asia and those in developed countries. As a result, the gap in KL ratios between home and overseas activities is larger in the MNEs with affiliates in East Asian countries. Based on these findings, Kimura *et al* (2009) claim that Japanese MNEs investing in East Asia aim to utilize

[15] Aswicahyono (2009) for Indonesia, Pham (2009) for Vietnam, and Wong (2009) for Australia.

[16] Production fragmentation is a corporate strategy to pursue total cost reduction, in which a "firm properly divides a factory into multiple production blocks and places them in various locations with different location advantages" (Kimura *et al*. 2009).

low-priced labor and cut out production blocks on the basis of factor intensities. Next, they investigate econometrically how such a gap in KL ratios is related to MNEs' performance. They find that "the larger the gap in capital-labor ratios between MNE's home and overseas activities, the higher their profitability" (return on assets) and labor productivity. This finding implies that, by separating production blocks so as to widen the gap in KL ratios between those blocks, firms can enjoy more benefits from production fragmentation. East Asia is a particularly suitable region for such separation, compared with other regions such as Europe, because of the huge disparities between areas within the region. In order to obtain greater gains from fragmentation in this region it is crucially important for MNEs to design carefully how to separate their production processes.

3.2. Learning-by-exporting

Whether learning-by-exporting effects can improve firms' productivity is a crucial question not only for researchers but also for policy makers. The presence or absence of learning-by-exporting effects has important implications for the appropriate policy stance toward 'openness'.

Hahn and Park (2009) examine this issue using plant-level panel data on the Korean manufacturing sector from 1990 to 1998, carefully controlling for self-selection[17] in export market participation using propensity score matching[18]. They found clear and robust empirical evidence for the learning-by-exporting effect. Firms can, of course, improve their productivity through various channels but the implication of this finding

[17] A statistically significant relationship between productivity and export market participation does not automatically imply the existence of leaning-by-exporting effects, as it can be a result of self-selection through which only productive firms can enter into export markets.

[18] For details of propensity score matching, see section 3 of Hahn and Park (2009).

is that exporting is one important channel for raising productivity.

Hahn and Park (2009) further find that "the effect is more pronounced for firms that have higher skill-intensity, higher share of exports in production, and are small in size." The skill-intensity result seems to support the view that "absorptive capacity" matters to achieve knowledge spillover from exporting activity. The implication is that policy makers should go beyond the neoclassical orthodoxy of unconditional opening and focus on policies to improve absorptive capacity.

3.3. FDI Spillovers

Attracting FDI has been high on the policy agenda in developing countries in East Asia based on the expectation that multinational enterprises (MNEs) would bring in much-needed capital, accompanied by employment opportunities, new production technologies, marketing techniques, management knowhow, and other benefits. In addition to these direct effects, the host countries have looked for FDI spillovers, through which domestic firms could improve their productivity, because this is the most promising path to assure long-term economic growth. Although developing countries in East Asia are often viewed as successful cases of FDI policies, the empirical evidence on the existence of FDI spillovers is still limited[19]. Policy makers in those countries have repeatedly expressed serious concerns over the lower-than-expected FDI spillovers.

Kohpaiboon (2009) investigates the existence of vertical and horizontal FDI spillovers, using an unbalanced panel dataset from the manufacturing survey of

[19] This does not mean that FDI policies in East Asia have been unsuccessful. On the contrary, they have been largely successful to provide the host country various opportunities to participate in international production networks.

Thailand over the period from 2001 to 2003. One of the most important findings is that "positive horizontal spillovers are found only in an industry operating in relatively liberal environment." This leads the author to conclude that FDI liberalization has to go hand in hand with trade liberalization because tariff reduction must reach a certain threshold level in order to realize the gains from FDI spillovers.

Relaxing the restrictive assumption of identical horizontal spillovers (which was imposed to obtain significant evidence of vertical spillovers in previous literature[20]) Kohpaiboon (2009) fails to find significant evidence for vertical FDI spillovers. Although it is reasonable to expect vertical FDI spillovers through backward linkages, the empirical evidence is still mixed. Kohpaiboon (2009) attributes this ambiguity to a measurement problem[21]. The empirical evidence available so far indicates that the *magnitude* of backward linkages by itself is not a significant determinant of vertical FDI spillovers. Policy makers should, therefore, look carefully at the *quality* of backward linkages which must be based on economic concerns rather than government regulations such as local content rules. This implication is of particular importance now as we observe a rise of economic nationalism and protectionism against the backdrop of the global economic crisis.

[20] See for example, Javorcik (2004) and Blalock and Gertler (2008). Indeed, Kohpaiboon (2009) reproduced the similar result with the restrictive assumption, but avoids referring the result as it is viewed as biased.

[21] In empirical analyses, the variable for backward linkages is usually compiled from input-output tables. This quantitative measure may not reflect the effective linkages between MNEs and domestic firms.

3.4. Firms' Response to Policy Reforms

3.4.1. The Impact of Liberalization on Plant Entry

The response of domestic firms to policy reforms is always a concern for policy makers. Narjoko (2009) addresses this issue by focusing on the extent and the determinants of plant entry in the Indonesian manufacturing sector over the period from 1993 to 1996. The period was chosen because of the significant trade and investment policy reforms between 1992 and 1994 initiated in response to the poor investment climate in Indonesia[22].

Narjoko (2009) finds weakly significant evidence *against* the conventional belief that liberalization in trade and investment will lead more domestic firms to enter the market. Both descriptive and econometric analysis indicates variation across industries in the impact of the liberalization. While there is evidence of an increase in plant entry rate in, for example, the textile-and-garment industries, it was not so in machinery and transport-equipment industries. The author attributes the findings to the possibility that the remaining non-tariff barriers (NTBs), including a protective industrial policy, offset the expected positive impacts from tariff reduction. His argument is reinforced by the finding that displacement entry was not as large as the extent of replacement entry, which implies that some inefficient plants still survived despite the liberalization policies. This further implies that the tariff reduction by the middle of the 1990s was not sufficient to induce credible competitive pressure.

[22] Pangestu (1996). Since the middle of the 1980s, the larger and more developed ASEAN countries (Thailand, Malaysia, and Indonesia in particular) have been in fierce competition to attract FDI. Therefore, delays in one country's liberalization could be perceived as a *relative* decline of investment climate.

3.4.2. Maximizing the Benefits from FTAs

While there is a view that concluding bilateral or plurilateral FTAs is a step toward a more open trade regime, the uncoordinated process has been generating side effects, amongst them the so-called "spaghetti bowl" syndrome. This is a particular problem in East Asia, where FTAs have proliferated rapidly and bilateral and plurilateral FTAs are intricately overlapped. As a result, it is often argued that FTAs in East Asia have not been fully utilized and the expected gains from FTAs have not been realized. In order to maximize the benefits from FTAs, it is essential to understand the actual utilization ratio and its determinants.

Hiratsuka *et al* (2009) is a pioneering attempt to conduct a rigorous econometric analysis to investigate the determinants of FTA utilization. Using firm-level data of Japanese foreign affiliates operating in six countries in ASEAN[23] for the period from 2006 to 2008, they found:

(1) The larger the affiliate, the more likely it is to utilize FTAs, implying that the opportunity to enjoy the benefits of FTAs is uneven, in favor of large firms. This implies that there may be fixed cost to start to utilize FTAs, and affiliates with a smaller number of employees and a small volume of transaction may not be able to cover the cost out of the expected benefits from utilizing FTAs.

(2) There is a negative relationship between the share of imports with zero tariffs outside of FTAs and the utilization of FTAs. Under some investment promotion schemes, for example, Japanese affiliates are eligible for tariff exemptions on imported inputs. IT-related products, as a case in point, are tariff-exempt under the Information Technology Agreement (ITA). Needless to say, if MFN tariffs are

[23] Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

zero, there is virtually no incentive to utilize FTAs.

(3) There is a significant inverse U-shaped relationship between FTA utilization and the share of local inputs[24]. Interestingly, they find the percentage of local inputs that maximizes the utilization of FTAs is around 40%, depending on the specification, which coincides with the regional value content requirement under the CEPT scheme.

(4) FTA utilization differs by industry. FTAs are more utilized in textile and automobile industries, and less in plastic products and electrical products.

(5) FTA utilization differs by the country of location. Japanese affiliates in the Philippines and Vietnam are less likely to utilize FTAs, due probably to the higher administrative costs for FTA utilization.

All these findings are statistically significant and contain important implications for policy makers wanting to promote the utilization of FTAs. Hiratsuka *et al*. (2009) differ importantly from the previous literature, where *ex post* evaluation of FTAs has largely been based on anecdotal evidence and descriptive analyses. However, a caveat still remains. A limitation of this study is that the coverage is of Japanese affiliates only. A number of foreign affiliates from various countries also operate in ASEAN countries, and in order to obtain a more precise picture of the current status of FTA utilization it is important to conduct a large scale business survey covering firms operating in ASEAN countries regardless of the country of origin.

[24] The rationale behind this inverse U-shaped relationship is as follows. The more local inputs an affiliate has, the more likely for the affiliates to meet the condition to utilize the CEPT scheme, which requires at least 40% regional value contents. On the other hand, an extremely large share of local inputs can discourage the utilization of FTAs when the affiliate imports the limited remaining inputs.

3.5. Discussion

These micro-data analyses reveal important policy implications for deepening economic integration.

Production fragmentation and the subsequent development of production networks are key phenomena behind deepening economic integration. From the viewpoint of firms, production fragmentation is a strategy to improve competitiveness by reducing total production costs. The home country of the firm therefore faces a dilemma. Industrial hollowing out, and the subsequent decrease in employment opportunities in the home country, may be negative consequences of production fragmentation. Yet Kimura *et al* (2009) find that production fragmentation can be a source of improving profitability and productivity of the firm. Their results also suggest that "the closer to Japan the host country is, … the significantly better the performance." That is, geographical adjacency among East Asian countries can be another source of higher profits and productivity. The results from the study by Kimura *et al* (2009) thus provide strong supporting evidence that East Asian countries will benefit by further development of production networks.

Although the difference in factor endowment is a key factor, it is not a sufficient condition for production fragmentation to take place. Firms make decisions on whether they undertake fragmentation strategy by comparing the expected gains from fragmentation and the necessary costs, that is, the costs for service links and network set-up (Kimura 2008). Unfortunately, some labor abundant countries with lower KL ratios, where there should be an advantage to locating production blocks, are often characterized by poor business environments in terms of rules and regulations, institutions, physical infrastructure and so on. These are key factors affecting services

link costs and network set-up costs. From the viewpoint of more-developed countries, providing official assistance to the less-developed countries to improve their business environments is a promising investment because it can provide firms of the donor country opportunities to enjoy gains from fragmentation.

At the same time, less-developed countries should improve their investment climate by extending FDI liberalization and strengthening facilitation, developing infrastructure and improving institutional capacity with the support of more-developed countries, as these strategies would pave the way to establishing an effective linkage with the growing production networks in East Asia.

4. Policy Recommendations

4.1. Tracing the Progress toward the AEC

In order for ASEAN to achieve the ambitious goal to establish the AEC by 2015, the AEC Blueprint must be steadily implemented in line with the schedule. For this purpose, the implementation mechanism must be improved to ensure member countries comply with the AEC Blueprint. A useful tool to aid this process would be one that allowed policy makers to visualize the progress in an objective and comparable format.

This is the objective of the quantitative measures developed in this project. Tables 1 to 7 provide first snapshots of ASEAN member countries with respect to key policy areas; services liberalization, trade facilitation, and investment liberalization. They were designed and compiled to ensure objectivity and comparability, and thereby enable policymakers (1) to capture the current status of remaining barriers to trade by country,

by mode, and by sector, (2) to define the detailed target and milestones in each policy action with reference to the regional best practice, and (3) to facilitate the implementation process through peer pressure.

There remains much to be done to extend the quantitative measures. The coverage is still limited. ERIA should expand the scope through close consultation with the ASEAN Secretariat. Feedback from policymakers will also improve the quality and usefulness of the quantitative measures.

4.2. General Policy Directions

In the current climate a commitment to maintaining the momentum toward a more liberal and open economic regime is essential. The research presented in this report contains ample evidence of the benefits to be derived from further liberalization. Further, as a strategy to ensure the benefits from closer integration with particular relevance to the East Asian region, the development of production networks should be supported through the reduction of services link costs and network set-up costs. For this purpose, ASEAN countries should maintain the steady progress in trade and investment liberalization, and accelerate the initiatives toward services liberalization, trade facilitation and investment facilitation outlined below.

4.3. Services Liberalization and Legitimate Regulation

The services subsectors focused on by Dee (2009), where quality and safety of service provision is so important, draw attention to the fact that there are legitimate objectives of regulation. The considerable benefits to be gained from services

liberalization have to be set against these legitimate objectives. The focus of the policy recommendations set out here is, therefore, on the mechanism to establish the minimum regulatory standards that would achieve the legitimate objectives and on ways to remove regulations that are unnecessarily burdensome. Detailed policy recommendations in this field are as follows.

- Beyond taking up the suggestions in the Singapore Roadmap in health services, the ASEAN countries should work together to establish satisfactory regimes for regulating and enforcing acceptable quality standards, both for individual professionals and for healthcare institutions. The aim would be to establish *minimum acceptable* quality standards. This need not involve establishing the same standards in each country. Quality already varies enormously across the region and, as elaborated in Dee (2009), this can be an efficient mechanism for encouraging those who can afford to pay for higher quality services to self-select and to contribute more to the cost of their care.
    - Having a "ladder" of quality standards across the region would (i) put a floor under standards, providing a benchmark for standards that were not more burdensome than necessary, and (ii) also provide a viable alternative for the replacement of standards that were discriminatory against foreign providers.
- Strengthen the existing Mutual Recognition Agreements for medical practitioners, dental practitioners and nurses to remove the potentially arbitrary ability for professional bodies or other authorities to impose "any other requirements" that they choose beyond those recognizing qualifications and competence.
- Commit to multilateralising the already liberal regimes for Modes 1 and 2 and improve the use of Mode 2 by improving the mobility of health insurance. This

latter recommendation is also related to achieving the AEC Blueprint goals in financial services although some lack of mobility of insurance comes from the decisions of the providers themselves, not from policy.

- Pay attention to removing non-discriminatory barriers as well as those that restrict business activities of foreigners. This enhances the gains from liberalization for domestic providers and reduces the risk that they will simply be hurt by foreign competition.
- In financial services the ambition should be to remove the barriers identified in the study to zero (since they exclude prudential regulations which would, of course, be maintained). Significant barriers to cross-border trade (Mode 1) still exist in financial services and removing them would be an important mechanism to facilitate trade. The most likely platform for Mode 1 trade is the internet so encouraging trade of this kind does require improved consumer protection coordination between countries and education of consumers about the risks and their rights.
- Facilitate the movement of persons, particularly inter-corporate transferees and individual skilled professionals. Since ASEAN has an interest in the rest of the world adopting more liberal Mode 4 it should also be prepared to be more liberal in return.
- Maintain and update the restrictiveness indexes on financial and health services restrictions over time.

4.4. Trade Liberalization and Facilitation

Although East Asia has been making significant progress in trade liberalization,

there are more to be done to gain more from the existing initiatives by fine-tuning trade policies and agreements. In addition, ASEAN should accelerate the efforts toward trade facilitation along the ASEC Blueprint. Following is the list of policy recommendation from our project, though not exhaustive.

- Make the best use of the existing policy frameworks and trade agreements. In particular, the size of firms is identified as a determinant of FTA utilization (Hiratsuka *et al*, 2009) so special attention should be paid to SMEs and policies developed to increase their utilization of existing policies, for example, by preparing modules and templates for value-added accounting (Meddala 2009).
- To reinforce the leaning-by-exporting effects, appropriate policies to enhance 'absorptive capacity' should be taken (Hahn and Park 2009). On the basis of current research results, the main determinant of capacity appears to be the human capital level of firms so this would be an appropriate policy focus. Further research may reveal other determinants of absorptive capacity.
- In the customs area, reinforce the commitments to, and monitor the implementation of, National Single Windows as a prerequisite to the ASEAN Single Window.
- Accelerate the efforts toward streamlining and harmonizing customs procedures, starting with the Customs declaration form (or Single Administration Document: SAD), as 'customs documents' is identified as one of the major impediments to trade facilitation (Table 4).
- ASEAN Customs authorities should report regularly, and in a comparable manner, on clearance time through customs, noting the target of 30 minutes.
- Develop a web-based databank of trade regulations that is regularly updated.

- Maintain and report the Hollweg-Wong logistics restrictiveness index for all countries in each year, and recalculate the adjusted Sourdin-Pomfret cif/fob ratio for all countries each year using Australian import data while at the same time examining (i) the opportunities to use import data of other ASEAN trading partners for this purpose (e.g. Japan), and (ii) the scope to use ASEAN export data for this purpose. If these data are not currently available develop the capacity to collect cif/fob data for intra-ASEAN trade.

4.5. Investment Liberalization and Facilitation

FDI has been an indispensable driving force for most of the countries in East Asia to achieve remarkable economic growth for decades. In order to further economic integration through the development of production networks, policymakers in East Asia are recommended to consider the followings:

- Data on FDI liberalization by mode of restrictions shows there are improvements possible in the following countries:
  - Market access: Myanmar, Thailand, Malaysia, and Lao PDR.
  - Screening and appraisal procedure: Indonesia, Cambodia, Myanmar, and Lao PDR
  - National treatment: Brunei and Malaysia.
- Investment liberalization in the services sector should be accelerated, with an appropriate competition policy.
- To promote FDI liberalization, the ASEAN countries should use various existing frameworks, such as WTO/GATT's TRIMs agreement, BITs, and FTAs. In particular, ASEAN should define the details of the ASEAN Comprehensive

Investment Agreement.

- To improve FDI facilitation, the ASEAN countries should actively use various cooperation programs with developed countries to improve human resources engaged in the implementation and enforcement of FDI policies. Possible multilateral and regional sources of technical assistance in this area are the UNCTAD, OECD and ERIA.
- An effective monitoring mechanism to track improvements in implementation of FDI liberalization and facilitation objectives should be established in collaboration between the ASEAN Secretariat and ERIA.
- Investment liberalization should be accompanied by steady progress in trade liberalization since research shows that the benefits from FDI are greatly affected by the trade regime (Kohpaiboon 2009).

4.6. Regional Cooperation in Statistical Policy

As summarized in section 3, micro-data analyses can be a rich source of important policy implications. It is desirable to conduct more research in this direction, as it is a promising way to design more effective and efficient policies regarding economic integration. For this purpose, we recommend the following[25].

- The use of micro-data should be open and rule-based for researchers. It has been obvious that micro-data analysis provides invaluable information to policy makers. However, the number of countries in which micro-data are accessible is still limited. In ASEAN, for example, Singapore and Malaysia do not permit research use at all. In Japan, customs data are never available at the firm level.

[25] For details, refer to Hayakawa *et al* (2009).

- The basic items included in statistics should be internationally standardized at least to a certain extent. Items to be considered include tangible assets, employment, procurement, ownership information, firms' overseas activities, and other elements identified in Hayakawa et al (2009).
- Firm-level data should be consistent and convertible. It is important to be able to link one set of firm-level data in a year with that data in other years, by firm. That is, the firm-level data should have a firm identification code identical through years. Furthermore, it is desirable that the firm identification code is convertible to that in other firm-level data. Where surveys are conducted they need to be designed on the assumption that they will be linked with other existing micro-data.
- Governments should improve the quality of micro-data. It is important not only to raise collection rates but also to decrease unanswered items, i.e. missing values. It would be desirable to make a survey mandatory for firms. Face-to-face interaction in collecting information is also effective.

5. Further Research Agenda

5.1. Tracing the Progress toward the AEC

As proposed in the previous section, the quantitative measures developed in this project should be maintained and updated to monitor the progress towards the AEC Blueprint. For this purpose we need to extend our research project to conduct the following further studies:

- Update the current version of quantitative measures on services liberalization

(medical professionals, healthcare, banking, and insurance services), trade facilitation (logistic restrictiveness index and trade cost estimates), and investment liberalization (FDI policy) in the same format.

- Improve the quality of the quantitative measures by (1) receiving and reflecting on feedback from policymakers, (2) conducting additional studies on trade cost estimates (as in Sourdin and Pomfret 2009) using trade statistics from other countries, and (3) investigating the relationship between the quantitative measures, the various existing surveys of perceptions on business environment and actual economic activities (trade and investment statistics).
- Expand the scope of the restrictiveness indexes for services liberalization. Services subsectors in the Priority Integration Sector (PIS), such as e-ASEAN, tourism, air travel, and logistics[26], are the likely candidates, but the selection will be made in close consultation with the ASEAN Secretariat.
- Begin the econometric analysis of the economic impact of different barriers to services trade to help set priorities on which policies to tackle first in the move to greater liberalization and to help build concrete objectives for the AEC Blueprint process.

5.2. Micro-data Analyses on the Impacts of Economic Integration

In order to design effective and efficient policies regarding economic integration it is important to deepen our understanding of the heterogeneous impacts of economic integration on the activities and performance of the business sector. As summarized in

[26] Among them, air travel and logistics are already incorporated in the logistic restrictiveness index (Figure 2). However, it is desirable to re-compile the index in the same format as other services sectors to facilitate comparability and consistency.

section 3 of this paper, micro-data analysis is a promising, perhaps the only available, method for this purpose. This line of study should be continued and expanded to include more countries.

Future research should attempt to replicate the analyses in previous studies using micro-data of East Asian countries[27]. Most available literature analyses developed countries and there are few papers on East Asian developing countries. In addition, since *de facto* economic linkages are stronger in East Asia than in other regions, empirical results are expected to differ from those in previous studies.

Another strand of research that might be of keen interest to East Asian countries is on the determinants of the degree of FDI spillovers. We already know that MNEs' nationality is one of the sources of heterogeneity in the magnitude of the spillover that domestic firms receive, but we do not know why. As a next step, we need to examine what sort of firm nationality characteristics yields such heterogeneity. Previous studies have analyzed the heterogeneity of spillover effects in domestic firms' input-output relationship with MNEs but they are forced to look only at input-output relationships at the industry level due to data limitations. That is, they confirm that domestic firms in industries having a close input-output relationship with the industries in which there are many foreign-owned firms, receive larger spillover effects. More direct examination is needed to analyze closely such heterogeneity of spillover effects. If the required data are available, we can directly examine whether or not domestic firms that supply their products to, or purchase inputs from, foreign-owned firms obtain larger spillover effect.

As pointed out in subsection 4.6, micro-data are either not available or not accessible in some countries in East Asia, and the quality and the content of the data

[27] For more details on the research proposal in this and next paragraph, see Hayakawa *et al* (2009).

differ significantly by country. In order to enable research to make a significant contribution to policy, we urge the governments of East Asian countries to provide access to micro-data to ERIA research projects.

5.3. Linkage between Real and Financial Economic Integration in East Asia

Given the backdrop of the global economic crisis, and as Asian economies become more globalized and complex, there is an urgent need to pay greater attention to the interdependencies between the real and financial sides of the economy.

The linkages between the two are apparent. In both 1997-98 and 2007-08, what was initially a financial crisis has eventually impacted trade and the real sector. The transmission channels of financial effects to the real economy are varied. In part they may be due to wealth, or balance sheet, effects from decreasing capital values of assets. They may also be transmitted by severe credit crunches caused by problems in the banking sector or other capital markets. These are likely to have particularly serious effects on SMEs and on trade. At the same time, weaknesses in the real sector raise non-performing losses, thus threatening the viability of the financial sector. Whatever the starting point of the crisis, the complex interactions between the real and financial sides of the economy can lead to a vicious downward spiral.

Of particular importance in the Asian region, financial integration is linked with the integration of the real economies. Developments in the real sector, patterns of trade and investment flows, the degree of synchronization of business cycles, and the manner in which industry is financed are important drivers of financial integration and are, therefore, factors in the appropriate design of financial arrangements, including currency arrangements.

Despite all of this, there remains a tendency among policymakers and academics to study the real and financial dimensions of the regional economies separately. There is an important job to be done providing coherent research on the links between these elements of the regional economy so that well-informed policy can be made in both spheres.

As noted above, there is still an open debate about the major transmission mechanisms running between the financial and real sides of economies. One important element in understanding the linkages is a clear picture of the way in which the real sector is financed, that is, the extent to which it depends on internal sources of funds versus external and, amongst the external, which sources are most important. Surprisingly these questions are not well researched for the Asian region although there is a well-established, counter-intuitive finding for developed economies that the major source of finance is internal not external (Mishkin, 2006). The implications of the way in which industry is financed for the linkage between the financial sector and the real sector are profound. If, for example, the major source of finance for industry is internal (retained finance), then our understanding of the role of banks and capital markets is altered and the transmission of financial shocks must be re-examined.

There is a vibrant debate about how to measure accurately the sources of finance (see Corbett *et al*. 2004 and Hackethal *et al*. 2004). Some methods require detailed firm or industry-level balance sheet and accounting data. A useful exercise will be to discover whether comparable cross-country data is available within the region and to make recommendations about what should be collected if it is not. Even in the absence of comparable micro financial data, however, much can be done using National Income Accounts and these will already be available in a standardized form for most

countries within the region. Some studies embodying the best methodology for establishing the sources of industrial finance do exist for a small number of Asian countries (Japan, Korea and Thailand). Given ERIA's connection with its Research Institute Network it would be very well placed to extend these studies to other countries in the region and, using them, to shed light on linkages between financial shocks and real ones.

There is also important work still to be done to understand the extent and pattern of financial integration in the region and how it is linked to the trade and production patterns. Many other organizations in the region have research agendas focused on enhancing regional financial integration, looking at the building of regional bond markets, currency swap arrangements and the development of a regional currency. However the research that is linked to these agendas rarely examines the manner in which these developments would impact on the real side of the economy. So a focus by ERIA on that element of the effect of closer financial integration would complement, not duplicate, the research done by other agencies.

The research agenda that we propose here would begin with a series of workshops for researchers, policymakers and the business community to contribute to a better understanding of the interactions between the financial and real (mainly trade) dimensions of integration in Asia and to introduce the methodology and explore the data needs that would enable a clear understanding of what is distinctive about the financial structure of the region's economies. The workshops can be held more than once and in different countries depending on the interests of host institutions and ERIA partners.

The following is a tentative, though not exhaustive, list of topics to be covered.

I. Real Sector Financial Structure

1. How is industry financed in Asia: an overview.
2. The links between real investment and finance.
    a. Does finance constrain investment?
    b. Does finance affect the growth and volatility of investment and output?
3. The role of FDI in supporting investment and vertical specialization and production networks.
    a. The role of FDI in trade in financial services.
4. Financial structure and corporate governance: what's the link?
5. Financing infrastructure: the future of multilateral and public-private partnerships.
6. Impact of financial crises on financial structure: lessons from the Asian crisis for the global financial crisis (bank finance versus others, impact on trade finance, etc).
7. Does regional exchange rate volatility matter for regional trade and FDI?

II. Real Effects of Regional Financial Integration: Extent, Measurement and Effects

8. Examining the extent of real and financial integration in Asia.
    a. Measurement and interpretation.
    b. The impact of financial integration on production fragmentation and intra-Asian trade.
9. Do regional FTAs enhance regional financial integration?
10. Business cycle synchronization: what drives it and what role for financial integration?
11. Links between openness of financial markets, financial integration and barriers

to trade in financial services.

12. Regional M&A activity – is it related to financial integration?

III. Changes in the Financial Sector and Implications for Regulation

13. New financial technology and financial systems.
14. Regional regulatory structures: how to coordinate to support closer financial integration?
15. Are prudential regulations barriers to trade in financial services and closer financial integration?

5.4. ERIA Business Survey

As demonstrated in subsections 2.2 and 2.3 above, business surveys can be a rich source of additional information on how the changes in policy environment are *perceived* by business sectors. Although the degrees of liberalization can be measured by the official information such as laws and regulations, it is more difficult to measure the degrees of *facilitation* based on publicly available information. Therefore, we recommend conducting a region-wide business survey, tailored to meet the mission of ERIA to support ASEAN's efforts to establish the AEC, taking advantage of the Research Institute Network of ERIA.

5.5. Development Strategies for Maritime Southeast Asia

Southeast Asia is highly diverse in geographical conditions; countries in the Eurasia continent (including a landlocked country), countries consist of a number of islands, small countries, and so on. The diversity in geographical conditions can be a cause of income disparity as it affects the nature and the speed of economic development.

The remarkable economic growth of Southeast Asia has been sustained by the development of production networks in the manufacturing sector. Deepening economic integration through the development of production networks can be a promising development strategy for the regions with location advantages such as proximities to existing industrial agglomerations and factor endowment complementary to the adjacent regions. For example, Cambodia has such location advantages as it locates between the largest and one of the fastest-growing industrial agglomerations in the region (Bangkok and Ho Chi Minh City respectively), and is endowed with abundant inexpensive labor. Therefore, an industrial corridor connecting Bangkok and Ho Chi Minh City through Phnom Penh can be an effective strategy to deepen economic integration while narrowing development gaps in the region by mobilizing the agglomeration and dispersion forces of economic integration (Kimura and Kobayashi 2009).

However, production networks have not extended fully to maritime Southeast Asia such as the states of Sabah and Sarawak in Malaysia and many parts of Indonesia and the Philippines mainly because of their geographical disadvantages. Such regions without effective linkages to the existing production networks are in general lagged behind in many aspects of economic development. Therefore, it is important to design a development strategy tailored for maritime Southeast Asia, taking their location advantages and disadvantages into consideration. We first need to investigate whether the above mentioned development strategy based on production networks is applicable to maritime Southeast Asia as well. For this purpose, we also need to identify (1) existing and potential industrial agglomerations, (2) the frontier of production networks, and (3) the current status and the development plans of logistic infrastructures in the

region. In addition, the research should include a careful review of existing sub-regional initiatives such as BIMP-EAGA (Brunei Darussalam, Indonesia, Malaysia, and the Philippines, East Asia Growth Area) and IMT-GT (Indonesia, Malaysia, and Thailand, Growth Triangle).

5.6. International Movement of Natural Persons

International movement of natural persons has been increasingly an integral part of the economic landscape in East Asia, especially in the age of deepening economic integration.

The most prevailing form of international migration is from less developed countries to more developed countries in search for employment opportunities and higher wages. The number of skilled workers, such as managers, professionals, and engineers, working in foreign countries has also been increasing in parallel with globalizing economic activities. Despite the prevalence of international migration, our understanding on the economic impacts and political implications thereof are still limited mainly because of the lack of comprehensive and consistent statistics on the international movement of natural persons.

Economic development in general entails structural adjustment, and economic integration is expected to accelerate the process. International migration, if appropriately managed, can serve as a buffer to mitigate the costs of structural adjustment. In order to promote economic integration in East Asia, therefore, it will be more important to design an effective mechanism to manage international movement of natural persons. For this purpose, ERIA is recommended to launch a comprehensive research project on this issue.

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CHAPTER 2

Services Liberalization toward the ASEAN Economic Community

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The purpose of this paper is twofold. The first is to summarize detailed work that maps the existing policy space in four key services sectors in the ASEAN region — medical services (medical, dental, and paramedical services), health services (hospital, medical laboratory and ambulance services), banking services and insurance services. The medical and health sectors are priority sectors under the ASEAN Economic Community Blueprint. The second purpose is to examine the way in which the services trade barriers interact with other domestic regulation in the fields of health and finance.

In healthcare, the instruments of legitimate regulation are often the same as the instruments of trade protection. Taking this interaction into account, a key conclusion of this paper is that, to facilitate further progress in liberalizing health and medical services, the ASEAN countries should work together to establish minimum acceptable standards of quality, both for individual professionals and for healthcare institutions. This will be a key prerequisite to dismantling the regulatory and other restrictions that, while having a possible rationale in quality assurance, are either more discriminatory or more burdensome that required.

In financial services, by contrast, the instruments of legitimate prudential regulation mostly differ from those of trade protection. This means that although adequate prudential regulation should precede liberalization, the trade liberalization can then proceed without jeopardizing the other regulatory objectives. While the regulatory response to the Asian financial crisis might have suggested that 'everything that had to be done, has been done' in financial services, this study suggests otherwise.

In both financial services and healthcare, the paper develops concrete proposals for achieving the ASEAN Blueprint's liberalization targets. In financial services, this will involve a significant reduction in the extent of discrimination against foreign suppliers that still exists in some ASEAN countries, more than a decade after the Asian financial crisis.

1. Services Targets in the ASEAN Economic Blueprint

The establishment of the ASEAN Economic Community is intended to deepen economic integration in East Asia as a whole. To achieve that end, the ASEAN Economic Community Blueprint lays out an ambitious reform agenda designed to establish an ASEAN single market. It envisages the free flow of services, investment, and skilled labour, along with the free flow of goods and the freer low of capital.

In services, it is intended that by 2015, there should be substantially no restriction to ASEAN services suppliers in providing services and in establishing companies across national borders within the region, subject to domestic regulations. For four priority sectors — healthcare, air transport, e-ASEAN and tourism — this target is to be achieved earlier, by 2010. It is also intended that ASEAN would work towards recognition of professional qualifications with a view to facilitate their movement within the region.

The blueprint also contains detail about the scheduled sequence of events by which these targets are to be achieved. Liberalization is to occur through consecutive rounds of negotiations, every two years. The number of sectors to be liberalized is to be expanded in each round. For each new group of sectors, the liberalization commitments are to include:

- no restrictions on service delivery via mode 1 (cross-border trade, where neither the producer nor the consumer moves, and trade often occurs via the internet) and mode 2 (consumption abroad, where the consumer moves temporarily to the country of the producer);
- gradual expansion of the foreign (ASEAN) equity participation permitted in each sector, to be no less than 70 per cent by 2010 in the four priority sectors, and eventually to be no less than 70 per cent by 2015 in all sectors; and
- progressive removal of other limitations on market access via mode 3 (commercial presence, where the producer sets up a permanent commercial presence in the country of the consumer) by 2015.

The negotiations are also to set the parameters of liberalization for limitations on national treatment (ie liberalization involving the removal of discrimination against foreign

providers), liberalization of service delivery via mode 4 (the movement of natural persons, whereby the individual service provider moves temporarily to the country of the consumer) and the liberalization of horizontal limitations on market access (ie limitations that apply across a range of services sectors, possibly affecting both domestic and foreign providers) by 2009. Commitments are then to be made according to these parameters from 2009. The ASEAN countries are also to complete mutual recognition agreements in architectural services, accountancy, surveying, and medical practitioners by 2008, dental practitioners by 2009, and to identify and develop mutual recognition agreements for other professional services by 2012. These agreements are to be implemented expeditiously, according to the provisions of each respective agreement.

The blueprint allows for some overall flexibilities in achieving these objectives, including via an ASEAN minus X formula (where countries that are ready to liberalize can proceed first and be joined by others later). In financial services, the process of liberalization should also take place with due respect for national policy objectives and the level of economic and financial sector development of the individual members.

The purpose of this paper is twofold. The first is to summarize detailed work that maps the existing policy space in four key services sectors - medical services (medical, dental, and paramedical services), health services (hospital, medical laboratory and ambulance services), banking services and insurance services. The medical and health sectors are priority sectors, to be liberalized by 2010. The detailed work of mapping existing policies in these sectors is described in a separate paper (Dee and Dinh 2009). By mapping actual policies, the exercise gives an indication of the extent of real policy reform that will be needed in each ASEAN member country in order to achieve the liberalization targets laid out in the ASEAN Economic Community Blueprint.

Note that in many ASEAN countries, existing commitments already made under the current ASEAN framework agreements on services and investment lag behind actual practice, so that an examination of current commitments would overstate the amount of real reform required to meet the Blueprint's liberalization targets. The current exercise avoids this source of overstatement. However, the current exercise maps existing policies on a

most-favoured nation (MFN) basis, meaning that it maps policies without taking into account any real, binding preferences that have been granted to other ASEAN member countries. Because of this, it *might* overstate the amount of real reform required to meet the Blueprint's liberalization targets, if those targets are to be met on a purely preferential basis (ie via commitments that apply only to other ASEAN member countries). However, this is not a foregone conclusion. Some services trade barriers are difficult or impossible to liberalize on a preferential basis. Some services trade barriers would be unwise to liberalize on a preferential basis. And the wording of the Blueprint itself only suggests preferential liberalization in the case of foreign equity limits. Whether the services liberalization under the Blueprint should be preferential is examined in more detail in the concluding section.

The second purpose of this paper is to examine the way in which services trade barriers interact with other domestic regulation in the fields of health and finance. Among other things, this interaction affects the gains to be expected from trade liberalization. The interaction can therefore influence both the desired sequencing of individual trade reform measures, as well as suggesting domestic regulatory reform measures that might desirably accompany, or in some cases even precede, the trade reforms. Ignoring these interactions could in some cases lead to distinctly suboptimal outcomes. Taking them into account leads to the policy recommendations laid out at the end of this paper.

2. A Scorecard for Services Liberalization: Medical and Health Services

Healthcare services can be provided by individual medical professionals, or in a broader institutional setting. Accordingly, the Central Product Classification (CPC), which is used to classify the different services covered by the General Agreement on Trade in Services (GATS) under the World Trade Organization (WTO), recognizes two types of healthcare services:

- the services of medical professionals, including medical and dental professionals (CPC 9312) and midwives, nurses, physiotherapists and paramedical personnel (CPC 93191).
- health services, including hospital services (including psychiatric hospitals, CPC 9311), and the services of medical laboratories, ambulances, and residential health care other than hospitals (CPC 9319, other than 93191).

The information on actual policies affecting trade in healthcare services in ASEAN member countries has been collected using two separate questionnaires — one for medical services and one for health services. The questionnaire instruments and the detailed responses are described in Dee and Dinh (2009). They are a further development of the framework for assessing barriers to trade in the professions that was developed by Nguyen-Hong (2000).

Medical professional services can be traded via mode 3 (commercial presence, in the form of medical clinics), and mode 4 (the movement of either individual professionals or the employees of foreign-located professional services firms). Medical, dental and para-medical services are sometimes provided via mode 1 (eg remote diagnostic services) and mode 2 (consumption abroad).

The questionnaire covering barriers to trade in medical services asks about actual policies affecting all these modes of delivery. Under commercial presence, the questionnaire asks whether there are restrictions on the entry of new professional services firms, either domestically-owned, foreign-invested or both, and whether there are restrictions on the legal form of such firms (eg whether they are prohibited from incorporating, whether foreign entrants are required to establish in a joint venture). It also asks about ownership restrictions — whether there are maximum limits on the equity participation of either private domestic or foreign shareholders in professional service firms, and whether there are restrictions on medical service firms being owned by people who are not licensed professionals.

Under mode 4, the questionnaire asks whether there are restrictions on the entry into professional practice of new individual professionals, either domestic, foreign or both, and

asks about any nationality, citizenship or residency requirements for individual professionals to practice. The questionnaire also asks about restrictions on the ability of individual professionals to leave their home country, as this can also affect mode 4 trade. Finally, the questionnaire asks about limitations on the movement of intra-corporate transferees (ie the employees of professional service firms), which might take the form of nationality or residency requirements on certain classes of directors, executives, managers or employees, or a requirement for labour market testing to establish that there is no qualified domestic person available for a position before a foreign person can be hired.

Under modes 1 and 2, the questionnaire asks whether foreign medical professionals located abroad can provide services cross-border to patients in the home country (eg via telemedicine), and whether domestic residents can purchases medical services while abroad.

Finally, the questionnaire recognizes that certain aspects of the domestic regulatory regime could have a detrimental effect on trade in medical services by unduly restricting the ability of domestic and/or foreign professionals to provide services. A key restriction here is limitations on the recognition of foreign qualifications, which can limit the ability of foreign professionals to obtain a license to practice. Accordingly, the questionnaire asks about the requirements that foreign professionals need to undergo to obtain a license to practice, including whether they need to retrain or sit a local examination, and whether their foreign qualifications are automatically accepted or are subject to a case-by-case assessment.

The questionnaire also asks about other potentially anti-competitive aspects of the regulatory regime, including whether there are activities reserved by law to the profession, whether there are restrictions on advertising or fee setting, whether there are restrictions on the ability of foreign service providers to access government subsidies (where these are available), either for themselves or for their clients, whether there are limitations on foreign professionals participating in government contracts, and whether there are requirements for foreign invested firms to train local staff (which could raise their costs).

Finally, the questionnaire reveals information about the transparency of the regulatory regime, by canvassing which stakeholders are consulted in advance of regulatory changes and by asking how regulatory decisions are made public. For information purposes only, it also asks for details about the regulator and about the licensing criteria used.

Health services are primarily facilities-based services that are traded via mode 3, that is, by the entry and operation of foreign-invested operators. Increasingly, however, hospital and medical laboratory services are traded via mode 1 (eg telemedicine or remote diagnostic services). Hospital services are also traded via mode 2 (consumption abroad). Once again, the questionnaire covering barriers to trade in health services asks about actual policies affecting all these modes of delivery. The format is similar to that for medical services, but focusing on restrictions that affect health institutions rather than individual professionals.

Under commercial presence, the questionnaire asks whether there are restrictions on the entry of new health services firms, either domestically-owned, foreign-invested or both, and whether there are restrictions on the legal form of such firms (eg whether they are prohibited from incorporating, whether foreign entrants are required to establish in a joint venture), and whether they are restricted in the scope of services they can provide or the number or type of clients they can service. It also asks about ownership restrictions — whether there are maximum limits on the equity participation of either private domestic or foreign shareholders in health service firms.

Under mode 4, the questionnaire asks essentially the same types of questions about restrictions on intra-corporate transferees as in the professional services questionnaire.

Under modes 1 and 2, the questionnaire asks whether foreign health services firms located abroad can provide services cross-border to patients in the home country (eg via telemedicine), and whether domestic residents can purchases health services while abroad.

The questionnaire also asks about potentially anti-competitive aspects of the domestic regulatory regime, including whether foreign-invested firms are subject to different licensing or quality assurance requirements from domestic firms, and whether there are

restrictions on the ability of foreign health service providers to access government subsidies (where these are available), either for themselves or for their clients.

Finally, the questionnaire reveals information about the transparency of the regulatory regime, by canvassing which stakeholders are consulted in advance of regulatory changes and by asking how regulatory decisions are made public.

As noted earlier, the questionnaire and the detailed responses are both described in detail elsewhere. For ease of summarizing the survey responses, the qualitative information about trade restrictions and about transparency has been coded in a zero-one fashion, where for each question, a score of 1 has been assigned if the restriction applies, and 0 if it does not. Sometimes an intermediate score is assigned for intermediate stages of restrictiveness. For example, if foreign equity participation is limited to 25 per cent, then a score of 0.75 is assigned, while if foreign equity participation is allowed to reach 75 per cent, then a score of 0.25 is assigned.

To obtain a restrictiveness score for broad restriction category, such as a score for all the restrictions affecting a particular mode, the zero-one scores for each of the restrictions affecting that mode have been simply added together. This means that each of the different restrictions affecting that mode have been given equal weight — no attempt has been made to make an assessment of the relative severity of the different restrictions. Accordingly, the overall restrictiveness scores for broad categories of restrictions reflect the frequency, but not necessarily the severity, of individual restrictions. To normalize the scores for a group, they have then been divided by the maximum possible restrictiveness score for that group. This gives a final restrictiveness score expressed as a percentage, where a score of 75 per cent means that three-quarters of the restrictions that could potentially apply to that category of trade do in fact apply.

2.1. Scorecard for the Medical Professions

Table 1 shows the resulting prevalence of restrictions affecting trade in medical services, by type of professional service and mode of trade, for each of the ten ASEAN countries. For each professional service, the table also gives a transparency score, reflecting

the extent of consultation before regulatory changes, and the number of different ways in which the resulting regulatory changes are published.

Table 1. Restrictions on Trade in Medical Services by Profession and Mode of Delivery (per cent)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Consumption abroad (Mode 2)	0	0	0	0	0	50	0	0	0	0	5
MEDICAL											
Commercial presence (mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	16
Inward movement of natural persons (mode 4) – Individual professionals	75	25	50	75	50	75	75	0	50	0	48
Outward movement of natural persons (mode 4) – Individual professionals	0	50	0	50	50	50	50	0	0	50	30
Inward movement of natural persons (mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	50
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	30
Ownership	25	0	7	25	10	33	25	0	17	0	14
Regulation – licensing	25	50	100	25	25	75	25	25	38	50	44
Regulation – restrictions on operation	44	22	44	0	72	61	44	11	0	0	30
TOTAL	**31**	**21**	**36**	**33**	**50**	**64**	**38**	**7**	**14**	**15**	31
Transparency	38	38	63	38	50	25	88	75	38	75	53
DENTAL											
Commercial presence (mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	16
Inward movement of natural persons (mode 4) – Individual professionals	75	25	50	75	50	75	75	0	50	0	48
Outward movement of natural persons (mode 4) – Individual professionals	0	50	0	50	50	50	0	0	0	50	25
Inward movement of natural persons (mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	50
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	30
Ownership	25	0	7	25	10	33	25	0	17	0	14
Regulation – licensing	25	50	100	25	25	75	25	25	38	50	44
Regulation – restrictions on operation	44	22	44	0	72	61	22	11	0	0	28
TOTAL	**31**	**21**	**36**	**33**	**50**	**64**	**29**	**7**	**14**	**15**	30
Transparency	38	38	63	38	50	25	88	75	38	75	53
PARA-MEDICAL											
Commercial presence (mode 3) – Professional service firms	0	0	40	40	20	60	0	0	0	0	16
Inward movement of natural persons (mode 4) – Individual professionals	75	25	75	75	50	75	75	0	50	0	50
Outward movement of natural persons (mode 4) – Individual professionals	0	50	0	50	50	50	0	0	0	50	25
Inward movement of natural persons (mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	50
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	30
Ownership	25	0	7	25	10	33	25	0	17	0	14
Regulation – licensing	25	50	50	25	25	75	25	25	38	50	39
Regulation – restrictions on operation	44	22	44	0	72	61	22	11	11	0	29
TOTAL	**31**	**21**	**36**	**33**	**50**	**64**	**29**	**7**	**17**	**15**	30
Transparency	38	38	63	38	50	25	88	75	38	75	53

Source: Survey responses.

Table 1 shows considerable variation in the prevalence of restrictions across countries. Most restricted is Myanmar, where foreigners are only allowed to offer some voluntary medical services and are not allowed to establish as business firms. Accordingly, there is no commercial trade in medical services. At the other extreme, Singapore is the most liberal, followed by Thailand, Vietnam and Cambodia. Singapore and Thailand are well-recognized as centres of medical and health commerce. For example, Singapore's Parkway Group Healthcare has set up joint ventures with hospitals in India, Indonesia, Malaysia, Sri Lanka and the United Kingdom, while the Bumrungrad Hospital in Thailand has entered into managements contracts with hospitals in Bangladesh and Myanmar, and has formed a joint venture with a hospital in the Philippines (Arunanondchai and Fink 2007). According to the survey responses, these commercial endeavours are underpinned by relatively liberal trade and regulatory regimes at home. The Philippines is well-known for exporting nursing services to the rest of the world. Its regime is also relatively liberal, though less so than in Vietnam and Cambodia, which are liberal as a result of their preparations for WTO accession.

It should be stressed, however, that the relative rankings of countries in Table 1 should be regarded as indicative, rather than definitive. Despite efforts to develop a common understanding about the survey questions among the respondents, there is inevitable variation in the ways in which questions have been interpreted, and in the depth and quality of responses. In particular, countries that have provided very detailed responses sometime run the risk of looking more restrictive, simply because they have provided more complete information.

There is a broad tendency for the countries that have a lower prevalence of restrictions on trade in medical services to have a more transparent regulatory regime, in terms of having wider consultation before regulatory decision are made and wider dissemination of those decisions after they are made. For example, Singapore has the lowest prevalence of restrictions but the second highest transparency score (behind the Philippines). By contrast, Myanmar has the highest prevalence of restrictions and the lowest transparency score.

Table 1 show that there is very little apparent difference in the degree of restrictiveness across the various medical professions. However, there is more marked variation in the prevalence of restrictions across the different modes of service delivery. On average, restrictions are least prevalent on ownership. While some of the ASEAN countries retain restrictions on foreign equity participation, all allow full domestic private equity participation — there are no government-owned monopolies, even though public provision still dominates in practice in at least some countries (Arunanondchai and Fink 2007). And in terms of foreign ownership, four ASEAN countries already meet or exceed the Blueprint's foreign equity target of 70 per cent — Cambodia, Malaysia, Singapore and Vietnam. Two additional countries probably meet the target. Brunei has a requirement that at least one of the owners of a medical service firm must be local. Whether this meets a 70 per cent foreign equity target depends on the size of the firm. In the Philippines, professional service firms may be foreign owned as long as the service providers are Filipino citizens. Therefore, there are technically no restrictions on the equity participation of foreigners in corporations. However, for general partnerships and single proprietorships for which the owners are the services providers, foreign ownership is not allowed because of the Constitutional provision restricting the practice of professions to citizens.

Thus it seems that a majority of ASEAN countries already meet, or probably meet, the Blueprint's foreign equity target. This reflects the fact that foreign equity limits have typically been among the first targets of services trade liberalization initiatives.

But Table 1 also indicates that other modes of service delivery are more restricted. The greatest prevalence of restrictions is on Mode 4 trade, with restrictions affecting the inward movement of both individual professionals and intra-corporate transferees. Domestic regulatory regimes also impose a relatively high frequency of restrictions. This is particularly significant, as some of these restrictions also affect domestic services suppliers, and may therefore doubly penalize economic performance in the health sector. Cross-border trade (mode 1) and the outward movement of individual professionals also face relatively frequent restrictions. The lowest prevalence of restrictions is on the entry and

legal form of medical service firms (ie restrictions on commercial presence, other than ownership restrictions) and on consumption abroad (mode 2).

Table 2 provides a different perspective on these restrictions, by showing their relative prevalence on domestically-owned and foreign-invested (or foreign located) firms. It shows that there is significant scope to remove discrimination against foreign suppliers, particularly by freeing up restrictions affecting cross-border trade and the movement of people. There is also scope to remove non-discriminatory restrictions on market access, particularly in the form of regulatory restrictions that impose a burden on domestic service providers as well as foreigners. However, reform of these regulatory restrictions would require a reassessment of the objectives that they were designed to achieve, and an examination of whether there were better ways to achieve those objectives. Such an examination would likely also promote greater transparency in the countries undertaking it.

Table 2. Restrictions on Trade in Medical Services by Ownership Category and Mode of Delivery (Per Cent)

	Brunei	**Cambodia**	**Indonesia**	**Lao PDR**	**Malaysia**	**Myanmar**	**Philippines**	**Singapore**	**Thailand**	**Vietnam**	**AVERAGE**
DOMESTIC MEDICAL											
Commercial presence (mode 3) – Professional service firms	0	0	0	0	0	0	0	0	0	0	0
Inward movement of natural persons (mode 4) – Individual professionals	0	0	0	0	0	0	0	0	0	0	0
Outward movement of natural persons (mode 4) – Individual professionals	0	50	0	50	50	50	50	0	0	50	30
Ownership	0	0	0	0	0	0	0	0	0	0	0
Regulation – restrictions on operation	50	25	50	0	63	13	50	25	0	0	28
TOTAL	**11**	**16**	**11**	**11**	**24**	**13**	**21**	**5**	**0**	**11**	12
FOREIGN MEDICAL											
Commercial presence (mode 3) – Professional service firms	0	0	57	57	29	86	0	0	0	0	23
Inward movement of natural persons (mode 4) – Individual professionals	33	33	0	33	67	33	33	0	67	0	30
Inward movement of natural persons (mode 4) – Intra-corporate transferees	20	40	20	60	100	100	60	20	20	60	50
Cross-border trade (Mode 1)	67	0	100	33	33	67	0	0	0	0	30
Ownership	50	0	13	50	20	67	50	0	34	0	29
Regulation – licensing	25	50	100	25	25	75	25	25	38	50	44
Regulation – restrictions on operation	43	21	43	0	75	75	43	7	0	0	31
TOTAL	**31**	**22**	**38**	**34**	**60**	**75**	**37**	**8**	**19**	**16**	34

Source: Survey responses.

2.2. Scorecard for Health Services

Tables 3 and 4 give a comparable picture of the prevalence of restrictions affecting the various health services. Table 3 indicates that there appears to be little variation in prevalence of restrictions affecting the different kinds of health services (hospital, medical laboratory, and ambulance), but there is significant variation in the prevalence across countries. Singapore, Vietnam and Cambodia are relatively free of restrictions, while Myanmar is the most restricted. Thailand, the Philippines, the Lao PDR and Brunei are also relatively free of restrictions.

Table 3. Restrictions on Trade in Health Services by Service and Mode of Delivery (Per Cent)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Consumption abroad (Mode 2)	0	0	0	0	0	50	0	0	0	0	5
HOSPITAL											
Commercial presence (mode 3)	43	0	29	29	14	71	57	0	43	0	29
Movement of natural persons (mode 4) – intra-corporate	20	40	60	60	100	100	60	0	60	40	54
Cross-border trade (Mode 1)	67	0	100	0	33	67	0	0	0	0	27
Ownership	38	0	10	0	15	50	0	0	26	0	14
Regulation	17	17	67	33	67	83	33	0	0	0	32
TOTAL	**31**	**13**	**45**	**30**	**48**	**77**	**39**	**0**	**31**	**9**	32
Transparency	33	33	83	33	50	33	100	67	67	50	55
MEDICAL LABORATORY											
Commercial presence (mode 3)	43	0	29	14	14	71	57	0	43	0	27
Movement of natural persons (mode 4) – intra-corporate	20	40	60	60	100	100	60	20	20	40	52
Cross-border trade (Mode 1)	0	0	100	0	33	67	0	0	0	0	20
Ownership	38	0	10	0	15	50	0	0	26	0	14
Regulation	17	17	67	33	67	83	0	0	0	0	28
TOTAL	**28**	**13**	**45**	**26**	**48**	**77**	**30**	**4**	**22**	**9**	30
Transparency	33	33	83	33	50	33	100	67	33	50	52
AMBULANCE											
Commercial presence (mode 3)	43	0	71	0	14	71	29	0	43	0	27
Movement of natural persons (mode 4) – intra-corporate	20	40	100	60	100	100	60	20	20	40	56
Cross-border trade (Mode 1)	0	0	0	0	0	67	0	0	0	0	7
Ownership	38	0	50	0	15	50	0	0	26	0	18
Regulation	17	17	83	33	67	83	0	0	0	0	30
TOTAL	**28**	**13**	**74**	**22**	**46**	**77**	**22**	**4**	**22**	**9**	32
Transparency	33	33	0	33	50	33	0	67	33	50	33

Source: Survey responses.

The pattern of restrictions across modes of delivery is also similar to that for medical services. Restrictions that are most prevalent are those affecting the movement of intra-corporate transferees and regulatory restrictions. Table 4 indicates that, compared with medical services, the regulatory restrictions in health are skewed to penalizing foreign suppliers, rather than affecting domestic and foreign suppliers equally. Table 3 also indicates that, compared to medical services, health services are more likely to be affected by restrictions on commercial presence that limit the entry, legal form, or scope of operations of foreign-invested firms. The detail supplied by the survey respondents suggests that many of the regulatory restrictions and restrictions on commercial presence in health are designed to ensure the quality of foreign health services suppliers. Therefore, the loosening or removal of these restrictions should entail an examination of whether there are better ways to ensure quality in health services. This issue is discussed in more detail in the final section.

Table 4. Restrictions on Trade in Hospital Services by Ownership Category and Mode of Delivery (per cent)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
DOMESTIC HOSPITAL											
Commercial presence (mode 3)	0	0	0	0	0	0	67	0	0	0	7
Ownership	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**0**	**0**	3
FOREIGN HOSPITAL											
Commercial presence (mode 3)	55	0	36	36	18	91	55	0	55	0	35
Movement of natural persons (mode 4) – intra-corporate	20	40	60	60	100	100	60	0	60	40	54
Cross-border trade (Mode 1)	67	0	100	0	33	67	0	0	0	0	27
Ownership	75	0	20	0	30	100	0	0	51	0	28
Regulation	17	17	67	33	67	83	33	0	0	0	32
TOTAL	**37**	**15**	**53**	**36**	**56**	**91**	**41**	**0**	**36**	**10**	38

Source: Survey responses.

3. A Scorecard for Services Liberalization: Banking and Insurance

The information on actual policies affecting trade in financial services in ASEAN member countries has been collected using two separate questionnaires — one for banking and one for insurance services. The questionnaire instruments and the detailed responses are described in Dee and Dinh (2009). They are a further development of the framework for assessing barriers to trade in banking services that was developed by McGuire and Schuele (2000), Dee and Dinh (2007), Dinh (2008) and World Bank (undated).

Like the earlier frameworks, however, the questionnaires are limited to assessing non-prudential regulation. This is on the understanding that prudential regulation has a legitimate regulatory purpose and is not the target of the Blueprint's liberalization initiatives (which is not to say that prudential regulation could not be improved in ASEAN countries).

Banking services involve the acceptance of deposits and other payable funds from the public, and lending of all types, including consumer credit and mortgages. In open economies, banking also involves the provision of foreign exchange services. While banking involves risks, there is some evidence that there are economies of scale in risk management, so that it can be an advantage if banks can combine their banking activities with other activities involving risk management, including insurance and securities management (see Barth, Caprio and Levine 2004 for a survey of the arguments and evidence).

Banking services can be delivered through all four modes of supply — cross-border (mode 1), via the movement of consumers (mode 2), via commercial presence and via the movement of individual bank personnel (particularly intra-corporate transferees, mode 4).

The questionnaire covering barriers to trade in banking services asks about actual policies affecting all these modes of delivery. However, one key aspect of the macroeconomic environment will affect trade in banking services via all four modes of supply. This is whether there are any controls on short- or long-term capital flows between countries. The questionnaire asks first about the existence of such capital controls.

Under commercial presence, the questionnaire asks whether there are restrictions on the entry of new banks, either domestically-owned, foreign-invested or both, and whether there are restrictions on the legal form of foreign banks (eg whether branches and/or subsidiaries are allowed), and whether banks are restricted in the scope of services they can provide (including non-bank services) or the number or outlets (street branches, offices and ATMs) that can have.

Note that the issue of the legal form that foreign banks are allowed to take is one area where the distinction between prudential and non-prudential regulation becomes blurred. When foreign banks establish subsidiaries, they must hold equity capital in those subsidiaries locally, and the host country's prudential rules governing minimum capital ratios can be applied to that local equity capital. By contrast, when foreign banks establish branches, their equity capital can stay in the home country, and the host country's prudential rules cannot be as easily applied. Some countries are prepared to allow this, essentially relying on the prudential regulation of the foreign bank's home country to determine capital ratios. Other countries allow foreign branches, but constrain them to lend against local capital. This is more restrictive than allowing them to lend against parent capital, although it can be justified for prudential reasons. It has nevertheless been counted as a restriction if branches are not allowed to lend against parent capital.

The banking questionnaire also asks about ownership restrictions — whether there are maximum limits on the equity participation of either private domestic or foreign shareholders in banks.

Under modes 1 and 2, the questionnaire asks about limitations on the movement of intra-corporate transferees (ie the directors, executives, managers and employees of banks), which might take the form of nationality or residency requirements on certain classes of personnel, or a requirement for labour market testing. It also asks about the permitted length of short- or long-term stay for such transferees, an aspect of the regulatory regime that is typically set horizontally by immigration departments rather than by banking regulators.

Finally, the questionnaire asks about potentially anti-competitive aspects of the domestic regulatory regime, including whether foreign-invested banks are subject to different licensing requirements from domestic banks, and whether interest rates are set or approved by government.

Insurance services involve the provision of different types of insurance, including life insurance, medical insurance, property insurance (which can cover marine, aviation and transport (MAT), automobile, freight, and building insurance), reinsurance, and broking services. Perhaps more than any other service, insurance is traded actively through all four modes of supply.

The structure of the insurance questionnaire is similar to that for banking, although without an emphasis on whether insurance companies can offer non-insurance services. In addition to the general restrictions on commercial presence, there are a few that are peculiar to insurance. One is restrictions on reinsurance — whether it is prohibited, whether reinsurance is restricted to foreign insurance companies, or whether a certain percentage of premiums need to be reinsured with domestically appointed insurers (the so-called ceding percentage). Another is limitations on whether insurance companies can hold assets overseas, or limitations on the form in which they must hold their assets.

Included in the restrictions on cross-border trade is whether there are restrictions on offshore insurance companies being allowed to solicit business through advertising in the home country. Included in the regulatory restrictions is whether the insurance premiums for the various insurance products are set or approved by government.

Note that although the insurance questionnaire includes questions about whether medical insurance can be traded internationally, it does not include questions about whether domestic medical insurance policies are mobile, in the sense of covering medical procedures that are obtained outside of the home country. The mobility of medical insurance coverage is an important prerequisite for promoting trade in medical and health services, but mobility is determined as much by the decision of individual medical insurance companies as it is by government policy. Possible measures that could promote the mobility of medical insurance are considered in the final section of the paper.

3.1. Scorecard for Banking Services

Table 5 shows the relative prevalence on domestically-owned and foreign-invested (or foreign located) firms of restrictions affecting trade in banking services, for each of the ten ASEAN countries. The restrictions are also broken down by mode of trade (where domestic firms can be affected by restrictions affecting commercial presence and ownership, and by regulatory restrictions).

Table 5. Restrictions on Trade in Banking Services by Ownership Category and Mode of Delivery (per cent)

	Brunei	**Cambodia**	**Indonesia**	**Lao PDR**	**Malaysia**	**Myanmar**	**Philippines**	**Singapore**	**Thailand**	**Vietnam**	**AVERAGE**
a. Macroeconomic policies	0	0	0	0	0	50	25	0	50	0	13
d. Consumption abroad (Mode 2)	0	0	0	0	0	100	100	0	0	50	25
DOMESTIC FIRMS											
b. Commercial presence (mode 3)	18	15	28	40	0	63	20	10	35	45	27
B. Ownership	8	8	17	0	33	33	17	17	33	8	18
C Regulation	50	25	0	0	75	100	0	25	100	33	41
TOTAL	**20**	**15**	**22**	**27**	**17**	**62**	**17**	**13**	**43**	**36**	27
FOREIGN FIRMS											
b. Commercial presence (mode 3)	17	14	25	38	52	90	36	9	49	49	38
c. Cross-border trade (Mode 1)	50	17	8	75	33	72	33	0	0	50	34
e. Movement of natural persons (Mode 4)	59	64	38	25	6	89	50	28	51	41	45
B. Ownership	8	8	17	50	80	100	57	17	67	55	46
C Regulation	67	17	0	0	50	100	0	17	67	22	34
TOTAL	**35**	**21**	**20**	**41**	**44**	**88**	**36**	**11**	**42**	**46**	39

Source: Survey responses.

The table indicates that once again, there is considerable variation in the prevalence of restrictions across countries. At one extreme, Singapore places few restrictions on either domestically-owned or foreign-invested banks. At the other extreme, Myanmar places considerable restrictions on both, by not allowing foreign-invested banks to operate, and by

placing very heavy restrictions on domestic banks — for example, through discretionary approval to operate, tight restrictions on what banks can do, and regulated interest rates.

Within these extremes, restrictions are still relatively prevalent among a number of other ASEAN countries, despite the liberalization of financial services that was supposed to have followed the Asian financial crisis. The crisis may have led to the streamlining and tightening up of prudential regulation, but countries such as Thailand and Vietnam still have quite heavy non-prudential restrictions on both domestic and foreign banks. Countries such as Malaysia and the Philippines still retain regulatory regimes that are heavily discriminatory against foreign providers, as they did before the crisis (eg see McGuire and Schuele 2000). Similarly, Brunei and the Lao PDR are also relatively discriminatory.

The most relevant restrictions are foreign ownership restrictions and restrictions on the movement of intra-corporate transferees. Six out of the ten ASEAN countries have foreign equity limits that do not meet the ASEAN Blueprint's benchmarks (note that the score for foreign ownership in table 5 covers not just foreign equity limits, but also restrictions on banks' ability to own non-financial firms).

Also relatively prevalent are regulatory restrictions (other than ownership restrictions) on commercial presence. These include restrictions on lending or raising funds, and restrictions on the ability of banks to undertake non-bank business. They also include government control or approval of interest rates. These restrictions affect domestic as well as foreign banks.

The restrictions that are least prevalent are those on the delivery of banking services via modes 1 (cross-border trade) and 2 (consumption abroad). Nevertheless, restrictions on mode 1 trade are still slightly more prevalent than for medical or health services.

Dee and Dinh (2009) survey the available evidence about whether non-prudential restrictions in banking have fallen over time. Over the period, 1997-2006, restrictions fell in about half of the sample countries they considered, including in Malaysia and Vietnam. However, they also rose in about half the countries, including Thailand, Indonesia and Singapore. Where restrictions were loosened, the most common reason was an increase in the number of foreign bank licenses issued. Mode 1 restrictions were also often loosened.

Where restrictions were tightened, a common reason was an increase in restrictions on banks' ability to undertake insurance business — either preventing it, or requiring banks to set up separate subsidiaries to provide insurance. New entry by both domestic and/or foreign banks also became more restricted in a third of sample countries. This may have been a response, although possibly not the best one, to perceived over-banking. Other restrictions that were tightened included those on banks' ability to undertake real estate business.

Countries with low income significantly reduced their restrictions, including China and Vietnam. Countries with high income tended to only slightly relax their restrictions, or impose new barriers. In the latter category were Thailand and a number of EU countries. The group with the largest reduction in trade barriers was the middle income countries, including Hungary, Turkey, the Czech Republic and Mexico.

3.2. Scorecard for Insurance Services

Table 6 shows the prevalence of restrictions affecting trade in insurance services, by type of insurance product and mode of trade, for each of the ten ASEAN countries.

There appears to be little variation in the prevalence of restrictions across the different insurance products, while the pattern across countries is similar to that for banking. The country with the tightest restrictions is Myanmar, where insurance is still a government-owned monopoly. The most liberal regime is in Singapore. Other relatively restrictive countries are Lao PDR, Thailand, Brunei and Indonesia.

Table 7 shows the relative prevalence on domestically-owned and foreign-invested (or foreign located) firms of restrictions affecting trade in life insurance services, for each of the ten ASEAN countries. The restrictions are also broken down by mode of trade (where domestic firms can be affected by restrictions affecting commercial presence and ownership, and by regulatory restrictions).

The table indicates that foreign ownership restrictions in insurance are not as prevalent as they are in banking — six of the ten ASEAN countries already meet the ASEAN Blueprint benchmark. However, cross-border trade in insurance services is still widely

restricted. This is significant, because unlike banking, insurance does not rely on extensive networks of local retail outlets, so it is a service where it is feasible for cross-border trade to be a significant mode of delivery. Insurance is also widely affected by regulatory restrictions (other than ownership restrictions) on commercial presence, including discretionary licensing and government controls or approvals of insurance premiums. Finally, insurance is widely affected by restrictions on the movement of intra-corporate transferees.

Dee and Dinh (2009) survey the available evidence about whether non-prudential restrictions in insurance have fallen over time. Over the period 1997-2004, only two of the sample countries had significant reductions in restrictions — China and India. In China, this was driven by WTO accession, while in India it was driven by unilateral reform. Over the sample, the biggest percentage reduction was in foreign equity limits.

Table 6. Restrictions on Trade in Insurance Services by Insurance Product and Mode of Delivery (per cent)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
Macroeconomic policies	0	0	0	0	0	50	25	0	50	0	13
LIFE INSURANCE											
Commercial presence (mode 3)	26	3	23	6	9	71	18	0	33	25	21
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	50	0	100	50	0	0	0	20
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	46
Ownership	0	0	10	35	35	100	0	0	26	0	21
Regulation	50	25	0	75	25	100	0	25	50	50	40
TOTAL	**31**	**16**	**21**	**29**	**20**	**85**	**21**	**7**	**37**	**31**	30
MEDICAL INSURANCE											
Commercial presence (mode 3)	26	3	23	6	9	77	18	0	33	25	22
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	50	0	100	100	0	0	0	25
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	46
Ownership	0	0	10	35	35	100	0	0	26	0	21
Regulation	50	75	0	75	25	75	0	25	50	75	45
TOTAL	**31**	**22**	**21**	**29**	**20**	**85**	**22**	**7**	**37**	**34**	31
PROPERTY INSURANCE											
Commercial presence (mode 3)	26	3	23	6	9	71	18	0	33	25	21
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	100	0	100	50	0	0	0	25
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	46
Ownership	0	0	10	35	35	100	0	0	26	0	21
Regulation	50	75	50	75	25	100	0	25	50	50	50
TOTAL	**31**	**22**	**27**	**30**	**20**	**85**	**21**	**7**	**37**	**31**	31
REINSURANCE											
Commercial presence (mode 3)	26	3	23	31	9	71	18	0	33	25	24
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	100	0	100	0	0	0	0	20
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	46
Ownership	0	0	10	100	35	100	0	0	26	0	27
Regulation	50	75	0	75	25	75	0	25	50	50	43
TOTAL	**31**	**22**	**21**	**52**	**20**	**82**	**19**	**7**	**37**	**31**	32
BROKING											
Commercial presence (mode 3)	26	3	23	50	9	71	18	0	24	25	25
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	100	0	100	0	0	0	0	20
Movement of natural persons (Mode 4)	59	64	63	100	6	100	50	28	51	41	56
Ownership	0	0	10	50	35	100	0	0	26	0	22
Regulation	50	75	0	63	25	75	0	25	50	50	41
TOTAL	**31**	**22**	**24**	**63**	**20**	**82**	**19**	**7**	**32**	**31**	33

Source: Survey responses.

Table 7. Restrictions on Trade in Life Insurance Services by Ownership Category and Mode of Delivery (per cent)

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	AVERAGE
LIFE INSURANCE - DOMESTIC											
Commercial presence (mode 3)	28	0	15	0	0	43	9	0	25	23	14
Ownership	0	0	0	0	0	100	0	0	0	0	10
Regulation	67	0	0	67	33	100	0	33	67	33	40
TOTAL	**28**	**0**	**10**	**10**	**5**	**63**	**6**	**5**	**26**	**20**	17
LIFE INSURANCE - FOREIGN											
Commercial presence (mode 3)	25	4	27	11	16	89	24	0	39	26	26
Cross-border insurance trade (Mode 1)	50	50	50	100	100	100	50	0	50	100	65
Consumption abroad (Mode 2)	0	0	0	50	0	100	50	0	0	0	20
Movement of natural persons (Mode 4)	59	64	38	25	6	100	50	28	51	41	46
Ownership	0	0	20	70	70	100	0	0	51	0	31
Regulation	40	40	0	80	20	100	0	20	40	60	40
TOTAL	**32**	**24**	**26**	**38**	**27**	**95**	**28**	**8**	**42**	**36**	36

Source: Survey responses.

By contrast, Malaysia and Thailand had slight increases in restrictions over time. In Malaysia, a law enacted in mid-1998 required the branches of foreign insurance companies to incorporate locally, raising is restrictions on joint venture requirements. In Thailand, there was a drought on issuing new licenses in the second half of the period, and those 'composite' companies undertaking both life and non-life insurance were required to separate, restricting their scope of business.

Dee and Dinh (2009) also survey recent econometric evidence on the economic cost of non-prudential regulatory restrictions in insurance. Applying those estimates to the regulatory restrictions found in this study, they find the cost to be significant. In Myanmar, the lack of competition from both internal domestic and foreign sources would inflate price-cost margins by over 400 per cent if premiums were not also controlled by government. They are also estimated to be adding to the real resource costs of insurance in Myanmar by almost 2.5 per cent. In Thailand, the restrictions are adding to price-cost

margins by around 150 per cent and to costs by around 1 per cent. This suggests a significant overall economic impact.

4. Achieving the Services Targets in the ASEAN Economic Blueprint

The purpose of this section is to develop some pathways for achieving the services liberalization targets in the ASEAN Economic Blueprint, for medical, health, banking and insurance services. Before doing so, it is useful to review briefly the expected benefits of liberalization, and the limitations that legitimate domestic regulatory objectives might place on that liberalization.

4.1. Benefits of Services Liberalization

The benefits of opening up services markets to foreign competition can potentially be similar to the benefits from opening up goods markets. Foreign suppliers may be able to offer services at lower cost or higher quality. Foreign-invested firms can bring additional resources in the form of capital and skills. And foreign-invested firms may bring better technologies and business processes.

Early estimates of the effects of services trade barriers suggested that the damage they caused could be many multiples of the damage caused by tariff barriers. An early study found that the benefits of services trade liberalization could exceed the benefits of liberalizing agriculture and manufacturing combined (Dee and Hanslow 2001).

One of the reasons is that many barriers to services trade do not just inflate price-cost margins, they can also add to real resource costs. This means that they can do much greater economic damage than tariffs. The very recent empirical evidence cited above suggests that the trade barriers in insurance services are of this form, while even more recent (as yet unpublished) research is finding similar effects in banking. Although the size of the cost effect in insurance may appear modest, its overall economic impact can be many multiples the economic damage caused by an equivalently-sized tariff.

In markets where foreign firms are providing essentially the same products as domestic firms, then removing all forms of discrimination against foreign suppliers may be sufficient to bring all the benefits of a single market. In services, however, suppliers typically provide highly differentiated services that are customized to each client, and foreign and domestic services providers often focus on different market niches. For example, foreign banks often focus on wholesale and investment banking while domestic banks focus on retail banking. Foreign-invested hospitals often specialize in particular treatments or focus on providing high quality services to wealthy customers, while domestic hospitals provide a broader range of services.

Where domestic and foreign service providers offer differentiated services, the removal of discrimination against foreign providers may be insufficient to discipline the cost and profit structures of domestic firms. Only by also removing the regulatory restrictions that limit competition by domestic firms, or restrict their performance, can the best economic outcomes be obtained. Recent research has suggested that the economic gains from removing non-discriminatory restrictions, ie those that affect domestic and foreign firms equally, can greatly exceed the gains from only removing discrimination against foreigners (Dee 2007). At best, a policy focus on ensuring national treatment can deliver relatively small gains. At worst, opening up a services market to particular foreign suppliers through preferential arrangements can, in the absence of measures to ensure general contestability, simply hand over monopoly rents to foreigners.

This means that a pathway to achieving services liberalization in ASEAN should pay at least as much attention to removing non-discriminatory restrictions on market access as to ensuring national treatment. Not only will this ensure that the gains from liberalization are substantial, it is also best way to maximize the chances that domestic service provides will themselves gain from liberalization, rather than simply being hurt by greater foreign competition.

4.2. Limitations on Services Liberalization

In many services sectors, there are legitimate reasons for domestic regulation. A key reason for prudential regulation in banking and insurance market is to guard against systemic instability. In medical and health markets, there are typically at least two legitimate regulatory objectives. One is to deal with asymmetric information. Almost by definition, the clients of professional services firms are not sufficiently trained to know whether the services they are receiving are of high quality. In some markets, this problem is dealt with after the event, via product liability legislation. In medical and health markets, this option is typically deemed unsatisfactory, so quality is regulated before the event — via licensing/registration requirements for medical professionals, and by licensing and quality assurance processes for medical and health institutions. A second regulatory objective in medical and health markets is to ensure equitable and affordable access, either for all, or for particular disadvantaged segments of society.

In banking and insurance, there is a relative clear-cut distinction between the regulatory instruments used for prudential reasons, and those that are deemed regulatory impediments to trade. The instruments commonly used for prudential purposes have been omitted from the regulatory scorecards for banking and insurance outlined above. They include:

- minimum capital requirements;
- capital adequacy ratios;
- liquidity reserve ratios;
- possible coverage by an insolvency guarantee or deposit insurance scheme; and
- a required frequency of publication of financial statements.

There are a few grey areas. Minimum capital requirements can sometimes be set unduly high, as a disguised barrier to trade, and commitments are sometimes made to reduce these requirements within trade agreements. As noted above, limitations can sometimes be placed on the legal form of foreign banks for prudential rather than protectionist reasons. And in light of the current global financial crisis, there may be some re-evaluation of the desirability of allowing banks to undertake non-bank business,

although initial assessments of the cause of the problems in the United States point elsewhere — particularly, to a watering down of capital adequacy ratios.[1]

Nevertheless, in most cases, regulatory restrictions affecting trade in banking and insurance services can be dismantled without jeopardizing prudential objectives, which are achieved using other means. However, there is still a sequencing issue. It would be unwise to open financial markets to competition without adequate prudential regulation and without adequate regulatory capacity to design and enforce it.

In medical and health services, the distinction between instruments used to achieve quality and access objectives and those deemed to be regulatory barriers to trade is less clear-cut. As noted earlier, many of the regulatory restrictions and restrictions on commercial presence in the health sector have an objective of ensuring quality. And at least some of the regulatory restrictions recorded by Malaysia are justified as ensuring that its system of subsidized health care, designed to ensure equitable access, remains affordable to the government. Malaysia, along with Thailand, is one of the few ASEAN countries to have significant government subsidization of public healthcare — according to Arunanondchai and Fink (2007), only 5 per cent of the total cost of public services are covered by fees. Yet foreign providers in Malaysia are not able to access producer subsidies, and their clients are unable to access consumer subsidies. At least in part, this is because the Malaysian government cannot afford to subsidize all healthcare.[2]

Achieving quality objectives in health and medical care will inevitably mean that there are barriers to the entry and operation of at least some providers. A well-designed quality control framework will ensure that the operators who are locked out are the genuinely low-quality ones. The framework can afford to be relatively neutral in its treatment of domestic and foreign providers.

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[1] In the United States, this was effected by watering down the distinction between investment banks (which do not have a deposit base, and have lower capital adequacy ratios) and commercial banks (which have a deposit base, and have higher capital adequacy ratios), leading to a significant increase in the overall leverage of the banking system.

[2] Arunanondchai and Fink (2007) point out that if Malaysia were to spend the same per capita amount of money on healthcare as Switzerland, Malaysia's health expenditure would be roughly equal to its GDP, leaving no money for food, housing, clothing or transportation.

Similarly, achieving equity objectives in health and medical care on an affordable basis may mean that not all providers or clients can gain access to government subsidies. The key policy challenge is to design a healthcare system in which those who can afford private healthcare will willingly pay for it, even when subsidized care is also available. This has proven to be a difficult policy challenge throughout the world, particularly when healthcare providers do not know the income status, tastes, or health characteristics of patients in advance. The theoretical literature shows how offering different qualities of health care can encourage the wealthy to self-select to pay for their own care. Sometimes in the policy literature this is seen to be inequitable in itself (eg Chanda 2001). But the theoretical literature shows that in a second-best world, where government budgets are limited, using quality differences to encourage self-selection may be the best outcome.[3]

Gaynor (2006) gives a good review of the recent literature. He concludes that when prices are regulated, competition actually increases quality (because the new entrants compete by offering higher quality rather than lower prices) and improves consumer welfare, although the effect on social welfare is ambiguous (because of the impact on profits of services providers). When firms set both price and quality (as they typically do in ASEAN countries), the effects of competition on both quality and welfare are ambiguous. However, one model he surveys is revealing. In the model by Mussa and Rosen (1978), a monopolist sells the same product at different qualities to discriminate among consumers who have different valuations. If the monopolist does not know their valuations in advance, she/he will set the quality of the low quality product too low to be socially optimal, in order to get the consumers to self-select.

In the ASEAN region, it is not typically the case that a single monopoly provider offers healthcare to both rich and poor. But a private (sometimes foreign-invested) provider often provides healthcare alongside the public system. And while the private provider cannot influence the price or quality of the public system directly, she/he often can indirectly, by offering salaries that will bid the highly trained medical professionals into the private

[3] This is particularly the case when quality is differentiated according to the size and amenities of a patient's bedroom, for example, rather than the quality of clinical care.

system. This poaching of talent into the private system has been a key area of policy concern (eg Chanda 2001, Arunanondchai and Fink 2007), and may be the real-world analogue to the policy problem that Mussa and Rosen (1978) outline in theoretical terms.

As noted, achieving equity objectives in health and medical care on an affordable basis may mean that not all providers or clients can gain access to government subsidies. Governments could ban the rich from attending subsidized hospitals or clinics, but they cannot prevent the rich misrepresenting themselves as poor. So governments who want to subsidize need to rely on some degree of self-selection. This is typically based on quality.

Governments may choose to deny higher-quality private providers access to subsidies, but if the system is to not unduly constrain trade, then this denial of subsidies should be the same for domestically-owned and foreign providers. Governments may chose not to be neutral in their treatment of access to subsidies by domestic and foreign patients, however. For obvious reasons, they may choose to deny the right of foreign patients to subsidized health care.

4.3. Pathways to Services Liberalization

In **health and medical services**, the Government of Singapore has developed a Roadmap to advance the region-wide integration of the healthcare sectors. This Roadmap was adopted by ASEAN Trade Ministers in November 2004. Much of the Roadmap is concerned with promoting trade in healthcare goods, including pharmaceuticals and medical equipment. In services, the Roadmap does little more than restate the targets contained in the Blueprint. However, in other areas, it contains recommendations relevant for health services, including:

- accelerating the implementation of mutual recognition agreements;
- setting clear targets and schedules for harmonization of standards, where required;
- facilitating the movement of business persons through an ASEAN Travel Card, and developing an ASEAN Agreement to facilitate free movement of experts, professionals, skilled labour and talents in ASEAN, taking account of domestic laws and regulations;

- more established ASEAN countries to provide training and host attachment programs for medical and health-related workers from less developed ASEAN member states; and
- to strengthen cooperation within ASEAN countries in the area of capacity-building, ie exchange of experts, regulatory infrastructure and human resource development, within available resources.

In health and medical services, it should be recognized that the ASEAN region is already relatively liberal (see also Arunanondchai and Fink 2007). In part, this is because ASEAN has centres of excellence in medical and healthcare, well-placed to export their services, not just to the rest of ASEAN, but also the rest of the world. In part, it is because at least some ASEAN countries have already bound relatively liberal regimes as part of their WTO accession. But in part, it is also because many ASEAN countries cannot yet afford the expensive universal healthcare subsidies available in the developed world, and so have not instituted the restrictions on access to subsidies that can also restrain trade.

A key conclusion of this paper is that, to facilitate further progress in liberalizing health and medical services, the ASEAN countries should work together to establish satisfactory regimes for regulating and enforcing acceptable quality standards, both for individual professionals and for healthcare institutions. This will be a key prerequisite to dismantling the regulatory and other restrictions that, while having a possible rationale in quality assurance, are either more discriminatory or more burdensome that required.

This need not involve establishing the same standards in each country. Quality already varies enormously across the region. Thailand has world-class hospitals catering to clients from Japan, but in Cambodia, many private facilities use obsolete equipment and more than half do not have a license from the Ministry of Health, while in Laos, training is considered to be inadequate, leading to high rates of misdiagnosis and maltreatment (Arunanondchai and Fink 2007). These latter countries do not have the training or regulatory resources to achieve Thai standards immediately. But cooperation among regulatory authorities could help to establish *minimum acceptable standards*, either by country, by discipline, by procedure, or by institution. Countries could choose to adopt standards in their home

country that were higher than the minimum acceptable standards. But having a 'ladder' of quality standards across the region would help to do two things:

- it would put a floor under standards, providing a benchmark for standards that were not more burdensome than necessary; and
- it would also provide a viable alternative for the replacement of standards that were discriminatory against foreign providers.

The remainder of this section will demonstrate how such regulatory cooperation would facilitate achieving the Blueprint's targets.

One such target is the completion of mutual recognition agreements. The ASEAN countries have by now completed Mutual Recognition Agreements for medical practitioners, dental practitioners, and nurses. In some respects, these agreements are very weak, because in each case, they state that foreign professionals can apply for registration in the host country subject to the following:

- having a relevant qualification — in the case of doctors and dentist, this must be recognized by the professional bodies of both the home and host countries;
- having professional registration in the home country;
- having minimum practical experience (5 years for doctors and dentists, 3 years for nurses);
- being in compliance with continuing professional development;
- being certified at home as not having violated professional or ethical standards; and
- being in compliance with any other requirements as may be imposed by the professional body or other relevant authorities in the host country.

In one sense, this last clause is tantamount to an all-purpose escape clause. In another sense, these agreements mean that recognition cannot be denied so long as all the criteria are spelt out and the foreign professional meets them. Hence, the work still needs to be done to ensure that the requirements imposed by the professional bodies or other relevant authorities are not unduly discriminatory or burdensome. The above regulatory cooperation to establish minimum acceptable professional standards would help to do this. Indeed, at

the level of professional qualifications, the regulatory cooperation could involve the same regulatory bodies as were signatories to the Mutual Recognition Agreements.

Another liberalization target in the Blueprint is liberalization of trade via modes 1 and 2. The scorecards show that modes 1 and 2 are already relatively liberal. Consumption abroad involves consumption beyond the jurisdiction of domestic quality control processes, so quality control rationales for regulatory restrictions do not apply. Furthermore, most governments recognize that it is impossible in practice to control what their citizens purchase while abroad. It would be a relatively low cost exercise for ASEAN countries to commit formally to keeping this mode of trade free of government restrictions, and on a most-favoured nation basis (ie for trade with all countries, not just with ASEAN partners).

As noted earlier, however, one of the key restrictions to mode 2 trade is the lack of mobility of health insurance coverage. Often this is because health insurers do not know how to assess the quality of overseas health providers. Mattoo and Rathindran (2005) suggest that hospitals in developing countries could seek accreditation from Joint Commission International, which is the international arm of the Joint Commission for Accreditation of Health Care Organizations, one of the leading organizations certifying hospital quality in the United States. This would provide a strong signal to health insurers around the world that their procedures were worthy of coverage. However, within ASEAN, it may not be necessary or appropriate for all hospitals to meet US standards. But some assurance that a particular hospital met ASEAN-defined minimum acceptable standards, either generally or for a particular procedure, could help to persuade ASEAN insurers to allow intra-ASEAN mobility of health insurance. But this requires ASEAN minimum standards to be defined.

Mode 1 trade in medical and health services is less liberal than mode 2 trade. Some countries restrict mode 1 trade to certain procedures, but this runs the risk of locking out trade in new procedures or services that have yet to be developed. To the extent that there are quality concerns, the development of ASEAN minimum acceptable standards would facilitate the removal of more burdensome barriers to trade among ASEAN members. But some of the most competitive suppliers of mode 1 diagnostic and medical laboratory

services are in places like Hong Kong — outside of the ASEAN region. Hence, to maximize the benefits of mode 1 liberalization, it should also be on a most-favoured nation basis.

A final concern about mode 1 trade is that the foreign hospitals and medical laboratories should respect the privacy and confidentiality of patient information. Developing rules to ensure the privacy and confidentiality of patient data cross-border is another area requiring regulatory cooperation.

A further liberalization target in the Blueprint is liberalization of limits on foreign equity participation. As noted, a majority of ASEAN members already meet the target in medical services, and on a most-favoured nation basis. Foreign services providers typically account for small shares of the healthcare market. And while little comprehensive information exists on the origin of foreign investors, in some countries they are from outside the region (Arunanondchai and Fink 2007). For example, in Cambodia most foreign hospitals are of Chinese origin. Further liberalization on a most-favoured nation basis would maximize the contribution of foreign investment to expanding the resource base in what is an extraordinarily expensive sector. But establishing minimum acceptable ASEAN standards would add to the transparency of the standards that foreign hospitals were required to achieve.

As noted, many of the remaining restrictions on commercial presence and the regulatory restrictions that are measures in the scorecard have been justified on the grounds of quality assurance. While the questionnaire instruments collected information about the general licensing and registration requirements imposed in each country, the scorecard made no judgment about whether they were more burdensome than necessary. It did record whether the requirements on foreign providers were more severe than those on domestic providers. A process of regulatory cooperation that defined minimum acceptable standards in ASEAN would provide a basis for further liberalizing the remaining limitations on market access via mode 3, not just those that discriminated against foreigners, but also those that unduly burdened domestic providers. As noted earlier, this type of liberalization could provide particularly large gains.

A final liberalization target in the Blueprint is liberalization of mode 4 trade. One key to this is the establishment of Mutual Recognition Agreements, which has been discussed above. Another is easing visa and other immigration restrictions on the movement of business people and professionals. The ASEAN Roadmap has useful practical suggestions in this regard.

However, there are residual concerns about brain drain — both from one country to another, and from the public to the private health system within a country. As noted by the ASEAN-ANU Migration Research Team (2005), mechanisms such as bonds and compulsory services are appropriate as an immediate measure. However, in the long term, raising the remuneration in healthcare occupations is also important. This depends partly on raising public allocations to healthcare. It also depends on raising the productivity of healthcare workers, and cooperation in the training of both professionals and regulators, as suggested by the Roadmap, would help in this regard. Furthermore, the social benefits of a medical education accrue very largely to the individual, in terms of higher lifetime earnings. There is therefore a case for ASEAN countries to recover a larger share of the costs of medical training from the students themselves.

Initiatives such as these can help to open up medical and health markets in the ASEAN region so as to increase the quantity and quality of healthcare available and to improve its 'value for money'. Tools such as the surveys used to map current policy settings in healthcare could be used on a repeated basis to monitor progress towards achieving the Blueprint's liberalization objectives. But because of the inevitable interactions between trade policy and domestic regulation, it should not be anticipated that all of the indicators of regulatory restrictions could be reduced to zero. The aim instead should be to ensure that regulatory structures are no more burdensome than necessary to ensure quality of the service. In most (but not all) cases, however, this means that they should operate on a non-discriminatory basis.

In **banking and insurance services**, by contrast, virtually all of the indicators of non-prudential regulatory restrictions that have been surveyed in this study could be expected to be reduced to zero on achievement of the Blueprint's liberalization objectives. One

exception is the indicator of foreign equity limits, where the targets are no less than 70 per cent foreign ownership by 2015. Other possible exceptions are areas where there is some overlap between prudential and non-prudential regulation. But largely, prudential objectives are achieved by other means, so that trade liberalization can occur without jeopardizing this objective.

This separation between the instruments for trade protection and the instruments for legitimate regulatory purposes is perhaps one of the reasons why finance, along with telecommunications, has been one of the areas where services trade liberalization has progressed most rapidly. For example, these were the two services areas where substantial agreement was reached in the WTO at the conclusion of the Uruguay Round.

In other parts of the world, liberalization of financial services has continued since. Both China and India have achieved substantial liberalization of insurance services. And middle income countries such as Hungary, Turkey, the Czech Republic and Mexico have achieved significant liberalization in banking.

In the ASEAN region, by contrast, the situation has been at least partly one of stasis, if not backsliding. Ironically, this can be attributed in part to the Asian financial crisis. In the wake of the crisis, many ASEAN countries undertook significant reform of their prudential regulation, and some loosened restrictions on foreign ownership on a most-favoured nation basis, albeit sometimes only temporarily. Even in trade circles, this created an impression that 'everything that needs to be done, has been done'.

Yet the survey undertaken for this study suggests otherwise. In banking in particular, a majority of ASEAN countries have yet to reach the ASEAN Blueprint targets for foreign equity limits. And barriers to trade extend far beyond these limits, as the Blueprint itself recognizes.

Significant barriers exist to cross-border (mode 1) trade in both banking and insurance. For insurance in particular, where an extensive network of outlets is not required, cross-border trade could be a particularly effective, low-cost way of trading the service. Consumers who undertake such cross-border transactions may need to be reminded of the limits of consumer protection in such cases. But there is little reason why transactions

should not be allowed currently on a 'caveat emptor' basis, while governments also work to strengthen both the government and private sector mechanisms that have developed to handle disputes over cross-border e-commerce transactions. And similar comments apply to mode 2 trade.

Furthermore, the most significant developments in the protection of cross-border e-commerce transactions have been outside of the ASEAN region, spearheaded by countries such as Australia. There are strong reasons for ASEAN countries to pursue the liberalization of mode 1 and mode 2 trade in financial services, hand in hand with a strengthening of cross-border consumer protection, on a most-favoured nation basis.

In banking in particular, significant limitations also exist on commercial presence, other than those on ownership. Some of these include restrictions on the ability of banks to undertake non-bank business. To the extent that systems of prudential regulation governing insurance and securities business start to diverge from those governing banking, it is understandable that governments might require banks to establish separate subsidiaries to undertake non-bank business. But few of the lessons from the current global financial crisis suggest that such non-bank business should be prevented altogether. Instead, the lessons are more to guard against the watering down of prudential regulation in banking itself.

As prudential regulations are strengthened, there is little justification for the remaining restrictions on forms of lending and raising funds, and as the operation of monetary policy is strengthened, there is little justification for the remaining controls over interest rates. In some ASEAN countries, however, it is not just the design, but also the implementation of prudential regulation that needs strengthening. These is plenty of scope for cooperation in the training of both prudential regulators within ASEAN, just as the Roadmap has suggested in healthcare.

Finally, there is a great deal that can be done to facilitate the movement of people, particularly intra-corporate transferees and individual skilled professionals, even as some ASEAN countries are major demandeur of freer mode 4 trade with the rest of the world. The suggestions in the health Roadmap are relevant, and apply beyond just the healthcare

sector. But arguably, if ASEAN is to make progress in its requests for greater mode 4 trade with the rest of the world, it should also be prepared to extend its own efforts to the rest of the world, eventually, if not immediately.

Initiatives such as these can help to open up financial services markets, and tools such as the surveys used to map current policy settings in financial services could be used on a repeated basis to monitor progress towards achieving the Blueprint's liberalization objectives. As noted, over time it should be anticipated that most of the indicators of regulatory restrictions would be reduced to zero. In particular, there should be a significant reduction the extent of discrimination against foreign suppliers that still exists in some ASEAN countries, more than a decade after the Asian financial crisis.

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CHAPTER 3

Trade Facilitation[1]

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Business surveys show the significance of customs rules and their implementation as a key impediment in regional supply chains. Other policies such as licensing and rules on operations, and lack of transparency generally, also constrain the establishment of new businesses and their operations. These policies and processes add to costs in the supply chain which impedes trade growth, wastes resources, impedes the development of new supply chains and new forms of economic integration and limits participation in regional production networks.

The burden of the measures is inequitable: they are often borne by the shippers themselves, limiting their access to the benefits of globalization. Not only the shippers but also the operators can gain from the removal of these impediments.

There is a value therefore in reinvigorating the reform program in trade facilitation and logistics in the Asia Pacific. Relevant steps are to reinforce, monitor, benchmark and report on commitments to (a) new customs processes, especially the National Single Windows as a prerequisite to the ASEAN Single Window, (b) a web-based databank of trade regulations that is regularly updated, and (c) streamlined and harmonized procedures, starting with the Customs declaration (or 'SAD') form.

It is also recommended to maintain and report a new summary measure of the logistics policy regime in the regime: the 'logistics restrictiveness index' should be calculated for all countries every year. Policy and performance are connected and therefore it is also important to demonstrate this and to illustrate the contribution of reform to the national goals of growth and equity.

[1] This paper was compiled by Christopher Findlay with contributions from Richard Pomfret, Loreli de Dios, Marn Heong Wong, Claire Hollweg and Patricia Sourdin. Responsibility for errors in this paper rests with Findlay.

1. Introduction

A series of recommendations of items to include in the ASEAN Scorecard towards an ASEAN Community are made in this paper. The focus in that work is on trade facilitation.

The next section of the paper discusses the scope of trade facilitation and its treatment in various research methodologies. These studies use empirical methods to infer directly or indirectly the extent of and impact of improvements in trade facilitation. Also important are views of the users of the trading system, and the following section presents data on business assessments of priorities in trade facilitation, drawing on the results of recent surveys in ASEAN. A key element of and contributor to trade facilitation, it is argued in the second section, is the provision of logistics services. Policy applying to logistics in the ASEAN+6 economies is reviewed in section 4 of the paper. Finally, also presented is a new index of trade costs, based on the ratio of cif to fob values of traded goods. The scope to use this ratio as an indicator of performance in trade facilitation is then discussed.

This work provides the basis of series of recommendations for elements of a scorecard on trade facilitation, which covers customs processes and logistics services as well as a number of performance measures.

2. Trade Facilitation

Trade facilitation (TF) has long been the subject of government policy and trade agreements. Several GATT Articles deal with TF issues. TF has also featured in regional trade agreements, most notably in the EU's single market program and establishment of Schengenland. The characteristic of these approaches is to set rules, proscribe certain procedures, advocate best practices and so forth. There was little attempt to quantify progress in TF, and this lacuna has begun to be viewed as an obstacle to future agreements on TF. In 2001, for example, APEC members agreed to

reduce trade costs by five percent over five years, but such TF commitments have little meaning without consensus on how trade costs are measured.

In the economics literature, the 2004 article "Trade Costs" by Anderson and van Wincoop highlighted the magnitude of trade costs. They estimated that in the high-income countries trade costs amount on average to a 170% ad valorem barrier to trade, and that tariffs and non-tariff barriers account for less than a fifth of the at-the-border trade costs. This dramatic figure is, however, based on a broad definition of trade costs: all costs of getting a good to the final user apart from the marginal cost of producing the good itself. Moreover, the empirical base for their results relied on indicative case studies or indirect evidence from gravity models.

An alternative approach, reported in a number of World Bank studies, breaks down trade costs into various components and estimates their impact on trade with a gravity model. Wilson, Mann and Otsuki (2003) use four broad TF indicators, and find that port efficiency has the largest positive effect on trade flows, regulatory barriers deter trade, and customs environment and e-business usage are statistically significant but less important. Simulating a scenario in which Asia-Pacific countries with below average port efficiency improve to half the APEC average, they estimate that intra-APEC trade would increase by $254 billion a year.

Other studies have identified the direct impact of similar variables on trade costs. Limao and Venables (2001) found a large variation in the cost of shipping a container from Baltimore to different countries, some of which is physically determined (landlocked countries have higher transport costs) but much of it is due to differences in infrastructure, measured by an index based on kilometers of road, paved road and railway per square kilometer and telephone main lines per capita. Clark, Dollar and Micco (2004) came up with similar results for the costs of shipping a container from Latin American countries to the USA, and emphasized the importance of port efficiency. Their principal measure of port efficiency is survey data drawn from the Global Competitiveness Report published by the World Economic Forum. Wilson, Mann and Otsuki (2003) and Wilmsmeier, Hoffmann and Sanchez (2006) use the same source, and Sanchez et al. (2003) use Latin American survey data. Bloningen and Wilson (2008) show that survey data overstate the importance of port efficiency because respondents include other country fixed effects.

Trade costs may be reduced by better logistics or internet connectivity. Devlin and Yee (2005) document the wide variation in logistics costs among the Middle Eastern and North African countries and how they can influence shipping costs, e.g. inefficient trucking services lead to longer stand time on the dockside and costly inventory accumulation as well as reducing export volumes so that there are infrequent shipping services. The World Bank logistics perceptions index provides proxy measures for cross-country variations in logistic quality. There is a literature on the Digital Divide between developed and developing countries and on the positive effect of Internet adoption on economic growth, e.g. Freund and Weinhold (2004) found that internet use had no impact on world trade in 1995 but after 1997 it had an increasing impact.

This literature has enhanced our understanding of variations in trade costs, which clearly depend upon more than distance and the commodity composition of bilateral trade. However, isolating port efficiency, logistics and so forth only provides a partial explanation, and, because the importance of each measure may vary from country to country, any one of these indicators is a poor guide to overall TF across countries. Many studies suggest that a deep determinant of trade costs is institutional quality, which may be proxied by indicators such as the World Bank's *Cost of Doing Business* surveys, Transparency International's *Corruption Perception Index*, the Heritage Foundations *Economic Freedom Index*, and so forth. These tend to be correlated and give similar results, but they are at best indicators rather than measures of trade costs and can provide no more than an ordinal ranking across countries.

Direct measurement of trade costs requires detailed microeconomic evidence. A number of attempts have been made to standardize the results of such studies. Border crossing surveys can be framed by the WCO's time-release methodology, but they cannot capture behind-the-border trade costs. The ESCAP Time/Cost-Distance Methodology has been applied to several transport corridors in Asia, and ESCAP have improved the software which is now available on a disk. JETRO has prepared an 'ASEAN Logistics Map' including surveys of various transport routes, and suggestions for resolving bottlenecks. These detailed studies are useful because, if done properly, they provide firmly based evidence of the time and financial costs of trade. They cannot, however, provide across-the-board information on the level of and changes in trade costs.

At the aggregate level an operational and economically meaningful approach to studying variations in trade costs is to examine the gap between free-on-board (fob) values when a good reaches the port of exit in the exporting country and import values which include cost, insurance and freight (cif). The cif/fob price gap is operationally useful because many national statistical offices have data on fob and cif values at disaggregated levels (Korinek and Sourdin, 2008). It is an economically meaningful measure of the wedge between the cost of producing and moving a good to the exporter's port and the price paid by the importer upon the good's arrival in the destination country. Some of the cif/fob price gap is exogenously determined by geography and the commodity composition of trade (e.g. low value/ weight commodities will have higher transport costs); Pomfret and Sourdin (2008), utilizing cif/fob data for Australian imports at the six-digit HS level, control for commodity fixed effects and geographical determinants of the gap to show that Asian countries' trade costs fell faster than the world average from the mid 1990s until early 2000s. Discussed below is a new and more specific application of this methodology to ASEAN.

The economics literature indicates the importance of trade costs beyond traditionally viewed transport costs and provides insights into why they vary across countries. The potential for TF is large but because TF is multifaceted and the empirical literature recent, it is still difficult to quantify the impact of TF measures. There are trade-offs between focusing on at-the-border and total trade costs and between partial and general measures, with narrower coverage more operational but conceptually incomplete. Table 1 provides a summary of the various approaches.

Table 1. Taxonomy of Methodologies for Measuring Trade Costs

	Partial	**General**
At-the-border	*WCO Time Release*	*cif/fob gap*
Total (at and behind the border)	• ESCAP/JETRO Time/Cost-Distance • Wilson et al (World Bank)	• Anderson – van Wincoop • Institutions (CDB, TI, HF)

Notes:
1) The top row is partial because the measures are based on a narrow definition of trade costs.
2) The bottom left cell is partial because the ESCAP method covers specific routes and the Wilson method covers only certain aspects of TF.
3) The bottom right cell is the hardest to define and quantify.

3. Business Views on Trade Facilitation[2]

Business views on trade facilitation in ASEAN are available from the results of two recent surveys.[3] Respondents for the Business survey consisted of companies from nine priority goods and five priority services sectors that engage in import transactions within ASEAN.[4] Respondents for the Logistics survey were logistics services providers (shippers and freight forwarders), regulatory bodies, and logistics trade associations across ASEAN countries.[5]

Data from the surveys is revisited to ascertain the most important barriers from the viewpoint of survey respondents. The term "barrier" is used here rather than the more neutral "non-tariff measure", in accordance with the terminology employed by the surveys. Using the WTO definition of trade facilitation ("the simplification and harmonisation of international trade procedures" where trade procedures are the "activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade"), the focus here is on Customs or border regulations and practices.

The aim is to identify priority trade facilitation measures, which will consist of improvements in rules, controls, or arrangements (both formal and informal) governing the movement of goods across borders/Customs. The ultimate goal is to reduce transactions costs and increase efficiency while securing legitimate regulatory objectives.

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[2] This section is based on an extract from the background paper by de Dios.

[3] These surveys were completed as part of the AADCP-REPSF Project No. 06/001: An Investigation into the Measures affecting the Integration of ASEAN's Priority Sectors (Phase 2), namely, (1) the Region-wide Business Survey (06/0013e) by Rowena Owen, PT ACNielsen Indonesia, and (2) the Case of Logistics (06/001d) by Robert de Souza, Mark Goh, Sumeet Gupta, and Luo Lei.

[4] In the Business Survey, 757 companies in the goods sector were distributed as follows: agro-based (72), fisheries (47), automotive (102), electronics (134), e-ASEAN (91), healthcare (47), rubber (61), textile and apparel (123), wood-based (79); while the 174 services companies came from e-ASEAN (32), healthcare (19), air travel (37), tourism (41), and logistics (45). In the Logistics Survey, there were 189 respondents.

[5] In the Business Survey, two sets of questionnaires were administered separately but all were asked to rate the seriousness of each barrier that affected them according to a 1-5 scale with 1 for least and 5 for most serious. Weighted average means were used to rank these barriers. In the Logistic Survey, each respondent was asked if a particular barrier exists or not, and to rate the significance of the barrier to free trade using a 6-point scale with 1 for insignificant and 6 for critically significant. Modal rather than mean scores were used as the basis for ranking these barriers.

Customs regulations and procedures are not a type of non-tariff measure under the ASEAN or UNCTAD classification schemes. Only special Customs formalities are a non-tariff measure in the UNCTAD inventory, where they are defined as "formalities which are not clearly related to the administration of any measure applied by the given importing country such as the obligation to submit more detailed product information than normally required on the basis of a customs declaration, the requirement to use specific ports of entry, etc." ASEAN considers these as technical measures and classifies certain Customs-specific measures under para-tariff measures, e.g. surcharges and decreed Customs valuations.

3.1. Key Results

Summary results of the analysis of the two surveys are presented in the next section. The main conclusion from the analysis of these survey responses is that border procedures continue to be pervasive and critically affect both goods and services businesses across ASEAN.

The procedures themselves are numerous and must be reduced or rationalized or streamlined, a need that has been enunciated for years now, and acted upon only slowly. The ASEAN Single Window program illustrates this difficulty, since national Single Windows still need to be realized in all member countries.[6] The completion of the national Single Window program is a priority.

Aside from the procedures per se, the manner of implementation has transformed certain procedures into formidable barriers, in particular those that allow wide discretion in application. Traders who have more to gain from unofficial payments favor this environment, and Customs personnel benefit privately from the arrangement. The total welfare loss of the community is expected to far exceed these private gains.

This can be addressed through an efficient information system that enables counterchecking of documents and a credible audit system to enforce accountability.

[6] Singapore has completed the implementation of its National Single Window (NSW). Malaysia, Philippines, Indonesia, Thailand and Brunei are expected to complete the NSW in 2009. Other ASEAN members are expected to complete by 2012. Pilot projects are underway to test the connections between National Single Windows. http://www.miti.gov.my/storage/documents/bb6/com.tms.cms.document.Document_49a3fec9-c0a81573-84808480-1cdc005c/1/MITI%20WEEKLY%20BULLETIN%20(Vol.%2030)%2004%20Februari%202009.pdf .

Content and time can be monitored through such a system, so that valuation and classification errors can be traced, while lengthy procedures examined to establish source of delays. Risks can also be managed and selectivity carried out by machine instead of manual alerts, and goods released automatically after payment, all through a good database and information system.

Transactions times require further study to pinpoint the exact causes and suggest remedies. Since time stamps are usually recorded for each procedure at Customs, this can be monitored regularly and used as target indicators for procedural improvement.

Poor information on border procedures was also cited as a major constraint. Thus another avenue that yields significant benefits is to make information available through the internet, update these as required, and obtain feedback from users. The lack of transparency and absence of accountability reinforce each other. Carrying out all these somewhat obvious solutions nevertheless requires a strong political will of government.

Recommended for the scorecard are a focus on customs services as a contribution to trade facilitation, and in particular, the following 4 points related to Customs procedures:

a. complete the implementation of the National Single Windows as a prerequisite to the ASEAN Single Window
b. set up a web-based databank of trade regulations that is regularly updated
c. streamline and harmonize procedures starting with the Customs declaration (or 'SAD') form (see below for details)
d. mutually recognize technical standards (see below for details)

A simple numerical measure but summary indicator of performance that should also continue to be monitored is the clearance time through customs (the ASEAN target time is 30 minutes). Generally these data are only available through special surveys but it is recommended here that ASEAN customs authorities collect and report these data themselves (most automated systems already include time stamps for each step that only need to be processed).

3.2. Priority Measures

More detailed results of the surveys are presented in this section. Barriers covered by the two surveys include regulations or procedures themselves, too much or a lack of procedure, dissimilarities of rules between countries, and more importantly, their manner of implementation such as imperfect or uneven or non-application of rules, arbitrariness, and malpractice.

Both surveys classified their respective barriers into several categories. For the Business survey, Customs procedures were further classified under sub-categories. That is, the category "Customs procedures" had ten sub-categories roughly corresponding to the steps in the import clearance process, under which individual barriers were classified.

Aggregate results are reported here and sectoral detail is available from de Dios (2009). The barriers were ranked on the basis of incidence (or frequency of occurrence, score out of 100) as well as significance (or impact, score on the scale of 1-5 for the Business Survey and 1-6 for the Logistics Survey). The top-ranked measures will be taken to indicate priorities for trade facilitation.

3.1.1. Goods

Questions about border procedures were asked in both surveys: the Business survey addressed them only to goods sectors respondents while the Logistics survey addressed them to its services respondents.

The ten sub-categories under the Business survey are ranked for each sector in terms of incidence and then significance. The results are shown in Table 2 for all sectors as a whole. The relatively widespread and serious barriers are shown in boldface, using as thresholds the average scores that are given under the column headings.

The Logistics survey results in Table 3 support the findings from the Business survey. Logistics service providers rated as critically significant documentation, inspection, classification, and clearance processes, and facilitation fees as moderately significant. In addition, the lack of border crossing coordination with neighboring Customs offices points to the urgent need for formal arrangements to eliminate this barrier.

Table 2. Ranking of Border Barriers in the Priority Goods Sectors from the Business Survey

RANKING BASED ON INCIDENCE	Incidence (45)
Unofficial facilitation fees for clearance or issuance of forms etc	61
Declaration of goods procedures - difficult to understand, numerous documents, long approval time	53
Information on regulations and procedures - not accessible, accurate, up-to-date, clear, or followed	52
Release of goods - difficult, time consuming	51
Selectivity & examination of goods - no risk management system, long examination	50
Refund of duty & access to appeal - complex and difficult processes	45
Valuation of goods - WTO Transaction Value not used, procedure not transparent, declared values not accepted or replaced by reference prices	39
Payment of duties and taxes - Customs assesses differently, payment problems	35
Duty exemption schemes - procedures not transparent, resulting delays	32
Classification of goods - AHTN not used, inconsistent	30
RANKING BASED ON SERIOUSNESS	Seriousness (2.79)
Refund of duty & access to appeal - complex and difficult processes	3.21
Release of goods - difficult, time consuming	3.03
Unofficial facilitation fees for clearance or issuance of forms etc	2.92
Declaration of goods procedures - difficult to understand, numerous documents, long approval time	2.80
Information on regulations and procedures - not accessible, accurate, uptodate, clear, or followed	2.76
Valuation of goods - WTO Transaction Value not used, procedure not transparent, declared values not accepted or replaced by reference prices	2.76
Duty exemption schemes - procedures not transparent, resulting delays	2.74
Payment of duties and taxes - Customs assesses differently, payment problems	2.64
Selectivity & examination of goods - no risk management system, long examination	2.55
Classification of goods - AHTN not used, inconsistent	2.49

Table 3. Ranking of Border Barriers from the Logistics Survey

	Incidence (18%)	Significance (3.83)
Time consuming documentation requirements	46	6
Burdensome inspection requirements	23	6
Different classification of goods in different countries	32	6
Lack of border crossing coordination with regional neighbors	19	5
Inefficiency of inbound clearance process	15	5
Arbitrary independent rulings	14	4
Volatility in border traffic	10	4
Multiple uncoordinated offices	12	4
Improper penalties	11	4
Other customs-related barriers	5	4
Malpractices (facilitation fees)	33	4
Limited hours of operations at Customs facilities	25	3
Discriminatory inspection practices, such as preferred treatment for domestic carriers	12	3
Customs department raises fees unilaterally	9	3
Criminal practices	9	3
Regulations that limit foreign firms' ability to provide brokerage services	12	2
Security related delays	20	2
Restriction on weight and value of shipment	20	1

The main observation about the top ranked barriers is that they are implementation practices that can be remedied through administrative decisions within the Customs agency.

- Unofficial facilitation fees affect the majority of respondents and are considered moderately serious in impact. The transaction involves two parties as the fees are both requested and paid for, implying mutual private benefits from the

arrangement to the detriment of the public treasury, a typical principal-agent problem. This practice may be reduced by a streamlining of procedures and an information or data management system that allows the counter-checking of actions of both parties.

- Barriers during goods declaration can be eliminated through a simplification of documentary requirements both in number and content, an information hotline for queries about procedures, or a time limit for the approval of declarations. Regular importers with good track records can be accorded Fast Lane privileges. This also requires an efficient database system.
- Barriers with respect to information on regulations and procedures can be easily removed with the help of the internet, a most effective way of publicizing regulations and procedures, updating them regularly, issuing explanatory notes, correcting inaccuracies, or responding to queries from clients. This is an area that does not require huge expenditures yet yields numerous benefits to users. A properly administered interactive website also allows Customs to receive feedback on its actions that aid its accountability efforts or clarify decisions immediately.
- Barriers during the release of goods such as procedural or signature requirements can be reduced through simplification and an information system that allows automatic release once payment has been received.
- The duty/tax refund process and appeals process are areas that can also be streamlined.
- Selectivity requires a good risk management system with regularly updated risk criteria and machine-implemented selection based on these risk criteria. X-ray equipment can reduce the time spent in examining goods. Manual inspection must be subject to time limits.

With respect to other measures

- The Customs marking requirement is a technical standard that defines the information to be printed on the package such as country of origin, weight, special symbols for dangerous substances, and the like. The objectives are not unreasonable, and can be less of a problem if a simple standard form is made

available to traders that they can attach to their packages. Perhaps a standard ASEAN package label can be agreed upon (recommendation c. above)

- Product characteristic requirements are technical specifications that the product must fulfil, usually for reasons of public health and safety, environmental and wildlife protection, national security, or prevention of deceptive practices. The objectives are again legitimate, and compliance is usually done through certification by an authorized body. The process will be enhanced if certifying bodies across ASEAN are recognized by all members for certificates to be immediately accepted at the border (recommendation d. above).
- The fixed time period for the settlement of import payments is a finance measure that is also within reason, depending on how long or short it actually is in each country. For unrealistically short periods, businesses could meet with finance officials to bargain for flexibility.

3.1.2. Services

The ranking of barriers in the services sector from the Business survey are classified under the pertinent GATS mode of supply to better appreciate their impact. These are mode 1 or cross-border supply (CBS), mode 2 or consumption abroad (CA), mode 3 or commercial presence (CP), and mode 4 or movement of natural persons (MNP). Cross-border supply barriers would be equivalent to border procedures in the goods sector. Consumption abroad does not apply to any of the barriers under consideration. Barriers that were not specific to a single mode were labeled “all”.

The type of services trade barrier from Hoekman and Braga (1997) was also indicated separately, consisting of quantitative restrictions (Q), price-based instruments (P), standards, licensing, and procurement (S), and discriminatory access to distribution networks (D). This typology roughly corresponds to the one for goods.

Table 4 is the summary list of barriers affecting all priority services sectors together, using results from the Business Survey.

Table 4. Ranking of Border Barriers in the Priority Services Sectors from the Business Survey

RANKING OF BARRIERS BASED ON INCIDENCE	Mode of supply	Type	Incidence (52%+)	Seriousness
License is required to operate in the market	CP	S	78	3.51
Period of license validity is restricted	CP	S	70	3.31
Quality standards are imposed	all	S	59	3.02
Unofficial facilitation fees are requested for issuance of forms, licenses, etc.	CP	S	57	3.30
Unofficial facilitation fees are paid for issuance of forms, licenses, etc.	CP	S	55	2.95
Laws and regulations are not up to date	All	All	56	3.00
Enforcement of rules and regulations is unpredictable	All	All,	53	3.20
RANKING OF BARRIERS BASED ON SERIOUSNESS	**Mode of supply**	**Type**	**Incidence**	**Seriousness (3.37+)**
Additional or higher excise tax imposed on products of non-national/non-resident companies	CBS	P	31	3.61
License is required to operate in the market	CP	S	78	3.51
Other financial measures: higher license or user fees for non-resident or foreign companies	CBS	P	34	3.50
Restrictions on temporary intra-firm transfer of tools of the trade	CP	D	29	3.50
Limits on the geographic market or market segments for locally established foreign suppliers	CP	Q	29	3.40
Lengthy visa/work permit procedures	MNP	S	36	3.38
Regulatory decisions are not participatory	all	All	47	3.37

The most common as well as most serious barrier is the operator's licensing requirement. Unofficial fees for the issuance of forms and licenses also affect the majority of respondents together with general barriers such as quality standards, outdated laws and regulations, and unpredictable enforcement. These mainly affect commercial presence, i.e. where the service is supplied through the movement of a commercial organization to the consumer's country of residence.

On the basis of seriousness, the top barriers relate to all modes of supply and are of varied types, led by high excise taxes on products of non-residents and user fees charged to non-residents which affect cross-border supply. These are price based policies.

Restrictions on the intra-firm transfer of tools of trade and limits to the geographic market for locally established foreign suppliers both relate to commercial presence. Lengthy visa/work permit procedures restrain the movement of natural persons. Non-participatory decision-making on regulations affects all modes of supply.

The Logistics survey covered a wider range of questions relative to the Business survey, to include Customs procedures, which affect the capacity of logistics providers to supply their services. The results presented in Table 5 underscore the importance of such border procedures, as they outweighed the other types of barriers in terms of incidence and significance.

In summary, Customs procedures turned out to be the most pervasive as well as critically significant, in particular, time consuming document requirements. Most of the significant barriers restrict cross-border supply and take place at Customs, notably burdensome inspection, varying classification systems, lack of border crossing coordination with regional neighbours, inefficiency of inbound clearance processes, aside from the absence of adequate warehouse and specialized storage facilities. Barriers to commercial presence follow as the next most significant, such as limits on equipment usage by road transport operators or discriminatory licensing requirements.

Table 5. Ranking of Barriers to Logistics Services from the Logistics Survey

RANKING OF BARRIERS BASED ON INCIDENCE	Mode of supply	Type	Incidence (26%+)	Significance (Mode)
Time consuming documentation requirements	CBS	Customs	46	6
Foreign ownership regulations: limit foreign investment such as on the basis of economic needs or capacity tests, form of establishment	CP	S	41	4
Road transport-specific barriers: limits on fleet size and hours of operation	CP	Q	34	5
Malpractices e.g. facilitation fees	All	P	33	4
Different classification of goods in different countries	CBS	Customs	32	6
Maritime-specific barriers: inefficient ports i.e. inability to handle large cargo volume	CBS	D	29	4
RANKING OF BARRIERS BASED ON SIGNIFICANCE	Mode of supply	Type	Incidence	Significance (Mode) 4.6
Time consuming documentation requirements	CBS	Customs	46	6
Burdensome inspection requirements	CBS	Customs	23	6
Different classification of goods in different countries	CBS	Customs	32	6
Lack of border crossing coordination with regional neighbours	CBS	Customs	19	5
Inefficiency of inbound clearance process	CBS	Customs	15	5
Maritime-specific barriers: directional imbalance	CBS		13	5
Maritime-specific barriers: absence of adequate warehouse and specialized storage facilities	CBS	D	13	5
Road transport-specific barriers: limits on equipment usage	CP	Q	23	5
Road transport-specific barriers: limits on fleet size and hours of operation	CP	Q	34	5
Arbitrary independent rulings	CBS	Customs	14	4
Volatility in border traffic	CBS		10	4
Multiple uncoordinated offices	CBS	Customs	12	4
Improper penalties	CBS	Customs	11	4
Other Customs-related barriers	CBS	Customs	5	4
Foreign ownership regulations: limit foreign investment such as on the basis of economic needs or capacity tests, form of establishment	CP	S	41	4
Discriminatory licensing requirements; variation across locations	CP	S	18	4
Maritime-specific barriers: inefficient ports i.e. inability to handle large cargo volume	CBS	D	29	4
Aviation-specific barriers: access to cargo handling and storage and warehousing facilities	CBS	D	22	4
Aviation-specific barriers: cabotage regulations that restrict the supply of internal point-to-point transport services to domestic carriers	CBS	D	13	4
Aviation-specific barriers: limited lift capacity and directional imbalance	CBS		11	4
Malpractices e.g. facilitation fees	All	P	33	4

4. Logistics Sector Policy[7]

Logistics performance is a critical component of the quality of trade facilitation. It is defined (Hollweg and Wong, 2009) as

> "the part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet consumers' requirements" (de Souza et al 2007).

Hollweg and Wong argue that efficient delivery of logistics services is the ability to move goods expeditiously, reliably and at low cost. A competitive and efficient logistics sector is vital for all economies and is an imperative component of trade. In the logistics industry, time is money. The costs of delays are high and ultimately passed on to the consumers. Government restrictions imposed on logistics services providers (LSPs) can adversely affect the price, reliability and quality of these services, and are considered restrictions to trade. It is the time as much as the cost of complying with all the rules and regulations that matters.

Logistics also features in various ASEAN scorecards for integration, for example, but not with sufficient detail to help develop an operational implementation method. Past studies have explored the regulatory performance within specific logistics sub-sectors such as maritime and aviation but for the first time in this project, a measure of the regulatory index of the entire logistics sector has been developed. The logistics sector restrictiveness index groups the types of restrictions under six primary headings: customs, investment, movement of people, and sector-specific restrictions for maritime, aviation, and road transport. The full list of restriction categories used in the construction of the restrictiveness index is presented in Table 6.

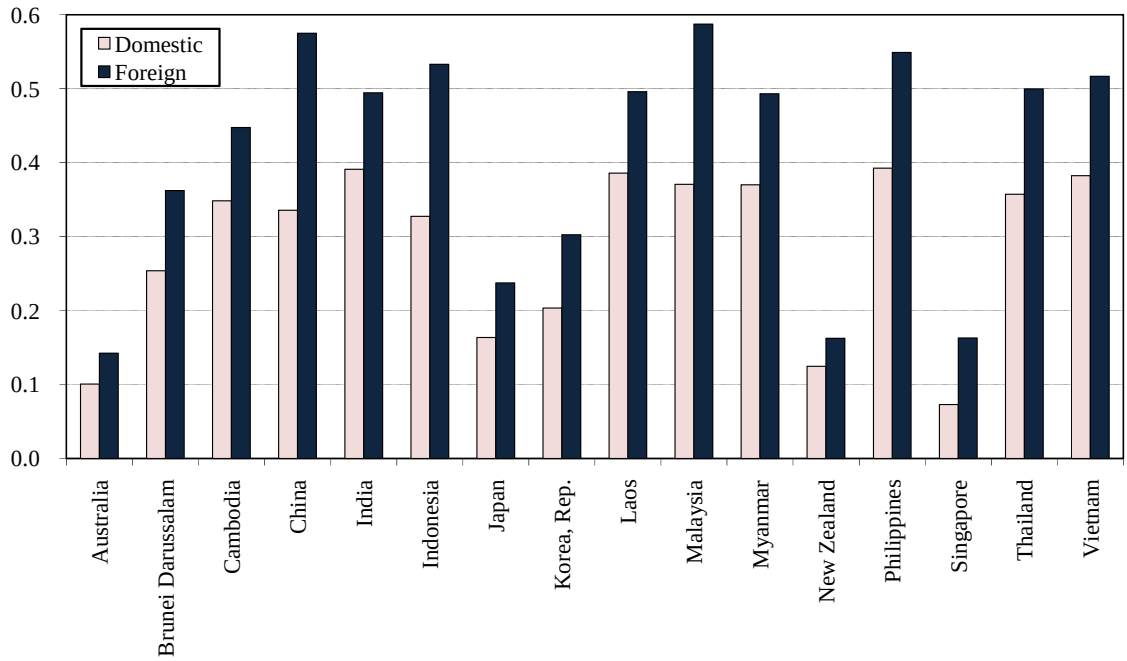
[7] The following is an extract from the summary section of the background paper by Hollweg and Wong.

Table 6. Components of the Logistics Restrictiveness Index

Logistics sector restrictiveness index					
Customs •Customs documents •Customs signatures •Import licensing •Local language •Customs inspections •Import restrictions •Customs Electronic Data Interchange •Harmonized Commodity Description and Coding System •Possibility of a review •Customs operating hours •Customs brokerage services •Customs clearance •Customs procedures time •Customs charges or fees •Improper penalties or fees •Discriminatory fees or inspection practices •DeMinimis level	**Investment** •Commercial presence •Foreign equity participation •Licensing •Discriminatory licensing •Factors affecting investment	**Movement of People** •Licensing requirements on management •Movement of people – Permanent •Movement of people – Temporary •Local employment requirements •Difficulty in firing	**Maritime Transport** •Cabotage restrictions •Cargo reservation •Cargo handling •Storage and warehousing •Container station and depot services •General competition legislation •Monopolized handling of port-related services	**Aviation Transport** •Take-off and landing slots •Ground-handling •Cargo-handling and warehousing •Foreign investment in domestic airlines •Open skies agreement •Seventh freedom rights •Cabotage restrictions •Multiple designation on international routes	**Road Transport** •Equipment usage •Hours of operation

Results are shown in Figure 1 from Hollweg and Wong (2009). Higher scores show higher levels of restriction and 'domestic' measures apply to all entrants while 'foreign' only to foreign providers (and is the sum of measures applying to all entrants plus additional conditions applying to foreign suppliers).

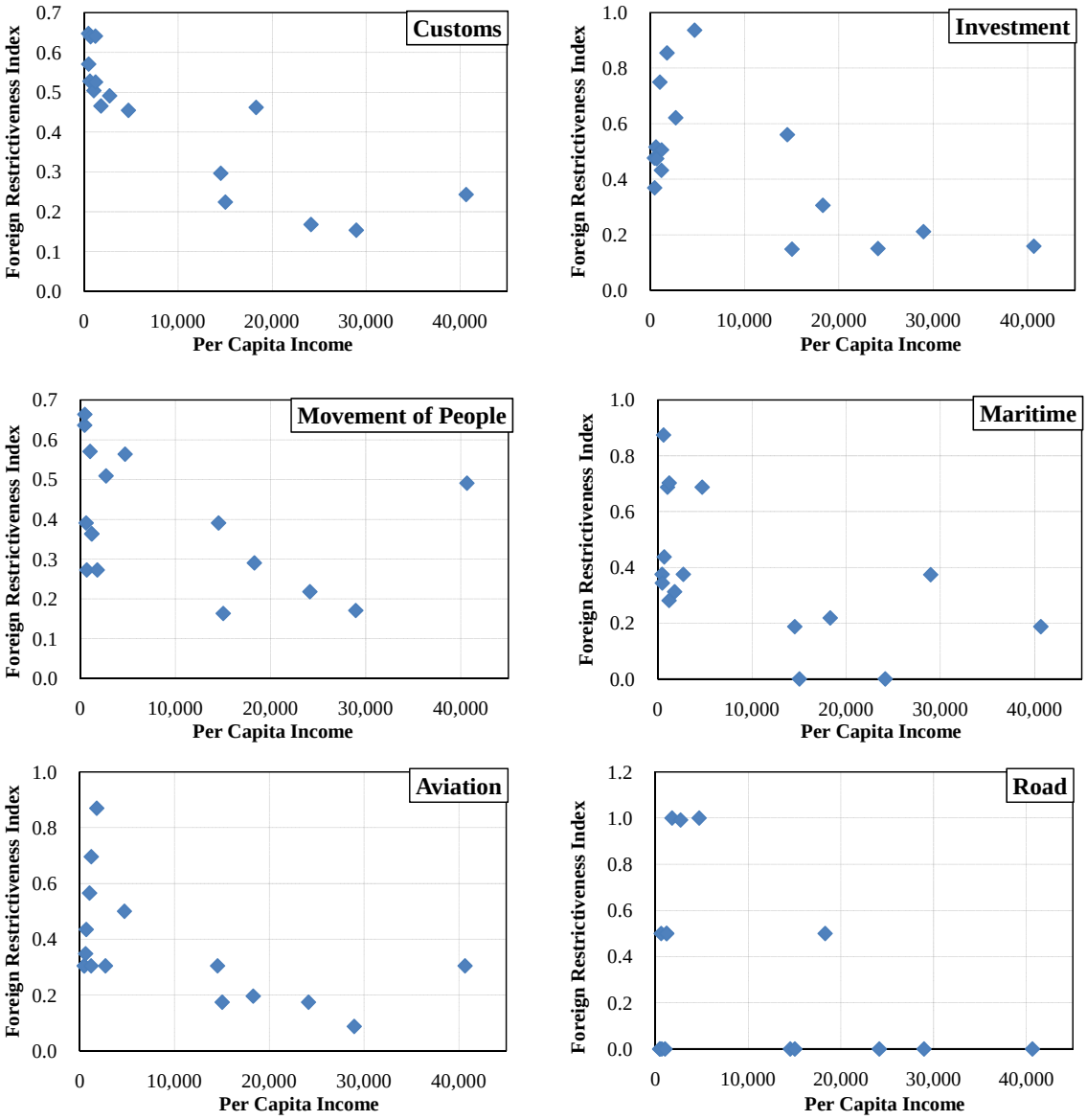
Figure 1. Logistics Restrictiveness Index Score (0-1)



Large differences exist in the regulatory environment for logistics of the ASEAN+6 economies. Many of these economies are open to trade in logistics services, while others are relatively restrictive. The average score for the domestic index is 0.29 and for the foreign index it is 0.41. Vietnam, Laos, India and the Philippines have relatively high scores on the domestic index (over 30% above the mean) and as do Indonesia, Philippines, China, and Malaysia on the foreign index.

Figure 2 provides additional detail in terms of the 6 components of the overall index (these are the foreign restrictiveness scores).

Figure 2. Logistics Index Component Scores



Generally the degree of restrictiveness falls as per capita income rises, but even at lower levels of income there is a range of values of the scores. In some sectors there are clear ideas, including among ASEAN members

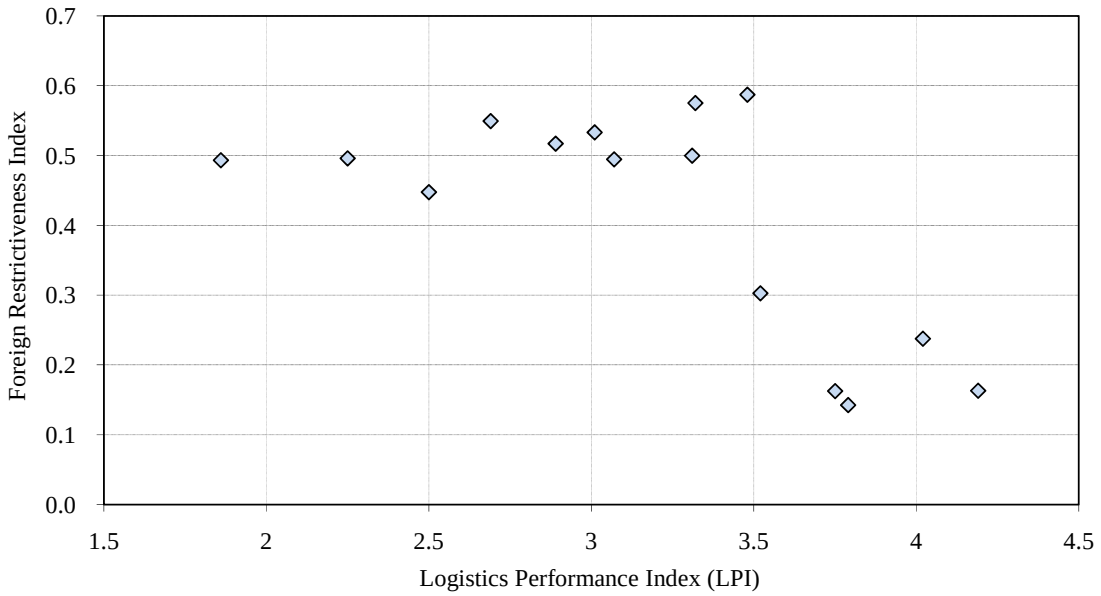
- Malaysia on investment
- Indonesia, Vietnam, Philippines and Malaysia on maritime services
- Indonesia, Philippines and Malaysia on aviation
- Thailand and Malaysia on road transport.

There is less variation on matters related to the movement of people, and customs we discuss in more detail below.

This study extended this analysis by using the restrictiveness index to see what relationships may exist between other indicators of logistics performance. This section assesses whether relationships exist between the performance of the logistics sector, as captured by the World Bank's LPI (Arvis and others, 2007), and the regulatory environment, as captured by the logistics sector restrictiveness index constructed in this study. Since the primary focus of this paper is on the regulatory barriers to international trade in logistics services, the foreign restrictiveness index is used in the analysis.

Data in Figure 3 support a general relationship exists between the two indices. Relatively high levels of the index values are associated with varying levels of performance in the low range of LPI values (which may reflect the presence of other constraints, such as features of the local infrastructure), but once the LPI scores reaches a value of 3, then a negative relationship with the index is observed. Less restrictive regimes are associated with better assessments of performance. The interaction of policy with other characteristics of the economy is a topic for further work.

Figure 3. Logistics Performance Index vs. Foreign Restrictiveness Index



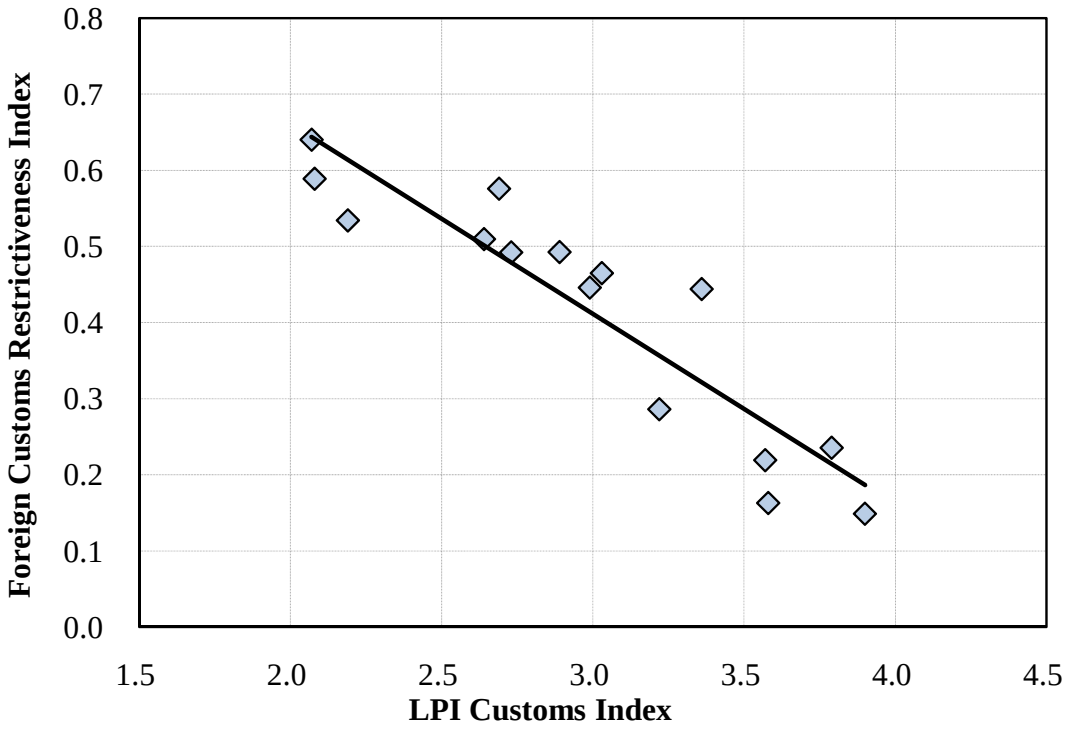
Customs regulations are considered to pose the greatest barrier to trade in logistics services (see 3.2.2). Furthermore, the customs component of this study has the greatest number of identified trade restrictions. A separate customs restrictiveness index was constructed. The customs restriction categories and their appropriate weights for the foreign and domestic indices are presented in Table 6. Figure 4 plots the customs component of the LPI against the foreign customs restrictiveness index.

Table 6. Customs Restrictiveness Index Weights

Restriction category	Foreign index weightings[a]	Domestic index weightings[a]
Restrictions on customs		
Customs documents	0.0889	0.0889
Customs signatures	0.0889	0.0889
Import licensing	0.0889	0.0889
Local language	0.0148	0.0148
Customs inspections	0.0889	0.0889
Import restrictions	0.0148	0.0148
Customs Electronic Data Interchange (EDI)	0.0889	0.0889
Harmonized Commodity Description and Coding System (HS)	0.0815	0.0815
Possibility of a review for imports	0.0741	0.0741
Customs operating hours	0.0444	0.0444
Customs brokerage services	0.0296	0.0296
Customs clearance	0.0741	0.0741
Customs procedures time	0.0741	0.0741
Customs charges or fees	0.0444	0.0444
Improper penalties or fees	0.0593	0.0593
Discriminatory fees or inspection practices	0.0444	n.a.
Total weighting or highest possible score	**1.00**	**0.9556**

Again, a strong correlation exists between the customs components of the LPI and the newly constructed foreign customs restrictiveness index of this study. The less customs restrictions faced by LSPs, then the better the perceived customs performance within that economy. The more recent members of ASEAN as well as Indonesia show relatively high scores on customs matters.

Figure 4. LPI Customs Index vs. Foreign Customs Restrictiveness Index



Indicators of logistics performance are available and are also worth monitoring (such as the World Bank's LPI). However, the underlying determinant of that performance according to this study is the policy environment. The ASEAN scorecard refers to 'a conducive policy environment' and for this reason it is recommended to use the index developed in this project as a template for monitoring the change in, as well as benchmarking, logistics sector policy in ASEAN.

5. CIF/FOB Ratios[8]

The project developed two measures of 'trade costs'. The first version, the **Unadjusted Index**, is based on the raw Australian cif/fob import data. Using Singapore in 2007 as the benchmark (i.e. the Index equals 100), the values from 1990-2007

[8] The following is an extract from the summary section of the background paper by Sourdin and Pomfret.

indicate the falling trend of trade costs in ASEAN countries, which can broadly be seen as convergence to regional best practice. The pattern is clearest for the five original ASEAN members and for Vietnam. For the four smaller trading nations, the index is more volatile and less valuable.

The Index provides a useful objective guide to trade costs, which can be used to monitor whether a country's trade costs are falling over time and whether they are falling relative to other countries' trade costs. However, if it is to be used as a policy guide, it is desirable to filter out changes in the Index which are not directly policy-related.

Some determinants of trade costs, such as distance, are constant for each country over time, but the research shows that commodity effects are also significant, so we should control for the extent to which the Index may be reflecting changes in a country's trade costs to due to commodity composition rather than trade facilitation measures.

The second version, the **Adjusted Index**, controls for commodity composition by running a regression with exporter-commodity fixed effects. The estimated trade costs capture ad valorem trade costs for a given commodity composition. The background paper explains the methodology used to create this index.

Compared to the Unadjusted Index, which is a simple trade-weighted index of trade costs, the estimates controlling for compositional change reveal a more rapid decline in transport costs over time from the ASEAN member countries relative to all countries in the world. Figure 5 shows results for a sample of ASEAN countries in which trade costs have fallen significantly since 1990.

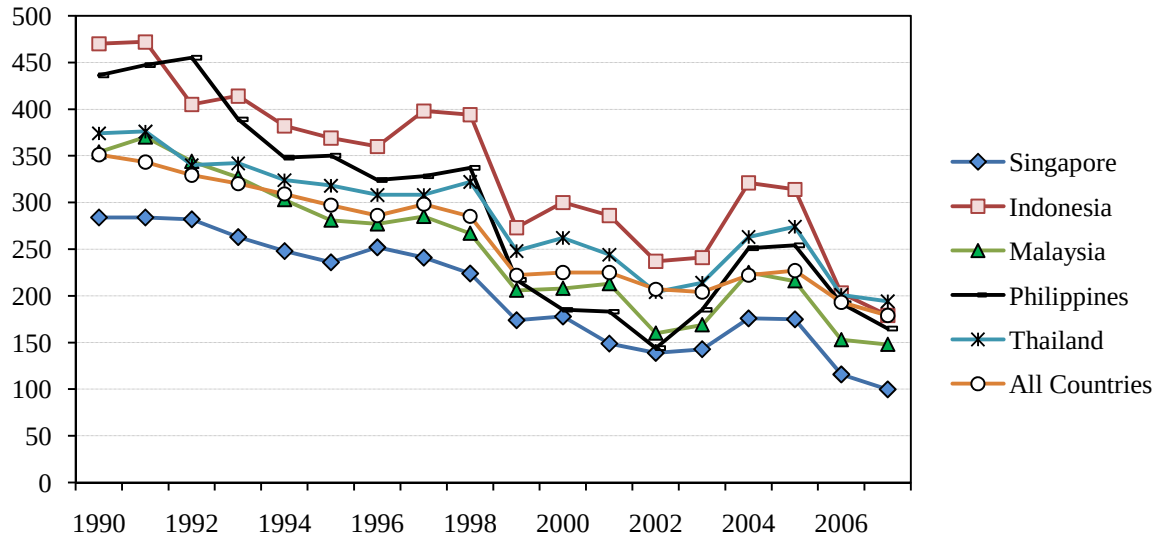
The Australian cif/fob measures are an impartial guide to the trade costs of each bilateral trading partner, and the provide good benchmark for ASEAN because it is a large trading partner whose cities are roughly equidistant from most ASEAN ports of export.

As a robustness test of the characteristics of the Australian data relative to ASEAN trade costs, a similar exercise could be conducted using other countries' import data, although the currently available options are limited.

At present comparable cif-fob data only exist for New Zealand, the USA, Argentina, Brazil and some other Latin American countries. Each of these, with the

possible exception of the USA, has potential problems with the small volumes of bilateral trade which may make bilateral trade costs volatile. If similar data were to become available for Japan, that would be an excellent source.

Figure 5. Adjusted Cif/Fob Ratio (Singapore 2007 = 100)



The index has limitations. It cannot match all definitions of trade facilitation, and it cannot provide evidence on specific elements of trade facilitation. The cif-fob measure does not include some behind-the-border reductions in trade costs and it includes elements of reduced transport costs that may not be included in some definitions of trade facilitation. The greatest shortcoming of the Index is that, by focussing only on dollar values of trade costs, it does not capture trade costs in the form of time.

An advantage of this Index is that it provides a useful single-number measure of ASEAN countries' trade costs. There is no obvious bias from using trade with Australia as the basis for the Index. Once set up the Index has the advantage of being easy to update from year to year given the timeliness with which the Australian Bureau of Statistics releases its trade data, and to extend the country coverage, e.g. if new members accede to ASEAN or if it is desirable to cover ASEAN+3 or all East Asia Summit countries.

In summary, the Index provides a single soundly based indicator of each country's trade costs in each year that can be easily updated. It is recommended here that a process be established for doing so.

6. Summary

Suggestions for the scorecard are therefore to reinforce commitments to, or add commitments to, and then monitor the implementation of,

a. National Single Windows as a prerequisite to the ASEAN Single Window
b. a web-based databank of trade regulations that is regularly updated
c. streamlined and harmonized procedures
    - starting with the Customs declaration (or 'SAD') form
d. mutually recognized technical standards

In terms of performance measures it is recommended to

- have ASEAN Customs authorities report regularly and in a comparable manner on clearance time through customs, noting the target of 30 minutes
- maintain and report the Hollweg-Wong logistics restrictiveness index for all countries in each year
- recalculate the adjusted Sourdin-Pomfret cif/fob ratio for all countries each year using Australian import data while at the same time examining
    - the opportunities to use import data of other ASEAN trading partners for this purpose eg Japan
    - the scope to use ASEAN export data for this purpose, and if not develop the capacity to collect cif/fob data for intra-ASEAN trade.

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CHAPTER 4

Investment Climate Study on ASEAN Member Countries

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This paper analyzes the FDI environment of the ASEAN countries with a view that the identification of impediments to FDI would provide useful information to policy makers interested in attracting FDI. The coverage of impediments to FDI in this study includes not only the FDI policies but also the implementation and enforcement of these policies. As for the openness of FDI policies, we find wide variations among the ASEAN countries. Most serious impediments are found to be the lack of transparency and complicated/delayed processing in screening and appraisal procedures regarding FDI application. Our findings indicate the need for further liberalization of FDI policies and promotion of facilitation measures in order to successfully attract FDI. In order to achieve these goals, we make several suggestions. First, to promote FDI policy liberalization, the ASEAN countries should use various existing frameworks, such as WTO/GATT's TRIMs agreement, BITs, and FTAs. In particular, ASEAN should use the ASEAN Comprehensive Investment Agreement. Second, to overcome obstacles concerning FDI facilitation, the ASEAN countries should actively use various cooperation programs with developed countries to improve human resources engaged in the implementation and enforcement of FDI policies. Possible multilateral and regional sources of technical assistance in this area are the UNCTAD, OECD, and ERIA. Third, monitoring of the implementation of FDI liberalization and facilitation measures has to be emphasized to achieve a freer FDI environment. In this regard, a monitoring mechanism should be established in ASEAN or in ERIA.

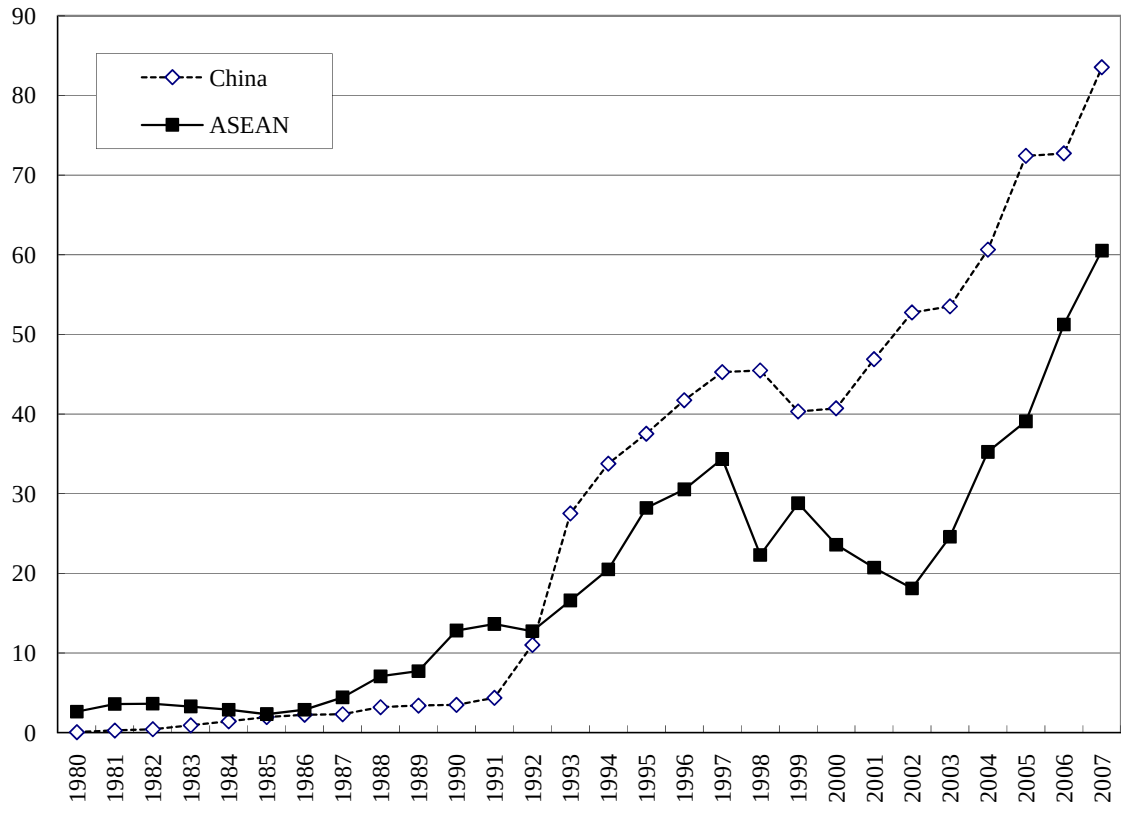
1. Introduction

Attracting foreign direct investment (FDI) has become an important policy priority for the government officials of many countries, as FDI can contribute to economic development and growth of the FDI recipient countries. Various channels have been identified for FDI's possible contribution to economic development/growth. FDI can bring not only financial resources for fixed investment but also technologies and managerial know-how, which play crucial roles in promoting economic growth of the recipient countries. Moreover, FDI enables the recipient countries to be engaged in various networks such as production, sales, procurement, and information networks of foreign multinational corporations (MNCs), major suppliers of FDI, resulting in the improvement of efficiency in production and marketing. Indeed, in East Asia FDI has contributed to enabling East Asian countries to achieve high economic growth through these factors.

The members of the Association of Southeast Asian Nations (ASEAN) have been quite successful in attracting FDI in recent years (Figure 1.1). After reaching a trough in 2002, FDI inflows to ASEAN have continued to rise noticeably. In five years from 2002 to 2007 FDI inflows to ASEAN more than tripled from $18 billion to $61 billion. Although ASEAN members have been experiencing favorable performance in attracting FDI, their performance has been outperformed by China. After being surpassed by China in the early 1990s in terms of FDI inflows, ASEAN has not been able to regain the commanding position it had in the 1980s. Having discussed FDI inflows to the ASEAN

members as a whole, one should observe wide variations in FDI inflows to individual ASEAN members (Table 1.1). As can be seen from the cumulative FDI inflows from 1990 to 2007, Singapore has been by far the most successful ASEAN member in attracting FDI inflows. Singapore is followed by Thailand and Malaysia, although their respective levels of FDI inflows were significantly smaller compared to the level registered by Singapore. By contrast to these countries, Lao PDR, Cambodia and Myanmar have not been successful in attracting FDI.

Figure 1.1. FDI Inflows to ASEAN and China ($ Billions)



Source: UNCTAD, Foreign Direct Investment Database.

Table 1.1. Foreign Direct Investment Inflows to ASEAN and China by Country ($ million)

Countries	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	1990-2007
Brunei	7	6	7	8	6	583	654	702	573	748	549	526	1,035	3,375	334	289	434	184	10,019
Cambodia	0	0	33	54	69	151	294	168	243	232	149	149	145	84	131	381	483	867	3,634
Indonesia	1,092	1,482	1,799	2,003	2,191	4,419	6,245	4,729	-207	-1,838	-4,495	-2,926	232	-507	1,896	8,337	4,914	6,928	36,294
Lao PDR	6	7	8	36	59	88	128	86	45	52	34	24	25	19	17	28	187	324	1,173
Malaysia	2,611	4,043	5,138	5,741	4,581	5,815	7,297	6,323	2,714	3,895	3,788	554	3,203	2,473	4,624	3,967	6,048	8,403	81,218
Myanmar	225	235	149	92	135	318	581	879	684	304	208	192	191	291	251	236	143	428	5,541
Philippines	550	556	776	1,238	1,591	1,459	1,520	1,249	1,752	1,247	2,240	195	1,542	491	688	1,854	2,921	2,928	24,797
Singapore	5,575	4,887	2,204	4,686	8,550	11,535	9,682	13,753	7,314	16,578	16,484	15,621	7,200	11,664	19,828	13,930	24,743	24,137	218,373
Thailand	2,575	2,049	2,151	1,807	1,369	2,070	2,338	3,882	7,492	6,091	3,349	5,061	3,335	5,235	5,862	8,048	9,010	9,575	81,300
Vietnam	180	375	474	926	1,945	1,780	1,803	2,587	1,700	1,484	1,289	1,300	1,200	1,450	1,610	2,021	2,360	6,739	31,224
ASEAN	12,821	13,640	12,739	16,591	20,496	28,218	30,541	34,358	22,310	28,793	23,595	20,697	18,109	24,576	35,242	39,091	51,243	60,513	493,573
China	3,487	4,366	11,008	27,515	33,767	37,521	41,726	45,257	45,463	40,319	40,715	46,878	52,743	53,505	60,630	72,406	72,715	83,521	773,539

Source: UNCTAD, Foreign Direct Investment Database.

Various factors influence the attractiveness of the host country for FDI inflows[1]. Political and economic stability is found to play an important role in attracting FDI. Political and economic instability discourages MNCs to undertake FDI as it increases the risk of losing invested assets. Large market size, favorable future economic prospects, availability of educated, well-disciplined, low-wage labor, well-developed soft and hard infrastructure are also attractive features of the host country for attracting FDI. Having discussed important elements in attracting FDI, one of the most important factors is a country's FDI policy regime. A country with many attractive features such as large market size cannot attract FDI if the country imposes restrictions on FDI inflows. Even if the FDI regime is open, a country has difficulty in attracting FDI if the regime lacks transparency or stability. These observations indicate the importance of the FDI policy regime as well as the FDI policy environment in determining the attractiveness of a country for FDI inflows.

In light of the observation that the FDI policy regime and FDI policy environment play important roles in determining FDI inflows, this study examines and evaluates the restrictiveness/openness of the FDI policy regime and environment for ASEAN countries. We adopt two approaches to achieve the objectives. In order to evaluate the FDI policy regime, we examine FDI policies which are documented in legal documents such as FDI Laws from the following six aspects, market access or right of establishment, national treatment, screening and approval procedure, restrictions on boards of directors as well as foreign investors, and performance requirement. To shed more light on the FDI policy

[1] For example, see Urata (2006) for the determinants of FDI inflows in East Asian countries.

environment, we use the information on barriers to FDI available from the survey compiled by the Japan Machinery Center for Trade and Investment (JMC), (JMC survey hereinafter).[2] Use of the information provided by the companies would reveal the true impediments to FDI. It is indeed well known, especially in developing countries, that the existence of a law does not mean that the law is actually implemented and enforced. By conducting these two kinds of analysis, we should be able to discern the policy-related impediments to FDI in ASEAN countries.

It is hoped that our study will contribute to a deeper understanding of the FDI policy regimes and FDI policy environment of ASEAN countries and help them formulate FDI policy. The structure of the study is as follows. Section 2 reviews two comparative studies assessing the business environment of ASEAN and other countries, to set the stage for our analysis of their FDI policy regimes and environments. This review is expected to discern the business environment in ASEAN from the global perspective. Sections 3 and 4 focus on ASEAN countries. Section 3 examines FDI policy regimes by assessing the contents of legal frameworks, while section 4 examines FDI policy environments by assessing the information collected from the companies. Section 5 concludes the study by presenting policy recommendations.

[2] See section 3 for the detailed explanation of the JMC survey.

2. ASEAN's Business Environment from the Global Perspective

An assessment of business environment in ASEAN countries from the global perspectives provides useful information for understanding the problems/barriers concerning foreign direct investment. With this in mind, this section reviews the results of two studies by an international organization and a think-tank that have analyzed the business environment of a large number of countries. Specifically, we take up the following studies: *Doing Business Database* compiled by the World Bank (World Bank, 2009) and *Global Competitiveness Report* 2006-2007 and 2008-2009 published by the World Economic Forum (World Economic Forum, 2006 and 2009).

Table 2.1 (a), constructed from the *Doing Business Database*, presents the latest ranking of ease of doing business for the ASEAN10 economies. It highlights cases with rankings lower than the median of the of sample countries. While the overall rankings in 2009 are high for Singapore (1st out of 181), Thailand (13th), and Malaysia (20th), they are particularly low for new ASEAN members and Indonesia and the Philippines: Laos (165th), the Philippines (140th), Cambodia (135th), Indonesia (129th), and Viet Nam (92nd). When the overall rankings in 2009 are compared with those in 2005 (Table 2.1 (b)), they are more or less similar to each other.

Table 2.1. Ranking of Ease of Doing Business for ASEAN Economies

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietnam	Average (9)	Average (6)
(a) 2009											
Overall ranking (out of 181	88	135	129	165	20	140	1	13	92	87	66
Ranking for 10 factors											
Starting a business	130	169	171	92	75	155	10	44	108	106	94
Dealing with licenses	72	147	80	110	104	105	2	12	67	78	62
Employing workers	5	134	157	85	48	126	1	56	90	78	80
Registering property	177	108	107	159	81	97	16	5	37	87	57
Getting credit	109	68	109	145	1	123	5	68	43	75	58
Protecting investors	113	70	53	180	4	126	2	11	170	81	61
Paying taxes	35	24	116	113	21	129	5	82	140	74	82
Trading across borders	42	122	37	165	29	58	1	10	67	59	34
Enforcing contracts	157	136	140	111	59	114	14	25	42	89	66
Closing a business	35	181	139	181	54	151	2	46	124	101	86
(b) 2005											
Overall ranking (out of 175	n.a.	n.a.	131	n.a.	25	121	2	19	98	n.a.	66
Ranking for 10 factors											
Starting a business	n.a.	n.a.	161	n.a.	66	99	11	23	89	n.a.	75
Dealing with licenses	n.a.	n.a.	129	n.a.	134	112	10	6	28	n.a.	70
Employing workers	n.a.	n.a.	141	n.a.	37	118	4	46	137	n.a.	81
Registering property	n.a.	n.a.	118	n.a.	68	91	12	16	30	n.a.	56
Getting credit	n.a.	n.a.	76	n.a.	3	96	7	41	76	n.a.	50
Protecting investors	n.a.	n.a.	58	n.a.	3	151	2	33	170	n.a.	70
Paying taxes	n.a.	n.a.	129	n.a.	49	96	8	54	116	n.a.	75
Trading across borders	n.a.	n.a.	55	n.a.	41	61	2	97	68	n.a.	54
Enforcing contracts	n.a.	n.a.	144	n.a.	78	50	23	43	90	n.a.	71
Closing a business	n.a.	n.a.	126	n.a.	47	143	2	36	105	n.a.	77

Data source: World Bank (2009).

Notes: Average ranking is calculated for a comparison among 10 factors. Average (9) shows average ranking for nine countries, and average (6) shows average ranking for six countries that appear in both years, respectively.

The *Doing Business Database* evaluates the following 10 aspects of the business environment: i. starting a business, ii. dealing with licenses, iii. employing workers, iv. registering property, v. getting credit, vi. protecting investors, vii. paying taxes, ix. enforcing contracts, and x. closing a business. The problems that need to be solved vary among the ASEAN countries. For the ASEAN region as a whole, however, the most serious problems are in the areas of starting a business (106th on average) and closing a business (101st), for which their rankings are significantly lower than their overall average of 87th. On the other hand, interestingly, the ranking for trading across borders is much higher than other items for ASEAN: 59th on average for ASEAN9 and 34th for ASEAN6 in 2009. When the rankings in 2009 are compared with those in 2005, some items tend to improve while others worsen. In particular, relative evaluations for trading across borders drastically improved from 54th to 34th on average of ASEAN6 countries, while relative evaluations for starting a business significantly worsened from 75th to 94th. These relatively high and rapidly improving rankings for trade activities may reflect the recent efforts that ASEAN countries have made for trade liberalization and facilitation, particularly to create an ASEAN Economic Community (AEC) with a targeted year of 2015.[3]

The survey results in Table 2.2 reveal that the length of time required for starting a business and closing a business is too long; for instance, it takes 116 days for Brunei and 103 days for Laos to start a business. Many procedures are necessary, particularly for

[3] See Ishikawa, Shimizu, and JETRO (2009) for efforts made by ASEAN countries as a part of movements toward AEC to form national single windows (NSW) and ASEAN single windows (ASW), which are the sort of one-stop services for trade at the national and ASEAN-wide level, as well as other discussion on AEC.

starting a business and obtaining certain licenses, which may be due to the complexity and/or delays of procedures; more than 10 kinds of procedures are required to start a business in Brunei, the Philippines, Indonesia, and Vietnam, and more than 20 procedures are necessary to deal with licenses in Brunei, Malaysia, Lao PDR, the Philippines, and Cambodia. Costs expressed as percentage of income per capita to start a business/ dealing with licenses are also high in some countries; for example, Cambodia for starting a business and Vietnam, Indonesia, and Lao PDR for dealing with licenses. Moreover, high minimum capital levels discourage starting a business in countries such as Indonesia, Cambodia, and the Philippines. Furthermore, the degree of difficulties of hiring and firing workers seem to be extremely high for Indonesia, and firing costs are particularly troublesome; firing costs expressed as the number of weeks of wages are as high as 108 for Indonesia, 91 for the Philippines, and 87 for Vietnam in extreme cases.

Even where trading across borders has a relatively high ranking, there remains room for further improvement in terms of the number of days and costs required for export and import processes. For instance, reduction of costs for exports and imports is necessary particularly for Lao PDR, the Philippines, Vietnam, and Cambodia, and the reduction of time for export and import operations is expected mainly for Lao PDR, Cambodia, Indonesia, and Vietnam. To realize them requires the development of logistics-related infrastructure such as ports and roads and improved efficiency in customs clearance in addition to the reduction (and simplification) of tariffs and non-tariff measures (NTMs).

Table 2.2. Components of Ease of Doing Business and Their Evaluation for ASEAN Economies, 2009

		Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Singapore	Thailand	Vietam
Starting a Business	Procedures (number)	18	9	11	8	9	15	4	8	11
	Time (days)	116	85	76	103	13	52	4	33	50
	Cost (% of income per capita)	9	152	78	14	15	30	1	5	17
	Min. capital (% of income per capita)	0	44	74	0	0	6	0	0	0
Dealing with Licenses	Procedures (number)	32	23	18	24	25	24	11	11	13
	Time (days)	167	709	176	172	261	203	38	156	194
	Cost (% of income per capita)	5	64	221	172	8	90	21	9	313
Employing Workers	Difficulty of Hiring Index (0-100)	0	44	61	11	0	56	0	33	11
	Rigidity of Hours Index (0-100)	20	60	0	40	0	20	0	20	20
	Difficulty of Firing Index (0-100)	0	30	60	50	30	30	0	0	40
	Rigidity of Employment Index (0-100)	7	45	40	34	10	35	0	18	24
	Firing costs (weeks of wages)	4	39	108	19	75	91	4	54	87
Registering Property	Procedures (number)	..	7	6	9	5	8	3	2	4
	Time (days)	..	56	39	135	144	33	9	2	57
	Cost (% of property value)	..	4	11	4	3	4	3	1	1
Getting Credit	Legal Rights Index (0-10)	7	9	3	4	10	3	10	4	7
	Credit Information Index (0-6)	0	0	4	0	6	3	4	5	4
	Public registry coverage (% adults)	0	0	26	0	53	0	0	0	13
	Private bureau coverage (% adults)	0	0	0	0	..	5	48	32	0
Protecting Investors	Disclosure Index (0-10)	3	5	9	0	10	2	10	10	6
	Director Liability Index (0-10)	2	9	5	3	9	2	9	7	0
	Shareholder Suits Index (0-10)	8	2	3	2	7	8	9	6	2
	Investor Protection Index (0-10)	4	5	6	2	9	4	9	8	3
Paying Taxes	Payments (number)	15	27	51	34	12	47	5	23	32
	Time (hours)	144	137	266	560	145	195	84	264	1050
	Profit tax (%)	32	19	27	25	17	26	8	29	21
	Labor tax and contributions (%)	6	0	11	6	16	10	15	6	19
	Other taxes (%)	0	4	0	3	2	14	5	4	0
	Total tax rate (% profit)	37	23	37	34	35	51	28	38	40
Trading Across Borde	Documents for export (number)	6	11	5	9	7	8	4	4	6
	Time for export (days)	28	22	21	50	18	16	5	14	24
	Cost to export (US$ per container)	630	732	704	1860	450	816	456	625	734
	Documents for import (number)	6	11	6	10	7	8	4	3	8
	Time for import (days)	19	30	27	50	14	16	3	13	23
	Cost to import (US$ per container)	708	872	660	2040	450	819	439	795	901
Enforcing Contracts	Procedures (number)	58	44	39	42	30	37	21	35	34
	Time (days)	540	401	570	443	600	842	150	479	295
	Cost (% of debt)	37	103	123	32	28	26	26	14	31
Closing a Business	Time (years)	3	..	6	..	2	6	1	3	5
	Cost (% of estate)	4	..	18	..	15	38	1	36	15
	Recovery rate (cents on the dollar)	47	0	14	0	39	4	91	42	18

Data source: World Bank (2009).

Table 2.3 presents global competitiveness index (GCI) by country and by category, obtained from the *Global Competitiveness Report*, highlighting cases with rankings lower than the half of the number of sample countries. The figures in the upper portion of Table 2.3 (a)/(b) indicate the ranking of a country among 134/125 countries for the items concerned (low figures indicate high rankings), while the figures in the lower portion of the table indicate the score (high numbers indicate high scores with 7 as the full score). The GCI evaluates the competitiveness of countries based on three broad categories with two to six sub-categories. The three broad categories are basic requirements, efficiency enhancers, and innovation and sophistication factors. The sub-categories are further broken down into the much more precise factors shown in Table A.2.1 in the Appendix. [4] Although the degree of competitiveness of a specific country may not directly influence the investment activities of firms, competitiveness would have a positive impact on investment decisions. Firms prefer competitive countries to less competitive ones for the place of their operations in the global market when considering investment locations.

[4] Factors considered as disadvantages are those ranked below 10 for Singapore with an overall ranking in the top 10 economies, those ranked equal to or lower than the economy's overall ranking for Brunei, Malaysia, Thailand, and Indonesia with an overall ranking from 11 to 50, and those ranked lower than 50 for Cambodia, Indonesia, the Philippines, and Viet Nam with an overall ranking lower than 51.

Table 2.3. The Global Competitiveness Index (GCI) for ASEAN Economies

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Average (8)	Average (6)
(a) 2008-2009										
Ranking (out of 134 economies)										
GCI 2008-2009	**39**	**109**	**55**	**21**	**71**	**5**	**34**	**70**	**51**	**43**
Basic requirements	**29**	**107**	**76**	**25**	**85**	**3**	**43**	**79**	**56**	**52**
Institutions	41	103	68	30	105	1	57	71	60	55
Infrastructure	39	97	86	23	92	4	29	93	58	55
Macroeconomy	2	105	72	38	53	21	41	70	50	49
Health and primary education	47	111	87	23	90	16	58	84	65	60
Efficiency enhancers	**77**	**115**	**49**	**24**	**68**	**2**	**36**	**73**	**56**	**42**
Higher education and training	69	127	71	35	60	8	51	98	65	54
Goods market efficiency	91	88	37	23	81	1	46	70	55	43
Labor market efficiency	16	33	43	19	101	2	13	47	34	38
Financial market sophistication	75	130	57	16	78	2	49	80	61	47
Technological readiness	54	123	88	34	70	7	66	79	65	57
Market size	116	95	17	28	34	41	21	40	49	30
Innovation and sophistication factors	**87**	**112**	**45**	**23**	**67**	**11**	**46**	**71**	**58**	**44**
Business sophistication	89	110	39	22	57	14	46	84	58	44
Innovation	91	112	47	22	76	11	54	57	59	45
Score (out of 7)										
GCI 2008-2009	**4.5**	**3.5**	**4.3**	**5.0**	**4.1**	**5.5**	**4.6**	**4.1**	**4.5**	**4.6**
Basic Requirements	**5.3**	**3.7**	**4.3**	**5.4**	**4.2**	**6.1**	**5.0**	**4.2**	**4.8**	**4.9**
Institutions	4.7	3.4	3.9	4.9	3.4	6.2	4.2	3.9	4.3	4.4
Infrastructure	4.4	2.8	3.0	5.3	2.9	6.4	4.7	2.9	4.1	4.2
Macroeconomy	6.3	4.4	4.9	5.4	5.2	5.7	5.4	4.9	5.3	5.3
Health and primary education	5.8	4.3	5.3	6.1	5.2	6.2	5.6	5.3	5.5	5.6
Efficiency enhancers	**3.8**	**3.3**	**4.3**	**4.8**	**4.0**	**5.5**	**4.5**	**3.9**	**4.3**	**4.5**
Higher education and training	3.9	2.7	3.9	4.6	4.1	5.6	4.3	3.4	4.1	4.3
Goods market efficiency	3.9	4.0	4.7	5.0	4.1	5.8	4.5	4.2	4.5	4.7
Labor market efficiency	4.9	4.7	4.6	4.9	4.1	5.7	5.0	4.5	4.8	4.8
Financial market sophistication	4.1	3.0	4.5	5.4	4.1	5.9	4.6	4.1	4.5	4.8
Technological readiness	3.6	2.4	3.0	4.4	3.3	5.6	3.4	3.1	3.6	3.8
Market size	2.4	3.0	5.1	4.7	4.5	4.4	4.9	4.4	4.2	4.7
Innovation and sophistication factors	**3.3**	**3.0**	**4.0**	**4.6**	**3.7**	**5.2**	**3.9**	**3.6**	**3.9**	**4.2**
Business sophistication	3.8	3.4	4.5	5.0	4.3	5.3	4.4	3.8	4.3	4.6
Innovation	2.9	2.7	3.4	4.3	3.0	5.1	3.4	3.3	3.5	3.8

	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Average (6)
(b) 2006-2007							
Ranking (out of 125 economies)							
GCI 2006-2007	**50**	**26**	**71**	**5**	**35**	**77**	**44**
Basic requirements	**68**	**24**	**84**	**2**	**38**	**71**	**48**
Institutions	52	18	88	4	40	74	46
Infrastructure	89	23	88	6	38	83	55
Macroeconomy	57	31	62	8	28	53	40
Health and primary education	72	42	82	20	84	56	59
Efficiency enhancers	**50**	**26**	**63**	**3**	**43**	**83**	**45**
Higher education and training	53	32	63	10	42	90	48
Market efficiency	27	9	57	4	31	73	34
Technological readiness	72	28	61	2	48	85	49
Innovation factors	**41**	**22**	**66**	**15**	**36**	**81**	**44**
Business sophistication	42	20	59	23	40	86	45
Innovation	37	21	79	9	33	75	42
Score (out of 7)							
GCI 2006-2007	**4.3**	**5.1**	**4.0**	**5.6**	**4.6**	**3.9**	**4.6**
Basic Requirements	**4.4**	**5.4**	**4.2**	**6.1**	**5.0**	**4.4**	**4.9**
Institutions	4.0	5.1	3.4	5.9	4.4	3.6	4.4
Infrastructure	2.7	5.1	2.7	6.2	4.4	2.8	4.0
Macroeconomy	4.5	5.0	4.4	5.7	5.1	4.6	4.9
Health and primary education	6.4	6.6	6.2	6.8	6.1	6.4	6.4
Efficiency enhancers	**4.1**	**4.9**	**3.9**	**5.6**	**4.3**	**3.4**	**4.4**
Higher education and training	4.3	4.8	4.0	5.6	4.4	3.4	4.4
Market efficiency	4.9	5.2	4.2	5.6	4.8	4.1	4.8
Technological readiness	3.2	4.6	3.3	5.7	3.7	2.8	3.9
Innovation factors	**4.1**	**4.9**	**3.6**	**5.1**	**4.2**	**3.3**	**4.2**
Business sophistication	4.5	5.3	4.2	5.2	4.6	3.5	4.6
Innovation	3.6	4.5	3.1	5.0	3.7	3.1	3.8

Data source: World Economic Forum (2006, 2009)

Notes: Average is calculated for a comparison among factors. Average (8) shows average of eight countries, and average (6) show average of six countries that appear in (a) and (b), respectively.

Similarly to the rankings for the *Doing Business*, the overall rankings in 2008-2009 are high for Singapore (5th out of 134), Malaysia (21st), and Thailand (34th), while they are particularly low for and new ASEAN countries and the Philippines, indicating unfavorable business environments in these countries: Cambodia (109h), the Philippines (71st), and Vietnam (70th) (Table 2.3 (a)). When the overall rankings in 2008-2009 are compared with those in 2006-2007 (Table 2.3 (b)), they are more or less similar to each other.

Based on the average figures shown in the right hand columns in Table 2.3, basic requirements such as institutions, infrastructure, and health and primary education are still not well developed at the sub-category level in the ASEAN6 countries compared to the rest of the world. More precisely, the factors regarded as lacking competitiveness in many countries in Table A.2.1 involve various public institutions, such as judicial independence, efficiency of the legal framework, infrastructure (particularly the quality of the electricity supply), tuberculosis prevalence, various market distortions concerning such matters as tertiary education, number of procedures and time required for starting a business, financial market sophistication including soundness of banks, and technological readiness such as availability of latest technologies and mobile telephone subscribers. Improving these factors would make the countries in the region more competitive, increasing their attractiveness for investors.

Table 2.4, compiled from the *Global Competitiveness Report*, shows the problematic factors involved in doing business in the countries concerned. The figures in the upper portion of the table indicate the percentage of respondents indicating the presence of the

problem for the item concerned, while those in the lower portion indicate the ranking of the severity of the problem for the 15/14 items in each economy. In the upper portion of the table, the figures registering 10 percent or above 10 percent are highlighted.[5] When the results for 2008-2009 are compared with those for 2006-2007, an inadequate supply of infrastructure is still recognized as a relatively serious problem in many ASEAN countries. Additionally, tax regulation is identified as a relatively serious problem in many countries in 2008-2009, while inefficient government bureaucracy is identified in 2006-2007. This suggests that efficiency of government bureaucracy has been improved, while other factors such as tax regulations have been regarded as more serious problems requiring improvement to facilitate business.

The evaluation of the business environment and competitiveness of the ASEAN countries in this section suggests that reducing the complexity and time required for institutional procedures, increasing labor market flexibility (reducing the burden of labor regulations), improving taxation regulations, and developing infrastructure are particularly important for improving investment environment.

[5] To construct this table, respondents were asked to select the five factors most problematic for doing business in the economy concerned, among 15/14 factors listed in the table, and to rank them from 1 (most problematic) to 5. The results were tabulated and weighted according to the ranking assigned by the respondents.

Table 2.4. The most problematic factors for doing business and their ranking for ASEAN Economies

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Average (8)	Average (6)	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Average (6)
	(a) 2008-2009										(b) 2006-2007						
Percent of responses																	
Access to financing	14.7	8.9	4.4	6.2	1.8	14.7	7.4	10.6	8.6	7.5	4.7	6.0	4.1	9.6	7.1	8.4	6.6
Corruption	0.9	0.7	3.9	4.5	1.5	1.3	4.6	3.1	2.6	3.2	4.6	8.0	21.5	0.3	14.7	18.8	11.3
Crime and theft	2.1	3.6	1.3	5.5	5.9	9.4	3.5	3.9	4.4	4.9	4.6	5.4	3.8	1.4	0.2	2.0	2.9
Foreign currency regulations	0.0	2.8	0.1	0.0	0.1	0.6	0.6	0.6	0.6	0.3	4.9	8.1	0.3	2.4	2.0	3.3	3.5
Government instability/coups	19.1	2.2	9.7	5.9	2.4	10.3	1.2	1.9	6.6	5.2	1.9	1.1	13.6	0.5	7.7	2.2	4.5
Inadequate supply of infrastructure	2.1	24.5	10.7	14.5	23.9	0.1	10.3	9.0	11.9	11.4	20.2	5.8	15.2	6.9	6.0	13.5	11.3
Inadequately educated workforce	0.7	2.6	0.1	8.3	1.9	0.2	0.8	0.9	1.9	2.0	8.1	6.7	0.8	15.9	10.2	9.5	8.5
Inefficient government bureaucracy	2.4	5.0	5.0	6.5	8.7	0.8	13.0	8.2	6.2	7.0	14.1	15.4	11.8	6.4	17.8	19.0	14.1
Inflation	13.7	4.9	7.5	4.7	3.8	5.2	4.1	7.7	6.5	5.5	6.0	7.5	2.1	8.0	4.3	2.2	5.0
Policy instability	1.7	1.8	3.7	1.8	7.0	0.0	21.5	1.4	4.9	5.9	14.0	6.4	15.3	3.4	13.9	0.9	9.0
Poor public health	0.7	4.6	6.7	6.1	6.4	7.6	5.1	6.4	5.5	6.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Poor work ethic in national labor force	4.5	8.9	16.4	5.4	13.1	5.9	5.2	16.5	9.5	10.4	1.6	6.0	1.1	8.8	2.8	6.9	4.5
Restrictive labor regulations	20.1	4.0	3.5	5.5	0.1	6.4	2.2	8.1	6.2	4.3	6.0	8.3	2.5	15.7	2.6	2.0	6.2
Tax rates	1.7	7.3	7.8	8.3	3.5	35.4	8.5	17.9	11.3	13.6	2.7	7.0	4.5	8.8	2.5	3.8	4.9
Tax regulations	15.6	18.3	19.3	16.7	19.7	2.2	12.1	3.7	13.5	12.3	10.5	8.3	3.7	11.9	8.2	7.7	8.4
Ranking in each economy																	
Access to financing	5	7	6	12	8	8	10	7	8	9	9	11	7	4	7	5	7
Corruption	8	1	3	2	1	14	4	4	5	5	11	5	1	14	2	2	6
Crime and theft	13	12	14	3	11	13	14	14	12	12	10	13	8	12	14	12	12
Foreign currency regulations	12	15	10	13	13	10	9	11	12	11	8	4	14	11	13	9	10
Government instability/coups	10	14	11	14	5	15	1	13	10	10	13	14	4	13	6	10	10
Inadequate supply of infrastructure	6	3	2	11	3	7	7	2	5	5	1	12	3	8	8	3	6
Inadequately educated workforce	4	4	9	6	12	2	6	3	6	6	5	8	13	1	4	4	6
Inefficient government bureaucracy	3	2	1	1	2	9	3	10	4	4	2	1	5	9	1	1	3
Inflation	11	5	5	4	9	1	5	1	5	4	7	6	11	7	9	10	8
Policy instability	7	6	8	5	4	11	2	5	6	6	3	9	2	10	3	14	7
Poor public health	15	11	15	15	15	12	15	15	14	15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Poor work ethic in national labor force	1	9	12	9	14	6	12	6	9	10	14	10	12	6	10	7	10
Restrictive labor regulations	2	13	4	8	10	3	13	12	8	8	6	2	10	2	11	12	7
Tax rates	9	10	13	10	7	4	11	9	9	9	12	7	6	5	12	8	8
Tax regulations	14	8	7	7	6	5	8	8	8	7	4	2	9	3	5	6	5

Data source: World Economic Forum (2006, 2009).

Notes: From a list of the above 15/14 factors, respondents were asked to select the five most problematic for doing business in their economy and to rank them from 1 (most problematic) to 5. The results were tabulated and weighted according to the ranking assigned by the respondents. The weighted percentage of firms identified the factor as a problematic is expressed in the upper part of this table "percent of responses". Average is calculated for a comparison among factors. Average (8) shows average of eight countries and average (6) show average of six countries that appear in (a) and (b), respectively.

3. Assessment of FDI Policy Regimes Based on Legal Documents

This section assesses the FDI policy regimes in ASEAN countries using the information obtained from the legal documents such as FDI Laws. In some cases supplementary information sources such as an FDI guide are used. The first section describes the methodology used for the analysis and then the following section discusses the results of the analysis.

3.1. Methodology

Several studies have assessed the restrictiveness of FDI policies. Golub (2003) examined the restrictiveness of FDI for OECD countries in 1998/2000 by examining rules on foreign equity, screening and approval procedure, and other restrictions including those on boards of directors, movement of people, and input and operational restrictions. Golub found the United Kingdom the most open country and Iceland the least open country among 28 OECD member countries.

PECC (2002) evaluated FDI regimes of APEC economies by examining wide-ranging FDI rules on market access, examination procedures, most-favored-nation treatment, profit repatriation, work permits, performance requirements, dispute settlement, investment incentives, and capital exports. PECC found Hong Kong to be the most open and Brunei the least open member among 19 APEC sample economies. The PECC study shows that FDI regimes of developing members are more restrictive compared to developed members.

We used a modified methodology adopted by Golub (2003). Our evaluation method is shown in Table 3.1. We evaluated the restrictiveness of FDI rules in six areas: foreign ownership or market access, national treatment, screening and approval procedure, boards of directors and management composition, movement of investors, and performance requirement. High scores indicate open FDI rules[6]. Different areas are given different weights. In most FTAs, restrictions are imposed on ownership and control of a local enterprise through a cap on foreign-owned equity. It is given a weight of 0.4 while restriction on national treatment is given a weight of 0.2 for the computation of the overall score. Meanwhile, other restrictions such as screening procedures, composition of management, entry of investors, and performance requirements are given 0.1 each. In this manner, this study avoided the limitations of Golub's analysis wherein some sectors received a score above 1, which is the highest possible score for the degree of restrictiveness. In order to derive the scores for the subtotal as well as overall totals, simple averages are computed by giving the same weight to their components. This method has its own limitations. It can be subjected to random and arbitrary weight. However, this is assuaged by using standards on all restriction and by careful analysis, in addition to comparison of the results of one country with another one.

All in all, 21 sectors that include 88 ISIC two-digit subsectors were evaluated in this study.

[6] We evaluated FDI rules by sectors, then aggregated them to obtain an overall score by giving equal weight. We used 88 ISIC two-digit industry classification to analyze FDI rules, then aggregated these detailed results to appropriate aggregation by giving equal weights

Table 3.1. Assessment of FDI Restrictions

(Maximum of 1.0 = fully liberalized)

Restriction on Ownership and Market Access	
No foreign equity is allowed	0
1-19 percent is allowed	0.1
Reservation on ownership and market access	0.25
20-34 percent is allowed	0.4
35-49 percent is allowed	0.5
50-74 percent is allowed	0.7
75-99 percent is allowed	0.8
No restriction but bound	0.9
Commercial presence is required	0.9
No restrictions	1
National Treatment	
No national treatment	0
Reservation on national treatment	0.25
No restrictions	1
Screening and Approval	
Objections in case the investment is contrary to national interest	0
Investment is required to show economic benefits before approv	0.1
Reservations for future limitations	0.25
Objections based on the size of investment	0.5
Prior or post notification	0.9
No restrictions	1
Board of Directors and Management Composition	
All members of the management should be local	0
Reservations for future restrictions	0.25
Majority should be local	0.5
At least one is local	0.75
Should be locally license	0.9
No restrictions	1
Movement of investors	
No entry	0
Less than one year	0.1
Reservations for further measures on entry	0.25
One to two years	0.4
Three to four years	0.5
More than four years but less than 10	0.8
No restrictions	1
Performance requirements	
Local contents	0.75
Others	0.9

3.2. The Results

We conducted the analysis for all the ten ASEAN countries. The results of our assessment are shown in Table 3.2. Overall scores for ASEAN countries range between 0.52 (Myanmar) and 0.88 (Singapore) with a simple average of 0.69. Other countries register the following scores. The Philippines' score is 0.78, second highest score. Thailand (0.75), Indonesia (0.74) and Cambodia (0.70) are given scores with the 0.7 level. Three countries register scores with the 0.6 level, Vietnam (0.69), Brunei and Lao, PDR (0.61). Malaysia is given the score of 0.59. As the scoring is undertaken in such a way that the high score indicates open FDI policy regime, our results show that FDI policy regime in Singapore is very open and those in the Philippines, Thailand, Indonesia and Cambodia are relatively open, while those in Myanmar, Malaysia, Brunei and Lao, PDR are relatively closed.

Table 3.2. Assessment of FDI Policy Regimes of ASEAN Countries

	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement	**Total score**
Weight	0.40	0.20	0.10	0.10	0.10	0.10	**1.00**
Brunei	0.76	0.20	0.57	0.41	0.82	0.82	**0.61**
Cambodia	0.86	0.60	0.25	1.00	0.25	0.88	**0.70**
Indonesia	0.69	0.95	0.24	0.95	0.48	0.95	**0.73**
Lao PDR	0.60	0.70	0.34	0.67	0.54	0.79	**0.61**
Malaysia	0.59	0.17	0.76	0.62	0.89	0.91	**0.59**
Myanmar	0.55	0.61	0.30	0.61	0.24	0.61	**0.52**
Philippines	0.74	0.81	0.89	0.48	0.96	0.89	**0.78**
Singapore	0.83	0.95	0.86	0.75	0.95	0.95	**0.88**
Thailand	0.58	1.00	0.91	0.98	0.37	0.90	**0.75**
Vietnam	0.66	0.74	0.64	0.71	0.53	0.85	**0.69**
Average	**0.69**	**0.67**	**0.58**	**0.72**	**0.60**	**0.85**	**0.69**
Standard deviation	0.11	0.29	0.28	0.20	0.28	0.10	**0.11**

Note: See the main text for the explanation of the scoring system.
Source: Authors' computation.

Examining the average scores for the ASEAN countries by issue areas, one finds that ASEAN countries have restrictive FDI regimes in the areas of screening and appraisal procedures of FDI applications and the movement of investors, as their average scores are low at 0.58 and 0.60, respectively, when compared with overall average of 0.69. Having pointed out the problems with the screening and appraisal procedure of FDI applications and the movement of investors in the ASEAN countries, it should be noted that there are wide variations in these scores among the ASEAN countries, reflecting diversity in the seriousness of those problems among them, as shown by the high standard deviations. Screening and appraisal procedures are particularly restrictive in Indonesia, Cambodia, Myanmar, and Lao PDR, while movement of investors is quite limited in Myanmar, Cambodia, and Thailand.

The lack of national treatment is a serious problem in Malaysia and Brunei. In Malaysia there are a number of cases where foreign companies are not treated equally with local companies. For example, foreign companies are allowed to acquire land up to a certain amount. In several industrial sectors foreign companies are required to form joint venture with local companies. In Brunei, the Government reserves the right to impose any measures with respect to national treatment. Regulations on boards of directors and management composition are restrictive in the Philippines, where the majority of board directors have to be local.

Let us examine the restriction on the right of establishment, or market access, which is considered the most important policy regarding inward FDI. Table 3.3 shows the results of our assessment of market access for the ASEAN countries by sectors. Before

analyzing the restrictions on market access by country, we first look at restrictions on market access by sectors. The sector with the most restrictive market access regulation is found to be public administration and defense. Electricity, gas, steam and air conditioning supply, and information and communications have quite restrictive regulation on market access. By contrast, market access regulation is relaxed in "activities of households as employers; undifferentiated goods - and services - producing activities of households for own use." Market access in manufacturing is rather open. Turning to the market access restrictions by country, we find that tight restrictions are imposed in Myanmar, Thailand, Malaysia and Lao PDR. In Myanmar and Lao PDR, FDI is not allowed in several sectors. In Myanmar market access is not allowed in the following sectors, agriculture, mining, electricity, gas etc., accommodation and food service, information and communications, financial and insurance activities, and public administration, while in Lao PDR the sectors in which market access is not allowed include construction, public administration, arts, entertainment and recreation, and activities of households as employers. In Thailand, majority ownership is not allowed in many sectors such as agriculture, electricity, and construction. In Malaysia market access is very limited in arts, entertainment, and recreation, accommodation and food service activities, real estate activities, and water supply etc.

Table 3.3. Assessment of Market Access in FDI Policies of ASEAN Countries

	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	**Average**
All sectors	**0.76**	**0.86**	**0.69**	**0.60**	**0.59**	**0.55**	**0.74**	**0.83**	**0.58**	**0.66**	**0.69**
A - Agriculture, forestry and fishing	0.90	0.90	0.67	0.90	0.90	0.00	0.65	1.00	0.50	0.80	**0.72**
B - Mining and quarrying	0.98	0.80	0.36	0.90	0.80	0.00	0.70	1.00	0.68	0.90	**0.71**
C - Manufacturing	0.95	0.90	0.24	0.59	1.00	0.45	0.90	1.00	0.84	0.95	**0.78**
D - Electricity, gas, steam and air conditioning supply	0.00	0.90	0.80	0.30	0.40	0.00	0.70	0.00	0.50	0.50	**0.41**
E - Water supply; sewerage, waste management and remediation activities	0.00	0.90	0.80	0.90	0.30	0.90	0.70	1.00	0.50	0.80	**0.68**
F - Construction	0.72	0.90	0.80	0.00	1.00	0.90	0.85	1.00	0.50	0.40	**0.71**
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	1.00	0.90	1.00	0.90	0.70	0.90	0.95	0.90	0.50	0.20	**0.80**
H - Transportation and storage	0.80	0.90	0.50	0.72	0.70	0.54	0.50	0.70	0.50	0.50	**0.64**
I - Accommodation and food service activities	1.00	0.90	1.00	0.90	0.25	0.00	0.95	1.00	0.50	0.90	**0.74**
J - Information and communication	1.00	0.80	0.78	0.35	0.40	0.00	0.60	0.83	0.50	0.50	**0.58**
K - Financial and insurance activities	1.00	0.90	0.83	0.90	0.60	0.00	0.80	1.00	0.50	0.85	**0.74**
L - Real estate activities	1.00	0.25	0.90	0.90	0.25	0.90	0.50	0.25	0.50	1.00	**0.65**
M - Professional, scientific and technical activities	0.89	0.90	0.36	0.90	0.77	0.90	0.45	0.89	0.50	0.80	**0.74**
N - Administrative and support service activities	1.00	0.90	0.95	0.71	0.60	0.60	0.65	0.98	0.50	0.90	**0.78**
O - Public administration and defence; compulsory social security	0.00	0.90	0.00	0.00	0.40	0.00	0.50	1.00	0.50	0.00	**0.33**
P - Education	1.00	0.90	0.50	0.90	0.40	0.90	0.50	0.00	0.50	0.90	**0.65**
Q - Human health and social work activities	1.00	0.90	0.50	0.90	0.40	0.90	0.85	1.00	0.50	0.30	**0.73**
R - Arts, entertainment and recreation	0.75	0.90	0.80	0.00	0.20	0.90	0.85	1.00	0.63	0.00	**0.60**
S - Other service activities	0.67	0.90	0.70	0.00	0.40	0.90	1.00	0.97	0.50	0.70	**0.67**
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	0.90	1.00	0.00	1.00	0.90	1.00	1.00	1.00	1.00	**0.88**
U - Activities of extraterritorial organizations and bodies	0.25	0.90	1.00	0.90	1.00	0.90	1.00	1.00	1.00	1.00	**0.90**

Note: See the main text for the explanation of the scoring system.
Source: Authors' computation.

Concerning performance requirements, Myanmar, Singapore and Thailand do not impose any such restrictions. It should be noted that the scores on performance requirement for these countries as not unity, because in the computation the sectors without market access are given zero on performance requirement. In Cambodia, foreign investors are required to provide adequate training to Cambodian employees, and to promote Cambodian staff to senior positions over time. In Lao PDR, a local content requirement is imposed in several manufacturing sectors such as leather products and wood products. In Malaysia export targets, technology transfer and local content requirements are imposed in the manufacturing sector. In the Philippines an export requirement is imposed for obtaining incentives, while preferences have to be given to local employees in the electricity sector. In Vietnam foreign firms have to comply with environment protection requirements.

Our analysis of FDI policy regimes for ASEAN countries shows wide variations in their openness/restrictiveness among them. Among issue areas, screening and appraisal, and movement of investors are found to be serious impediments in several countries. As for the policy on market access, it is worth noting that service sectors such as public administration, electricity, gas, steam and air conditioning supply, and information and communication are quite restrictive. Recognizing that service sectors occupy a large and important part of economic activity in ASEAN countries, the provision of greater market access to foreign companies can contribute to an improvement of allocative and technical efficiency in these countries. A fear of market domination by competitive foreign companies, which is justified, should be dealt with by appropriate competition policy.

4. Assessment of FDI Environment Based on Firm Survey

This section analyzes the FDI environments of ASEAN countries by using the information obtained from the survey conducted on Japanese firms. First, we discuss the methodology used for the analysis and then undertake the analysis.

4.1. The Methodology and the Data Used for the Analysis

We classify the problems and obstacles faced by Japanese firms operating in ASEAN countries into ten categories (Table 4.1). The ten categories are divided into two groups, one consisting of four categories of problems related to FDI liberalization and six categories of problems related to FDI facilitation. This classification, which has been proposed by Urata, Ando, and Ito (2007), is based on a literature survey and discussions among the members of the committee including representatives of APEC Business Advisory Council (ABAC) Japan, the Japan Machinery Center for Trade and Investment (JMC), the Ministry of Trade, Investment, and Industry (METI) Japan, and university professors.

The four categories of impediments concerning FDI liberalization are i) restrictions on foreign entry, ii) performance requirements, iii) restrictions on overseas remittances and controls on foreign exchange, and iv) restrictions on the movement of people and employment requirements.[7]

[7] The category i) corresponds to 1.restrictions on foreign entry and 21.restrictions on foreign ownership of land in the JMC survey. Similarly, the category ii) corresponds to 2.local content requirements, 3.export requirements, and 18.technology transfer requirements, the category iii)

Table 4.1. 10 Major Categories of Issues to be Solved for FDI Liberalization and Facilitation

FDI liberalization	
i	Restrictions on foreign entry
ii	Performance requirements
iii	Restrictions on overseas remittances and controls on foreign currency transactions
iv	Restrictions on the movement of people and employment requirements
FDI facilitation	
v	Lack of transparency in policies and regulations concerning investment (institutional problems)
vi	Complicated and/or delayed procedures with respect to investment-related regulations (implementation problems)
vii	Insufficient protection of intellectual property rights
viii	Labor regulations and related practices excessively favorable to workers
ix	Underdeveloped infrastructure, shortages of human resources, and insufficient investment
x	Restricted competition and price controls

Source: Urata, Ando, and Ito (2007).

Category "i) restrictions on foreign entry", for instance, includes prohibited or restricted foreign entry into specific sectors, regulations on maximum foreign ownership ratios (foreign equity participation), joint venture requirements, minimum capital requirements, restricted forms of commercial presence (regulations on the forms of establishments) and restrictions on land ownership by foreign-owned firms. Category "ii) performance requirements" includes local content requirements and export requirements/ technology transfer requirements linked with various FDI incentives. Category "iii) restrictions on overseas remittances and controls on foreign currency transactions" includes restrictions or difficulties in making overseas remittances, restrictions on the possession and use of foreign currencies, difficulties in access to/exchange of local currencies. The last category among impediments concerning FDI

11 .foreign remittances, 12.control of foreign exchange, and the category iv) 16.employment in the JMC survey.

liberalization is “iv) restrictions on the movement of people and employment requirements”, which includes difficulties in obtaining and/or renewing necessary visas for foreign representatives, and requirements on employment of local people (or specific types of local people). All of these problems can certainly be impediments to new foreign entry or expansion of investment by existing foreign firms.

The six categories of impediments related to FDI facilitations are as follows: “v) lack of transparency in policies and regulations concerning investment (institutional problems)”, “vi) complicated and/or delayed procedures with respect to investment-related regulations (implementation problems)”, “vii) insufficient protection of intellectual property rights (IPRs)”, “viii) labor regulations and related practices excessively favorable to workers”, “ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives”, and “x) restricted competition and price controls”.[8]

Categories “v) lack of transparency in policies and regulations concerning investment” and “vi) complicated and/or delayed procedures with respect to investment-related regulations” cover issues concerning various investment-related

[8] Category v) corresponds to 5. regulations on policies of supporting industries, 7. implementing procedure for Foreign Capital Act, 8. issues of FDI hosting agencies, 9. regulations on export/import activities and customs clearance, 10. restrictions on activities in free trade zones (FTZs)/special economic zones (SEZs), 14. taxation, 19. (industrial) standards and conformity, 22. issues of environmental pollutions and waste disposal, 24. lack of legal regulations/sudden changes in regulations, and 26. others in the JMC survey. Note that some of the issues in these categories in the JMC survey are classified as those in category vi) when they are the issue of implementation. In addition to them, category vi) includes 4.regulations on withdrawal of operations and 23. inefficient administrative procedures of various regulations in JMC survey. Category vii) is composed of 17. problems of IPRs, the category viii) consists of a part of 16. labor, the category ix) includes 6. diminished incentives to FDI, 13. finance, 16. labor (human capital-related), and 26. others (infrastructure-related), and category x) are 15. price control and 20. monopoly.

regulations in terms of institutional problems and implementation problems, respectively. Category “v) lack of transparency in policies and regulations concerning investment” is specifically concerned with sudden and/or frequent changes (without notification in advance), non-transparency, ambiguity in various investment-related regulations and lack of certain regulations, while category “vi) complicated and/or delayed procedures with respect to investment-related regulations” covers problems in implementing regulations on establishments, approval of foreign entry, taxation, customs clearance, withdrawal/reorganization of operations, arbitrary and/or inconsistent interpretation and implementation of various regulations, and other such matters. Examples of problems in categories “vii) insufficient protection of IPRs”, “viii) labor regulations and related practices excessively favorable to workers”, “ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives”, and “x) restricted competition and price controls” include the following: insufficient protection of IPRs and issues involving patents for the category vii), non-modern labor regulations that are excessively favorable to workers, such as difficulty in firing workers, drastic/frequent changes in minimum wage levels, never decreasing wages, and restrictions on temporary workers for the category viii), underdeveloped physical infrastructure and logistics, shortages of human resources such as management staff and engineers, and high turnover ratios for category ix), and oligopolistic market structure and monopolistic pricing for category x).

Most of the problems classified into categories iv) to x) are not necessarily discriminatory measures to foreigners but are, rather, domestic problems inside the

borders. These impediments could, however, directly and indirectly prevent potential investment from entering the economy. In other words, if a country solves these problems and improves the investment climate, it would receive a larger amount of investment than it will without such an improvement. Out of 10 major categories for FDI liberalization and facilitation, six are those concerning for FDI facilitation. We emphasize the importance of implementing FDI facilitation measures, in addition to FDI liberalization measures, as will be discussed in the following section.

We conduct the analysis based on the methodology discussed above by using information obtained from the survey conducted by the Japan Machinery Center (JMC) for Trade and Investment. The JMC has annually collected and compiled the detailed survey, "Issues and Requests for Trade and Investment Activities by Country/Region". This survey is based on the responses to "questionnaire on the problems in trade, investment, and production activities abroad," conduced by the Japan Business Council for Trade and Investment Facilitation (JBCTIF). The JBCTIF has as its members approximately 150 industry associations. The respondents to the questionnaire are its members involved in trade and FDI activities. We employ the version of 2008 of the JMC survey (JMC survey 2008 hereafter), which was conduced from November 2007 to January 2008, with the responses from 38 industries associations (in the case of ASEAN10). For a comparison, we also employ the results in Urata, Ando, and Ito (2007) that are based on the version of 2005 of this survey (JMC survey 2005 hereafter).

4.2. The Results

Table 4.2 summarizes the results of our analysis of the investment climate in 2008 in the ASEAN10 countries: the number of incidents by category and country. Since the JMC survey deals with precisely the problems raised by many industry associations of Japanese firms, which are members of the BCTIF, we first collect all the information on the countries concerned and identify the problems by country. We then classify these problems into 10 categories and collate them for all the countries, as shown in Table A.4.2 in the Appendix. Table 4.2 is constructed based on Table A.4.2.

Table 4.2. Investment Climate in ASEAN10 Economies in 2008: The Number of Incidents by Category and Country

	Brunei	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Total	Share by category (%)
(a) The number of Japanese affiliates in each coun	**1**	**10**	**659**	**6**	**759**	**10**	**419**	**991**	**1,577**	**332**	**4,764**	
(b) Issues to be solved for FDI liberalization and facilitation												
FDI liberalization	**0**	**0**	**14**	**0**	**11**	**7**	**9**	**1**	**15**	**9**	**66**	**21%**
i) Restrictions on foreign entry	0	0	10	0	5	2	6	0	8	4	35	11%
ii) Performance requirements	0	0	2	0	3	0	0	0	2	2	9	3%
iii) Restrictions on overseas remittances and controls on foreign currency transactions	0	0	0	0	1	5	2	0	3	2	13	4%
iv) Restrictions on the movement of people and employment requirements	0	0	2	0	2	0	1	1	2	1	9	3%
FDI facilitation	**0**	**16**	**28**	**4**	**33**	**21**	**48**	**6**	**45**	**49**	**250**	**79%**
v) Lack of transparency in policies and regulations concerning investment (institutional problems)	0	5	5	1	8	8	11	0	14	12	64	20%
vi) Complicated and/or delayed procedures with respect to investment-related regulations (implementation problems)	0	5	11	1	10	7	16	0	20	18	88	28%
vii) Insufficient protection of intellectual property rights	0	0	2	0	3	0	3	0	2	1	11	3%
viii) Labor regulations and related practices excessively favorable to workers	0	0	2	0	5	0	10	3	3	4	27	9%
ix) Underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives	0	6	6	2	7	5	8	3	5	11	53	17%
x) Restricted competition and price controls	0	0	2	0	0	1	0	0	1	3	7	2%
Total	**0**	**16**	**42**	**4**	**44**	**28**	**57**	**7**	**60**	**58**	**316**	**100%**

Data source: authors' calculation, based on Toyo Keizai (2008) for (a) the number of Japanese affiliates abroad and JMC (2008) for (b) the issues to be solved for FDI.

Note: Japanese affiliates abroad are here defined as those with Japanese ownership of no less than 10%.

Four points should be kept in mind in interpreting these results. First, some problems can be classified into different categories from those in Table A.4.2. Some may be classified into two or more categories. In constructing Table A.4.2, such problems are classified into the most relevant categories in our classification.

Second, the number of incidents in the tables indicates the presence of direct and indirect barriers to FDI (at least those identified). It, however, does not directly imply the degree of seriousness of the barriers distorting investment decisions.

Third, there is a possible bias in the identification of the problems in that the number of incidents tends to be high in those countries where a large number of FDI projects are undertaken. As mentioned above, the respondents to the questionnaire on which the JMC survey is based are those having trade with and/or investment in the countries concerned. Therefore, the countries in which Japanese firms are more active in trade and investment or those to which Japanese firms pay considerable attention as new investment locations may tend to have a larger number of incidents since they are more likely to face various problems through their operations (Table 4.3). At the same time, the countries with a fewer number of problems identified here do not necessarily receive a large amount of investment. The countries with a smaller number of Japanese firms involved may have a larger number of issues, in practice, than those identified here if firms were not able to enter those countries due to certain impediments, and the actual investment climate was not known. We will consider this point in interpreting the results for the individual countries below.

Table 4.3. Investment Climate in ASEAN7 Economies in 2005

	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam	Total (2005)	Total (2008)
FDI liberalization	**0**	**10**	**17**	**11**	**3**	**16**	**16**	**73**	**59**
i) Restrictions on foreign entry	0	5	4	6	1	6	5	27	33
ii) Performance requirements	0	2	5	2	0	1	5	15	9
iii) Restrictions on overseas remittances and controls on foreign currency transactions	0	1	4	1	0	3	4	13	8
iv) Restrictions on the movement of people and employment requirements	0	2	4	2	2	6	2	18	9
FDI facilitation	**1**	**52**	**36**	**37**	**6**	**53**	**34**	**219**	**209**
v) Lack of transparency in policies and regulations concerning investment (institutional problems)	1	14	10	10	1	14	6	56	50
vi) Complicated and/or delayed procedures with respect to investment-related regulations (implementation problems)	0	21	14	12	0	24	14	85	75
vii) Insufficient protection of intellectual property rights	0	4	3	1	0	2	2	12	11
viii) Labor regulations and related practices excessively favorable to workers	0	3	5	6	3	3	2	22	27
ix) Underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives	0	8	4	8	2	9	8	39	40
x) Restricted competition and price controls	0	2	0	0	0	1	2	5	6
Total	1	62	53	48	9	69	50	292	268

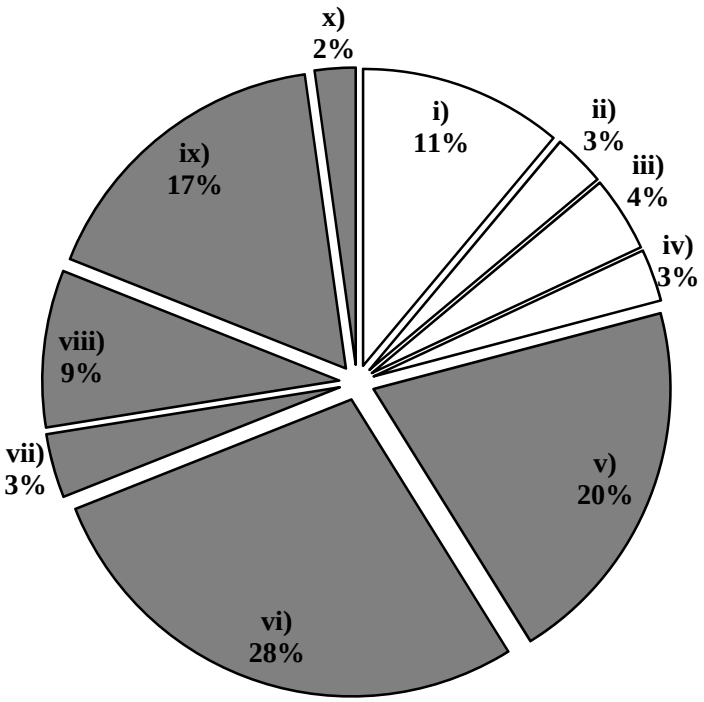
Data source: Urata, Ando, and Ito (2007) and Table 4.1.

Fourth, most problems identified are those related to manufacturing activities. Since the major activities of most respondents are manufacturing, impediments to FDI in non-manufacturing sectors might be underestimated.

Table 4.2 and Figure 4.1 give an overall picture of direct and indirect impediments to investment in ASEAN10. Various sorts of indirect barriers to FDI exist in the region: 79 percent of the total problems identified (250 out of 316) are concerned with FDI facilitation. This finding indicates that there is plenty of room to reduce FDI facilitation problems in order to promote FDI in ASEAN. In particular, more than half the problems fall into two categories v) institutional problems (lack of transparency in policies and regulations on investment) and vi) implementation problems (complicated and/or delayed

procedures with respect to investment-related regulations). These account for 20 percent and 28 percent of the total incidents, respectively. Although neither institutional nor implementation problems are necessarily discriminatory against foreign firms, as discussed above, they need to be reduced to promote investment activities in the region.

Figure 4.2. Decomposition of the Incidents into 10 Categories: ASEAN10 in 2008



Data source: Table 4.1.
Note: i) to iv) indicates four categories for FDI liberalization and v) to x) indicates six categories for FDI facilitation. Figures express shares of each category. See Table 4.1 for 10 categories.

The major problems identified in many countries for category v) are underdevelopment, lack of transparency, ambiguity, sudden changes, frequent changes, and uncertainty of various legal regulations and institutions, particularly those concerning

taxation, investment incentives, safety and environmental standards and conformity, and financial markets including exchange rates. The major problems for category vi) are complexity, delay, difficulty, and inefficiency of various administrative procedures, arbitrary interpretation in implementing regulations, corruption, smuggling; particularly complicated customs clearance procedures, delayed, difficult, inefficient, and complicated procedures for visa application and renewal, import tariff reimbursement/exemption, value-added tax exemption (including non-implementation) procedures, taxation, withdrawal of business, arbitrary and/or inconsistent interpretation and implementation of safety certification, customs clearance, and arbitrary tax collection.[9]

Categories v) and vi) are followed by another category classified under FDI facilitation, category ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (17 percent of total incidents). It suggests that access to necessary infrastructure, human resources, and investment incentives is also an important factor for firms in making the decision to enter a new country or expand operations in a host country. Major problems in category ix) are as follows: difficulty in hiring and securing human resources due to shortages of management staff and engineers, high turnover ratios, underdevelopment of industrial infrastructure such as electric power, paved roads and transportation, and ports; also insufficient investment incentives for the development of supporting industries, and immaturity of financial markets.

[9] Delayed procedures of regulations are sometimes a result of the complicated nature of the procedures.

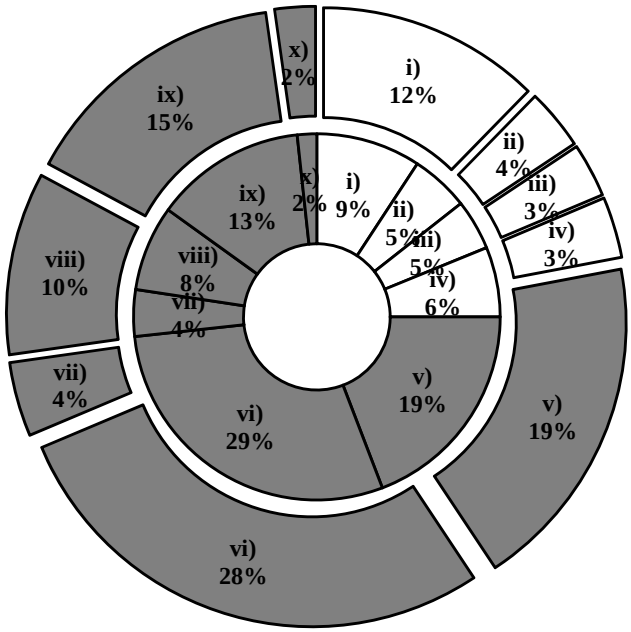
Categories other than v), vi), and ix) are arranged in descending order in terms of the percentage of the total number of incidents: category i) restrictions on foreign entry (11 percent), viii) labor regulations and related practices excessively favorable to workers (9 percent), category iii) restrictions on overseas remittances and controls on foreign currency transactions (4 percent), category ii) performance requirements, category iv) restrictions on the movement of people and employment requirement, and category vii) insufficient protection of IPRs (all of the three, 3 percent) , and category x) restricted competition and price controls (2 percent). Although relatively low percentages for the categories for FDI liberalization imply that issues involving direct barriers to FDI (problems preventing FDI liberalization) are not so serious as those involving indirect barriers to FDI (problems preventing FDI facilitation) in the region, they are critical impediments in some low-income countries.

Major problems for category i) include prohibition of or restrictions on foreign entry (for specific sectors), restrictions on foreign ownership ratios, joint venture requirements (with specified business partners), and restrictions on foreign ownership of land. The problems for category viii) include difficulty in firing workers, wage-related issues such as rapidly rising wage levels, dramatic increases in minimum wage levels, no allowance for lowering wage levels, and labor regulations and related practices that are excessively favorable to workers. The problems for category iv) include a nationality requirement for directors, restrictions on hiring foreigners including requirements of hiring local people (or specific types of local people), and difficulties and tightened issuance conditions in obtaining and/or renewing visas. The problems for category vii) include widespread

counterfeiting of goods and pirated copying due to insufficient protection of IPRs, lack of intellectual property rights treaties, and infringements of trademarks rights and patents. Those for category ii) include local content requirements and their strengthening and investment incentives linked with export requirements, technological transfer requirements, and hiring local people. Those for category iii) include restrictions on overseas remittances and restrictions on the amounts, payment by, and use of foreign currencies. Those for category x) include monopolistic energy supply and discriminatory rising of its prices, and discriminatory pricing for loads at ports.

To capture changes in the investment climate in ASEAN countries, let us compare the patterns of pervasiveness of the identified problems in 2008, with those in 2005 provided by Urata, Ando, and Ito (2007). ASEAN countries for this comparison are the seven countries that are both members of ASEAN and APEC. Table 4.3 presents the results for the investment climate in 2005 in ASEAN7: the number of incidents by category and country. Figure 4.2 in turn shows the decomposition of the incidents into 10 categories for ASEAN7 in 2005 (inside circle) and 2008 (outside circle). As the figure suggests, ASEAN7 as a whole saw a decline in the number of the issues preventing FDI both directly and indirectly: the number of incidents drops from 292 in 2005 to 268 in 2008 for the total, from 73 to 59 for FDI liberalization, and from 219 to 209 for FDI facilitation. This suggests that the seven ASEAN countries, in general, improved their investment climate. In particular, they reduced the number of direct barriers to FDI and promoted FDI liberalization, compared with indirect barriers to FDI (Figure 4.2).

Figure 4.2. Shares of 10 Categories: ASEAN7 in 2005 and 2008



Data source: Table 4.1 and Table 4.2.

Notes: Inside is for 2005 and outside is for 2008. i) to iv) indicates four categories for FDI liberalization and v) to x) indicates six categories for FDI facilitation. Figures express shares of each category. See Table 4.1 for 10 categories. ASEAN7 includes ASEAN countries appeared in Table 4.2.

Wide variations among the ASEAN countries, however, do exit. Although we cannot strictly conduct a comparative analysis among the countries due to the nature of the survey, the tables and figures provide several interesting findings. First, various problems have prevailed in Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Second, among those five countries, Indonesia, Malaysia, and Thailand have improved their investment climate, while the Philippines and Vietnam have worsened it. In Indonesia (with a drop in incidents from 62 to 42), Malaysia (from 53 to 44), and Thailand (from 69

to 60), the number of incidents decreased drastically in categories for FDI facilitation, particularly institutional problems and implementation problems for investment-related policies and regulations. As a result, the total number of incidents dropped significantly. On the other hand, in the Philippines (with a rise in incidents from 48 to 57) and Vietnam that has been recently attracting new FDI (from 50 to 58), the number of incidents increased substantially in categories for institutional and implementation problems, investment-related policies and regulations, labor regulations, and practices excessively favorable to workers. Consequently, the total number of incidents increased, though the number of incidents decreased in categories for FDI liberalization as a whole.

To sum up, ASEAN economies as a whole tend to have improved their investment climate, as the number of the incidents reporting the problems preventing FDI both directly and indirectly declined concerning FDI liberalization, and FDI facilitation. In particular, they tend to have reduced the number of incidents relating to direct barriers to FDI, compared with indirect barriers to FDI. The direct barriers to FDI, however, still remain. Further efforts to reduce them by ASEAN countries are necessary in order to attract FDI. At the same time, the reduction of indirect barriers to FDI or the promotion of FDI facilitation is also indispensable for them. Particularly important issues to be resolved include institutional problems, complicated and delayed procedures, underdeveloped infrastructure, inflexible labor market conditions such as difficulty in hiring and firing workers and burdensome labor regulations and wage-related issues, and problems involving taxation regulations (including double taxation problems due to lack of double taxation treaties).

4.3. By-country Discussion

In the following, we briefly discuss major problems by country.

4.3.1. Brunei (0 incident, 1 Japanese Affiliate)

For Brunei, no problems are identified in JMC Survey 2008, though one problem was identified in the JMC Survey 2005 in category v) lack of transparency in policies and regulations concerning investment: ambiguity of government procurement procedures. It should be noted that few Japanese affiliates operate in Brunei, leading to low probability of incidents.[10]

4.3.2. Cambodia (16 Incidents, 10 Japanese Affiliates)

The categories with issues identified are v) lack of transparency in policies and regulations concerning investment (5),[11] vi) complicated and/or delayed procedures with respect to investment-related regulations (5), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (9). The examples include underdevelopment, ambiguity, and lack of transparency of various legal regulations and institutions for category v), complexity of administrative procedures of custom clearance, arbitrary interpretation in implementing customs and taxations, and corruption for category vi), inadequate infrastructure such as electricity supply, road and

[10] In Brunei, some NTMs are applied to many tariff lines, including technical measures for food industries, automatic licensing measures and import quotas for machinery industries, and automatic and non-automatic licensing measures for chemical and wooden industries. These measures may indirectly influence the investment climate. See Ando (2009) for the analysis of NTMs, using frequency ratios of NTMs by type and industry.

[11] The number of incidents is shown in parenthesis.

traffic, and telecommunication and underdevelopment of financial market for category ix).

4.3.3. Indonesia (42 Incidents, 659 Japanese Affiliates)

Major categories are vi) complicated and/or delayed procedures with respect to investment-related regulations (11), i) restrictions on foreign entry (10), ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (6), and v) lack of transparency in policies and regulations concerning investment (5). As discussed above, the number of incidents drastically declined in the categories concerning FDI facilitation from 52 to 28, particularly in terms of institutional problems and implementation problems for investment-related policies and regulations. As a result, the total number of incidents significantly dropped from 62 to 42. One should note that the number of incidents for restrictions on foreign entry increased from 5 to 10. Such a change seems to have been caused by the introduction of a more restrictive "new negative list" (in effective since July 2007) which specifies the sectors in which no foreign entry is allowed, as well as sectors subject to certain conditions for foreign equity participation, particularly in the services sectors.[12] The examples include complexity, delay, and inefficiency of various administrative procedures, arbitrary interpretation in implementing regulations, and corruption under category vi), underdevelopment, ambiguity, and sudden and frequent changes of various legal regulations and institutions under category v), restrictions on foreign ownership ratios in specific sectors mainly in

[12] See Asakura (2009) for changes in regulations on FDI in Indonesia, particularly in service sectors.

services sectors and joint venture requirements under category i), and insufficient infrastructure under category ix).

4.3.4. Lao PDR (4 Incidents, 6 Japanese Affiliates)

The categories with the issues identified are v) lack of transparency in policies and regulations concerning investment (1), vi) complicated and/or delayed procedures with respect to investment-related regulations (1), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (2). The examples include underdevelopment of exchange contract system under category v), arbitrary interpretation in implementing customs under category vi), and inadequate infrastructure such as road and traffic and underdevelopment of financial markets under category ix).

4.3.5. Malaysia (44 Incidents, 759 Japanese Affiliates)

Similarly to Indonesia, the number of incidents declined in categories for both FDI liberalization and FDI facilitation, resulting in a fall in the total number of incidents from 53 to 44. The major categories are vi) complicated and/or delayed procedures with respect to investment-related regulations (10), v) lack of transparency in policies and regulations concerning investment (8), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (7). Examples include complexity, delays, and difficulty of administrative procedures and arbitrary interpretation in implementing regulations under category vi), lack of transparency and instability of regulations and taxation issues under category v), and difficulty in hiring

and securing human resources due to shortages of management staff and engineers, high turnover ratios, and issues involving investment incentives, and inadequate infrastructure such as electricity supply and road and traffic under category viii).

4.3.6. Myanmar (28 Incidents, 10 Japanese Affiliates)

The major categories are v) lack of transparency in policies and regulations concerning investment (8), vi) complicated and/or delayed procedures with respect to investment-related regulations (7), iii) restrictions on overseas remittances and controls on foreign currency transactions (5), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (5). The examples are underdevelopment and ambiguity of legal systems and regulations such as a double exchange rates regime, double taxation due to lack of tax treaties, and taxation under category v), complexity and delay of administrative procedures such as customs clearance and overseas remittances under category vi), ambiguity and strengthened regulations on overseas remittances and various controls on foreign currency transactions under category iii), and underdevelopment or lack of infrastructure such as electricity supply, ports, and airports under category ix).[13]

4.3.7. The Philippines (57 Incidents, 419 Japanese Affiliates)

The number of incidents increased sharply in categories for FDI facilitation from 37 to 48, particularly due to a growing number of issues related to implementation problems

[13] See Ando (2009) for multiple exchange rate regimes in Myanmar.

for investment-related policies and regulations and labor regulations and practices excessively favorable to workers. Consequently, the total number of incidents increased from 48 to 57, though the number of incidents decreased in categories for FDI liberalization as a whole. The major categories are vi) complicated and/or delayed procedures with respect to investment-related regulations (16), v) lack of transparency in policies and regulations concerning investment (11), viii) labor regulations and related practices excessively favorable to workers (10), ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (8), and restrictions on foreign entry i). The issues in the Philippines are spread widely across many categories: complexity, delays, and inefficiency of administrative procedures, arbitrary interpretation in implementing regulations, and corruption under category vi), ambiguity, sudden and frequent changes of regulations and standards and conformity issues under category v), various labor restrictions under category viii), high turnover ratios, underdeveloped infrastructure such as electricity and road and traffic, and insufficient incentives for foreign investment and supporting industries under category ix), and restrictions on foreign entry into specific sectors under category i).

4.3.8. Singapore (7 Incidents, 991 Japanese Affiliates)

The categories with the largest number of incidents, although they are very few, for Singapore are viii) labor regulations and related practices excessively favorable to workers (3) and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (3). The issues reflect rapid increases in wage levels,

an increasingly heavy burden of employee pensions, the burden of educational funding, and difficulty in hiring and securing human resources due to shortages of management staff and engineers, and high turnover ratios.

4.3.9. Thailand (60 Incidents, 1577 Japanese Affiliates)

Thailand is the country where the number of reporting Japanese affiliates is the largest among ASEAN countries. As mentioned above, the number of incidents declined in categories for FDI facilitation from 53 to 45, particularly implementation problems for investment-related policies and regulations and underdevelopment infrastructure, and in a category for FDI liberalization concerning restrictions on the movement of people and employment requirements from 6 to 2. As a result, the total number of incidents dropped from 69 to 60. The major categories recording the incidents are vi) complicated and/or delayed procedures with respect to investment-related regulations (20), v) lack of transparency in policies and regulations concerning investment (14), i) restrictions on foreign entry (8), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (5). Examples include complexity and delays in administrative procedures and arbitrary interpretation in implementing regulations under category vi), underdevelopment and lack of transparency of various regulations and taxation issues under category v), restrictions on foreign entry under category i), and high turnover ratios and inadequate infrastructure under category ix).

4.3.10. Vietnam (58 Incidents, 332 Japanese Affiliates)

Vietnam has been active in hosting FDI in recent years, and thus an increasingly large number of issues are likely to be reported. Similarly to the Philippines, the number of incidents noticeably increased in categories for FDI facilitation from 34 to 49, particularly due to a growing number of issues in terms of institutional problems and implementation problems for investment-related policies and regulations and underdeveloped infrastructure and shortage of human resources. Consequently, the total number of incidents increased from 50 to 58, though the number of incidents declined in categories for FDI liberalization as a whole from 16 to 9. Major categories registering incidents are vi) complicated and/or delayed procedures with respect to investment-related regulations (18), v) lack of transparency in policies and regulations concerning investment (12), and ix) underdeveloped infrastructure, shortages of human resources, and insufficient investment incentives (11). The examples are complexity and delay of administrative procedures and arbitrary implementation of customs clearance under category vi), underdevelopment, ambiguity, and sudden changes in various regulations under category v), and underdeveloped infrastructure and difficulty in hiring and securing human resources due to shortages of management staff and engineers under category ix).

5. Concluding Remarks and Policy Recommendations

Our analysis of the FDI climate study for ASEAN countries revealed that impediments to FDI are found not only in the policies but also in their implementation and enforcement. As far as FDI policies are concerned, wide variations concerning their openness are found among ASEAN countries. One of the most important findings of our study are the impediments concerning screening and appraisal procedures regarding FDI application. The impediments concern not only the rules or policies but also the practices in the forms of lack of transparency and complicated/delayed processing.

Our findings indicate the need for further liberalization of FDI policies and promotion of facilitation measures for ASEAN countries in order to successfully attract FDI. In order to achieve these goals, we would like to make several policy recommendations. First, in order to promote FDI policy liberalization, the ASEAN countries should use various existing frameworks, such as WTO/GATT's TRIMs agreement, BITs, FTAs, and other legal frameworks. In particular, ASEAN should use the ASEAN Comprehensive Investment Agreement. Second, to overcome obstacles concerning FDI facilitation, the ASEAN countries should actively use various cooperation programs with developed countries to improve human resources engaged in the implementation and enforcement of FDI policies. Possible multilateral and regional sources of technical assistance in this area may be UNCTAD, OECD, and ERIA. Third, monitoring of the achievement of FDI liberalization and facilitation has to be emphasized, in order to achieve a freer FDI environment. In this regard, a monitoring mechanism

should be established in ASEAN, if it has not been established yet, or in ERIA. Finally, firm surveys on foreign companies from various countries, in addition to those from Japan which are utilized in our study, should be conducted to identify FDI impediments.

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Table A2.1. GCI Components and Notable Competitive Disadvantages: 2008-2009

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Overall GCI ranking	39	109	55	21	71	5	34	70
Basic requirements								
1. Institutions								
Public institutions								
Property rights								
1.01 Property rights	62	118	117	38	92		61	75
1.02 Intellectual property protection	52	110	102	33	89		55	94
Ethics and corruption								
1.03 Diversion of publics funds		92	68	39	117		56	84
1.04 Public trust and politicians		70	59		123		64	
Undue influence								
1.05 Judicial independence	54	118	80	47	83	15	53	75
1.06 Favoritism in decisions of government officials		87		28	117		49	70
Government inefficiency (red tape, bureaucracy and waste)								
1.07 Wastefulness of government spending		81			120		34	83
1.08 Burden of government regulation	58	87			109		47	105
1.09 Efficiency of legal framework	47	91	66	21	104		49	56
1.10 Transparency of government policymaking		76	121		85		60	58
Security								
1.11 Business costs of terrorism		98	81	82	125	76	107	99
1.12 Business costs of crime and violence		79		74	93		50	58
1.13 Organized crime		83	61	75	92		63	85
1.14 Reliability of police services	42	115	85	37	98		71	
Private institutions								
Corporate ethics								
1.15 Ethical behaviour of firms	50	99	97	30	102		69	73
Accountability								
1.16 Strength of auditing and accounting standards	63	126	75	33			58	106
1.17 Efficacy of corporate boards	43	72		25	53		66	85
1.18 Protection of minority shareholders' interests	93	106		25	54		46	75
2. Infrastructure								
2.01 Quality of overall infrastructure	39	82	96		94		35	97
2.02 Quality of roads		80	105		94			102
2.03 Quality of railroad infrastructure	n.a.	97	58		85		48	66
2.04 Quality of port infrastructure		91	104		100		48	112
2.05 Quality of air transport infrastructure		87	75		89			92
2.06 Available seat kilometres	86	91		22		17		
2.07 Quality of electricity supply	45	117	92	31	82	13	43	104
2.08 Telephone lines	61	132	100	71	105	30	86	
3. Macroeconomy								
3.01 Government surplus/deficit		71	84	109	64		96	86
3.02 National savings rate		93			84			
3.03 Inflation		74	79	25		24		103
3.04 Interest rate spread	52	122	74	31	64	59	48	
3.05 Government debt		52	63	74	96	121	66	76

(Table A2.1. Continued)

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
4. Health and primary education								
Health								
4.01 Business impact of malaria	89	105	93	76	87	56	60	79
4.02 Malaria incidence	74	109	96	84	91		93	90
4.03 Business impact of tuberculosis	85	109	86	65	102	29	57	88
4.04 Tuberculosis incidence	80	127	109	88	115	46	96	100
4.05 Business impacts of HIV/AIDS	69	109	78	67	61	19	97	75
4.06 HIV prevalence		95		79		50	108	79
4.07 Infant mortality	39	125	88	47	83		70	64
4.08 Life expectancy		108	89	66	89	12	66	66
Primary education								
4.09 Quality of primary education		122	51	23	72		64	96
4.10 Primary enrolment	64	87			76	38	61	55
4.11 Education expenditure	101	121	126		113	110	46	100
Efficiency enhancers								
5. Higher education and training								
Quantity of education								
5.01 Secondary enrolment		115	102	95	79	21	85	100
5.02 Tertiary enrolment	94	117	91	71	72	31	44	106
Quality of education								
5.03 Quality of the educational system	48	112					53	120
5.04 Quality of math and science education	53	122		21	100		55	72
5.05 Quality of management schools	88	123		23			49	120
5.06 Internet access in schools		107	58	40	56		42	62
5.07 Local availability of specialized research	105	115		27	51	13	58	76
5.08 Extent of staff training	61	107					51	72
6. Goods Market efficiency								
6.01 Intensity of local competition	81	118		31	74	30	45	56
6.02 Extent of market dominance	61	88		24	104	11	60	
6.03 Effectiveness of anti-monopoly policy	83	118		40	77	20	66	91
6.04 Extent and effect of taxation					65			53
6.05 Total tax rate	47			40	99		49	61
6.06 Number of procedures required to start a business	125	75	103	58	120		44	91
6.07 Time required to start a business	125	120	123	51	107		77	105
6.08 Agricultural policy costs					76		52	
6.09 Prevalence of trade barriers	80	105		70	95		101	110
6.10 Trade-weighted tariff rate	70	107	66	72	52		81	126
6.11 Prevalence of foreign ownership	121	75		67	98		89	104
6.12 Business impact of rules on FDI	81	70		47	97		68	
6.13 Burden of customs procedures		110	95	27	105		52	91
6.14 Degree of customer orientation	62	85		22				91
6.15 Buyer sophistication	99	65		23			44	

(Table A2.1. Continued)

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
7. Labor Market efficiency								
7.01 Cooperation in labor-employer relations		113			71			91
7.02 Flexibility of wage determination		84	79	42	108		91	101
7.03 Non-wage labor costs				60		46		69
7.04 Rigidity of employment		90	87		61			
7.05 Hiring and firing practices	79			42	101		39	
7.06 Firing costs		70	117	95	108		84	103
7.07 Pay and productivity		64			57		43	
7.08 Reliance on professional management	82	121		22			59	95
7.09 Brain drain		55		29	116	13		88
7.10 Female participation in labor force	109		102	107	86	83	38	
8. Financial markets sophistication								
8.01 Financial market sophistication	68	114	72	31	57		37	106
8.02 Financing through local equity market	126	134			54	18		
8.03 Ease of access to loans	62	107	65		89	11	44	91
8.04 Venture capital availability	78	95			77	12	53	59
8.05 Restriction on capital flows	71	62		67	75		104	84
8.06 Strength of investor protection	86				107			123
8.07 Soundness of banks	61	125	121	50	72	13	75	113
8.08 Regulation of securities exchanges	101	130		32	66		36	81
8.09 Legal rights index		128	52		93		52	
9. Technological readiness								
9.01 Availability of latest technologies	59	109	61	29	52	14	50	71
9.02 Firm-level technology absorption	53	106	65	21		13	61	54
9.03 Laws relating to ICT	85	122	71		60		61	72
9.04 FDI and technology transfer	82	94					48	57
9.05 Mobile telephone subscribers	53	120	100	56	84	15	72	114
9.06 Internet users		130	107		101	15	78	70
9.07 Personal computers	67	128	105	38	70		72	63
9.08 Broadband Internet subscribers	57	108	100	51	96	22	94	79
10. Market size								
10.01 Domestic market size	123	96		35		53		
10.02 Foreign market size	92	79				11		
Innovation and sophistication factors								
11. Business sophistication								
Networks and supporting industries								
11.01 Local supplier quantity	63	126			77	44		79
11.02 Local supplier quality	82	117	57	32	64	22	40	97
Sophistication of firms' operations and strategy								
11.03 State of cluster development	78	60			56			
11.04 Nature of competitive advantage	39	86		29		16	67	126
11.05 Value-chain breadth	128	88		26		14	54	91
11.06 Control of international distribution	127	123			67	57	83	119
11.07 Production process sophistication	87	107	72	27	77	14	68	94
11.08 Extent of marketing	106	117	55	29		17	47	98
11.09 Willingness to delegate authority	104	120				15	67	96

(Table A2.1. Continued)

	Brunei	Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
12. Innovation								
12.01 Capacity for innovation	103	107	53	21	63	19	64	
12.02 Quality of scientific research institutions	93	120			86	13	57	85
12.03 Company spending on research and development	92	75					54	
12.04 University-industry research collaboration	76	106	54		63		38	70
12.05 Government procurement of advanced technology products	45	85	87		110		48	
12.06 Availability of scientists and engineers	117	126		24	92	22	56	51
12.07 Utility patents	88	88	84	29	68	11	69	88

Data source: World Economic Forum (2009).

Note: variables considered as disadvantages are those ranked below 10 for Singapore with an overall ranking in the top 10 economies, those ranked equal to or lower than the economy's overall ranking for Brunei, Malaysia, Thailand, with an overall ranking from 11 to 50, and those ranked lower than 50 for Cambodia, Indonesia, the Philippines and Viet Nam with an overall ranking lower than 51.

Table A3.1. Assessment of FDI Policy Regimes by Country

Brunei	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.76**	**0.20**	**0.57**	**0.41**	**0.82**	**0.82**
A - Agriculture, forestry and fishing	0.90	0.25	1.00	0.50	1.00	1.00
B - Mining and quarrying	0.98	0.25	0.82	0.50	1.00	1.00
C - Manufacturing	0.95	0.25	0.81	0.50	1.00	1.00
D - Electricity, gas, steam and air conditioning supply	0.00	0.00	0.00	0.00	0.00	0.00
E - Water supply; sewerage, waste management and remediation activities	0.00	0.00	0.00	0.00	0.00	0.00
F - Construction	0.72	0.25	0.70	0.50	1.00	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	1.00	0.25	1.00	0.50	1.00	1.00
H - Transportation and storage	0.80	0.20	0.80	0.40	0.80	0.80
I - Accommodation and food service activities	1.00	0.25	1.00	0.50	1.00	1.00
J - Information and communication	1.00	0.25	0.55	0.50	1.00	1.00
K - Financial and insurance activities	1.00	0.25	0.10	0.50	1.00	1.00
L - Real estate activities	1.00	0.25	1.00	0.50	1.00	1.00
M - Professional, scientific and technical activities	0.89	0.25	0.61	0.50	1.00	1.00
N - Administrative and support service activities	1.00	0.25	1.00	0.50	1.00	1.00
O - Public administration and defence; compulsory social security	0.00	0.00	0.00	0.00	0.00	0.00
P - Education	1.00	0.25	0.10	0.50	1.00	1.00
Q - Human health and social work activities	1.00	0.25	0.10	0.50	1.00	1.00
R - Arts, entertainment and recreation	0.75	0.19	0.08	0.38	0.75	0.75
S - Other service activities	0.67	0.17	0.67	0.33	0.67	0.67
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	0.25	0.55	0.50	1.00	1.00
U - Activities of extraterritorial organizations and bodies	0.25	0.25	1.00	0.50	1.00	1.00

Cambodia	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.86**	**0.60**	**0.25**	**1.00**	**0.25**	**0.88**
A - Agriculture, forestry and fishing	0.90	1.00	0.25	1.00	0.25	0.90
B - Mining and quarrying	0.80	0.25	0.25	1.00	0.25	0.75
C - Manufacturing	0.90	1.00	0.25	1.00	0.25	0.90
D - Electricity, gas, steam and air conditioning supply	0.90	0.25	0.25	1.00	0.25	0.90
E - Water supply; sewerage, waste management and remediation activities	0.90	0.65	0.25	1.00	0.25	0.85
F - Construction	0.90	0.25	0.25	1.00	0.25	0.90
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.90	0.25	0.25	1.00	0.25	0.90
H - Transportation and storage	0.90	0.40	0.25	1.00	0.25	0.90
I - Accommodation and food service activities	0.90	1.00	0.25	1.00	0.25	0.90
J - Information and communication	0.80	0.65	0.25	1.00	0.25	0.90
K - Financial and insurance activities	0.90	0.50	0.25	1.00	0.25	0.90
L - Real estate activities	0.25	0.25	0.25	1.00	0.25	0.75
M - Professional, scientific and technical activities	0.90	0.60	0.25	1.00	0.25	0.90
N - Administrative and support service activities	0.90	0.90	0.25	1.00	0.25	0.90
O - Public administration and defence; compulsory social security	0.90	1.00	0.25	1.00	0.25	0.90
P - Education	0.90	0.25	0.25	1.00	0.25	0.90
Q - Human health and social work activities	0.90	0.25	0.25	1.00	0.25	0.90
R - Arts, entertainment and recreation	0.90	0.25	0.25	1.00	0.25	0.90
S - Other service activities	0.90	1.00	0.25	1.00	0.25	0.90
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.90	1.00	0.25	1.00	0.25	0.90
U - Activities of extraterritorial organizations and bodies	0.90	1.00	0.25	1.00	0.25	0.90

(Table A3.1. Continued)

Indonesia	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.69**	**0.95**	**0.24**	**0.95**	**0.48**	**0.95**
A - Agriculture, forestry and fishing	0.67	1.00	0.25	1.00	0.50	1.00
B - Mining and quarrying	0.36	1.00	0.25	1.00	0.50	1.00
C - Manufacturing	0.24	0.96	0.24	0.96	0.48	0.96
D - Electricity, gas, steam and air conditioning supply	0.80	1.00	0.25	1.00	0.50	1.00
E - Water supply; sewerage, waste management and remediation activities	0.80	1.00	0.25	1.00	0.50	1.00
F - Construction	0.80	1.00	0.25	1.00	0.50	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	1.00	1.00	0.25	1.00	0.50	1.00
H - Transportation and storage	0.50	1.00	0.25	1.00	0.50	1.00
I - Accommodation and Food service activities	1.00	1.00	0.25	1.00	0.50	1.00
J - Information and communication	0.78	1.00	0.25	1.00	0.50	1.00
K - Financial and insurance activities	0.83	1.00	0.25	1.00	0.50	1.00
L - Real estate activities	0.90	1.00	0.25	1.00	0.50	1.00
M - Professional, scientific and technical activities	0.36	1.00	0.25	1.00	0.50	1.00
N - Administrative and support service activities	0.95	1.00	0.25	1.00	0.50	1.00
O - Public administration and defence; compulsory social security	0.00	0.00	0.00	0.00	0.00	0.00
P - Education	0.50	1.00	0.25	1.00	0.50	1.00
Q - Human health and social work activities	0.50	1.00	0.25	1.00	0.50	1.00
R - Arts, entertainment and recreation	0.80	1.00	0.25	1.00	0.50	1.00
S - Other service activities	0.70	1.00	0.25	1.00	0.50	1.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	0.25	1.00	0.50	1.00
U - Activities of extraterritorial organizations and bodies	1.00	1.00	0.25	1.00	0.50	1.00

Lao PDR	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.60**	**0.70**	**0.34**	**0.67**	**0.54**	**0.79**
A - Agriculture, forestry and fishing	0.90	1.00	0.50	1.00	0.80	1.00
B - Mining and quarrying	0.90	1.00	0.50	1.00	0.80	1.00
C - Manufacturing	0.59	1.00	0.43	0.87	0.70	0.50
D - Electricity, gas, steam and air conditioning supply	0.30	1.00	0.00	0.00	0.00	1.00
E - Water supply; sewerage, waste management and remediation activities	0.90	1.00	0.50	1.00	0.80	1.00
F - Construction	0.00	0.00	0.00	0.00	0.00	0.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.90	1.00	0.50	1.00	0.80	1.00
H - Transportation and storage	0.72	1.00	0.40	0.80	0.64	1.00
I - Accommodation and Food service activities	0.90	1.00	0.50	1.00	0.80	1.00
J - Information and communication	0.35	1.00	0.30	0.60	0.48	1.00
K - Financial and insurance activities	0.90	0.25	0.50	1.00	0.80	1.00
L - Real estate activities	0.90	0.25	0.50	1.00	0.80	1.00
M - Professional, scientific and technical activities	0.90	0.25	0.50	1.00	0.80	1.00
N - Administrative and support service activities	0.71	1.00	0.41	0.83	0.66	1.00
O - Public administration and defence; compulsory social security	0.00	1.00	0.00	0.00	0.00	1.00
P - Education	0.90	1.00	0.50	1.00	0.80	1.00
Q - Human health and social work activities	0.90	1.00	0.50	1.00	0.80	1.00
R - Arts, entertainment and recreation	0.00	0.00	0.00	0.00	0.00	0.00
S - Other service activities	0.00	0.00	0.00	0.00	0.00	0.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.00	0.00	0.00	0.00	0.00	0.00
U - Activities of extraterritorial organizations and bodies	0.90	1.00	0.50	1.00	0.80	1.00

(Table A3.1. Continued)

Malaysia	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.59**	**0.17**	**0.76**	**0.62**	**0.89**	**0.91**
A - Agriculture, forestry and fishing	0.90	0.00	0.90	0.90	1.00	1.00
B - Mining and quarrying	0.80	0.00	0.00	0.90	1.00	1.00
C - Manufacturing	1.00	0.23	0.86	0.86	1.00	0.50
D - Electricity, gas, steam and air conditioning supply	0.40	0.00	0.90	0.25	1.00	1.00
E - Water supply; sewerage, waste management and remediation activities	0.30	0.00	0.68	0.19	0.75	0.75
F - Construction	1.00	0.00	0.93	0.50	1.00	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.70	0.00	0.90	0.75	1.00	0.90
H - Transportation and storage	0.70	0.00	0.90	0.30	1.00	1.00
I - Accommodation and food service activities	0.25	0.00	0.45	0.13	0.50	0.50
J - Information and communication	0.40	0.00	0.90	0.25	1.00	1.00
K - Financial and insurance activities	0.60	0.00	0.90	0.25	1.00	1.00
L - Real estate activities	0.25	0.00	0.00	0.75	0.25	1.00
M - Professional, scientific and technical activities	0.77	0.71	0.71	0.71	0.71	0.86
N - Administrative and support service activities	0.60	0.67	0.97	0.96	1.00	1.00
O - Public administration and defence; compulsory social security	0.40	0.00	0.90	0.75	1.00	1.00
P - Education	0.40	0.00	0.90	0.75	1.00	1.00
Q - Human health and social work activities	0.40	0.00	0.90	0.75	1.00	1.00
R - Arts, entertainment and recreation	0.20	0.00	0.45	0.38	0.50	0.50
S - Other service activities	0.40	0.00	0.90	0.75	1.00	1.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	1.00	1.00	1.00	1.00
U - Activities of extraterritorial organizations and bodies	1.00	1.00	1.00	1.00	1.00	1.00

Myanmar	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.55**	**0.61**	**0.30**	**0.61**	**0.24**	**0.61**
A - Agriculture, forestry and fishing	0.00	0.00	0.00	0.00	0.00	0.00
B - Mining and quarrying	0.00	0.00	0.00	0.00	0.00	0.00
C - Manufacturing	0.45	0.50	0.25	0.50	0.20	0.50
D - Electricity, gas, steam and air conditioning supply	0.00	0.00	0.00	0.00	0.00	0.00
E - Water supply; sewerage, waste management and remediation activities	0.90	1.00	0.50	1.00	0.40	1.00
F - Construction	0.90	1.00	0.50	1.00	0.40	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.90	1.00	0.50	1.00	0.40	1.00
H - Transportation and storage	0.54	0.60	0.30	0.60	0.24	0.60
I - Accommodation and Food service activities	0.00	0.00	0.00	0.00	0.00	0.00
J - Information and communication	0.00	0.00	0.00	0.00	0.00	0.00
K - Financial and insurance activities	0.00	0.00	0.00	0.00	0.00	0.00
L - Real estate activities	0.90	1.00	0.50	1.00	0.40	1.00
M - Professional, scientific and technical activities	0.90	1.00	0.50	1.00	0.40	1.00
N - Administrative and support service activities	0.60	0.67	0.33	0.67	0.27	0.67
O - Public administration and defence; compulsory social security	0.00	0.00	0.00	0.00	0.00	0.00
P - Education	0.90	1.00	0.50	1.00	0.40	1.00
Q - Human health and social work activities	0.90	1.00	0.50	1.00	0.40	1.00
R - Arts, entertainment and recreation	0.90	1.00	0.50	1.00	0.40	1.00
S - Other service activities	0.90	1.00	0.50	1.00	0.40	1.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0.90	1.00	0.50	1.00	0.40	1.00
U - Activities of extraterritorial organizations and bodies	0.90	1.00	0.50	1.00	0.40	1.00

(Table A3.1. Continued)

Philippines	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.74**	**0.81**	**0.89**	**0.48**	**0.96**	**0.89**
A - Agriculture, forestry and fishing	0.65	0.25	0.90	0.50	1.00	0.75
B - Mining and quarrying	0.70	0.25	0.90	0.50	1.00	0.75
C - Manufacturing	0.90	0.90	1.00	0.50	1.00	0.75
D - Electricity, gas, steam and air conditioning supply	0.70	1.00	1.00	0.50	1.00	0.75
E - Water supply; sewerage, waste management and remediation activities	0.70	0.80	0.90	0.50	1.00	1.00
F - Construction	0.85	1.00	1.00	0.50	1.00	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.95	0.75	1.00	0.50	1.00	0.90
H - Transportation and storage	0.50	0.45	1.00	0.50	1.00	0.85
I - Accommodation and food service activities	0.95	1.00	0.75	0.50	1.00	1.00
J - Information and communication	0.60	1.00	0.90	0.50	1.00	0.90
K - Financial and insurance activities	0.80	1.00	0.85	0.60	1.00	0.90
L - Real estate activities	0.50	0.25	1.00	0.50	1.00	1.00
M - Professional, scientific and technical activities	0.45	0.50	0.80	0.50	0.25	0.90
N - Administrative and support service activities	0.65	0.90	0.80	0.50	0.85	0.95
O - Public administration and defence; compulsory social security	0.50	1.00	1.00	0.50	1.00	0.90
P - Education	0.50	1.00	0.25	0.00	1.00	0.75
Q - Human health and social work activities	0.85	1.00	0.85	0.50	1.00	0.75
R - Arts, entertainment and recreation	0.85	1.00	0.75	0.50	1.00	0.95
S - Other service activities	1.00	1.00	1.00	0.50	1.00	1.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	1.00	0.50	1.00	1.00
U - Activities of extraterritorial organizations and bodies	1.00	1.00	1.00	0.50	1.00	1.00

Singapore	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.83**	**0.95**	**0.86**	**0.75**	**0.95**	**0.95**
A - Agriculture, forestry and fishing	1.00	1.00	1.00	0.75	1.00	1.00
B - Mining and quarrying	1.00	1.00	1.00	0.75	1.00	1.00
C - Manufacturing	1.00	0.91	0.94	0.75	1.00	1.00
D - Electricity, gas, steam and air conditioning supply	0.00	0.00	0.00	0.00	0.00	0.00
E - Water supply; sewerage, waste management and remediation activities	1.00	1.00	1.00	0.75	1.00	1.00
F - Construction	1.00	1.00	1.00	0.75	1.00	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.90	1.00	1.00	0.75	1.00	1.00
H - Transportation and storage	0.70	1.00	0.85	0.75	1.00	1.00
I - Accommodation and Food service activities	1.00	1.00	1.00	0.75	1.00	1.00
J - Information and communication	0.83	1.00	0.88	0.75	1.00	1.00
K - Financial and insurance activities	1.00	1.00	0.25	0.75	1.00	1.00
L - Real estate activities	0.25	1.00	1.00	0.75	1.00	1.00
M - Professional, scientific and technical activities	0.89	1.00	0.72	0.75	1.00	1.00
N - Administrative and support service activities	0.98	1.00	1.00	0.75	1.00	1.00
O - Public administration and defence; compulsory social security	1.00	1.00	1.00	0.75	1.00	1.00
P - Education	0.00	1.00	1.00	0.75	1.00	1.00
Q - Human health and social work activities	1.00	1.00	0.75	0.75	1.00	1.00
R - Arts, entertainment and recreation	1.00	1.00	1.00	0.75	1.00	1.00
S - Other service activities	0.97	1.00	0.75	0.75	1.00	1.00
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	1.00	0.75	1.00	1.00
U - Activities of extraterritorial organizations and bodies	1.00	1.00	1.00	0.75	1.00	1.00

(Table A3.1. Continued)

Thailand	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.58**	**1.00**	**0.91**	**0.98**	**0.37**	**0.90**
A - Agriculture, forestry and fishing	0.50	1.00	0.90	1.00	0.00	0.90
B - Mining and quarrying	0.68	1.00	0.92	1.00	0.29	0.90
C - Manufacturing	0.84	1.00	0.97	1.00	0.34	0.90
D - Electricity, gas, steam and air conditioning supply	0.50	1.00	0.90	1.00	0.40	0.90
E - Water supply; sewerage, waste management and remediation activities	0.50	1.00	0.90	1.00	0.40	0.90
F - Construction	0.50	1.00	0.90	1.00	0.40	0.90
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.50	1.00	0.90	1.00	0.40	0.90
H - Transportation and storage	0.50	1.00	0.90	1.00	0.40	0.90
I - Accommodation and food service activities	0.50	1.00	0.90	1.00	0.40	0.90
J - Information and communication	0.50	1.00	0.90	1.00	0.40	0.90
K - Financial and insurance activities	0.50	1.00	0.90	0.50	0.40	0.90
L - Real estate activities	0.50	1.00	0.90	1.00	0.40	0.90
M - Professional, scientific and technical activities	0.50	1.00	0.90	1.00	0.40	0.90
N - Administrative and support service activities	0.50	1.00	0.90	1.00	0.40	0.90
O - Public administration and defence; compulsory social security	0.50	1.00	0.90	1.00	0.40	0.90
P - Education	0.50	1.00	0.90	1.00	0.40	0.90
Q - Human health and social work activities	0.50	1.00	0.90	1.00	0.40	0.90
R - Arts, entertainment and recreation	0.63	1.00	0.93	1.00	0.40	0.90
S - Other service activities	0.50	1.00	0.90	1.00	0.40	0.90
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	1.00	1.00	0.40	0.90
U - Activities of extraterritorial organizations and bodies	1.00	1.00	1.00	1.00	0.40	0.90

Vietnam	Market access	National treatment	Screening & appraisal	Board of directors	Movement of investors	Performance requirement
All sectors	**0.66**	**0.74**	**0.64**	**0.71**	**0.53**	**0.85**
A - Agriculture, forestry and fishing	0.80	1.00	0.65	0.75	0.60	0.90
B - Mining and quarrying	0.90	0.85	0.30	0.95	0.75	0.95
C - Manufacturing	0.95	0.95	0.85	1.00	0.80	0.95
D - Electricity, gas, steam and air conditioning supply	0.50	1.00	0.10	0.75	0.50	0.90
E - Water supply; sewerage, waste management and remediation activities	0.80	1.00	0.90	0.90	0.65	1.00
F - Construction	0.40	0.25	0.70	0.75	0.50	1.00
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	0.20	0.20	0.40	0.75	0.50	1.00
H - Transportation and storage	0.50	0.85	0.65	0.75	0.50	1.00
I - Accommodation and food service activities	0.90	1.00	1.00	0.90	0.65	1.00
J - Information and communication	0.50	0.60	0.50	0.50	0.60	0.70
K - Financial and insurance activities	0.85	1.00	0.80	0.75	0.50	0.95
L - Real estate activities	1.00	1.00	0.90	0.75	0.50	1.00
M - Professional, scientific and technical activities	0.80	0.70	0.80	0.70	0.50	0.80
N - Administrative and support service activities	0.90	0.75	1.00	0.90	0.70	1.00
O - Public administration and defence; compulsory social security	0.00	0.00	0.00	0.00	0.00	0.00
P - Education	0.90	1.00	0.50	0.75	0.50	0.75
Q - Human health and social work activities	0.30	0.35	0.30	0.30	0.20	1.00
R - Arts, entertainment and recreation	0.00	0.00	0.00	0.00	0.00	0.00
S - Other service activities	0.70	1.00	1.00	0.85	0.60	0.90
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	1.00	1.00	1.00	1.00	0.80	1.00
U - Activities of extraterritorial organizations and bodies	1.00	1.00	1.00	1.00	0.80	1.00

Table A4.1. Investment Issues in ASEAN Countries

Category Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
i) Restrictions on foreign entry																
Existence of prohibition and restriction on foreign entry	○		○		○						○		○		○	○
Restriction on foreign entry for specific sector: distribution service sector	○								○		○					○
Restriction on foreign entry for specific sector: coal mining industry	○										○					
Restriction on foreign entry for specific sector: retail trade	○		○						○				○			
Restriction on foreign entry for specific sector: no allowance of establishment of branches of general commercial bank		○														
Restriction on entry for specific sector: license requirement in the construction industry (license required only for foreign firms; no issuance of licenses for foreign-owned firms with more than 40% ownership)	○	○	○		○								○			
Restriction on foreign entry for specific sector: license requirement for integration, closing down, and movement of servives centers					○											
Restriction on foreign entry for specific sector: stop of registration and renewal of licenses for trade								○								
Restriction on entry for specific sector: licensing of transport business allowed only to a single company (monopoly with a company runned by the former prime minister's family, in exclusion of foreign and other local companies)		○										○				
Restriction on entry for specific sector: limited approval of license for domestic sea freight distributor (discriminatory against foreign companies; exclusive approval of Filipino and Filipino wholly-owned partnership and companies with Filipino ownership ratio of more than 60%)			○										○			
Prohibition on foreign entry for specific sector: bid on government		○										○				
Restriction on foreign ownership ratio for specific sector: non-manufacturing sector (restrictions on various types of services such as distribution and marketing)		○										○				
Restriction on foreign ownership ratio for specific sector: service sector (restrictions on the majority-owned foreign firms)	○				○										○	
Restriction on foreign ownership ratio for specific sector: linked with export ratio	○		○										○			
Joint venture issue: restrictions on foreign ownership ratios and joint venture requirement (including reduction in maximum foreign ownership ratios)	○															○
Joint venture issue: joint venture requirement with a state enterprise politically	○										○					
Minimum foreign capital requirement					○			○							○	
Land ownership and use: restrictions on (prohibition of) land ownership by foreign-owned firms	○		○		○				○		○		○		○	○
Land ownership and use: a lump-sum payment of land-use fee, implemented only for foreign-owned firms									○							○
Restructions on the form of establishment of offices to support branches and affiliates					○									○		
Discriminatory treatment on Japanese firms vis-à-vis U.S. firms					○										○	
ii) Performance requirements																
Home country insurance principle (obligation)		○										○				
Local content requirement: link between local content ratio and tariff rate									○							○
Local content requirement: exclusion of foreign-owned firms from domestic procurement												○				
Local content requirement: requirement to use local firms (Bumiputra firms)		○										○				
Local content requirement: planning of local content requirement policy for automobiles																○
Local content requirement: requirement for increasing local content ratios									○							○
Local content requirement: Insufficient ability of indigenous firms to satisfy local content requirement	○										○					
Performance requirements such as the amount of investment, export, production, etc. (including export requirement)												○				○

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
High percentage of direct exporting obligation												○				
Link with preferential treatment: requirement to hire local labors					○								○			
Link with preferential treatment: export ratio (export requirement)					○								○		○	
Government licensing requirement for royalty, brand-use fee, etc																○
Enforcement of obligation to conduct continuing exploration and survey for coal mine rights ownership	○										○					
iii) Restrictions on overseas remittances and controls on foreign currency transactions																
Restriction on overseas remittances: difficulty in remittances of compensation for intangible assets and services in foreign currencies					○											
Restriction on overseas remittances: reinforcement and lack of transparency in restrictions on remittances in foreign currencies								○								○
Restriction on overseas remittances: restrictions on upper bound of in-advanve payment			○													
Restriction on overseas remittances: difficulty in overseas remittance of the payment for foreign projects																
Restriction on overseas remittances: partly													○			
Restriction on overseas remittances: prohibitive tax imposed on remittances (including tax on profit remittances)															○	○
Control related to local currency: control on local currency transactions in offshore market					○						○	○				
Control related to local currency: restricted financing in Baht for non-residents															○	
Sudden introduction and modification of foreign exchange transaction controls												○				
Foreign currency transactions: restrictions on having foreign currencies												○				
Foreign currency transactions: restrictions on having and using foreign currencies in the domestic market								○				○				
Foreign currency transactions: requirement to obtain foreign currencies from exports to get import linceses								○								
Foreign currency transactions: difficulty in foreign exchange settlement and foreign payment									○							○
Foreign currency transactions: restriction on the way of using foreign currency deposits					○										○	
Foreign currency transactions: restriction on the withdrawal through foreign currency accounts								○								
Difficulty in currency hedging		○	○													
Restriction on "netting"								○				○				
Royalty payment: restrictions on royalty and strict method of calculating royalty									○							
Royalty payment: exclusion of imported parts, etc. from royalty calculation																○
iv) Restrictions on the movement of people and employment requirements																
Mandatory employment of local labor: general	○										○					
Mandatory employment of local labor: employment of Malaysians with a priority (including request for handover of managing directorship)		○										○				
Mandatory employment of local labor: nationality requirement of directors (including president and board members in investment trust companies)			○										○		○	
Restriction on hiring foreigners: employment quota for foreigners or restriction on foreign employment ratio				○	○							○		○	○	○
Restriction on hiring foreigners: modification and tightening of policies regarding foreign workers		○										○				
Restriction on hiring foreigners: restriction on hiring and visa issuance to mainland Chinese workers																
Visa issue: discontinued issuance of multiple-entry visa																
Visa issue: application fee for re-entry																

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Visa issue: difficulty in obtaining working visa, tightening of issuance condition (including cases of certain engineering or investors only), restriction on visa issuance					○				○			○			○	○
Visa issue: tightening of visa renewal (difficulty in renewal of multiple-entry visa; including suspension of renewal procedures in US)													○		○	
Visa issue: restricted entry by SMEs due to prerequisite conditions for working visa issuance															○	
Visa issue: no work permit under foreign temporary workers for construction engineering															○	
Visa issue: introduction of obligation to obtain entry visa	○										○					
Discriminate period of residency permit between those with and without university degree														○		
v) Lack of transparency in policies and regulations concerning investment (institutional problems)																
Underdevelopment, lack of transparency, and delay of implementation of regulations (inadequate implementing regulations and prolonged delays in their issuance): general	○					○		○			○					
Underdevelopment of legal system: implementation rules of EPA					○											
Underdevelopment of legal system: stock market and credit market						○										
Underdevelopment of legal system: regulations on mortgage, lien, and									○							○
Underdevelopment of legal system: financial system such as credit transactions									○							
Underdevelopment of legal system: foreign exchange system (double exchange rates)								○								
Underdevelopment of legal system: exchange contract							○									
Underdevelopment of legal system: temporary system of opening governments' windows responsive to emergency imports									○							
Underdevelopment of legal system: insufficient economic system based on domestic currencies						○										
Underdevelopment of legal system: re-organization of operations					○											
Underdevelopment of legal system (insufficiency): Corporate Separation Law and merger law															○	
Underdevelopment of legal system (insufficiency): Building Law, and Fire Defence Law, and related laws and regulations															○	
Underdevelopment of legal system (insufficiency): legislation about handling of chemicals and hazardous materials					○										○	
Underdevelopment of legal system (insufficiency): regulations on dishonor					○										○	
Underdevelopment of legal system (insufficiency): double taxation due to lack of tax treaty								○								
Underdevelopment of legal system (inadequacy): inadequate protection of depositors															○	
Underdevelopment and inconsistent implementation of legal system (insufficiency): foreign exchange law and taxation system					○										○	
Lack of transparency in legal system: ownership of land and its utilization system						○										
Lack of transparency in legal system: restrictions on equity transfer for joint venture companies		○														
Lack of transparency in legal system: regulations on tax laws											○					
Lack of transparency in legal system: investment incentives	○		○										○			
Lack of transparency in legal system: withdrawal rules															○	
Lack of transparency in legal system: conditions of employment															○	
Lack of transparency in legal system: licenses and approvals for construction					○										○	
Lack of transparency in legal system: an introduction of international practices		○														
Lack of transparency in legal system: disclosure of information on changes in regulations		○						○								

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Lack of transparency in legal system: conditions on application for contract of technicaal assistance		○														
Ambiguity of legal system: disparity of tariff rates among similar products	○										○					
Ambiguity of legal system: introduction of emission control regulations (including unrealistic policies)											○			○		
Ambiguity of legal system: foreign exchange laws		○	○									○				
Ambiguity of legal system: export restrictions						○										
Ambiguity of legal system: method to calculate tax								○								
Ambiguity of legal system: government procurement procedures										○						
Ambiguity of legal system: approval and license procedures by administrative institutions											○					
Ambiguity of legal system: approval and license criterion of investment-related regulations								○	○							○
Ambiguity of legal system: partnership requirement											○					
Ambiguity of legal system (insufficiency): regulations on disposal of industry wastes												○				
Ambiguity of legal system (insufficiency): tariff classification for parts and components									○							○
Lack of implementation of legal system: environmental control											○					
Sudden modification of legal system: general (including absence of legal stability)											○		○			
Sudden modification of legal system: capital control and other controls												○				
Sudden modification of legal system: incentives for foreign investors																○
Sudden modification of legal system: raising of import tariffs									○			○				
Sudden modification of legal system (introduction): new tax (value-added tax for export processing firms)									○							
Sudden modification of legal system: custom clearance (e-custom clearance)					○											
Sudden modification of legal system (setting): sudden setting of holidays	○		○										○			
Sudden modification of legal system: reduction of export incentices									○							
Sudden modification of legal system: crieria to prepare financial statements			○													
Sudden and frequent modification of legal system: laws and notices (general)	○								○							○
Modification and publicity of legal system: difficulty in accessing information on regulations and practices, and insufficient efforts to disseminate information on their revision			○										○			
Instability of legal system: possible changes in investment incentives			○													
Instability of legal system: automobile-related taxation system									○			○				
Instability of legal system: tax holiday regime											○					
Instability of legal system: possible tightning regulations on market access to the retail firms					○											
Instability of legal system: regulations on foreign workers		○										○				
Instability of legal system: possible regulations inconsistent with WTO					○											
Unsatisfactory quality of local parts and components due to insufficient regulations and standards												○				
Taxation issue: extremely high value-added taxs			○													
Taxation issue: elimination of tax exemption for imported equipments and imposition of corporate tax											○					
Taxation issue: tax withholding for PE and inter-branch transactions												○				
Taxation issue: tax exemption discriminatory between national and non-national cars		○										○				
Taxation issue: conformity requirement on accounting and tax service															○	
Taxation issue: inadequate reserve criteria for taxation regulations															○	
Taxation issue: persisting system of corporate tax withholding from supporting industry firms															○	

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Taxation issue: tax on surplus remittances					○										○	
Taxation issue: commercial tax (local production and exports and imports)								○								
Taxation issue: rent tax (real estates)								○								
Taxation issue: no application of preferential treatment of tax treaties (exemption of corporate tax at the source for subcontactors)			○													
Taxation issue: conditions on application of exise tax linked with incentive measures (eco-car policy)					○											
Taxation issue: tax on adverse spread					○											
Safety and environmental standards and certification issue: inadequate safety evaluation standards											○	○	○			
Safety and environmental standards and certification issue: insufficient regulations on anti-air pollution			○										○			
Safety and environmental standards and certification issue: unique technical standard and safety certification (iron and steel, plug etc)					○											
Safety and environmental standards and certification issue: inconsistency with the International Accounting Standards					○											
Depreciation issue: long depreciation period											○					
Depreciation issue: lack of exemplification of designated products (ambiguity)											○					
Import restriction: import restriction by import quota and import licensing (build-up car, steel, and color copy machine)		○														
Import restriction: difficulty in obaining import licenses									○							
Import restriction: import restriction on final products by manufacturing firms																○
Export restriction									○							
Unilateral abrogation of international commitments											○					
Limited tariff exemption for companies in the Special Economic Zones													○			
Unreasonable regulations and regulations without considering technological development trend			○										○		○	
Cap on surplus reserve			○										○			
Unilateral review of PPA													○			
vi) Complicated and/or delayed procedures with respect to investment-related regulations (implementation problems)																
Complicated procedures: regimes general											○					
Complicated procedures: procedures for equipment lease and rental certification									○		○					
Complicated procedures: procedures for overseas remittances															○	
Complicated procedures: approval and license procedures for merge, dissolution, or relocation of the service center					○										○	
Complicated procedures: renewal of import licensing (short period in effective)								○								
Complicated procedures: bidding rules for joint venture with state owned enterprises (application of rules for SOEs)									○							
Complicated procedures: signiture requirements to documents submitted to government agencies and ministries					○											
Complicated procedures: procedures for exception of import tariffs		○														
Complicated procedures (too-detailed): BOI approval and reporting procedures					○										○	
Complicated procedures (too-detailed): import licensing procedures																○
Complicated procedures (too-detailed): tax payment procedures for taxation at the source					○											
Complicated procedures (too-detailed): obtaining export and import licensing									○							
Complicated procedures: tax payment registration for foreign individuals											○					
Complicated procedures (including uniqueness): state customs clearance procedures												○				

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Complicated and delayed procedures: customs clearance (including clearance certificate requirement, AFTA origin certificate procedures and management, enforcement of certificate of origin document registration, off-shore trade customs clearance, and inefficiency of customs clearance)					○	○		○	○		○	○	○		○	○
Complicated and delayed procedures: procedures to apply for working visa and its renewal (including work permit)	○	○	○		○				○		○	○	○		○	○
Complicated and delayed procedures: tax regulations-related procedures	○		○								○					
Complicated and delayed procedures: EPTA procedures	○										○					
Complicated and delayed procedures: import tariff reimbursement and tax exemption procedures		○			○							○			○	
Complicated and delayed procedures: export bounty coupon issuance															○	
Complicated and delayed procedures: government approval procedures for withdrawal		○							○						○	○
Complicated and delayed procedures: BOI export and import approval and reporting procedures for products, materials, equipments, defective products and rejected materials					○										○	
Complicated and delayed procedures: patent registration application procedures					○											
Delayed procedures: import custom clearance and cargo inspection (including uncertainty)		○	○						○							
Delayed procedures: AICO approval procedures											○					
Delayed procedures: procedures to obtain permissions (general)								○	○							
Delayed procedures: certificate procedures for CEPT		○														
Delayed procedures: oversea payment								○								
Delayed procedures: permission of oversea remittance								○								
Delayed procedures: import license		○										○				
Delayed procedures: judgement of non-application of PE					○											
Delayed procedures: approval procedures for technology transfer																○
Delayed procedures: production license issuance (partial)															○	
Delayed procedures (including difficulty): procedures for waste disposal (and its renewal)			○										○		○	
Delayed procedures (including difficulty): procedures for prepayment of corporate tax reimbursement	○										○					
Delayed procedures (including difficulty): difficulty in obtaining AICO									○							○
Delayed procedures (including difficulty): renewal of business license								○								
Delayed procedures (including non-refunding and difficulty): value-added tax reimbursement procedures	○		○		○						○		○		○	
Delayed procedures (including non-refunding): corporate withholding tax reimbursement procedures					○										○	
Difficulty in procedures: corporate tax advance declaration and payment procedures		○										○				
Inefficiency of procedures (including corruption): investment approval procedures	○				○						○		○			
Inefficiency of procedures (including corruption): obtaining licenses for operations in the construction sector			○													
Disunity of procedures: procedures at the office counter (window)			○		○								○		○	
Complicated corporate tax prepayment system	○										○					
Complicated banking business resulting from the regulations requiring banking transactions in rupiah	○										○					
Complicated offsetting of debtors and creditors account in foreign trade transactions					○										○	
Complicated handling of BOI incentives															○	
Complicated approval and licensing for automobile price												○				

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Complicated L/C import system (iron and steel products)			○										○			
Insufficient enforcement of environmental protection									○							
Ambiguous implementation of antitrust law															○	
Arbitrary application of system: disunity of legal interpretation and implementation (including disunity and inconsistency of implementation of product safety certification system, excessive power of local officials, etc.)		○			○							○			○	○
Arbitrary application of system: diversity of implementation and interpretation by customs (including arbitrary tariff classification and tariff evaluation, difference with international rules, inequity of tariff rate application and ITA nonperformance)	○	○			○	○	○		○		○	○	○		○	
Arbitrary application of system: arbitrary corporate tax examination					○										○	
Arbitrary application of system: arbitrary and corrupt tax collection (including back taxes and tax on business corporations)	○		○			○					○		○		○	
Arbitrary application of system: extension of vaild period of license for air forwarder			○													
Disunity of legal interpretation for application of system: rules of origin					○								○			
Disunity of legal interpretation for application of system: acquisition of indigenous rights for land-use													○			
Disunity of regulations, controls, and legal interpretation for application among relevant ministries and agencies					○				○						○	
Disunity of legal interpretation for application of system: discriminately application for foreigners of a criteria of environment at the office									○							
Inconvenience of centralized authorization rights (including disapproval of PROSEC licensing procedures in rural areas)											○					
Special personal connection and political bribery and corruption of public savants (including collusion and corruption in customs)	○		○			○			○		○	○	○			○
Unanimous voting at the board meeting of joint ventures									○							○
Prohibitive port charge and departure tax											○					
Introduction of value-added tax to free trade zones											○					
Heavy burden of value-added tax			○										○			
Prohibitive individual income tax									○							
Income tax at the source for expensive expenses of the use			○													
Collection of technology promotion funds											○					
Inconsistent tax collection									○							○
Irrational traffic regulation											○					
Business tax			○													
Irrational payment due for public utility charges			○													
Irrationality of listed company provision												○				
Existence of excessive regulations such as X-ray controls												○				
Heavy burden of individual income tax																○
Restricted transfer of the equity share												○				
Difficulty in obtaining plans of governments												○				
Excessively strict foreign exchange control															○	
Signature requirement for document submitted to government and other public offices															○	
Discrimination against foreign firms provided by the Board of Investment																○
Rampant smuggling						○		○	○							○
Rampant illegal import of used cars																
Deemed tax valuation system																○
vii) Insufficient protection of intellectual property rights (IPRs)																
IPRs: widespread counterfeit goods and pirated copy goods due to insufficient protection of IPRs	○	○	○		○				○		○	○	○		○	○

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
IPRs: insufficient crackdown on counterfeit goods at the border (including Hong Kong customs case of watches), delayed appraisal during suspension of imports and uncertainty of disposal of seized articles		○	○									○				○
IPRs: unratified IPR treaty (global treaty)		○	○		○							○			○	
Trademark right: underdeveloped and insufficient trademark right protection	○										○					
viii) Labor regulations and related practices excessively favorable to workers																
Difficulty in firing workers: retirement and firing reglations excessively protective for workers	○	○			○				○		○				○	
Difficulty in firing workers: judgment of a labor court			○													
Wage: absence of minimum wage system (no minimum wage system and high labor cost)												○				
Wage: substantial raising, frequent and arbitrary revision and disparity control of minimum wage	○		○		○				○		○				○	
Wage: rapid increase in wage level (raising of labor cost)		○		○					○			○		○		○
Wage: disapproval of and difficulty in demotion and salary cut		○	○		○								○			
Strike: easy implementation of strike and long-term strike practices			○								○					
Illegal strike									○							
Payment of costs for labor-related court		○														
Restrictions on the period to hire temporary workers			○													
Irrational regulations on ages of young workers			○													
Labor-management agreement and practices excessively favorable to workers; difficulty in revision of conservative labor regulations and vested conditions of employment												○			○	○
Misuse of medical leave												○				
Excessive holidays and/or work absence		○										○				
Abuse of family and medical leave system																
Specificity of working time			○										○			
Unreasonably high wage rates for working on holidays			○										○			
Prohibition of employing contract workers			○										○			
Restriction on transfer of insurance officials among companies			○										○			
Greater burden of employees' pension				○										○		
Burden of educational fund				○										○		
Heavy burden of obligation to distribute taxable profits and profit sharing dividends to employees													○			
ix) Underdeveloped infrastructure, shortage of human resources, and insufficient investment incentives																
Difficulty in hiring and securing human resources due to shortage of management staff and engineers (including brain drain of IT engineers)		○		○					○		○	○	○	○	○	
High turnover ratio and job hopping practices		○	○	○	○									○	○	
Infrastructure issue: underdeveloped (industrial) infrastructure (general)											○		○		○	○
Infrastructure issue: increased risk of power shortages and electrical power supply (instability)	○	○	○		○	○		○	○			○				
Infrastructure issue: underdeveloped road and traffic	○	○	○	○	○	○	○	○	○							
Infrastructure issue: underdevelopment and lack of seaport infrastructure	○							○	○							
Infrastructure issue: inadequate spaces for railway and underdeveloped containerized railway transportation					○											
Infrastructure issue: creaky existing infrastructure											○					
Infrastructure issue: poor public physical distribution services											○					
Infrastructure issue: underdeveloped intermediate distribution															○	
Infrastructure issue: inadequate public sanitation	○		○									○				
Infrastructure issue: runaway cost of public utilities (instability)											○					
Infrastructure issue: insufficiency and underdevelopment of waste disposals									○				○			○
Infrastructure issue: delayed delivery due to traffic jam in cities									○							
Infrastructure issue: underdeveloped telecommunication infrastructure			○													

(Table A4.1. *Continued*)

Category / Issues	2008									2005						
	Indonesia	Malaysia	Philippines	Singapore	Thailand	Cambodia	Lao PDR	Myanmar	Vietnam	Brunei	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Infrastructure issue: insufficient air transport infrastructure					○			○								
Incentives issue: disparity of incentives in the same zone due to project-by-project grant of BOI incentives (irrationality)															○	
Incentives issue: absence of investment incentives for the construction industry															○	
Incentives issue: insufficient incentives for existing foreign-owned firms															○	
Incentives issue: insufficiency, shrinking and ambiguity of incentives for foreign investors	○										○		○			○
Incentives issue: insuffient exemption of import tariffs imposed on capital goods within economic zone			○													
Incentives issue: absence of incentives for parts manufacturer									○							○
Incentives issue: insufficient incentives for foreign finished car maker																○
Incentives issue: BOI tax incentives															○	
Incentives issue: discriminatory favorable incentives for national cars		○										○				
Insufficient incentive for nurture of supporting industries (including local industrial development policy)	○	○	○						○				○			○
Issues of local suppliers in terms of delivery time and quality																○
High tax rate: corporate tax											○					
High tax rate: individual income tax									○		○					
Financial market: immature financial market						○			○				○			○
Financial market: underdeveloped foreign currency exchange system						○	○	○					○			
Financial market: underdeveloped capital market						○									○	
Insufficiency of medical institutions		○	○										○			
Public security: frequent occurrence of theft		○	○													
x) Restricted competition and price controls																
Monopoly / unilateral increase in price of energy supply	○										○					
Discriminatory rise in fuel price	○										○					
Price reporting requirement to the Department of Commerce					○										○	
Government-designated trading company system									○							○
Monopolistic pricing									○							○
Discriminate pricing for loads at ports									○							
Double pricing between domestic and foreign investment								○								

Data source: Authors' preparation, based on JMC survery 2008 and Urata, Ando, and Ito (2007).

CHAPTER 5

Background Data for Constructing Quantitative Measures

This chapter contains the list of the tables of the background data to develop the quantitative measures presented in previous chapters.

The quantitative measures on services liberalization (Chapter 2) are based on the background data compiled by a team of researchers led by Dr. Philippa Dee, with close collaboration with project members from research institutes in ASEAN member countries. The quantitative measures on trade facilitation (Chapter 3) are based on the background data compiled by a team of researchers led by Dr. Christopher Findlay. The quantitative measures on FDI policy (Chapter 4) are based on the background data compiled by a team of researchers led by Dr. Shujiro Urata, with close collaboration with project members from research institutes in ASEAN member countries.

All tables are downloadable from the website of ERIA (http://www.eria.org).

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CHAPTER 6

Firm-level Analysis of Globalization: A Survey

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This paper extensively reviews empirical studies that analyze the various impacts of the globalization phenomenon on corporate activities by using micro data. First, we set up a flow chart describing how globalization leads to national productivity enhancement. Secondly, we summarize the hypotheses and the methods explored in 13 lines of literature on globalization, which this flow chart maps. Thirdly, we discuss further possible avenues for micro data analysis. Finally, we provide some suggestions on statistics-related policies.

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1. Introduction

Micro data analysis of corporate firms or establishments has totally redefined the scope of empirical policy studies since the latter half of the 1980s. It has been proved to be one of the most effective ways of investigating microeconomic causality and understanding macroeconomic consequences.

Micro data relating to productive sectors have been collected by the central government of each country. In particular, a census of manufacturing is the most important, well-developed primary set of statistics used in quantifying economic activities in the form of secondary statistics such as national accounts and input-output tables. To pinpoint the nature of economic activities, a manufacturing census typically collects data at the establishment level, rather than at the firm level. In addition, some countries have developed firm-level statistics in order to capture the sophisticated nature of corporate structures. Particularly at higher stages of development, some firms become big and operate multiple establishments as well as affiliates, both domestic and foreign, to conduct various economic activities at the same time. Internal corporate structure, together with various inter-firm relationships, becomes an important feature of firms, particularly in the globalised era.

Some studies construct their own micro data relating to establishments or firms. However, typical papers reviewed in this paper employ ready-made government data sets, though extensive cleaning-up is usually required. Since such micro data contain confidential information, their usage used often to be restricted by laws on the use of statistics. However, the accumulation of invaluable research papers using micro data has encouraged national statistical authorities to let researchers have access to micro

data subject to certain rules. As a result, the number of countries in which micro data are accessible for researchers has gradually increased.

The usage of micro data has substantially strengthened the basis of empirical research. Compared with traditional aggregated data at the macro or sectoral level, micro data at the establishment or firm level have a number of strong points. In particular, with micro data, econometric controls for industry characteristics are much easier. Furthermore, once we construct panel (longitudinal) data in which individual establishments or firms are traced over time, time-invariant characteristics of establishments/firms can be controlled so as to analyze the dynamic heterogeneous transformation of corporate activities. In other words, micro data allow us to provide a versatile empirical basis for rigorous econometric exercises investigating the heterogeneity of firms. Although a micro or panel data set is typically huge, the recent development of personal computers has made such analyses much easier and quicker than before. The advancement of econometrics on the usage of micro and panel/longitudinal data has also worked as a strong backbone of the development of the vast academic literature.

In the context of international trade literature, empirical analysis of globalizing corporate activities certainly requires the viewpoint of individual corporate firms. Globalization provides both enhanced competitive pressure and new opportunities in business for corporate firms. How they adapt to globalization depends heavily on the heterogeneous characteristics of individual firms. For example, the conclusion of a bilateral free trade agreement yields different impacts across firms. Some firms may start exporting or continue to export while others may stay in the domestic market. The use of firm-level data enables us to directly examine the relationship between firms'

characteristics and their export status, and to investigate what characteristics would be the key in globalizing corporate activities.

The formal introduction of firm heterogeneity in the theoretical literature of international trade is very recent. International trade theory has had a strong tradition of keeping a general equilibrium framework and has experienced a long-term struggle in incorporating the globalizing of corporate activities in a rigorous theoretical model. Economic literature has lagged behind international business literature in dealing with multinational enterprises or foreign direct investment; in international business literature, individual corporate strategies are analyzed typically without any consideration of economic equilibria. A major breakthrough came with Melitz (2003) in which the co-existence of heterogeneous firms is admitted without imposing rigorous market clearing conditions. By this important change in mindset, a more rigorous theoretical underpinning of economic logic became possible.

The aim of this paper is to review empirical studies that analyze the impact of globalization on corporative firms by using micro data. It is worthwhile conducting a serious survey of the literature in an organized manner now, because micro data analysis on the impact of globalization has been substantially accumulated. Indeed, there already exist some review papers in *each* literature on micro data analysis. In contrast to these existing review papers, this paper reviews 13 literatures in an organized manner. In micro data analysis, we can find similar methods and hypotheses throughout the literature. This becomes clearer if they are compared side-by-side. Since such a comprehensive survey highlights shortfalls or missing links in the micro data analysis, our paper should contribute greatly to researchers seeking future work/directions. In addition, such a review paper is convenient for researchers to compare empirical results

based on a new dataset with previous results in other countries. It seems particularly useful for East Asian economists because empirical research along this line in East Asia is relatively lagging compared with North America and Europe, and statistical data, not fully explored, are still abundant in East Asia. Such a collection of micro data analysis would also be useful for policy makers, who need to know what sort of policy guidance they can obtain from giving researchers access to micro data.

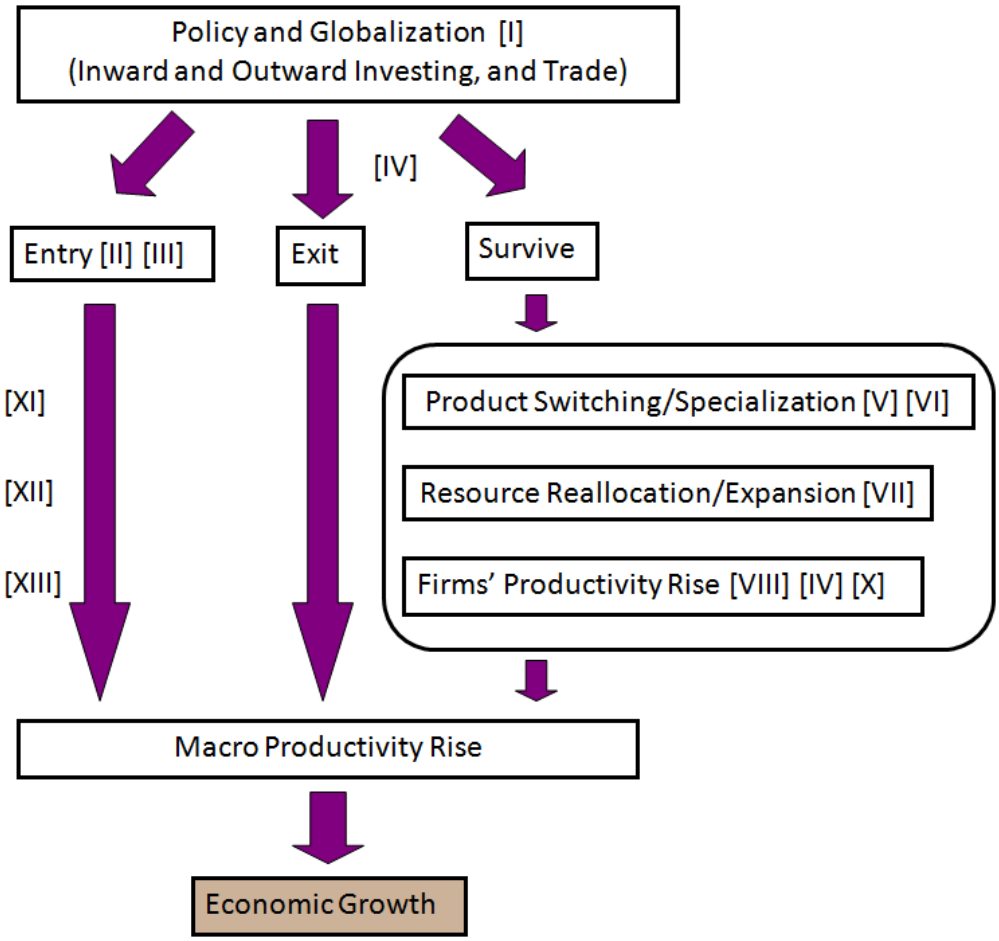
The rest of this paper is organized as follows: The next section reviews various literatures. In Section 3, we discuss possible avenues for micro-data analyses and issues on statistics-related policies. Section 4 concludes the paper.

2. Reviews

Our survey framework is summarized in the form of a flow chart describing how the advancement of globalization or changes in policy measures related to globalization lead to national productivity enhancement (Figure 1). There are multiple aspects of globalization influencing market functioning and various sorts of policy measures accelerating globalization of economic activities. As a consequence of further globalization, some existing firms will be forced to shut down, and some new firms will enter the domestic or international market. On the other hand, the surviving firms will change the variety of products they produce and/or expand their production. Furthermore, such firms will change the primary productive factors they intensively use and/or expand the demand of the productive factors. These changes and expansion should raise the productivity of the surviving firms. In addition to the rise of such

firms' productivity, due to the closure of firms with low productivity and the new entrants, the national productivity should rise, which leads to significant economic growth.

Figure 1. The Flow Chart on Globalization and Economic Growth



Our framework consists of 13 literatures. The first four literatures examine how different the responses to the measures are across firms. The first literature is about the selection of exporters and investors [I]. For example, it examines what kind of firms invests abroad. The second and third literatures investigate the kind of countries that multinational enterprises (MNEs) invest in [II] and the mode(s) of entry they use,

respectively. These literatures are well-known location choice and entry mode choice analyses. The fourth literature examines the characteristics of firms that survive and exit from the domestic and international markets [IV].

The next six literatures discuss the strategies employed by the surviving firms. The fifth and sixth literatures analyze the products that surviving firms produce. The fifth one looks into the decisions made on the number of products and investigates what kind of firms produces a larger number of varieties [V]. The sixth one examines the changes in the product line as the surviving firms change their production [VI]. The seventh literature is similar to the sixth one and investigates the changes in the factors of production that surviving firms undergo as they change their inputs [VII]. The eighth literature tackles the impacts of outward FDI on MNEs' productivity at home [VIII]. The ninth literature analyzes the impacts of inward FDI on domestic firms' productivity [IX]. It has two topics: direct impacts (cross-border M&A) and indirect impacts (spillover). The tenth literature examines the impacts of firms' geographical concentration on corporate performance [X].

The last three literatures analyze the relationship with macro economy: national production [XI], national demand on productive factors [XII], and national productivity [XIII]. For example, the last literature examines the channel that contributes the most to the rise in the national productivity: the active entry and exit of firms and the efficiency gain of the surviving firms.

In the following, we provide extensive surveys on these 13 literatures.

2.1. Selection in Investing and Exporting

Since the last decade, numerous theoretical papers on the relationship between

firms' overseas activities and their productivity have been written. The main theme of this line of research is "firm heterogeneity". The pioneering study of Melitz (2003) theoretically shows that exporting firms have relatively high productivity despite paying sunk cost for export. Since firms with high productivity can obtain high operating profit, they obtain non-negative gross profit even if they incur sunk cost for export. The Melitz model has also been applied in the context of firms' outward investing by Helpman, Melitz, and Yeaple (2004), and the finding is that investing firms have relatively high productivity. These selections based on the level of productivity are called "selection effect" in exporting and investing activities.

Recently, these theoretical studies have become complicated as there are multiple choices in the models the firms would employ. For example, the model of Helpman, et al. (2004) has four options: exit, serving only the domestic market, serving not only the domestic market but also the international market through exporting, and serving not only the domestic market but also the international market through investing. Recent studies have proved to be more flexible as they introduce more options. Antras, Grossman, and Helpman examine what kind of partners the firms supply their products to[1]. There are two dimensions in partner firms: domestic/overseas and intra-firm group/inter-firm group. For example, Antras and Helpman (2004) show that the firms with the highest productivity supply their products to the overseas intra-firm group partners. On the other hand, Grossman, Helpman, and Szeidl (2006) extend the study of Helpman et al. (2004) in terms of both the economic development of potential host countries (developed and developing countries) and the production process of goods (finished goods and intermediate goods). According to not only the firms' productivity

[1] See Antras (2003, 2005), Antras and Helpman (2004), Grossman and Helpman (2002, 2003, 2004, 2005), Grossman, Helpman, and Szeidl (2005), Helpman (2006), and Nunn (2007).

but also the trade costs of each good, there are many cases in the firms' production location patterns.

These theoretical propositions have been tested by many empirical studies. The hypothesis by Melitz (2003) has been tested in many countries. In those studies, the following equation is estimated:

$$\Pr(\text{Export}_{it} = 1) = \beta_0 + \beta_1 \text{ Productivity}_{it} + \boldsymbol{\gamma}\, \mathbf{X}_{it} + \varepsilon_{it}.$$

Export_{it} is an indicator variable taking unity if firm i is engaged in exporting activity at time t and zero otherwise. Productivity_{it} denotes firm i's productivity at time t. $\mathbf{X}$ is a vector of the several control variables. In this equation, β_1 is expected to be positively estimated by probit/logit estimation method. The representative papers are as follows: Bernard and Jensen (1999) for the US; Clerides, Lach, and Tybout (1998) for Colombia, Mexico, and Morocco; Bernard and Wagner (2001) for Germany; Delgado, Fariñas, and Ruano (2002) for Spain; Greenaway and Kneller (2004) for the United Kingdom; Hallward-Driemeier, Iarossi, and Sokoloff (2002) for East Asian countries (Indonesia, Korea, Malaysia, the Philippines, and Thailand); Aw and Hwang (1995), Liu, Tsou, and Hammitt (1999), Aw, Chung, and Roberts (2000), and Aw, Roberts, and Winston (2007) for Taiwan; Aw, et al. (2000) and Hahn (2004) for Korea; Baldwin and Gu (2003) for Canada; and Kimura and Kiyota (2006) and Murakami (2005) for Japan. Most of these studies find evidence that more productive producers self-select into the export market.[2]

The hypothesis by Helpman, et al. (2004), i.e., the selection of investing, has also been empirically tested by several papers such as Murakami (2005) and Kimura and

[2] Wagner (2007) provides a synopsis of findings from 54 empirical studies covering 34 countries on the firm-level relationship between exports and productivity. Most of the findings for pre-entry differences surveyed present evidence in favor of the self-selection hypothesis.

Kiyota (2006). As well as the hypothesis by Melitz (2003), for example, the following equation is estimated:

$$\Pr(\text{FDI}_{it} = 1) = \beta_0 + \beta_1 \text{ Productivity}_{it} + \boldsymbol{\gamma}\, \mathbf{X}_{it} + \varepsilon_{it}.$$

FDI_{it} is an indicator variable taking unity if firm i is engaged in FDI at time t and zero otherwise. As a result, the previous studies obtain the results supporting the selection of investing. In addition, although Helpman, et al. (2004) consider outward FDI, there are numerous papers analyzing inward FDI showing that foreign-owned firms are more productive than domestic firms. These papers include the following: Doms and Jensen (1998) for the US; Girma, Thompson, and Wright (2002) for the UK; Hallward-Driemeier et al. (2002) for East Asian countries (Indonesia, Korea, Malaysia, the Philippines, and Thailand); and Fukao and Murakami (2005), Fukao, Ito, and Kwon (2005), and Kimura and Kiyota (2007) for Japan.

Recently, more complicated theoretical hypotheses have also come to be tested by empirical analysts. The theoretical works of Antras, Helpman, and Grossman are partly supported by the empirical analysis of Tomiura (2007). Tomiura empirically shows that, in Japan, investing firms are more productive than exporting firms, and that the firms trading with overseas intra-firm group firms are more productive than those trading with overseas inter-firm group firms.[3] However, Murakami (2005) finds that the latter type of firms is more productive. Furthermore, the theoretical prediction by Grossman, et al. (2006) is also partly supported by Aw and Lee (2008).

[3] Tomiura (2007) is the extended version of Tomiura (2005). Using Japanese firm-level data, Tomiura (2005) distinguishes the foreign outsourcing from domestic outsourcing. His finding is that only a few firms (less than three percent) outsource their production to abroad and that productive firms or firms with labor-intensive products outsource more.

2.2. To Which Countries/Regions

The literature in this subsection investigates which countries or regions the MNEs invest in. This is a well-known location choice analysis. Employing the usual new economic geography model (i.e., CES utility function, Dixit=Stiglitz monopolistic competition, and ice-berg trade costs), the literature derives the profit function, which is summarized as:

$$\ln \Pi_r = V_r + \varepsilon_r \qquad \text{and} \qquad V_r = V(\mathbf{X}_r).$$

where $\mathbf{X}$ is a vector of regional characteristics, and ε_r denotes unobservable regional characteristics. McFadden (1974) demonstrates that when ε_r is independent and follows an identical type I extreme value distribution across regions, the probability that the firm locates its affiliate in region r is given as

$$P_r = \frac{\exp(V_r)}{\sum_i \exp(V_i)},$$

The coefficients are estimated using maximum likelihood procedures. The recent references are as follows: Head, Rise, and Swenson (1999) for Japanese MNEs in the US; Belderbos and Carree (2002) for Japanese MNEs in China; Head and Mayer (2004) for Japanese MNEs in Europe; Disdier and Mayer (2004) for French MNEs in Europe; Castellani and Zanfei (2004) for large MNEs in the world; Mayer, Mejean, and Nefussi (2007) for French MNEs in the world; Crozet, Mayer, and Mucchielli (2004) for MNEs in France; and Basile, Castellani, and Zanfei (2008) for MNEs in Europe.

There are three topics in this literature. The first introduces various location elements as independent variables. The above-mentioned model usually yields the profit function, which is a function of market size, productive factor prices, price of

intermediate goods, and trade costs. As a proxy for the price of intermediate goods, the measure of agglomeration is often used, particularly the number of manufacturing firms. Some studies employ more disaggregated numbers of manufacturing firms, for example, the number of manufacturing firms with the same nationality as firms choosing location (e.g., Head, et al., 1999; Crozet, et al., 2004) or the number of firms belonging to the same firm-group (e.g., Belderbos and Carree, 2002). As part of trade costs, some investment climate measures are examined: free trade zones in the US (Head, et al., 1999), special economic zones and opening coastal cities in China (Belderbos and Carree, 2002), and Objective 1 structural funds and cohesion funds in Europe (Basile et al., 2008).

Second, the validity of proxy variables for location elements is further examined. Head and Mayer (2004) examine the validity of market potential on location choice. In this literature, two measures are proposed: the Harris market potential index (Harris, 1954) and the Krugman-type index used in Redding and Venables (2004). The Harris-type index is simply the sum of distance-weighted real GDP as follows:

$$MP_r^{Hariss} = \sum_{i=1}^{R} \frac{GDP_i}{dist_{i,r}},$$

where $dist_{i,r}$ denotes a great distance between regions i and r. For the intra-regional distance, following the border effect literature (see, for example, Head and Mayer, 2000), the literature uses two-thirds times the radius of surface area in the region. Head and Mayer (2004) employ the Krugman-type market potential index, which is directly derived from the new economic geography model. The Krugman-type measure takes into account the extent of competition (i.e., price index) and is constructed using estimators of importing country dummy variables in the well-known gravity equation,

as in Redding and Venables (2004). They find that "*theory does not pay*", in the sense that the Harris market potential outperforms the Krugman's market potential in both the magnitude of its coefficient and the fit of the model to be estimated.

The third topic is to explore the substitution of location by examining inclusive values in the nested-logit model. For instance, using firm-level data on French investments both in France and abroad over the 1992-2002 period, Mayer, et al. (2007) investigate the determinants of location choice and assess empirically whether the domestic economy is losing attractiveness over the recent period or not. The estimated coefficient for inclusive value is strongly significant and near unity, indicating that the national economy is not different from the rest of the world in terms of substitution patterns. Similarly, Disdier and Mayer (2004) investigate whether French multinational firms consider Western Europe and Eastern Europe as two distinct groups of potential host countries by examining the coefficient for the inclusive value in nested-logit estimation. They confirm the relevance of an East-West structure in the country location decision and show that this relevance decreases.

2.3. Entry Mode Choice

The third literature examines by probit or logit analysis which entry mode the MNE chooses. In producing abroad, MNEs need to choose not only host countries but also their entry modes. There are mainly two types of entry modes: greenfield and merger with or acquisition of an existing firm in the foreign country (M&A). The former sets up a new production facility, while the latter acquires an existing firm. The greenfield investment is further decomposed according to the MNEs' share of ownership. While the wholly owned subsidiaries are ones that the MNE has their whole ownership (WOE),

joint ventures share ownership with domestic firms (JV). The theoretical framework employed in this literature is often based on the "transaction cost theory" (e.g., Asiedu and Esfahani, 2001) and more recently on the "incomplete contract theory" (Raff, Ryan, and Stahler, 2008a). In this literature, despite a large number of empirical studies in management or commercial science (e.g., Gomes-Casseres, 1990; Hennart and Larimo, 1998; Chang and Rosenzweig, 2001), only a few can be found in economics. Recently, however, studies in this literature have been increasing also in economics (Tse, Pan, and Au, 1997; Makino and Neupert, 2000; Asiedu and Esfahani, 2001; Girma, 2002; Wei, Liu, and Liu, 2005; Raff, Ryan, and Stahler, 2008b; Chun, 2008). At present, this literature seems to suggest two directions.

The first one is to take a number of entry modes into consideration. Most of the studies in this literature examine the binary choice of entry modes: WOE versus JV (Hennart and Larimo, 1998; Makino and Neupert, 2000; Asiedu and Esfahani, 2001) and Greenfield versus M&A (Chang and Rosenzweig, 2001; Girma, 2002). More recently, by employing nested-logit or multinominal logit model, the multinominal choice of entry modes comes to be explored. Wei, et al. (2005) establish a multinominal logit model in which foreign-invested firms are allowed to choose among four entry modes of FDI in China: WOE vs. equity JV vs. contractual JV vs. joint stock companies. Employing a three-stage nested-logit model, Raff et al. (2008b) examine which strategies a firm will use to enter a foreign market: *Will it export goods produced at home (exporter) or will it produce goods in the foreign country* (FDI)*? If it chooses to produce abroad, will it set up a new production facility* (Greenfield) *or will it acquire an existing firm* (M&A)*? If it establishes a new facility, how will it own it: will it choose whole ownership* (WOE) *or create a joint venture where it shares ownership with a*

local firm (JV)*?*

The other one is to explore the many elements affecting entry mode choice. Three kinds of characteristics are introduced as independent variables: host country/regional characteristics, industrial characteristics, and firm (MNE) characteristics. Examples of country characteristics include host country's experience in attracting FDI, country risk, infrastructure, FDI policy, technological capabilities of domestic firms, and cultural ties with investing countries. Simply speaking, the advantage of *information or access* that domestic firms have plays a crucial role in choosing JV rather than WOE. For example, corruption would motivate joint ventures because local partners can more effectively provide access to "special" treatment. Industry characteristics such as asset intensity, technology intensity, resource intensity, and the extent of input-output relationships with local firms may work in similar ways. Lastly, firm characteristics often taken into consideration are amount of investment and international experience. More recently, the role of MNEs' productivity in entry mode choice is examined (Raff, et al., 2008a, b; Cieslik and Ryan, 2008). In particular, Raff, et al. (2008b) find the ranking of firms' TFP to be as follows: domestic firms, exporters, cross-border M&A MNEs, JV MNEs, and MNEs with wholly-owned subsidiaries.

2.4. Selection in Dead or Surviving Firms

The advancement of globalization and policy measures on globalization have great impacts on firms. The most significant impact would be the closure of some firms. In this literature, it has been empirically investigated that the less productive plants under high pressure from globalization are more likely to shut down. Broadly speaking, we can interpret that this literature is a test of Melitz (2003). For example, trade cost

reduction leads to an increase in imports of more foreign-made varieties. The increase in varieties consumable in the domestic market forces firms to decrease production volume per firm and thus the operating profit in each firm. As a result, the threshold of productivity payable for sunk cost rises, and thus domestic firms with lower productivity will be forced to shut down.

To test this hypothesis, the following equation is estimated in the literature:

$$\Pr(\text{Death}_{it} = 1) = \beta_0 + \beta_1 \text{ Globalization}_{it} + \beta_2 \text{ Productivity}_{it}^{*} \text{ Globalization}_{it} + \boldsymbol{\gamma}\, \mathbf{X}_{it} + \varepsilon_{it},$$

where $\text{Globalization}_{it}$ is the measure indicating how high the pressure from globalization a plant i is under time t. By examining the estimate of β_1, it investigates whether plants under high pressure from globalization are more likely to shut down or not. Furthermore, the negative estimate of β_2 implies that, among such plants, those with lower productivity are more likely to shut down.

Previous studies which investigate such hypothesis include Bernard and Jensen (2007), Bernard, Jensen, and Schott (2006a, b), and Greenaway, Gullstrand, and Kneller (2008). Bernard, et al. (2006a) employ the annual average change in industry trade costs in the preceding five years as the globalization measure. They find its coefficient to be negative, which indicates that as trade costs fall, plant death is more likely to happen. Furthermore, they introduce the globalization measure multiplied by plant's productivity and find its coefficient to be negative as implied by theory. On the other hand, Bernard, et al. (2006b) employ the import penetration from low-wage countries (and others). They find that the probability of plant death increases with an industry's exposure to imports from low-wage countries and that plant death is more likely to

occur among less productive plants. Greenaway, et al. (2008) also examine the impact of import penetration in addition to other factors such as the extent of comparative advantage.

2.5. Selection in the Number of Varieties

This literature examines whether the more productive firms introduce the larger number of products or not. The logic underlying this hypothesis is basically the same as the Melitz model. Previously, Bernard, Redding, and Schott (2006c) present a theoretical model on the relationship between firms' productivity and the number of varieties. They extend the Melitz model to a general equilibrium model of multi-product firms. In their model, firm productivity in a given product is modeled as a combination of firm-level "ability" and firm-product-level "expertise", both of which are stochastic and unknown prior to the firm's payment of a sunk cost of entry. Higher firm-level ability raises a firm's productivity across all products, lowering the zero-profit cutoff for expertise which the firm finds profitable to enter a product market, thereby expanding the range of products manufactured by the firm.

There are a few previous studies in this literature. First, employing the U.S. data, Bernard, Redding, and Schott (2006d) regress the following equations:

$$\text{Multi}_i = \beta_0 + \beta_1 \text{ Performance}_i + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_i,$$

$$\Pr(\text{Add}_i = 1) = \delta_0 + \delta_1 \text{ Performance}_i + \boldsymbol{\eta}\mathbf{X}_i + \varepsilon_i.$$

Multi_i is an indicator variable taking unity if firm i produces more than one variety and zero otherwise. Add_i is also an indicator variable taking unity if firm i adds varieties during a period and zero otherwise. Performance represents several firm

characteristics: output, employment, probability of export, labor productivity, and TFP. Implied by the theoretical model, both β_1 and δ_1 are estimated to be positively significant.[4] Second, using firm-level data for the Chinese manufacturing sector during 1998-2000, Brambilla (2006) compares the performance of foreign and domestic firms in terms of introduction of new varieties. His empirical result suggests that firms with more than 50 percent of foreign ownership create more than twice as many new varieties of products as private domestic firms. Such a larger number of new varieties in foreign firms would be attributed to their higher productivity. Last, Teshima (2008) is suggestive to this literature. Employing Mexican plant-level dataset, he distinguishes process innovation from product innovation and explores impacts of tariff changes on process and product R&D expenditures. As a result, he found that tariff reduction induces to increase process R&D rather than product R&D. This result indicates that trade liberalization encourages firms to improve their cost efficiency rather than to develop new varieties.

2.6. From What Products to What Products

This literature examines the changes in the product line firms undertake due to globalization. Two hypotheses are tested in the literature.

The first hypothesis is whether more product switching in plants under high pressure from globalization can be observed or not. This literature extends conceptually the model in the third literature: selection in dead or surviving firms. That is, it examines differences in response to the globalization among surviving firms:

[4] Although they find a positively significant coefficient for TFP, they point out that measuring the TFP of multiple-product firms is problematic if separate data on output, prices, and inputs at the firm-product level are unavailable.

switching products they produce or not switching. Its test is performed by regressing the following equation:

$$\Pr(\text{Switch}_{it} = 1) = \beta_0 + \beta_1 \text{ Globalization}_{it} + \beta_2 \text{ Productivity}_{it}^{*} \text{ Globalization}_{it} + \boldsymbol{\gamma}\, \mathbf{X}_{it} + \varepsilon_{it},$$

where Switch_{it} is an indicator variable taking unity if plant i changes its main products at time t and zero otherwise. As in the third literature, it assumes that plants under high pressure from globalization are more likely to change their main products and furthermore, among such plants, those with higher productivity are more likely to change their main products. The references in this hypothesis are Bernard, et al. (2006a, b). As in the fourth literature, trade cost reduction and import penetration from low-wage countries are examined as globalization measures and results confirm the aforementioned arguments.

The second hypothesis is that the vertical FDI (VFDI) forces MNEs to specialize in the products they have comparative advantage in producing and as a result, this increases their home production. There are mainly two types of FDI: horizontal FDI (HFDI) and VFDI. While the HFDI is a strategy to avoid broadly defined trade costs by setting up plants within the targeting market/country rather than by exporting from the home country, the VFDI is the one that exploits low-price production factors of the host country. From a theoretical point of view, the VFDI decreases production of the products MNEs do not have comparative advantage but increases production of the products they have comparative advantage. As a result, the VFDI MNEs may increase their production at home.

To empirically test this hypothesis, the literature directly examines the impacts of the VFDI on production at home. Specifically the following equation is regressed:

$$\text{Production}_{it} = \beta_0 + \beta_1 \text{VFDI}_{it} + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_i,$$

where Production_{it} denotes total production values/sales of firm i at home at time t. Variable VFDI is an indicator variable taking unity if firm i conducts the VFDI at time t and zero otherwise. There are several papers analyzing this hypothesis: Hijzen, Inui, and Todo (2007) for Japanese MNEs; Navaretti and Castellani (2004) and Navaretti, Castellani, and Disdier (2006) for Italian MNEs; and Navaretti and Castellani (2004) for French MNEs. Most of the studies simply employ an FDI variable, which takes unity if a firm invests abroad and zero otherwise, rather than the VFDI variable, and find significantly positive results. Only Navaretti, et al. (2006) explicitly distinguish the FDI type. Navaretti, et al. (2006) classify the FDI in developing countries and that in developed countries as VFDI and HFDI, respectively. As a result, they found that MNEs conducting the VFDI increase their production at home.

2.7. From What Resources to What Resources

Similar to the previous literature, this literature investigates the changes in the resources firms employ as they change their inputs. As argued above, the VFDI firms increase the production of the goods they have comparative advantage in producing. Thus, those MNEs increase relatively the demand for resources they intensively use in producing such goods. Since such resources are usually skilled labor or knowledge capital, skill intensity at home should rise in the MNEs. In the HFDI, on the other hand, MNEs might obtain superior knowledge or technology in the host country and as a result, raise the skill intensity at home. In short, this literature examines whether the MNEs investing abroad raise their skill intensity in inputs at home or not.

There are numerous papers in the literature. First, some papers simply analyze

whether FDI increases employment at home or not without taking into consideration the quality/skill of employment. The methodology in those papers is qualitatively the same as in the previously mentioned analysis on the impacts of FDI on production at home:

$$\text{Employment}_{it} = \beta_0 + \beta_1 \text{FDI}_{it} + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_i,$$

where Employment_{it} denotes total employment of firm i at home at time t. A variable FDI is an indicator variable taking unity if firm i invests abroad at time t and zero otherwise. References include the following: Hijzen, et al. (2007) for Japanese MNEs; Castellani, Mariotti, and Piscitello (2008), Navaretti and Castellani (2004), and Navaretti et al. (2006) for Italian MNEs; and Navaretti and Castellani (2004) and Hijzen, Jean, and Mayer (2006) for French MNEs. However, most of the studies have failed to obtain significantly positive results.

Failure to get positive results seems to be natural because these papers do not distinguish between skilled and unskilled labor. If skilled labor increases and unskilled labor decreases at home, total employment may remain unchanged. Therefore, the second approach is to directly examine whether the ratio of skilled labor to unskilled labor rises or not. The literature estimates the following equation:

$$\text{Skill-intesity}_{it} = \beta_0 + \beta_1 \text{FDI}_{it} + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_i,$$

where skill intensity is a share of managers and clerks or a share of non-production workers in total employments at home. This examination would be an appropriate approach for its test. References are Castellani, et al. (2008) for the Italian MNEs and Hijzen et al. (2006) for the French MNEs. Unfortunately, most of the results in these

papers are insignificant.[5]

2.8. Impacts of Exporting and Outward FDI

Contrary to the first literature (see Section 2.1), i.e., selection of investing and exporting, this literature examines whether those overseas activities give a positive impact on productivity at home or not. Such a positive effect is called "learning effect". Exporting firms may obtain new and superior knowledge. While the MNEs investing in developed countries might obtain superior technology or knowledge, those investing in developing countries may achieve total cost reduction by utilizing low-priced production factors. As a result, those firms may succeed in raising their productivity at home. To examine the learning effect of exporting and investing, the following equations are estimated:

$$\text{Productivity}_{it} = \beta_0 + \beta_1 \text{ Export}_{it} + \boldsymbol{\gamma}\mathbf{X}_{it} + \varepsilon_{it},$$
$$\text{Productivity}_{it} = \eta_0 + \eta_1 \text{ FDI}_{it} + \boldsymbol{\rho}\mathbf{X}_{it} + \varepsilon_{it},$$

where Export_{it} and FDI_{it} are indicator variables taking unity if firm i starts to export and to invest at time t, respectively. In this literature, there is a severe endogeneity issue: exporters or investors by their nature have higher productivity than non-exporters or non-investors (selection effect). To tackle this issue, previous studies use instruments or the matching method. In particular, the propensity score matching method is often employed because there are enough matching pairs in using firm/establishment-level data.

The use of matching techniques to distinguish post-exporting effect from selection

[5] Verhoogen (2008) investigates wage dispersion between skilled and unskilled during export boom in Mexico. Focusing on the period of the late-1994 peso crisis in Mexico, he finds that the more productive plants significantly increased the exporting, skilled wages, unskilled wages, and wage dispersion between skilled and unskilled.

effect, pioneered by Wagner (2002) for Germany and Girma, Greenaway and Kneller (2004) for the UK, has stimulated a number of empirical studies testing such a learning-by-exporting effect. The leading papers include Arnold and Hussinger (2005) for Germany, Yasar and Rejesus (2005) for Turkey, and Alvarez and López (2005) for Chile. According to a comprehensive survey by Wagner (2007), supportive evidence of the learning-by-exporting hypothesis is detected in some previous studies only.[6] However, a significant positive effect of export experience on firm's productivity has been found in several recent studies such as Van Biesebroeck (2005) for sub-Saharan African countries, De Loecker (2007) for Slovenia, and Lileeva and Trefler (2007) and Serti and Tomasi (2008) for Italy. For example, De Loecker (2007) examines the learning from exporting in Slovenian manufacturing firms in the period 1994-2000. Interestingly, the author finds that the productivity gains are higher for firms exporting to high-income regions.

On the other hand, empirical studies do not necessarily succeed in detecting a positive causal effect of investing on firms' productivity.[7] Papers analyzing the learning effect in investing include Navaretti and Castellani (2004) for Italian MNEs, Hijzen, et al. (2006) and Navaretti et al. (2006) for French MNEs, and Hijzen, et al. (2007) and Ito (2007) for Japanese MNEs. Navaretti and Castellani (2004) find significantly positive impacts, but Hijzen, et al. (2007) and Ito (2007) do not.

One possible reason why we cannot obtain significantly positive results is the

[6] The accumulated empirical findings of the relationship between exports and productivity are summarized by Wagner (2007) as follows: there is evidence in favor of self-selection of more productive firms into export markets, but nearly no evidence in favor of the learning-by-exporting hypothesis. International Study Group on Exports and Productivity (ISGEP) (2008) further explores the selection and learning effects of exporting by using comparable micro-level panel data for 14 countries and employing identically-specified empirical models and find evidence in line with the big picture of the literature clarified by Wagner.

[7] Hijzen, Inui, and Todo (2009) investigate the impacts of international outsourcing on corporate performance and find its significantly positive impacts.

qualitative differences between the impacts of the HFDI and those of the VFDI. From a theoretical point of view, the resulting impact of the HFDI on productivity at home is ambiguous. Its positive impact comes from excellent knowledge or technology of producing products in the host country enabling investing firms to produce the products at home more efficiently. The resulting impact of the HFDI becomes positive if this positive impact is larger than the negative impact due to the loss of economies of scale. On the other hand, the impact of the VFDI should be positive as long as such an impact is being examined on only the domestically remaining production process. The VFDI is expected to force firms at home to relocate their resources and to achieve improvements in their productivity. Thus, if most of the FDIs are HFDI, we might not really obtain a significantly positive impact.

To take into consideration such a qualitative difference in learning effect, Hijzen, et al. (2006) and Navaretti, et al. (2006) examine the learning effects according to FDI type separately. Navaretti, et al. (2006) classify the FDI in developing countries and that in developed countries as VFDI and HFDI, respectively. In Hijzen, et al. (2006), the VFDI is defined as investments in developing countries by firms in comparative disadvantage industries while the HFDI is defined as investments in developed countries by firms in comparative advantage industries. Contrary to these predictions, however, both Navaretti, et al. (2006) and Hijzen, et al. (2006) find positively significant enhancements in productivity in the French HFDI but not in its VFDI.

2.9. Impacts of Inward FDI

This section reviews the studies that analyze the impacts of inward FDI on domestic firms' performance. Impacts are either direct or indirect. Acquisition by

foreign-owned firms results in the direct transfer of these firms' superior knowledge to the acquired domestic firms, ending up with a rise of performance of the domestic firms after the acquisition. Meanwhile, domestic firms may benefit from the presence of foreign firms due to some positive externalities accruing from FDI and the presence of multinational firms. In this section, we discuss the studies analyzing these two impacts separately.

2.9.1. Cross-border M&A

This subsection examines the impacts of cross-border M&A on the performance of target domestic firms. On the one hand, as introduced in the first literature, foreign-owned firms are more productive than domestic firms. On the other hand, the target domestic firms possess a locational advantage, years of experience in the local market, and an ability to navigate the local institutional environment. As a result, when integrated with the know-how of foreign firms, the local advantages of the target domestic firm could translate to enhanced productivity (Petkova, 2008). Thus, the impacts of cross-border M&A are expected to be positive.

To empirically explore such impacts through propensity score matching, the domestic firms' productivity is examined before and after the cross-border M&A. The references include Arnold and Javorcik (2005) for Indonesia, Girma (2005b) for the UK, Bertrand and Zitouna (2008) for France, Fukao, Ito, Kwon, and Takizawa (2006) for Japan, Petkova (2008) for Indonesia, and Chen (2008) for the US. These studies consistently find significantly positive impacts. Furthermore, some of them compare the impacts of cross-border M&A with those of local M&A and find larger impacts with cross-border M&A.

This literature suggests two directions. One is to explore which MNEs give larger positive impacts. Chen (2008) finds in the US that the country of origin plays an important role: the impacts of acquisition by developed countries on profits are larger than those by developing countries. The other is to examine which domestic firms receive larger positive impacts. The key role of absorptive capacity of domestic firms is found in Girma (2005b). The rate of productivity change following a foreign takeover is higher than the pre-acquisition productivity level of the acquired firm. Furthermore, beyond some critical level of initial productivity, the rate of technology transfer due to foreign acquisition starts to decline. Girma (2005b) interprets this result as indicating that UK-owned firms that had been operating nearer the domestic technology frontier have less to gain from their association with foreign multinationals.[8]

2.9.2. Spillover

This subsection investigates whether the presence of inward FDI raises domestic firms' productivity or not. Such positive impacts are called "spillover effects". Conceptually, there are two kinds of spillover effects: intra-industry and inter-industry. Four paths of spillover effect are suggested in the literature: imitation, skill acquisition and proliferation, competition, and exports. Imitation is the path to raise productivity by imitating MNEs' superior products and technology. Skill acquisition and proliferation is the path whereby the MNE's know-how and technology are directly transferred to domestic firms, say, by the shift of labor from MNEs to domestic firms.

[8] Branstetter, Fisman, and Foley (2006) examine the relationship between intellectual property rights (hereafter IPRs) and international technology transfer. They investigate the impacts of IPRs on technology transfer from U.S. multinational enterprises to their affiliate firms in mostly medium developing 16 countries. Their finding is that the stronger the IPR environment in a country, the more technology is transferred to affiliates locating in the country. Also see Keller (2004), which provides a very useful summary to understand the cause and consequences of several pathways (imports, learning by exporting, and FDI) of cross-border technology transfer.

Competition is the path whereby the MNEs put pressure on domestic firms to use existing technology more efficiently. Exports refer to the path to raise productivity by learning information from MNEs on penetrating the export market and starting export activities (see learning effects of exports in Section 2.8). Through these paths, domestic firms are expected to be able to obtain positive impacts from MNEs.

Although the spillover effect is tested by a large number of papers, previous studies do not necessarily obtain significantly positive effects. A simple way to test the spillover effect is to regress the following equation:

$$\text{Productivity}_i = \beta_0 + \beta_1 \text{ MNEs}_i + \boldsymbol{\gamma}\mathbf{X}_i + \varepsilon_i,$$

where MNEs represents the mass of MNEs in the industry to which a domestic firm i belongs. The significantly positive estimate of β_1 indicates the existence of spillover effect. Although Chuan and Lin (1999) obtain significantly positive impacts in Taiwan, Haddad and Harrison (1993) for Morocco and Kokko, Tansini, and Zejan (1996) for Uruguay do not. Furthermore, Aitken and Harrison (1999) obtain significantly negative results. Table 2 in Gorg and Greenaway (2004)[9] summarizes the results of many previous studies on spillover effect and shows that most of these studies do not obtain robust positive impacts.

One reason for such unexpected results pertains to another aspect of the competition path. The fiercer competition due to the massive entry of MNEs decreases production per firm and thus economies of scale are violated (Aitken and Harrison, 1999). This violation works as a negative impact of inward FDI. As a result, if such a negative impact is greater than the above-mentioned positive impacts of the competition path, a significantly negative result is likely to be obtained.

[9] Crespo and Fontoura (2007) are another important survey paper in this literature.

Other reasons are due to the heterogeneity of the spillover effect. Both MNEs and domestic firms are heterogeneous in several points. Therefore, all types of MNEs do not necessarily become sources of spillover effect, and all types of domestic firms do not necessarily obtain spillover effect. The present literature on spillover effect tries to clarify what kinds of heterogeneity in MNEs or domestic firms are crucial.

Studies analyzing the heterogeneity of MNEs in offering the spillover effect are as follows. First, Todo and Miyamoto (2002, 2006) show that, in Indonesia, while the MNEs conducting human resource development on site give positive influence on domestic firms' productivity, the MNEs that are not conducting such development do not. Second, Banga (2003), Girma and Wakelin (2002), and Karpaty and Lundberg (2004) have investigated the source countries (nationality) of MNEs. For instance, Banga (2003) has confirmed that Japanese FDI is more likely to create spillover for Indian domestic firms than US FDI. One possible reason of this result is that Japanese technology is the more widely used one, and thus it is easier to be imitated than the US technology. Third, Girma (2005a) and Girma, Gorg, and Pisu (2008) have studied the type of FDI. For instance, Girma, et al. (2008) classify FDI into export-oriented and market-oriented, and show that only the former type has positive impacts on domestic firms' productivity. The negative aspect of competition path is also interpreted as small in the export-oriented type of FDI but large in the market-oriented type.

The other is the heterogeneity of domestic firms in terms of their responses in receiving the spillover effect. One point of difference lies in the level of absorption capability of domestic firms as studied by Kokko, et al. (1996), Girma (2005a), Girma, Greenaway, and Wakelin (2001), Girma and Gorg (2003), and Kinoshita (2001). For instance, Kinoshita (2001) finds that R&D-intensive domestic firms enjoy more benefits

from spillover effect. Another is the domestic firms' geographical proximity to MNEs (Sjoholm, 1999; Aitken and Harrison, 1999; Girma and Wakelin, 2002; Halpern and Murakozy 2007). However, the robust geographical locality of spillover effect has not been necessarily detected in the literature. The last is the heterogeneity of domestic firms' input-output relationship with MNEs as studied by Javorcik (2004), Blalock and Gertler (2008), Driffield, Munday, and Roberts (2002), and Harris and Robinson (2004). These papers have found that the closer the input-output relationship with MNEs, the larger the benefits from spillover effect the domestic firms enjoy.

2.10. Impacts of Agglomeration

Although the previous subsection reviews papers analyzing the way in which the existence of MNEs raises indigenous firms' performance, the geographical concentration of any types of firms affects corporate performance generally. Trade costs reduction across nations pushes increasing returns to scale (IRS) technology industry to locate in a small number of countries in which many consumers, input suppliers, and other supporting industries have already located. Manufacturing industries, particularly the IRS technology industry, are concentrated not only in a limited number of countries but also in limited local areas within a country. This subsection examines the impacts of such agglomeration on corporate performance.

There are three kinds of agglomeration economies: technological spillovers, pecuniary externalities, and a competition-based selection process. The first two forces often mean that knowledge and information spillovers cross between firms sharing the same intermediate goods including labor (Marshallian thick labor market effect), and increasing returns to scale at the local input-output level. Rosenthal and

Strange (2004) provides a fully comprehensive review of the cause and consequences of agglomeration economies. Through these pathways, producers in the denser area are expected to be able to obtain such "agglomeration spillover effects".

The previous studies analyzing such agglomeration spillover effects on corporate performance are as follows: Amiti and Cameron (2007) examine the impacts on corporate wages. They distinguish the cost linkages and demand linkages to identify the location of intermediate input suppliers and final consumers exactly. As a result, they found that there are significant agglomeration effects on wages due to locally restricted cost and demand linkages. Further, Greenstone, Hornbeck, and Moretti (2008) take into account local cost linkages between customers and suppliers more seriously, using the evidence of "Million Dollar Plant" in winning and losing counties. The corporate real estate journal reports not only the county in which the "Million Dollar Plant" chose to locate (the "winning county") but also one or two runner-up counties (the "losing counties"). They use the TFP of incumbent plants in losing counties as a counterfactual for the TFP of incumbent plants in winning counties in the absence of the plant opening. Their empirical results show that new plant opening induces incumbent plants in winning counties to experience a significant and sharp increase in TFP compared to incumbent plants in losing counties during the five years after opening.

The last force relies on a competition-driven selection process of agglomeration. Relatively inefficient producers find it more difficult to operate profitably when it is easier for consumers to change suppliers within a local area. Since markets with higher demand density stimulate spatial substitutability, inefficient producers lose their market share. That is, inefficient producers in the denser area are easy-to-lose their

market share and easy-to-exit than those in the less dense area. As a result, the average productivity in denser markets always becomes higher. Such a selection according to markets density is called a “pro-competitive effect”.

There are a few studies on the pro-competitive effects in denser areas. First, Syverson (2004) regresses plant TFP on local demand density. His empirical results show an increase in the lower bound of average productivity in the denser market and a decrease in the level of within-market dispersion of plant productivity in the denser market. Secondly, Combes, Duranton, Gobillon, Puga, and Roux (2009) present an empirical framework to distinguish agglomeration spillover effects (left-truncation of the productivity distribution) from pro-competitive effects (right-shifts in the productivity distribution). Their empirical results based on French establishment-level data suggest that, even if pro-competitive effects are controlled, agglomeration spillover effects still contribute to explain spatial productivity differences in France. Third, Arimoto, Nakajima, and Okazaki (2009) focus on the silk-reeling industry in the early stage of industrial development, and the emergence of clusters during the late 1890s and early 1910s in Japan. They regressed plant TFP on county-level plant density and found that the productivity disparity among plants in a clustered area was smaller and that productivity distribution was severely more truncated than those in non-clustered area.

2.11. Decomposition: Production

So far, we have reviewed studies on firm behavior. As a next step, it is certainly meaningful to examine the impacts of changes in the firm-level behavior on the national economy. The following three literatures analyze the main sources of growth of

national production, employment, and productivity. In particular, this subsection reviews two papers that decompose the growth of national production and exports: Bernard, et al. (2006d) and Bernard and Jensen (2004a). We can clarify the relative contribution of active entry and exit on their growth.

Bernard, et al. (2006d) examine the sources of US production growth during 1987-1997. They divide product output Y in year t according to firms that produce the product in both t and t-5 and increase its amount (incumbents), surviving firms that do not produce the product in t-5 but produce it in t (adders), and firms that do not exist in t-5 but produce the product in t (entering firms),

$$Y_{tp} = \sum_{j \in B_{tp}} Y_{tpj} + \sum_{j \in A_{tp}} Y_{tpj} + \sum_{j \in N_{tp}} Y_{tpj}$$

where p indexes products, and B_{tp}, A_{tp}, and N_{tp} represent the set of incumbents, adders, and entering firms, respectively. In particular, they examine percentage decompositions for each product by dividing through by Y_{tp}. Similarly, we can decompose product output reduction according to firms that incumbents that decrease their production, surviving firms that produce the product in t but not in t+5 (droppers), and firms that produce the product in t but die between t and t+5 (exiting firms),

$$Y_{tp} = \sum_{j \in C_{tp}} Y_{tpj} + \sum_{j \in D_{tp}} Y_{tpj} + \sum_{j \in X_{tp}} Y_{tpj}$$

where C_{tp}, D_{tp} and X_{tp} denote the sets of incumbents, droppers, and exiting firms, respectively. In both cases, they find that roughly two-thirds of the average product's output is changed by incumbents. The remaining output is more or less evenly split between firms adding or dropping the product and entering or exiting firms.

On the other hand, Bernard and Jensen (2004a) investigate sources of the US export growth during the period 1987-1992. They decompose its growth rate according to the

following types of exports (product index is omitted here):

$$\sum_{j\in N\cup B\cup X}\left(\frac{E_{tj}-E_{t-1j}}{E_{t-1j}}\right)=\left(\frac{\sum_{j\in N}E_{tj}}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right)+\left(\frac{\sum_{j\in B}\left(E_{tj}-E_{t-1j}\right)}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right)-\left(\frac{\sum_{j\in X}E_{t-1j}}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right),$$

where E_{tj} denotes plant j's exports at time t. N, B, and X represent the set of plants that do not exist in t-1 and do exist in t, plants that exist in both t and t-1, and plants that exist in t-1 but do not exist in t, respectively. As a result, they find that total direct exports reported by plants in the Census of Manufactures increased by $80.9 billion from 1987 to 1992. Of that total increase, 87% came from B-type plants, while 13% came from N-type plants less X-type plants. Moreover, the contributions by plants that existed in both years can further be decomposed as follows:

$$\frac{\sum_{j\in B}\left(E_{tj}-E_{t-1j}\right)}{\sum_{j\in N\cup B\cup X}E_{t-1j}}=\left(\frac{\sum_{j\in B_N}E_{tj}}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right)+\left(\frac{\sum_{j\in B_B}\left(E_{tj}-E_{t-1j}\right)}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right)-\left(\frac{\sum_{j\in B_X}E_{t-1j}}{\sum_{j\in N\cup B\cup X}E_{t-1j}}\right),$$

where B_N, B_B, and B_X are sets of plants existing in both t and t-1. In particular, they are sets of plants that do not export in t-1 but do export in t, plants that export in both t and t-1, and plants that export in t-1 but do not in t, respectively. As a result, they find that 61% came from B_B-type plants, while 26% came from B_N-type plants less B_X-type plants.

2.12. Decomposition: Resources

This literature is the second decomposition analysis, the decomposition of national employment growth. As well as the decomposition of production, there are two alternative explanations of aggregate employment growth: active entry of new firms and expansion of employment in incumbent firms. Davis, Haltiwanger, and Schuh

(1996) carefully examine their relative contributions by introducing two measures to capture resource reallocations at plant level: gross job creation rate (*JCR*) and gross job destruction rate (*JDR*). *JCR* can be measured by employment gains summed over all plants that expand and enter between *t*-1 and *t*. *JDR* can be measured by employment losses summed over all plants that contract and shut down between *t*-1 and *t*. Specifically, job creation and job destruction rates are given by

$$JCR_t = \frac{\sum_{i\in\Omega^+}\left(N_{i,t} - N_{i,t-1}\right)}{\sum_{i\in\Omega} N_{i,t-1}} \quad \text{and} \quad JDR_t = \frac{\sum_{i\in\Omega^-}\left(N_{i,t} - N_{i,t-1}\right)}{\sum_{i\in\Omega} N_{i,t-1}},$$

where $N_{i,t}$ represents plant *i*'s employment at *t*. Ω is a set of all plants. Ω^+ is a set consisting of the incumbent plants that raise employment (expanding plants) and the new entrants. Ω^- is a set consisting of the incumbent plants that reduce employment (contracting plants) and the exiting plants. Gross job reallocation can be expressed as the sum of job creation and destruction between *t*-1 and *t*, i.e. $|JCR_t| + |JDR_t|$. As a result, in the US manufacturing during 1973-1988, they found that both job creation and destruction rates are about 10%, and that 16% of the creation is driven by expanding plants, and that 3% of the destruction is by exiting plants.[10]

As pointed out in Bernard and Jensen (2004a), one important advantage of the decomposition is that we can group plants into some categories, e.g., by export status or FDI status. Suppose the disaggregation of Ω_+ into $\Omega_+^{throughout}$, Ω_+^{start}, Ω_+^{stop}, and Ω_+^{never}. Of the set Ω^+, $\Omega_+^{throughout}$ includes plants that export in both *t*-1 and *t*, Ω_+^{start} includes plants that export only in *t*, Ω_+^{stop} includes plants that export only in *t*-1, and Ω_+^{never} includes plants that never export in both times. The same holds true for Ω^-. We can

[10] Blanchflower and Burgess (1996) found that about 50% of each of job creation and destruction is accounted for by just 4% of continuing businesses.

further disaggregate samples according to import status. Indeed, Biscourp and Kramarz (2007) analyze the relationship among export, import, and employment. Their evidences from French manufacturing suggest that there is a strong correlation between increasing imports of finished goods and destruction of production jobs. They also find that such a tendency is stronger for larger firms.

Recently, this literature has tried to clarify the job creation and destruction within a firm: Ariga (2006) and Corseuil and Ichimura (2006). Ariga (2006) investigates the relationship between the horizontal transfers/promotion of employees across ranks and the job creation/destruction inside a large Japanese firm. His finding is that jobs and units are constantly created and destroyed in this firm, and that the job creation and destruction cause horizontal transfers of employees within the firm. On the other hand, Corseuil and Ichimura (2006) study the job creation and destruction due to the birth/death of the job categories (occupation) in incumbent firms (job mix component). First, it turns out that job mix component accounts for 30% of total job creation and 40% of total job destruction. Second, the job mix component of both job creation and destruction are concentrated among non-production/managerial jobs. In sum, their result implies that it is far more important to examine intra-firm reallocation of job categories and labor division within and across industries.

2.13. Decomposition: Productivity

The last decomposition analysis is for national productivity. Its methodology is qualitatively the same as before. The basic decomposition, which is proposed by Foster, Haltiwanger, and Krizan (2001), is the following[11]:

[11] They also propose another formulation.

$$\Delta A_{it} = \underbrace{\left[\sum_{e\in C} s_{et-1}\Delta A_{et} + \sum_{e\in C}\left(A_{et-1} - A_{it-1}\right)\Delta s_{et} + \sum_{e\in C}\Delta s_{et}\Delta A_{et}\right]}_{Continuing\ \ firms}$$
$$+ \underbrace{\left[\sum_{e\in N} s_{et}\left(A_{et} - A_{it-1}\right)\right]}_{Entry\ \ firms} - \underbrace{\left[\sum_{e\in X} s_{et-1}\left(A_{et-1} - A_{it-1}\right)\right]}_{Exiting\ \ firms},$$

where A_{it} denotes productivity (labor productivity or multifactor productivity) in industry i at time t. e represents plant index of which industry is categorized in the industry i. s is a share of a plant in the industry in terms of outputs/inputs. C, N, and X are sets of continuing plants, entry plants, and exiting plants, respectively. The multifactor productivity (ln MFP) is measured as follows:

$$\ln MFP_{et} = \ln Q_{et} - \alpha_K \ln K_{et} - \alpha_L \ln L_{et} - \alpha_M \ln M_{et},$$

where Q is real gross output, K is real capital, L is labor input, and M is real materials. Factor elasticities are measured via industry cost shares. The index of plant-level labor productivity is measured as the difference between log gross output and log labor input.

There are three novel points. First, since productivity is not a measure representing a kind of volume, we need to aggregate each plant's productivity by using a plausible weight. In the above method, a share of plant's outputs or inputs is used as such a weight. Second, relating to the first point, we need to distinguish between reallocation effect and own effect. Reallocation effect is the productivity growth owing to the more rapid expansion of high productivity plants relative to low productivity plants. Own effect quantifies the importance of productivity growth at individual plants. The three terms in the first bracket take care of them: the first term represents a within-plant component based on plant-level changes (own effect), the second term is a between-plant component that reflects changing shares (reallocation effect), and the third term is the cross term. Third, the between-plant term and the

entry and exit terms involve deviations of plant-level productivity from the initial industry index.

Their findings in multifactor productivity in the US manufacturing during 1977-1987 are as follows: the within-component accounts for about half of average industry productivity growth, the between-plant component is negative but relatively small, and the cross term is positive and large and accounts for about a third of the average industry change. Net entry accounts for 26% of the average industry change. A number of similar studies of other countries including United States (Baily et al., 1992), Israel (Griliches and Regev, 1995), Chile and Colombia (Liu 1993), and Australia (Bland and Will, 2001) find that entry and exit of firms or plants within an industry contribute little to productivity growth. On the other hand, Olley and Pakes (1996) for the US, Van Biesebroeck (2008) for China, and Aw, Chen, and Roberts (2001) for Taiwan highlight that firm and/or plant turnover is an important source of industry productivity growth, as well as higher productivity of the continuing firms and/or plants.

Similar to the decomposition of employment, we can group plants into categories, e.g., by export status or FDI status. Bernard and Jensen (2004b) first consider only continuing firms (B), i.e., firms that exist in years t and t+1, and further cut across the cross term, as follows:

$$\Delta A_{it} = \underbrace{\sum_{e \in B} \left(A_{et-1} - A_{it-1} \right) \Delta s_{et}}_{Reallocation \quad Effect} + \underbrace{\sum_{e \in B} s_{et-1} \Delta A_{et}}_{Own \quad Effect}.$$

Second, plants are clustered into four groups based on their export status in the two years (see the notation in Section 2.11.): B_N, B_B, B_X, and B_D (a set of plants that never export). $B \in B_N \cup B_B \cup B_X \cup B_D$. Their decomposition formulation becomes

$$\Delta A_{it} = \underbrace{\sum_{B_i \in B} \sum_{e \in B_i} (A_{et-1} - A_{it-1}) \Delta s_{et}}_{Reallocation\ \ Effect} + \underbrace{\sum_{B_i \in B} \sum_{e \in B_i} s_{et-1} \Delta A_{et}}_{Own\ \ Effect} .$$

As a result, their finding is that continuing exporting plants are the most important group for the national-level TFP growth.

3. Discussion

3.1. Directions of Further Research

Although a large number of research papers on the impact of globalization have already been published, we believe that vast room still exists for a further extension of the literatures, with strong interest held by not only academicians but also policymakers.

Four lines of future research would be suggested. The first is the replication of previous studies in countries/regions which have not been fully explored. We have introduced many related articles in the previous section. Although many papers exist in each literature, most of them are analyses for developed countries. In particular, there are few papers on East Asian developing countries. It would be invaluable to replicate previous studies by using these countries' own micro data. Then, since *de facto* economic linkages are quite strong in East Asia compared with other regions, we might obtain empirical results different from those in previous studies on developed countries or developing countries in other regions. If we reach unusual results, it would be a substantial contribution to the literature to clarify why such results were obtained.

The second one line of future research would be to extend and develop the previous

studies along the research line of each literature. For example, there is still room for development in the knowledge spillover literature. We already know that the MNEs' source country or nationality is one of the sources of heterogeneity in the magnitude of the spillover that domestic firms receive, but we do not know why. As a next step, we need to examine what sort of firm nationality characteristics yields such heterogeneity. In addition, previous studies have analyzed the heterogeneity of spillover effects in domestic firms' input-output relationship with MNEs. However, they define such input-output relationships at the industry level due to data limitation. That is, they confirmed that domestic firms *in the industries* having a close input-output relationship *with the industries* in which many foreign-owned firms exist receive larger spillover effects. To closely analyze such heterogeneity of spillover effects, more direct examination is desirable. If the required data are available, we can directly examine whether or not domestic firms that supply their products to or purchase inputs from foreign-owned firms obtain larger spillover effect.

The third line of future research is to make breakthroughs in the existing literatures to develop new literatures. We have introduced selection effects in the relationship between the number of varieties and the firms' productivity in the third literature. Similar to the relationship in overseas activities between selection (the first literature) and learning effects (the eighth literature), on the other hand, starting to produce one more variety might raise the firms' productivity due to, say, the complementary relationship between an existing variety and a newly added variety. The examination of such a learning effect may open a new literature, though we obviously need to take care of the endogeneity issue due to the selection effect. Furthermore, it may be more interesting to investigate whether differences in the learning effect among added

varieties exist or not. Clarifying the cause of such differences becomes an important research topic.

The last line of future research is to integrate some literatures. Indeed, as introduced in Section 2.3, we can find the integration of the first and third literatures. Raff et al. (2008b) incorporate the firms' choice between FDI and exporting into their choice of FDI modes such as WOE, JV, and M&A. Such an examination contributes to clarifying the overall picture of the substitution of overseas activities. The integration of the third and the eighth literatures is another possible example of this direction. At present, in the eighth literature, the learning effects are examined according to FDI types (HFDI and VFDI). In addition to this FDI-type dimension, the learning effects of FDI seem to differ according to the entry modes. In particular, the JV and the M&A would yield larger positive impacts on MNEs' performance than the WOE due to the integration of location advantages of the domestic firms with the know-how of the MNEs.

3.2. Feedbacks to Related Government Agencies from Statistics Users

From the viewpoint of micro data users, there is a lot of room for improving statistics collected by governments, and for facilitating the way of utilizing them.

First, the basic items included in statistics should be internationally standardized at least to a minimal level. There are vast variations in items available across countries. For example, productivity is one of the most important measures for analyzing the impact of globalization. The most widely-used productivity measure is TFP, which requires in its calculation tangible assets, employment, and so on. If consistent estimates of TFP are desirable, other items such as procurement are also necessary

(Olley and Pakes, 1996; Levinsohn and Petrin, 2003). Ownership information is essential for the analysis of spillover effects. The items on firms' overseas activities are necessary to examine the impacts of outward FDI on domestic economies.

Secondly, firm-level data should be convertible. It is important to be able to link one set of firm-level data in a year with that data in other years, by firm. That is, the firm-level data should have a firm identification code identical through years. Such data enable researchers to enjoy panel data advantage and thus to conduct rigorous micro data analysis. Furthermore, it is desirable that the firm identification code is convertible to that in other firm-level data. Countries usually have multiple micro data. Thus, researchers sometimes need to link one kind of firm-level data with other firm-level data. Without a convertible identification code, the perfect linkage of two data sources is almost impossible. The survey needs to be designed on the assumption that it will be linked with the other existing micro data.

Thirdly, governments should improve the quality of micro data. It is important to not only raise collection rates but also decrease unanswered items, i.e., missing values. It would be good to make a survey for firms mandatory. Face-to-face interaction in collecting information is also effective.

Finally, the use of micro data should be open and rule-based for researchers. It has been obvious that micro data analysis provides invaluable information to policy makers. However, the numbers of countries in which micro data are accessible to is still limited. In East Asia, for example, Singapore and Malaysia do not permit research use at all. Also in Japan, customs data are never available at the firm level, despite the fact that Bernard and Jensen (2004a) proved the usefulness of such data. Better communication between statistics makers and users is hoped for on this matter.

4. Concluding Remarks

This paper has extensively reviewed empirical studies that analyze the globalization phenomenon by using micro data. First, we set up a flow chart describing how the advancement of globalization or changes in policy measures on globalization would lead to national productivity enhancement. Secondly, we summarize the hypotheses and the methods explored in 13 literatures on globalization, mapped by our flow chart. Thirdly, we discuss further possible avenues in micro data analyses. Finally, some suggestions are made for statistics-related policies. With rigorous econometric treatment, we hope that these literatures in micro data analysis will develop even further, offering strong policy guidance, particularly for economic development.

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CHAPTER 7

Gains from Fragmentation at the Firm Level: Evidence from Japanese Multinationals in East Asia

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The unprecedented development of production networks in East Asia has been investigated, both theoretically and empirically, employing the conceptual framework of fragmentation theory and its extensions. However, the benefits of production fragmentation at the firm level, particularly benefits deriving from different location advantages, have never been directly measured empirically. This paper presents the very first attempt, to the authors' knowledge, to empirically capture the benefits of fragmentation. Specifically, using Japanese firm-level data, we find that the larger the gap in the capital-labor ratios between fragmenting firms' home and overseas activities, the more greatly their cost efficiency improves.

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1. Introduction

The fragmentation theory initiated by Jones and Kierzkowski (1990) has had a great impact on the theoretical conceptualization of the production-process-wise division of labor developed between the North and South.[1] Notably, the unprecedented formation of production networks in East Asia has been investigated, both theoretically and empirically, with employing the conceptual framework of fragmentation theory and its extensions.[2] The fragmentation theory has indeed become a strong theoretical backbone for understanding the recent phenomenon of active North-South intra-industry trade. Applying gravity equations for bilateral trade data *at the industrial level*, some researchers have found more active trade in parts and components in country-pairs with larger differences in income in East Asia (see, for example, Athukorala and Yamashita, 2006; Kimura, Takahashi, and Hayakawa, 2007). However, the benefits of production fragmentation *at the firm level*, particularly benefits derived from utilizing different location advantages, have never been directly measured empirically. This short paper presents the very first attempt, to the authors' knowledge, to empirically capture the benefits of fragmentation, using rigorous econometric methods.

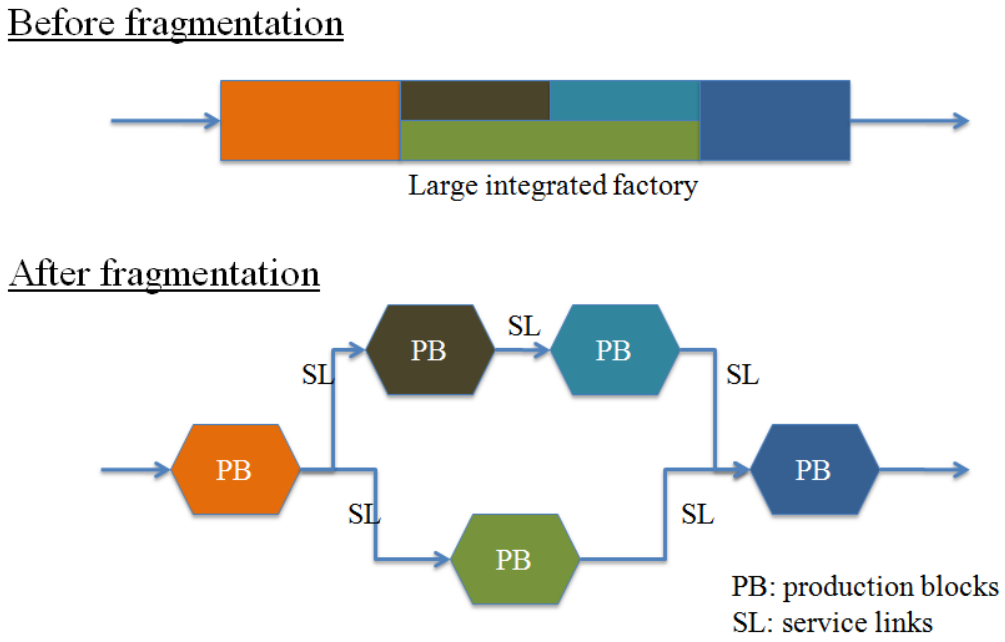
The basic concept of fragmentation is illustrated as Figure 1. Suppose that a firm originally has a large electronics factory that takes care of a long sequence of value chains from upstream to downstream. The electronics industry as a whole is physical-capital-intensive or human-capital-intensive, so that the factory is located in a

[1] For the fragmentation theory and its applications, also see Arndt and Kierzkowski (2001), Cheng and Kierzkowski (2001), and articles in the special issue of *International Review of Economic and Finance* on "Outsourcing and Fragmentation: Blessing or Threat" (Vol. 14, Issue 3, 2005).

[2] Kimura and Ando (2005) extend the fragmentation framework to two dimensions, incorporating fragmentation along the geographical distance axis and along the integration (intra-firm vs. arm's length) axis. Kimura (2006) summarizes the nature and characteristics of East Asian production networks in the extended framework.

developed country. If we take a look at the factory in details, we find that it consists of various production processes; some production processes are purely human-capital-intensive while others are labor-intensive. Thus, if the firm properly divides a factory into multiple production blocks and places them in various locations with different location advantages, the total production cost may be reduced. This is fragmentation. To make fragmentation economically viable, two conditions must be met. First, there must be a large reduction in production cost in production blocks, achieved by utilizing different location advantages. Secondly, the cost of the service links that connect remotely located production blocks must be reasonably low.

Figure 1. The Fragmentation Theory: Production Blocks and Service Links



Source: Authors' compilation

Note that the fragmentation theory does not directly include the mechanism by which the production blocks are separated. Suppose that production activities require

two primary inputs, capital (K) and labor (L), and differences in location advantages between developed countries (DCs) and less developed countries (LDCs) are represented by differences in factor prices, r and w. If a firm could freely separate production blocks, it would place a purely capital-using production block in a DC and a purely labor-using production block in a LDC, in order to fully exploit differences in factor prices. This, however, does not actually happen because a firm faces technological and managerial constraints in separating production blocks. Casual observations in a number of factory visits suggest that production blocks located in LDCs tend to be more labor-intensive than those in DCs, as we would expect. However, gaps in factor intensity between production blocks in LDCs and DCs differ widely across firms, and how far the differences in location advantages are exploited seems to determine the extent of gains from fragmentation.

This is actually a testable hypothesis with the data of Japanese firms and their foreign affiliates, though we have to tolerate various data limitations. What we will demonstrate is as follows: suppose that two firms initially exist in an industry and operate at home (a DC) with the same technology. They now draw lotteries as Melitz (2003), determine the magnitude of gaps in factor intensity between a production block which remains at home and the other located in a foreign country (a LDC), and conduct fragmentation. Applying a set of reasonable conditions proposed by Deardorff (2001), we graphically demonstrate that a firm with a larger gap in factor intensity in fragmentation presents better performance than the other. Our econometric exercise provides a robust support for this claim.

The rest of this paper is organized as follows: the next section provides the theoretical framework of our empirical analysis. Following the theoretical framework

of Deardorff (2001), we show that international fragmentation with a larger gap in capital-labor ratios (KL ratios) between two production blocks leads to a larger total cost reduction. Section 3 specifies our empirical methodology and discusses data issues. Some data overview on the capital-labor ratios of Japanese MNEs and the empirical results are reported in section 4, and section 5 concludes.

2. Theoretical Framework

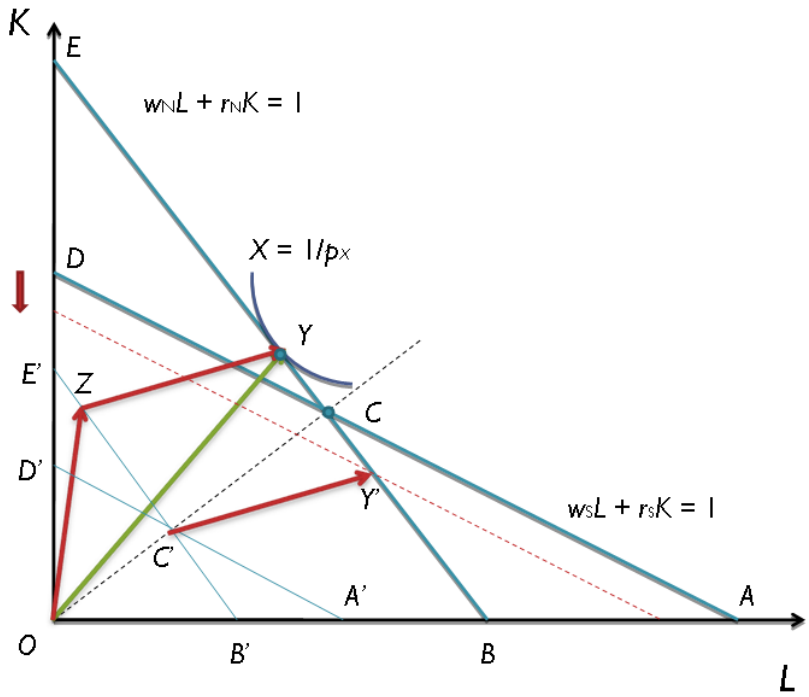
This section summarizes how the benefit from fragmentation is related to the gap in capital-labor ratios between activities at home and abroad. To do that, we employ the fragmentation model, particularly the theoretical framework proposed by Deardorff (2001).

2.1. Fragmentation and the Gap in KL Ratios

Consider two countries with different factor prices under free trade. The one is the capital-abundant North, and the other is the labor-abundant South. We assume that sufficiently different factor endowments between countries make factor price equalization impossible. Unit isocost lines in both countries are shown in Figure 2 (lines ACD and BCE for South and North, respectively). In this paper, we focus on good X, which is assumed to be capital-intensive enough to be initially produced only in the North. In this framework, we consider the total cost of a firm that tries to fragment technology for producing X. The production of good X can be broken up into two fragments, which are assumed to follow Leontief fixed-coefficient technologies. It is

also assumed that since the firm constitutes a sufficiently small part of the total economies, it takes factor prices in the two countries as given, and its changing to the fragmented technology does not cause a noticeable change in the factor prices in either country.

Figure 2. Fragmentation



We first consider the fragmentation that uses the same quantity of resources as the unfragmented technology. Deardorff (2001) calls such fragmentation "costless fragmentation". The amount of good X produced by the isoquant $X=1/p_x$ can also be produced using the capital-intensive fragment that requires the vector of factors shown as OZ and the labor-intensive fragment that requires the vector shown as ZY. Since the capital-labor ratio of fragment OZ is above the cutoff line OC, the capital-intensive fragment OZ will be produced in the North.

In this setting, Deardorff (2001) demonstrates that international fragmentation leads

to total cost reduction. To see this, it is useful to draw some lines. The lines A'C'D' and B'C'E' are parallel to ACD and BCE respectively, and both lines are contracted toward the origin by the same proportion. The line B'C'E' passes through the tip of the arrow OZ and thus shows the factor combinations that cost as much as factor inputs in producing fragment OZ in the North. The amount of such cost becomes less than one dollar. Since point C' is placed on both A'C'D' and B'C'E', the factor combination at this point costs the same amount between the North and the South. Thus, drawing vector C'Y' with the same length and direction as ZY, we can obtain the point Y', through which an isocost line shows the total cost for producing the capital-intensive fragment in the North and the labor-intensive fragment in the South. As a result, since the point Y' lies inside unit isocost line ACD, the use of fragmented technology reduces the cost if the fragments are produced in different countries. That is, in this setting, international fragmentation succeeds in reducing the total cost for the production of good X.[3]

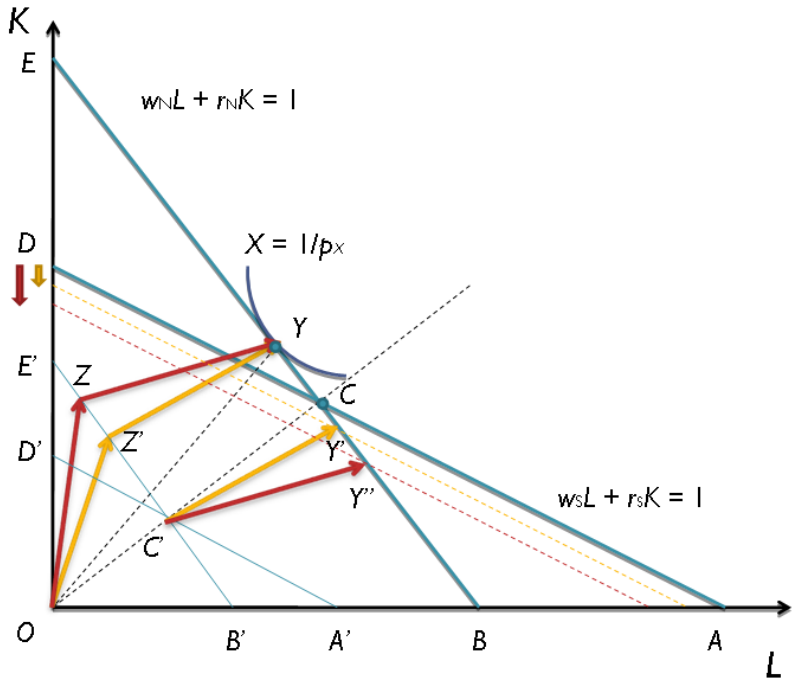
We can derive a further meaningful result from the above framework. We consider two firms. While one firm conducts fragmentation with a large gap in capital-labor ratios between fragments (KL gap), the other firm does so with a small KL gap. Here we restrict our attention to the fragmentation in which the cost for producing the capital-intensive fragment does not depend on its KL ratio. This ensures that the KL gap *uniformly* expands as the KL ratio in the capital-intensive fragment rises. Thus, we can easily compare fragmentation between large and small KL gaps.

[3] If the fragment ZY is not so labor-intensive, that is, if Y' is placed on the upper-left area of the point C, international fragmentation raises the total cost. In this paper, we assume that the fragment ZY is sufficiently labor-intensive. At the same time, the fragment OZ is assumed to be sufficiently capital-intensive that the good X is capital-intensive enough to be produced only in the North in the unfragmented technology.

Graphically, even if the KL ratio in capital-intensive fragment OZ changes, the tip of the arrow OZ is always placed on the line B'E'.[4]

The result is shown in Figure 3. Two fragments' vectors in the large KL gap fragmentation are shown as OZ and ZY, and those in the small KL gap fragmentation as OZ' and Z'Y. Notice that both points Z and Z' are placed on the line E'B' since the cost of producing the fragment does not depend on its KL ratio. The rest of the figure construction is the same as in Figure 1. Corresponding vectors to ZY and Z'Y are C'Y' and C'Y'', respectively. Because both vectors C'Y' and C'Y'' start from point C', and due to the order of KL ratio between ZY and Z'Y, point Y'' always lies more inside the isocost line ACD than point Y'. This indicates that a large KL gap fragmentation leads to more total cost reduction than a small gap fragmentation.

Figure 3. Small KL Gap versus Large KL Gap



[4] Since allowing the dependence of the cost in the capital-intensive fragment on its KL ratio prevents us from visualizing our claim, we do not cover such fragmentation in this paper.

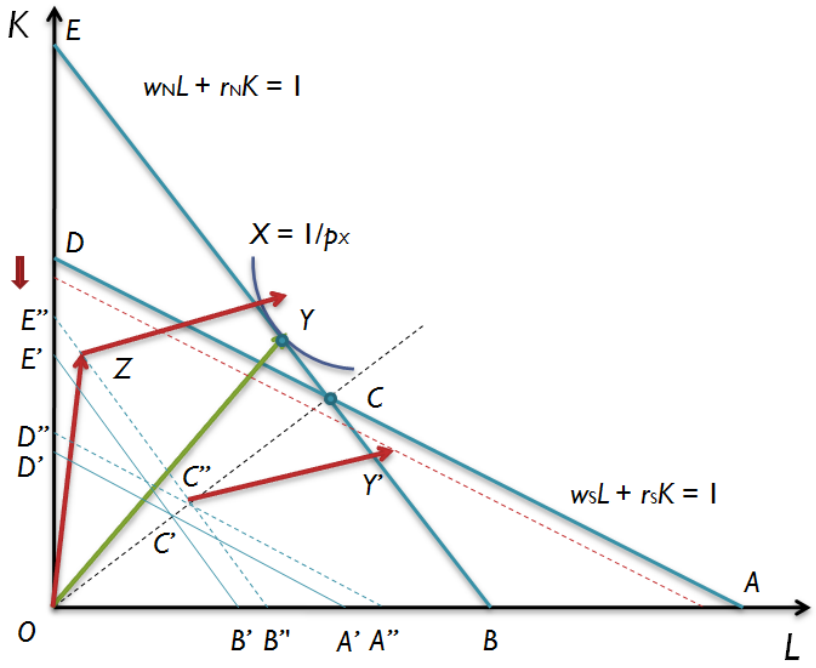
2.2. Service Link Costs

So far, we have not considered costs to link two remotely located fragments, i.e. service link costs. A service link would require additional supervision, coordination, and control over the geographically diversified production activities. In this subsection, we model such costs as additional factor use. As a result, international fragmentation is required to use more combined factors than could have produced the good before. Specifically, we assume that such extra resources have the same KL ratio with the fragment at home and are inputted at home by a certain proportion of resources used in the home fragment.[5] This type of fragmentation is qualitatively similar to the one that Deardorff (2001) calls "costly fragmentation".

In this framework, as in Deardorff (2001), we can see that international "costly" fragmentation could still lead to a total cost reduction. Such a case is shown in Figure 4. Since the capital-intensive fragment extends beyond the previous isocost line B'C'E', the labor-intensive fragment's vector also reaches beyond the unit-isocost line BCE. As a result, the same figure construction as before yields the point Y', through which an isocost line shows the total cost in international fragmentation. Thus, international fragmentation can reduce the total cost even though it is costly in terms of factor use. Consequently, as the fragmentation theory claims (see, for example, Arndt and Kierzkowski, 2001; Cheng and Kierzkowski, 2001), whether international fragmentation reduces total cost or not depends on the magnitude of service link costs (in our case, the amount of the extra resources). The longer the vector OZ, the more likely it is that point Y' will reach the right area of unit-isocost line ACD. Thus, the smaller the service link cost, the larger total cost reduction the firms can enjoy.

[5] The following results are qualitatively unchanged even if we assume such extra resources are inputted abroad (see Deardorff, 2001), or both at home and abroad.

Figure 4. International Fragmentation with Service Link Costs



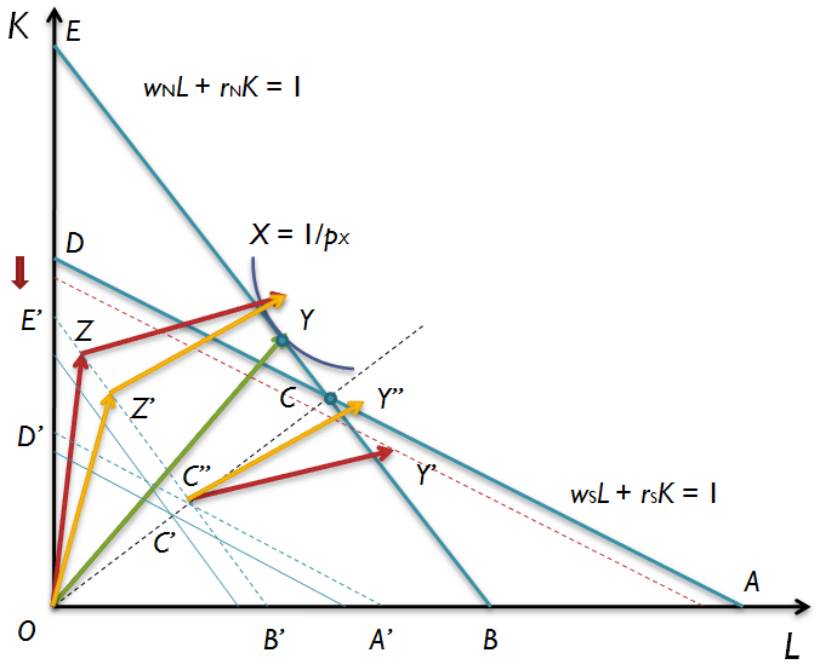
We again compare fragmentation between large and small KL gaps, incorporating service link costs. As shown in Figure 5, the figure construction is basically the same as in Figure 3. We extend the fragment OZ' by the same proportion as in the case of fragment OZ. Since we restrict ourselves to the fragmentation in which the cost for producing the capital-intensive fragment does not depend on its KL ratio, the vectors C''Y' and C''Y'' again start from the same point. Thus, we can confirm that a large KL gap fragmentation leads to more total cost reduction than a small gap fragmentation. Consequently, in this section, we obtain the following testable hypothesis:

Testable Hypothesis: *The larger the gap in KL ratios between a Northern fragment and a Southern fragment, the greater the total cost reduction in international fragmentation.*

In other words, the larger the gap in KL ratios between an MNE's home and overseas activities, the larger its total profit is. As long as we assume Leontief technology, the MNE's profit has a positive linear relationship with the gap in KL ratios.

From the next section, we investigate whether this hypothesis is empirically valid or not.

Figure 5. Small KL Gap versus Large KL Gap: Service Link Costs



3. Empirical Issues

3.1. Methodology

Our hypothesis to be tested is whether the larger the gap in KL ratios between a fragmentation firm's home and overseas activities, the better the performance of the firm is. To empirically test this hypothesis, we regress the following simple linear equation:

$$Performance_{ft} = \beta_0 + \beta_1 Gap_{ft} + u_{ft},$$

where $Gap_{ft} = (K_{ft}^{Home} / L_{ft}^{Home}) - (K_{ft}^{Abroad} / L_{ft}^{Abroad})$. β_0 and β_1 are coefficients to be estimated, and β_1 is expected to be significantly positive. u is disturbance. *Gap* is the difference in capital-labor ratios between home and abroad.[6] K and L are tangible fixed assets and labor, respectively. Subscripts f and t represent firm and year, respectively. We do not take logs of *Performance* and *Gap* not only because they can be negative but also because the theoretical framework does not require us to take their logs. To keep consistency of our empirical framework with the above theoretical prediction, we investigate MNEs' profits on a consolidated basis, i.e. the sum of home profit and overseas profit.[7] Thus the greater the total cost reduction in international fragmentation, the larger their consolidated profits would be. To control differences in scale among MNEs, we divide the consolidated profits by their total assets. In addition to the profits, we also examine the impact on value added[8] on a consolidated basis, which is further divided by their total employment. Firms with greater total cost reduction in international fragmentation would gain larger value added. In sum, our performance measures are return on assets (ROA) and labor productivity on a consolidated basis.

Some other variables are included as independent variables for controlling firm-specific characteristics and host country-specific characteristics. The first

[6] In this paper, we use the *difference* in capital-labor ratios between home and abroad rather than their *ratio*. In the gravity analysis, the relationship between trade and wage gap is often examined (see, for example, Kimura, et al., 2007). All these studies use a *difference* in GDP per capita between exporter and importer as the gap measure. Also in the studies of the knowledge-capital model, e.g. Carr, et al. (2001), a *difference* in the share of the labor force in certain skilled occupations between parent and host country is used in order to examine the relationship between affiliate sales and skill difference. Our paper follows the formulation of gap in such studies. But, even in the case of the *ratio*, we obtain qualitatively the same results, particularly in the case of labor productivity.

[7] To our best knowledge, this paper is the first that explores the impacts of investing abroad on investors' consolidated performance.

[8] Due to the data limitation in this paper, value added is simply defined as total sales minus total procurements.

variable is a firm-specific one. The amount of capital stock on a consolidated basis is included to further control MNEs' scale. The other variables are host country-specific ones. In the above theoretical framework, we confirm that the smaller the service link cost, the larger the benefit from investing. To control differences in the service link cost with Japan among host countries, we include two variables on such cost: geographical distance between Japan and host country and the extent of country risk. As a result, our baseline regression equation is given by

$$Performance_{ft} = \beta_0 + \beta_1 Gap_{ft} + \beta_2 \ln Capital\ Stock_{ft} + \beta_3 \ln Distance_c + \beta_4 \ln Risk_{ct} + u_{ft}.$$

Subscript c represents host country. Year and industry dummies are also introduced.

In order to keep further consistency with the theoretical framework, we need to restrict our sample firms only to firms with fragmentation. To do that, we require sample firms to meet the following five conditions. The first is to invest in East Asian countries since many empirical papers such as Kimura (2006) show that Japan has actively been engaged in international fragmentation primarily with East Asian countries. Secondly, we restrict to firms with only one affiliate. Although it is an important research topic to clarify the mechanics and consequences of operating multiple affiliates, such examination is beyond our framework in section 2.[9] The third is the firms of which activities at home are more capital-intensive than those abroad. Since Japan is expected to serve as a country producing the more capital-intensive fragments than host countries in East Asia, firms with negative gaps are eliminated from

[9] We also conducted regression with the MNEs with multiple affiliates in East Asia. The gap measure is constructed by using the weighted average of all East Asian affiliates' KL ratio in each MNE. We use affiliates' sales as a weight. Their inclusion in the sample drastically increases the number of observations in regression, though the aggregation procedure is inevitably accompanied by a looser link with our theoretical framework. As a result, we obtained qualitatively unchanged results as reported in this paper.

our sample. Fourthly, we restrict our sample set to firms that are actually exporting their products from home to their overseas affiliates, since the fundamental source of benefits from international fragmentation is the intra-firm vertical division of labor between home and abroad. As long as we assume that upstream processes are more capital-intensive, Japanese MNEs should export their upstream products to their affiliate. Lastly, our sample of overseas affiliates is restricted to affiliates in the same industry as their parents, which enables us to compare KL ratios among fragments (production processes) in an industry, as is consistent with our theoretical framework.

3.2. Data Issues

Our main data source is "The Basic Survey of Overseas Business and Activities (BSOBA)," which is a firm-level survey by the Ministry of Economy, Trade and Industry, Government of Japan. The aim of this survey is to obtain basic information on the activities of the overseas affiliates of Japanese firms. The survey has two versions. One is the Basic Survey, which includes more detailed questions and is conducted every three years. The other is the Trend Survey, which is an abbreviated version and is carried out between the Basic Surveys. Both the Basic Survey and the Trend Survey consist of two parts: one is for parent companies and the other is for their overseas affiliates.[10] The parent companies are Japanese corporations which, as of the end of March, own or have owned overseas affiliates in the past, excluding those in the financial and insurance industry or real estate industry. The information on parents

[10] An overseas affiliate of a Japanese firm is defined as follows: a foreign affiliate in which a Japanese firm has the invested capital of 10% or more, a foreign affiliate in which a "subsidiary" funded more than 50% by a Japanese firm has invested capital of more than 50%, and a foreign affiliate in which a Japanese firm and a subsidiary funded more than 50% by a Japanese firm have invested capital of more than 50%.

includes their employment, assets, exports, and so on. As for affiliates, the establishment year of the affiliates, the breakdown of sales and purchases, employment, costs, and research and development, and so forth are available. As a result, the BSOBA provides us all necessary data on firm-specific variables.

As of 2008, micro data sets for the BSOBA are available between 1995 and 2005. However, tangible fixed assets in parent firms and their overseas affiliates, which are necessary to construct the Gap, are available only in the Basic Survey. Furthermore, such information turns out to be unavailable for 2004. Thus, our sample years are forced to be only 1995, 1998, and 2001. For further information on the figures included in the BSOBA, see "Survey Form for Oversea Affiliates" and "Guide for Completing the Survey".[11]

Next, data sources of the country-specific variables are as follows: the data on bilateral distance are drawn from the CEPII website. As a proxy for the country risk, we use a country risk index which is drawn from Institutional Investor (Institutional Investor, various issues). This index is formed from aggregates of bankers' evaluations on the risk of default, and a larger value indicates that the risk of default in the country is smaller.

Lastly, it is worth noting one crucial limitation in our dataset. Our dataset is pooling data, not panel data. Although our data source includes firm identification codes applicable over years, most of our sample firms appear only once, mainly due to the frequent absence of data on tangible fixed assets. As a result, we are forced to treat our sample as a pooling set and could not introduce time-invariant firm-fixed effects into our regression equation.

[11] Downloadable from the METI web site: http://www.meti.go.jp/english/statistics/tyo/kaigaizi/index.html.

4. Empirical Results

4.1. Overview of KL Ratios in Japanese MNEs

We present some tables on capital-labor ratios in Japanese MNEs in 1998, in which there are a largest number of observations for our sample period, i.e. 1995, 1998, and 2001. The number of Japanese overseas affiliates reporting both K and L in 1998 is provided by industry by region in Table 1.[12] As for regional definition, in this paper, East Asia means ASEAN countries, China, and Asian NIEs, while developed countries include European countries (both Western and Eastern European countries) plus North American countries (Canada and the US).

Table 1. KL Ratios

	Observations		KL in affiliates		KL at home		Gap	
	Developed Countries	East Asia	Developed Countries	East Asia	Developed Countries	East Asia	Developed Countries	East Asia
Textile	5	110	15	3	48	13	32	11
Chemicals	157	262	30	19	25	27	-5	8
Primary metal	28	90	16	14	23	27	6	13
Metals	14	42	13	6	10	9	-3	3
General Mach.	134	153	17	4	13	11	-4	7
Electrical Mach	48	138	11	6	11	10	0	5
IT Mach.	145	298	4	5	11	12	6	7
Trasnport Equip	187	221	19	9	12	12	-7	3
Precision Mach	23	43	6	5	9	11	2	6
Others	176	347	20	23	24	22	4	0
Total Average	917	1,704	18	11	17	17	-1	5

Source: Authors' calculation by using the Basic Survey of Overseas Business and Activities.

[12] This table includes the MNEs with multiple-affiliate or/and negative gap values and those without exports to their affiliates.

Three kinds of measures are presented. The first is the simple average of KL ratios in Japanese affiliates. In most of the industries, affiliates in developed countries have higher KL ratios than those in East Asian countries. This result implies that Japanese MNEs investing in East Asia aim to utilize low-priced labor. Secondly, the simple average of KL ratios in Japanese MNEs' home activities is also presented. Compared with the results in the first measure, the table does not show clear differences in KL ratios between the case of East Asia and that of developed countries, in most of the industries. This result would indicate that Japanese MNEs investing in either East Asia or developed countries have no choice but to get engaged in sufficiently capital-intensive production activities at home due to the high wages in Japan. The last is the gap in KL ratios between home and overseas activities. We find that, in almost all industries, the gap is larger in the case of East Asian countries. Thus, we can say that, on average, Japanese MNEs investing in East Asia cut out production blocks on the basis of factor intensities.

4.2. Regression Results

Next, we report our regression results. Basic statistics are provided in Table 2.[13] Table 3 tabulates the regression results.

[13] In this dataset, we exclude two obvious outliers in gap: they have abnormally large gaps of a value greater than 1,000.

Table 2. Basic Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Return on assets	204	7	14	-18	108
Labor productivity	204	13	19	-23	145
Gap	204	9	16	0	198
log of Capital stock	204	6	2	3	10
log of Distance	204	8	1	7	9
log of Country risk	204	4.06	0.26	3.33	4.42
Adjusted Labor productivity	204	8	16	-4	197
Adjusted Gap	204	13	19	-23	144

Source: Authors' calculation by using the Basic Survey of Overseas Business and Activities

Table 3. Baseline Results

Dependent variable	Return on Assets			Labor Productivity		
Equation	(I)	(II)	(III)	(I)	(II)	(III)
Gap	0.108**	0.117*	0.121*	0.495***	0.450***	0.457***
	[0.054]	[0.062]	[0.063]	[0.095]	[0.096]	[0.100]
log of Capital stock	-0.249	-0.376	-0.570	2.379***	2.632***	2.619***
	[0.748]	[0.697]	[0.747]	[0.613]	[0.632]	[0.690]
log of Distance	-6.414**			-4.745		
	[2.989]			[3.175]		
log of Country risk	-3.127			-1.477		
	[3.123]			[5.167]		
Year dum.	YES	YES	NO	YES	YES	NO
Industry dum.	YES	YES	YES	YES	YES	YES
Country dum.	NO	YES	NO	NO	YES	NO
Country*Year dum.	NO	NO	YES	NO	NO	YES
Observations	204	204	204	204	204	204
R-squared	0.188	0.206	0.250	0.425	0.498	0.505

Notes: Heteroskedasticity-consistent standard errors (White) are in parentheses. ***, **, and * show 1%, 5%, and 10% significance, respectively.

The baseline results are presented in equation (I). Three points are noteworthy in the case of ROA. First, we can see that the coefficient for Gap is estimated to be significantly positive at the five percent level, indicating that the larger the gap in KL ratios between MNEs' home and overseas activities, the higher their profitability. Secondly, the insignificant result in capital stock would be because differences in scale among MNEs are already adjusted by dividing their consolidated profits by their total

assets. Thirdly, as is consistent with our theoretical framework, the closer to Japan the host country is, that is, the lower the distance-related charge, the significantly better the performance. The results in the case of labor productivity are basically the same as in the case of ROA. In particular, the coefficient for Gap is again positively significant at the one percent level. The noteworthy difference with the case of ROA is that the coefficient for the capital stock turns out to be significantly positive. This result may indicate that total employment is not enough to control MNEs' scale embodied by their capital stock, in contrast to total assets.

To confirm the robustness of these results in Gap, we further conduct several regressions. First, by introducing country fixed effects or country-year fixed effects, we control host country characteristics in full detail, which include factor endowment, technology, the magnitude of service link costs, and so on. Then, differences in factor prices, that is, differences in the slope of the unit isocost line, are also controlled. In these regressions, host country-specific variables are dropped. Their results are reported in equations (II) and (III) and remained unchanged with baseline results. That is, we consistently find positive estimators of the Gap coefficient.

The second robustness check is more important. Since our sample of host countries comprises countries with different levels of economic development, there seem to be the large differences in labor quality. Although such differences may be partly controlled by introducing country-year fixed effects, we also try to adjust such differences more directly. Specifically, we multiply an affiliate's employment by a ratio of the level of education (average schooling years in the total population) in the host country to that in Japan. The data concerning the education level are drawn from "Data Set for a Panel of 138 Countries" provided by Robert J. Barro and Jong-Wha

Lee.[14] By employing such adjusted labor in the host countries, we again calculate our gap measure and labor productivity. Their basic statistics are reported in Table 2, and the regression results are provided in Table 4. From this table, we again find qualitatively unchanged results compared with Table 3 and confirm the significantly positive coefficients for Gap.

Table 4. Regression Results: Adjusted Employments

Dependent variable	Return on Assets			Labor Productivity		
Equation	(I)	(II)	(III)	(I)	(II)	(III)
Gap	0.113**	0.119*	0.123*	0.545***	0.500***	0.509***
	[0.055]	[0.063]	[0.064]	[0.093]	[0.097]	[0.102]
log of Capital stock	-0.226	-0.349	-0.539	2.511***	2.707***	2.696***
	[0.750]	[0.698]	[0.745]	[0.593]	[0.620]	[0.674]
log of Distance	-6.384**			-3.882		
	[2.974]			[3.181]		
log of Country risk	-3.253			-3.326		
	[3.107]			[5.215]		
Year dum.	YES	YES	NO	YES	YES	NO
Industry dum.	YES	YES	YES	YES	YES	YES
Country dum.	NO	YES	NO	NO	YES	NO
Country*Year dum.	NO	NO	YES	NO	NO	YES
Observations	204	204	204	204	204	204
R-squared	0.189	0.207	0.251	0.448	0.509	0.517

Notes: Heteroskedasticity-consistent standard errors (White) are in parentheses. ***, **, and * show 1%, 5%, and 10% significance, respectively.

5. Concluding Remarks

This paper empirically investigated gains from fragmentation at the firm level. Examining corporate performance on a consolidated basis, we investigated, using Japanese firm-level data, whether the heterogeneity in impacts of international

[14] http://www.nber.org/pub/barro.lee/

fragmentation on corporate performance across firms exists or not. We found that the larger the gap in KL ratios between their home and overseas activities, the more greatly their cost efficiency improves. Several estimations confirmed the robustness of this finding. Given this finding, our future research may be to clarify what firm characteristics determine such a gap in KL ratios between home and overseas activities.

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CHAPTER 8

Learning-by-exporting in Korean Manufacturing: A Plant-level Analysis

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The paper analyzes whether firms that start exporting become more productive utilizing recently developed sample matching procedures to control the problems from self-selection into the export market. We use plant level panel data on Korean manufacturing sector from 1990 to 1998. We find clear and robust empirical evidence in favor of the learning-by-exporting effect; total factor productivity differentials between exporters and their domestic counterparts arises and widens during several years after export market entry. We also find that the effect is more pronounced for firms that have higher skill-intensity, higher share of exports in production, and are small in size. Overall, the evidence suggests that exporting is one important channel through which domestic firms acquire accesses to advanced knowledge and better technology. Also, the stronger learning-by-doing effect for firms with higher skill-intensity seems to support the view that "absorptive capacity" matters to receive knowledge spillovers from exporting activity.

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1. Introduction

One of the most frequently asked question in trade and growth literature is whether and how international trade or openness of trading regime promotes productivity growth of countries. Although numerous studies, both theoretical and empirical, have been conducted on this issue, there seems to be no clear consensus yet. Recently, a growing number of studies have started to utilize firm or plant level data and re-examined this issue, particularly focusing on exporting as a channel of international technology diffusion or knowledge spillover. One empirical regularity emerging from these studies is that exporters are more productive than non-exporters. The positive correlation between exporting and productivity in cross-sectional context, however, provides little useful information on the direction of causality. On one hand, this could reflect self-selection into export market: only productive firms can expect to recoup the sunk entry cost of entering into the export market and join the export market. In this case, the causality runs from productivity to exporting. On the other hand, it is also plausible that the positive correlation between exporting and productivity reflects learning-by-exporting effect: firms that become exporters could gain new knowledge and expertise after entering export market and improve their productivity relative to average player in the same industry. The self-selection hypothesis is supported by most studies, but the evidence on learning-by-exporting seems less clear-cut (Tybout 2000).

This paper examines the exporting-productivity nexus utilizing the plant level panel data on Korean manufacturing sector (Survey of Mining and Manufacturing, SMM henceforth) from 1990 to 1998. The main question to be addressed is whether

exporting activity improves productivity performance of plants. The emphasis on learning-by-exporting in the paper stems from the recognition that it is the area where existing literature presents mixed empirical results and, nevertheless, whether or not the learning-by-exporting effect exists has an important implication on the formulation of appropriate policy stance toward "openness". As discussed by Bernard and Jensen (1999a), if the gains do accrue to firms once they become exporters, then the appropriate policy interventions would be those that reduce barriers to entering foreign markets including macroeconomic trade policies to promote openness to trade and microeconomic policies to reduce entry costs, such as export assistance, information programs, joint marketing efforts, and trade credits. On the other hand, if there are no post-entry rewards from exporting, these policies designed to increase the numbers of exporters are more likely to end up wasting resources.[3]

Furthermore, this paper attempts to clarify the conditions, if at all, under which the learning-by-exporting may or may not take place, utilizing information on some plant or industry characteristics. As plant characteristics, we consider skill-intensity, export propensity, plant size, and R&D intensity. Most existing studies utilized information only on whether a plant exports or not and focused on the existence of learning-by-exporting effect. However, it is plausible that the degree of learning-by-exporting could be related to, for example, how important exporting activity is to the plant involved, in as much as learning-by-exporting arises through interactions with foreign buyers which requires costly resources. Thus, we examine whether plants with higher export propensity enjoys more benefits of learning-by-exporting. Meanwhile, if knowledge spillovers from exporting activities require domestic "absorptive capacity",

[3] See Bernard and Jensen (1999a) for detailed discussion.

then we could expect that plants with higher absorptive capacity will exhibit stronger learning-by-exporting. We use the skill-intensity of plants as a proxy for the domestic absorptive capacity.

We also examine whether the destination of exports matter in learning-by-exporting a là Loecker (2007). He shows that the degree of learning-by-exporting depends on destination of exports, using plant level information on the export destination in Slovenian manufacturing. The analysis is based on the presumption that learning-by-exporting effect will be stronger for plants that start exporting to more advanced countries. In case of Korea, however, the plant level information about the export destination is not available. So, we examine instead whether plants in industries with higher share of exports to advanced countries tend to exhibit stronger learning-by-exporting.

Examining these issues in the Korean case is particularly important in several respects. Above all, as well recognized, Korea is one of the few success countries that has narrowed the income gap with advanced countries by adopting an outward-oriented trade strategy.[4] So, examining and clarifying the openness-productivity nexus in the Korean case could provide valuable lessons on other developing countries that hope to catch-up with advanced countries. Furthermore, Korea is a country with large external exposure in trade that still needs to make a transition toward a fully developed country. Thus, in so far as learning-by-exporting, if it exists, reflects trade-related uni-directional knowledge spillovers from advanced to less-advanced countries, Korea is the appropriate place to examine these issues.

There are some empirical studies that scrutinize the causal relationship between

[4] See Krueger (1997), for example.

exporting and productivity. Most studies report that exporters are more productive than non-exporters before they start to export, suggesting that cross-sectional correlation between exporting and productivity partly reflects a self-selection effect. For example, Clerides, Lach and Tybout (1998) find very little evidence that previous exposure to exporting activities improves performance, using the plant-level panel data from Colombia, Mexico, and Morocco. Similar results are reported by Aw, Chung, and Roberts (2000) and Aw, Chen, and Roberts (2001) for Taiwan, Bernard and Jensen (1999b) for U.S. By contrast, the evidence on a learning effect is mixed. Earlier research such as Bernard and Jensen (1999b) find little evidence in favor of learning. They report that new entrants into the export market experience some productivity improvement at around the time of entry, they are skeptical about the existence of strong learning-by-exporting effect. However, several recent studies utilizing more refined empirical technique to deal with self-selection problem such as matched sampling techniques provide some empirical evidence in favor of learning-by-exporting. See Girma, Greenaway, and Kneller (2002) for UK, Loecker (2007) for Slovenia, and Albornoz and Ercolani (2007) for Argentina.

Related previous studies on Korea include Aw, Chung, and Roberts (2000) and Hahn (2004). Aw, Chung, and Roberts (2000), using plant-level panel data on Korean manufacturing for three years spaced at five-year intervals, does not find evidence in favor of either self-selection or learning-by-exporting. It differs from similar studies on other countries in that even the self-selection hypothesis is not supported. Aw, Chung, and Roberts (2000) argue that Korean government's investment subsidies tied to exporting activity rendered plant productivity a less useful guide on the decision to export. By contrast, following the methodologies of Bernard and Jensen (1999a,

1999b), Hahn (2004) finds some supporting evidence for both selection and learning in Korean manufacturing sector, using annual plant-level panel data from 1990 to 1998. However, Hahn (2004) suffers from the same technical difficulties as Bernard and Jensen (1999a, 1999b) in that the uncontrolled self-selection problem in export market participation may have contaminated the result.

In this paper, we re-examine the learning-by-exporting hypothesis in Korean manufacturing sector controlling for the self-selection in export market participation with a recently developed statistical tool: propensity score matching.

The organization of this paper is as follows. The following section explains the data set and the calculation of plant total factor productivity. Section 3 briefly discusses the estimation strategy to overcome the difficulties arising from self-selection in decision making for export market participation and to obtain a better estimate for the effects of learning-by-exporting. Section 4 discusses our main empirical results and the final section concludes.

2. Data and Plant Total Factor Productivity

2.1. Data

This paper utilizes the unpublished plant-level census data underlying the *Survey of Mining and Manufacturing* in Korea. The data set covers all plants with five or more employees in 580 manufacturing industries at KSIC (Korean Standard Industrial Classification) five-digit level. It is an unbalanced panel data with about 69,000 to 97,000 plants for each year from 1990 to 1998. For each year, the amount of exports

as well as other variables related to production structure of plants, such as production, shipments, the number of production and non-production workers and the tangible fixed investments, are available. The exports in this data set include direct exports and shipments to other exporters and wholesalers, but do not include shipments for further manufacture.

2.2. Plant Total Factor Productivity

Plant total factor productivity (TFP) is estimated following the chained-multilateral index number approach as developed in Good (1985) and Good, Nadiri, and Sickles (1997). This procedure uses a separate reference point for each cross-section of observations and then chain-links the reference points together over time. The reference point for a given time period is constructed as a hypothetical firm with input shares that equal the arithmetic mean input shares and input levels that equal the geometric mean of the inputs over all cross-section observations. Thus, output, inputs, and productivity level of each firm in each year is measured relative to the hypothetical firm at the base time period. This approach allows us to make transitive comparisons of productivity levels among observations in panel data set.[5]

Specifically, the productivity index for firm i at time t in our study is measured in the following way.

[5] Good, Nadiri, and Sickles (1996) summarize the usefulness of chaining multilateral productivity indices. While the chaining approach of Tornqvist-Theil index, the discrete Divisia, is useful in time series applications where input shares might change over time, it has severe limitations in cross-section or panel data framework where there is no obvious way of sequencing the observations. To the contrary, the hypothetical firm approach allows us to make transitive comparisons among cross-section data, while it has an undesirable property of sample dependency. The desirable properties of both chaining approach and the hypothetical firm approach can be incorporated into a single index by chained-multilateral index number approach.

$$\ln TFP_{it} = \left(\ln Y_{it} - \overline{\ln Y_t}\right) + \sum_{\tau=2}^{t}\left(\overline{\ln Y_\tau} - \overline{\ln Y_{\tau-1}}\right) - \left\{\sum_{n=1}^{N}\frac{1}{2}(S_{nit} + \overline{S_{nt}})(\ln X_{nit} - \overline{\ln X_{nt}}) + \sum_{\tau=2}^{t}\sum_{n=1}^{N}\frac{1}{2}(\overline{S_{n\tau}} + \overline{S_{n\tau-1}})(\overline{\ln X_{n\tau}} - \overline{\ln X_{n\tau-1}})\right\} \quad (1)$$

where Y, X, S, and TFP denote output, input, input share, TFP level, respectively, and symbols with an upper bar are corresponding measures for the hypothetical firm. The subscripts τ and n are indices for time and inputs, respectively. The year 1990 is chosen as the base year.

As a measure of output, we use the gross output (production) of each plant in the Survey deflated by the producer price index at disaggregated level. The capital stock used in this paper is the average of the beginning and end of the year book value of capital stock in the Survey deflated by the capital goods deflator. As for labor input, we use the number of workers, which includes paid employees[6], working proprietors and unpaid family workers. We allowed for the quality differential between production workers and all other types of workers. The labor quality index of the latter was calculated as the ratio of non-production workers' and production workers' average wage at each plant, averaged again over the entire plants in a given year. The sum of "major production cost" and "other production cost" reported in the Survey was taken as the measure of intermediate input. Major production cost covers costs arising from materials, parts, fuel, electricity, water, manufactured goods outsourced and maintenance. Other production cost covers expenditures on outsourced services such as advertising, transportation, communication and insurance. The estimated intermediate input was deflated by the intermediate input price index.

[6] Paid employees is the sum of production and non-production workers.

We assumed constant returns to scale production technology so that the sum of factor elasticities equals to one. Labor and intermediate input elasticities for each plant are measured as average factor cost shares within the same plant-size class in the five-digit industry in a given year. Here, plants are grouped into three size classes according to the number of employees; 5-50, 51-300, and over 300. Thus, the factor elasticities of plants are allowed to vary across industries and plant size classes and over time.

2.3. Definition of Exporters

Following convention in the literature, we define an exporter in a given year as a plant reporting positive amount of exports. Accordingly, non-exporters in a given year are those plants with zero exports. With this definition of exporters, it is possible to classify all plants into five sub-groups: Always, Never, Starters, Stoppers, and Other.[7] "Always" is a group of plants that were exporters in the year that they first appear in the data set and never changed their exporting status. Similarly, "Never" is a group of plants that were non-exporters in the year that they first appear in the data set and never switched to exporters. "Starters" includes all plants that were non-exporters in the year that they first appear, but switched to exporters in some later year and remained as exporters thereafter. "Stoppers" consists of all plants that were exporters in the year that they first appear, and then switched to non-exporters, never switching back to exporters thereafter. All other plants that switched their exporting status more than twice during the sample period are grouped as "Other".

[7] We eliminated plants that switch in and out of the dataset more than twice during the sample period. Thus, we keep only those plants that do not have a split in time series observations. This procedure eliminates about 10 percent of the sample in terms of number of plants.

2.4. A Preliminary Analysis: Performance of Exporters and Non-exporters

Table 1 shows the number of exporting plants and average exports as percentage of shipments, or export intensity, for each year during the sample period. Exporting plants accounted for between 11.0 and 15.3 percent of all manufacturing plants. The share of exporting plants rose slightly between 1990 and 1992, but since then steadily declined until 1996. However, with the outbreak of the financial crisis in 1997, the share of exporting plants rose somewhat noticeably to reach 14.8 percent in 1998. The rise in the share of exporting plants can be attributed mostly to the closure of non-exporting plants, rather than increase in the number of exporting plants. Note that the increases in the number of exporters in 1997 and 1998 were modest, which are broadly consistent with the severe contraction of domestic demand and huge depreciation of Korean Won associated with the crisis.

Table 1. Number of Exporters and Export Intensity

Year	Total number of plants (percent)	Non-exporters (percent)	Exporters (percent)	Exports/shipments ratio (percent)	
				unweighted	weighted
1990	68,690 (100)	58,392 (85.0)	10,298 (15.0)	54.8	37.3
1991	72,213 (100)	61,189 (84.7)	11,024 (15.3)	54.3	37.3
1992	74,679 (100)	63,241 (84.7)	11,438 (15.3)	51.7	36.3
1993	88,864 (100)	77,514 (87.2)	11,350 (12.8)	49.9	36.0
1994	91,372 (100)	80,319 (87.9)	11,053 (12.1)	47.2	35.9
1995	96,202 (100)	85,138 (88.5)	11,064 (11.5)	44.8	37.2
1996	97,141 (100)	86,502 (89.0)	10,639 (11.0)	43.6	35.3
1997	92,138 (100)	80,963 (87.9)	11,175 (12.1)	44.2	38.0
1998	79,544 (100)	67,767 (85.2)	11,777 (14.8)	44.7	48.7

Source: Hahn (2004).

Consistent with the high export propensity of the Korean economy, the share of exports in shipments at plant level is quite high. During the sample period, the unweighted mean export intensity is between 43.6 and 54.8 percent, declining from 1990 to 1996 but rising with the onset of the crisis in 1997. The average export intensity weighted by shipment shows a similar pattern, with generally lower figures than the unweighted average, suggesting that smaller exporting plants have a higher export intensity.

It is a well-established fact that exporters are better than non-exporters by various performance standards. Table 2 compares various plant attributes between exporters and non-exporters for three selected years. First, exporters are on average much larger in the number of workers and shipments than non-exporters. The differential in shipments is more substantial than that in the number of workers. So, the average labor productivity of exporters measured by either production per worker or value added per worker is higher than that of non-exporters. Compared with the cases of value added, the differential in production per worker between exporters and non-exporters is more pronounced. This might reflect a more intermediate-intensive production structure of exporters relative to non-exporters. Although exporters show both higher capital-labor ratio and a higher share of non-production workers in employment than non-exporters, they do not fully account for the differences in labor productivity. As a consequence, total factor productivity levels of exporting plants are, on average, higher than those plants that produce for the domestic market only. Some differences in the total factor productivity may be attributed to the differences in R&D intensity. Note that, controlling for the size of shipments, exporters spent about twice as much on R&D as non-exporters. From a worker's point of view, exporters

had more desirable attributes than non-exporters. That is, the average wage of exporters is higher than that of non-exporters. Although both a production worker's wage and a non-production worker's wage are higher in exporters than in non-exporters, the differential in the non-production worker's wage is more pronounced.

Table 2. Performance Characteristics of Exporters vs. Non-exporters

	1990		1994		1998	
	exporters	non-exporters	exporters	non-exporters	exporters	non-exporters
Employment (person)	153.6	24.5	119.4	20.0	95.1	17.8
Shipments (million won)	11,505.5	957.0	17,637.1	1,260.3	25,896.8	1,773.8
production per worker (million won)	50.5	26.8	92.4	47.0	155.0	74.2
value-added per worker (million won)	16.5	11.3	31.0	20.4	51.3	29.6
TFP	0.005	-0.046	0.183	0.138	0.329	0.209
capital per worker (million won)	16.8	11.9	36.0	21.9	64.6	36.7
non-production worker/ total employment (percent)	24.9	17.1	27.5	17.5	29.6	19.2
average wage (million won)	5.7	5.1	10.3	9.2	13.7	11.5
Average production wage (million won)	5.5	5.1	10.0	9.2	13.1	11.4
average non-production wage (million won)	6.8	5.3	11.6	9.4	15.6	12.4
R&D/shipments (percent)	-	-	1.2	0.6	1.4	0.6

Source: Hahn (2004).

3. Empirical Strategy: Propensity Score Matching

It is now well-recognized in the literature that the decision to become an exporter is not a random event but a result of deliberate choice, requiring special efforts to correctly identify the true effect of becoming an exporter on its productivity (Loecker 2007, Albornoz and Ercolani 2007). The participation decision in the export market is likely to be correlated with the stochastic disturbance terms in the data generating process for a firm's productivity, so that the traditional simple mean difference test on productivity differences between exporters and non-exporters does not provide the correct answer. The matching method has been gaining popularity among applied researchers since it is viewed as a promising analytical tool with which we can cope with statistical problems stemming from an endogenous participation decision.

The underlying motivation for the matching method is to reproduce the treatment group (exporters) out of the non-treated (non-exporters), so that we can reproduce the experiment conditions in a non-experimental setting. Matched samples enable us to construct a group of pseudo-observations containing the missing information on the treated outcomes had they not been treated by paring each participant with members of the non-treated group. The crucial assumption is that, conditional on some observable characteristics of the participants, the potential outcome in the absence of the treatment is independent of the participation status.

$$y_i^0 \perp d_i \,|\, X_i \qquad (2)$$

where y_i^0 is the potential outcome in the absence of the treatment, d_i is the dummy to indicate participation, and X_i is the vector of conditioning variables. The basic

idea of matching is to construct a sample analog of a counter factual control group by identifying the members of a non-participating group that possess conditioning variables as close to those of treatment group as possible. In practice, it is very difficult to construct a control group that satisfies the condition in (2), especially when the dimension of the conditioning vector X_i is high.

Rosenbaum and Rubin (1983) propose a clever way to overcome the curse of dimensionality in the traditional matching method. Suppose that the conditional probability of firm *i*'s becoming an exporter can be specified as a function of observable characteristics of the firm before the participation;

$$p(X_i) = \Pr[d_i = 1 | X_i] = E(d_i | X_i) \qquad (3)$$

Rosenbaum and Rubin (1983) call the probability function in (3) propensity score and show that if the conditional independence assumption in (2) is satisfied it is also valid for $p(X_i)$ that

$$y_i^0 \perp d_i \,|\, p(X_i) \qquad (4)$$

We have replaced the multi-dimensional vector with a one-dimensional variable containing the same information contents so that the highly complicated matching problem in (2) is reduced to a simple single dimensional one in (4).

One can define the average treatment effect on the treated (ATT) as;

$$\begin{aligned} ATT &= E[y_i^1 - y_i^0 | d_i = 1] = E[E[y_i^1 - y_i^0 | d_i = 1, p(X_i)]] \\ &= E[E[y_i^1 | d_i = 1, p(X_i)] - E[y_i^0 | d_i = 1, p(X_i)]] \end{aligned} \qquad (5)$$

where y_i^0 is the potential outcome that would have been observable had participating

firm i decided not to participate in an export market and y_i^1 is the observable outcome for participating firm i. Note that ATT is not the measure for the effect of exporting on all firms but on firms that start to export.

Since y_i^0 is not observable, the definition (5) is not operational. Given that the unconfoundedness condition under propensity score (4) is satisfied and the propensity score (3) is known, the following definition is equivalent to (5).

$$ATT = E\left[y_i^1 - y_i^0 \middle| d_i = 1\right] = E\left[E\left[y_i^1 \middle| d_i = 1, p(X_i)\right] - E\left[y_i^0 \middle| d_i = 0, p(X_i)\right]\right] \qquad (6)$$

Since both y_i^0 and y_i^1 are observable in (6), one can construct an estimator for ATT by constructing its sample analog.

As the first step, we estimate the probability function in (3) with the following probit specification.

$$p(X_i : \beta, \sigma) = 1 - \int_{-\infty}^{\beta' X_i} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{z^2}{2}\right) dz \qquad (7)$$

Log of total factor productivity, log of the number of workers employed, log of capital per worker, 9 yearly dummies, and 10 industry dummies are included in the conditioning vector X_i. As for conditioning variables, we use the values from one year before the firm starts to export in order to account for the time difference between decision to participate and actual participation.

Based on estimated version of (7), one can calculate propensity score for all observations, participants and non-participants. Let *T* be the set of treated (exporting) units and *C* the set of control (non-exporting) units, respectively, and denote by $C(i)$

the set of control units matched to the treated unit i with an estimated value of propensity score of p_i. Then, we pick the set of nearest-neighbor matching as;

$$C(i) = \min_j \left\| p_i - p_j \right\| \qquad (8)$$

Denote the number of controls matched with a treated unit $i \in T$ by N_i^C and define the weight $w_{ij} = \frac{1}{N_i^C}$ if $j \in C(i)$ and $w_{ij} = 0$ otherwise. Then, the propensity score matching estimator for the average treatment effect on the treated at time *t* is given by;

$$ATT_t^* = \frac{1}{N^T} \sum_{i \in T} \left(y_{i,t}^1 - \sum_{j \in C(i)} w_{ij} y_{j,t}^0 \right) \qquad (9)$$

where $y_{i,t}^1$ is the observed value on firm *i* in the treatment group at time *t* and $y_{j,t}^0$ the observed value on firm *j* in the matched control group for firm *i* at time *t*. Moreover, one can easily show that the variance of the estimator in (9) is given by;

$$Var\left(ATT_t^*\right) = \frac{1}{N^T} Var\left(y_{i,t}^1\right) + \frac{1}{\left(N^T\right)^2} \sum_{i \in T} \sum_{j \in C(i)} \left(w_{ij}\right)^2 Var\left(y_{j,t}^0\right) \qquad (10)$$

One can estimate an asymptotically consistent estimator for (10) by replacing two variance terms for the treatment and control groups with corresponding sample analogs.

We use two different versions of the propensity score matching procedure written in STATA language; **attn.ado** explained in Becker and Ichino (2002) (BI, hereafter) and **psmatch2.ado** provided by Leuven and Sianesi (2008) (LS, hereafter). The two

procedures follow an identical approach in estimating propensity score and constructing the control group, except for the fact that the former tries to verify the unconfoundedness condition in the sample by dividing the entire region of estimated propensity scores into several blocks and construct the matched control group within the block to which the treated observation belongs.

In order to allow for the possibility that the effect of learning by exporting works at different intensities depending on a firm's characteristics and industry, we divide the entire sample into several categories according to plant or industry characteristics, such as the export intensity of plants, skill intensity of plants, plant size measured by the number of workers, R&D intensity of plants, and export destination of industries. We measure the average treatment effect of the treated for each sub-sample.

4. Empirical results: Learning-by-exporting Effects

4.1. Starter vs Non-exporter

Table 3 reports the estimated productivity gain from participating in an export market when heterogeneity in treatment effect is not taken into account. The estimated coefficients indicate percentage productivity differentials between plants that start exporting and their domestic counter-parts *s* years after entering the export market. We report results from the two different versions of propensity score matching procedure, BI and LS.

Table 3. Average Productivity Gain of Exporters

Matching Method		s = 0	s = 1	s = 2	s = 3
IB	ATT	0.041*** (0.008)	0.065*** (0.010)	0.077*** (0.011)	0.064*** (0.014)
	No. Treated	5696	5696	5696	5696
	No. Controls	3725	2206	1401	854
LS	ATT	0.030*** (0.008)	0.051*** (0.011)	0.056*** (0.014)	0.058*** (0.019)
	No. Treated	5650	2492	1354	743
	No. Controls	76576	54362	38237	27244

First and foremost, all estimated coefficients are positive and highly significant, suggesting the existence of a learning-by-exporting effect. This is quite a surprise finding considering the fact that most previous studies were skeptical about the existence of the learning-by-exporting effect. Second, productivity gain for starters begins to materialize immediately after entering the export market, and the productivity gap between the starters and non-exporters[8] widens further as time passes, although at a decelerating pace. Third, it seems that the choice of procedures in constructing the control group does not yield any material differences in the final result, not only qualitatively but also qualitatively. The estimated coefficients from BI procedure indicate that starters become about 4.1 percent more productive in the year of entry. Over the following years, productivity gain for starters fluctuates between 6.4 and 7.7 percentage points. Thus, it is suggested that entering the export market has a permanent effect on productivity level, especially during the first several years after entry. In other words, export market entry has a temporary effect on productivity growth especially during the first few years after entry.

[8] Non-exporters correspond to the "never" group in our earlier definition.

4.2. Sub-group Estimation: Plant Characteristics

In order to allow for a differential treatment effect depending on plant characteristics, we divided our sample into three sub-groups according to various features such as an exports-production ratio, the skill intensity, plant size measured by the number of workers, and R&D-production ratio. Then we apply the matching estimators discussed in Section 3 and estimate the learning-by-exporting effect separately for each sub-group. Based on BI procedure[9], we report the estimated productivity gains for starters in each sub-group in Table 4.

First, the estimated coefficients are generally larger and more significant for plants with higher exports-production ratio. For example, in the group of low export intensity with exports-production ratio of less than 10%, starters become more productive, between 2.5 and 4.1 percent during the three years after the participation. By contrast, in the group of high export intensity with an exports-production ratio greater than 50%, productivity gains for starters are between 9.5 and 11.4 percent for the same time span. In the earlier section, we argued that if the estimated effect of learning-by-exporting indeed captures the beneficial consequences of learning activities associated with exporting, then the effect is likely to be stronger for plants with higher exports-output ratios; if learning-by-exporting arises from contact with foreign buyers and foreign markets, which require costly resources, then firms for whom exporting is their major activity are likely to be more heavily exposed to foreign contact and experience productivity gain. The results for sub-groups with different export intensities are very consistent with this hypothesis.

[9] Estimation results based on LS procedure are reported in the appendix.

Table 4. Average Productivity Gain of Starters by Firm Characteristics: BI Procedure

Firm Characteristics			s = 0	s = 1	s = 2	s = 3
Export Ratio	Low	ATT	0.043***	0.041***	0.025	0.04**
			(0.013)	(0.015)	(0.018)	(0.020)
		No. Treated	2141	2141	2141	2141
		No. Controls	1457	834	546	352
	Medium	ATT	0.014	0.066***	0.081***	0.071***
			(0.013)	(0.015)	(0.017)	(0.021)
		No. Treated	1840	1840	1840	1840
		No. Controls	1338	755	474	288
	High	ATT	0.06***	0.112***	0.114***	0.095***
			(0.014)	(0.016)	(0.019)	(0.021)
		No. Treated	1696	1696	1696	1696
		No. Controls	1230	744	481	325
Skill Intensity	Low	ATT	0.009	0.021	0.015	0.026
			(0.020)	(0.027)	(0.033)	(0.046)
		No. Treated	1100	1100	1100	1100
		No. Controls	552	314	185	100
	Medium	ATT	0.026***	0.054***	0.065***	0.033**
			(0.009)	(0.010)	(0.012)	(0.014)
		No. Treated	3329	3329	3329	3329
		No. Controls	2737	1590	1031	652
	High	ATT	0.049***	0.065***	0.068***	0.072***
			(0.017)	(0.022)	(0.024)	(0.027)
		No. Treated	1267	1267	1267	1267
		No. Controls	964	511	316	205
Plant Size (Number Of Workers)	Small	ATT	0.078***	0.124***	0.207***	0.177***
			(0.015)	(0.020)	(0.027)	(0.033)
		No. Treated	1456	1456	1456	1456
		No. Controls	811	381	201	106
	Medium	ATT	0.028***	0.055***	0.058***	0.049***
			(0.010)	(0.011)	(0.013)	(0.016)
		No. Treated	3183	3183	3183	3183
		No. Controls	2667	1523	997	607
	Large	ATT	0.003	-0.056***	-0.009	0.033
			(0.020)	(0.023)	(0.027)	(0.028)
		No. Treated	1057	1057	1057	1057
		No. Controls	675	508	361	248
R&D Intensity	None	ATT	0.051***	0.065***	0.08***	0.069***
			(0.009)	(0.010)	(0.012)	(0.014)
		No. Treated	4723	4723	4723	4723
		No. Controls	3130	1866	1225	797
	Low	ATT	-0.009	0.037	0.065	0.07
			(0.035)	(0.036)	(0.042)	(0.044)
		No. Treated	352	352	352	352
		No. Controls	216	132	87	56
	Medium	ATT	-0.016	0.016	0.022	0.041
			(0.031)	(0.038)	(0.046)	(0.041)
		No. Treated	446	446	446	446
		No. Controls	270	157	91	61
	High	ATT	0.03	-0.034	-0.033	0.07
			(0.048)	(0.061)	(0.077)	(0.073)
		No. Treated	175	175	175	175
		No. Controls	113	62	43	27

Second, the learning-by-doing effect seems to be more pronounced for plants with higher skill intensity[10]. For the group of plants with a skill intensity of less than 10%, starters became more productive, between 1.5 and 2.6 percentage points during the three years after beginning to export. For the group of plants with a skill intensity greater than 40%, starters became and remained between 9.5 and 11.4 percentage points more productive during the same period. These results suggest that domestic "absorptive capacity" matters for exporting plants to take advantage of the benefits of international knowledge spillovers. Specifically, the result on the correlation between skill intensity and productivity gain from starting to export in Table 4 is consistent with the previous empirical literature that emphasizes the role of human capital in facilitating technology adoption (Welch 1975, Bartel and Lichtenberg 1987, Foster and Rosenzweig 1995, Benhabib and Spiegel 1994)[11].

Third, we also examine whether the degree of learning-by-exporting is related to plant size, dividing the entire sample into three groups: a group of small plants with the number of workers less than 10, a group of medium-sized plants with the number of workers between 11 and 49, and a group of large plants with 50 or more workers. Table 4 suggests that effect of learning-by-exporting is generally larger and more significant for smaller plants. As argued by Albornoz and Ercolani (2007), there seems to be no a priori reason to expect larger learning-by-exporting effects for small exporters.[12] While one can argue that large firms are generally more structured and better suited to facilitate absorption and use new knowledge obtained through

[10] Skill intensity is measured by the share of non-production workers out of the total of production and non-production workers.

[11] These studies are empirical investigations of Nelson-Phelps hypothesis which suggests that the rate at which the gap between the technology frontier and the current level of productivity is closed depends on the level of human capital. See Benhabib and Spiegel (2005) for detailed explanation.

[12] They also find that small firms learn more from exporting activities using firm-level panel data on Argentinian manufacturing.

exporting activities, it is also possible to argue that knowledge might be easier to disseminate in a small firm due to its flexibility and simplicity of organizational structure and its decision making process. Our findings in Table 4 seem to suggest that the latter effect dominates.

Finally, we examine whether plants with higher R&D investment exhibit a larger learning-by-exporting effect. To do so, we classify plants into four sub-groups: a group with no R&D investment, a low R&D group with a ratio of R&D expenditure to production less than 2 percent, a medium R&D group with a ratio from 2 to 10 percent and a high R&D group with a ratio higher than 10 percent. Somewhat surprisingly, the learning-by-exporting effect is statistically significant only in the no R&D group. Although we cannot come up with a clear explanation for the results, we can conjecture that R&D intensity reflects industry specific characteristics rather than the innovativeness of firms.[13]

4.3. Sub-group Estimation: Export Destinations as an Industry Characteristic

As far as we are aware of, little is known about industry characteristics that affect the degree of learning-by-exporting. In this subsection, we examine whether the export destination of industry as an industry characteristic affects the strength of learning-by-exporting of the plants. If the learning-by-exporting effect found in this paper captures international knowledge spillovers from advanced to less advanced countries which arise through the contact with foreign buyers in more advanced countries, then we could expect to find that the learning-by-exporting effect is stronger in industries that have larger share of their exports directed to more advanced

[13] It is a well known fact that R&D intensity varies a lot across industries

countries.

However, we cannot expect that learning-by-exporting will be stronger unambiguously in industries with a larger share of exports directed to more advanced countries for many reasons, including the following. First of all, international knowledge spillovers might arise not only through direct contact with foreign buyers in advanced countries but also through indirect contact with foreign competitors in the markets of less advanced countries. For example, Korea's car exporters could learn from the business practices of German car exporters in the Chinese market. Secondly, generally more intense competition in export markets can exert pressure on firms that start to export to improve their productive efficiency. Then the degree of competition in an export market could be an important factor in determining the degree of "learning-by-exporting" effect. Thirdly, there should be an industry-level technology gap between the exporting country and the frontier country in order for the learning-by-exporting effect to take place. That is, there should be some "advanced knowledge" out there to learn from in the first place. If this is the case, then the direction of exports would be immaterial for an industry that is at or close to the world frontier.[14]

Fourthly, if exporting is associated with fragmentation of production by multinational firms, then efficiency improvement coming from the fragmentation of production which, in some cases, involves exporting to lower income countries within the production network might be captured as learning-by-exporting effect. Kimura, Hayakawa, and Matsuura (2009) provide a theoretical explanation related to this story. They show that in the case of vertical FDI, the larger the gap in capital-labor ratios

[14] This might be one reason that learning-by-exporting effect is occasionally reported in studies of developing countries but not in developed countries, such as the U.S.

between a Northern fragment and a Southern fragment, the greater the total cost reduction in international fragmentation. In this case, exporting to lower income countries within a production network might be associated with a greater learning-by-exporting effect.

Although exploring all these possibilities is out of the scope of this paper, we think that examining whether the direction of exports matters for the strength of learning-by-doing is the first step toward understanding the exact nature of the learning-by-exporting effect captured in this paper.

As a preliminary step, we first examine whether there are cross-industry differences in productivity gains from becoming exporters. To do so, we divided our sample into 10 sub-industries[15] and repeated the matching procedure for each industry. Table 5 shows that productivity gains from learning-by-exporting are visible in the textile and apparel, chemical, metal, and transport equipment industries. However, we cannot find significant productivity gains in the food, wood and pulp, general machinery, precision instrument, and electronics industries. Roughly speaking, the former group of industries largely coincides with the area for which Korea is believed to have a comparative advantage. Therefore, the result can be interpreted as providing a piece of evidence supporting the hypothesis that involvement in exporting activities results in productivity gains. However, it is somewhat surprising that we can find no significant evidence for the existence of a learning-by-exporting effect in the electronics industry. Although we could conjecture that this reflects that many Korean producers in the electronics industry are the "frontier" producers, a more definitive assessment cannot be made until a more in-depth analysis is carried out.

[15] They are food, textile and apparel, wood and pulp, chemical, metal, general machinery, electronics, precision instrument, transport equipment, and others.

Nevertheless, Table 5 seems to show that there are some industry characteristics that affect the strengths of the learning-by-exporting effect.

Table 5. Average Productivity Gain of Starters by Industry: BI Procedure

Industry		s=0	s=1	s=2	s=3
Food	ATT	0.048 (0.038)	0.01 (0.042)	-0.028 (0.052)	-0.006 (0.058)
	No. Treated	278	278	278	278
	No. Controls	194	100	66	51
Textile and Apparel	ATT	0.099*** (0.018)	0.117*** (0.019)	0.129*** (0.021)	0.097*** (0.025)
	No. Treated	1331	1331	1331	1331
	No. Controls	894	552	355	223
Wood and Pulp	ATT	-0.015 (0.033)	-0.016 (0.039)	-0.043 (0.042)	-0.138*** (0.054)
	No. Treated	243	243	243	243
	No. Controls	177	115	77	52
Chemical	ATT	0.026 (0.021)	0.041 (0.028)	0.063* (0.033)	0.158*** (0.035)
	No. Treated	696	696	696	696
	No. Controls	444	255	163	109
Metal	ATT	0.09*** (0.029)	0.09** (0.038)	0.067 (0.044)	0.013 (0.045)
	No. Treated	319	319	319	319
	No. Controls	215	128	74	49
General Machinery	ATT	0.019 (0.015)	0.005 (0.019)	-0.013 (0.024)	-0.002 (0.026)
	No. Treated	1436	1436	1436	1436
	No. Controls	936	528	332	193
Electronics	ATT	-0.003 (0.026)	-0.016 (0.031)	-0.045 (0.033)	-0.024 (0.033)
	No. Treated	618	618	618	618
	No. Controls	401	235	157	109
Precision Instrument	ATT	-0.016 (0.048)	-0.022 (0.056)	0.004 (0.054)	-0.001 (0.074)
	No. Treated	207	207	207	207
	No. Controls	122	76	44	27
Transport Equipment	ATT	0.018 (0.040)	0.039 (0.045)	0.111** (0.052)	0.15*** (0.051)
	No. Treated	246	246	246	246
	No. Controls	176	114	77	52
Other	ATT	0.043 (0.029)	0.071* (0.040)	0.1** (0.050)	0.183*** (0.055)
	No. Treated	322	322	322	322
	No. Controls	212	112	70	44

We next turn to the export destinations of industries as one possible factor explaining differential strengths of the learning-by-exporting effect estimated at the sub-group level of industries. As explained above and also in Loecker (2007), this hypothesis is based on the presumption that a learning-by-exporting effect will be stronger for plants that start exporting to more advanced countries, where the opportunities for learning new knowledge and technology are relatively abundant. Although Loecker (2007) examined this issue using plant-level information on the destination of exports, we do not have such information available for Korea. Instead, we examine whether plants in industries with a higher share of exports to advanced countries exhibit higher productivity gains.[16]

To do so, we first matched the direction of exports dataset at SITC 5 digit level complied from UNComtrade (Rev. 3) with the Mining and Manufacturing Survey dataset at KSIC[17] three-digit level. Then, we classified Korea's export destination countries into two groups: "lower-income" and "higher-income" countries. Here, higher-income countries are those with an average per capita GDP for the period from 1990 to 1998 larger than that of Korea. The remaining countries are lower-income countries. Next, for each of the 58 three-digit manufacturing industries, we calculated their shares of exports to lower-income and higher-income countries averaged over the same period. Then, we classified each industry into "higher-income" or "lower-income" group if its share of exports to higher-income countries is greater or smaller than lower-income countries, respectively.

The estimated productivity gain for starters is reported in Table 6 for each sub-

[16] In some respect, direction of exports is more likely to be an industry characteristic rather than plant characteristic.

[17] Korean Standard Industrial Classification.

group. At first glance, the results are not supportive of the hypothesis that the learning-by-exporting effect is more pronounced in industries with more of their exports directed to more advanced countries. In fact, the result is the other way around: Learning-by-exporting effect in the lower-income group is stronger than that of the higher-income group, although both are highly significant. We conjecture that the result is driven by the fact that the gain from participating in export markets depends on many factors conveniently branded as the benefits of openness. We believe that those factors must be interlinked in a very complicated fashion and a simple approach like ours cannot give the definite answer to this important question.

Table 6. Average Productivity Gain of Starters by Export Destinations: BI Procedure

		t = 0	t = 1	t = 2	t = 3
Higher-income	ATT	0.068*** (0.011)	0.068*** (0.013)	0.057*** (0.016)	0.036* (0.020)
	No. Treated	3108	3108	3108	3108
	No. Controls	2002	1144	707	455
Lower-income	ATT	0.059*** (0.012)	0.079*** (0.013)	0.081*** (0.016)	0.074*** (0.020)
	No. Treated	2559	2559	2559	2559
	No. Controls	1629	975	631	376

Given the inadequate control of various factors that might be relevant for determining the degree of learning-by-exporting effect, the above results should not be taken as a definitive piece of evidence against the hypothesis that the learning-by-exporting effect is larger in industries with more of their exports directed to higher-income countries. We think that various industry as well as plant characteristics might also play a role here. Further analysis seems to be warranted to shed light on this issue.

5. Conclusion

This paper examined the presence of a learning-by-exporting effect utilizing a unique plant level panel data covering all manufacturing sectors in Korea. Korean experiences offer a good window of opportunity to analyze this issue in the sense that Korea is one of the best known success stories having achieved fast economic growth driven by "outward-oriented" development strategies.

We find clear and robust evidences for a learning-by-export effect. The total factor productivity gap between exporters and their domestic counterparts is significant and shows the tendency to widen during three years after entry into the export market. We also find that the beneficial effect of productivity gain is more pronounced for plants with a higher skill-intensity or higher share of exports in production.

Although this paper examined the learning-by-exporting effect, it should be born in mind that learning-by-exporting is just one of many channels through which the benefits of openness are realized. That is, the results of this paper does not at all exclude the possibility that the beneficial effects of openness are realized through various other channels, such as increases in consumer surpluses and improvements of allocation efficiency, knowledge spillovers and market-disciplining effects from imports, and improvement of scale efficiency, among others.

One interesting policy implication which arises from this paper might be that neoclassical orthodoxy of prescribing unconditional openness policy[18] might not be entirely warranted. If domestic absorptive capacity is complementary to the openness policy, as suggested by the evidence of larger a learning-by-exporting effect in skill-

[18] See Sachs and Warner (1995), for example.

intensive plants, then upgrading the quality of human capital might be necessary to more fully utilize the benefits from openness.

Table A.1. Average Productivity Gain of Starters by Firm Characteristics: LS Procedure

Plant Characteristics			s=0	s=1	s=2	s=3
Export Ratio	Low	ATT	0.036***	0.001	0.021	-0.005
			(0.011)	(0.016)	(0.022)	(0.026)
		No. Treated	2129	972	526	304
		No. Controls	76576	54362	38237	27244
	Medium	ATT	0.019	0.071***	0.052**	0.054
			(0.012)	(0.018)	(0.024)	(0.033)
		No. Treated	1835	769	424	222
		No. Controls	76576	54362	38237	27244
	High	ATT	0.054***	0.109***	0.105***	0.074**
			(0.013)	(0.019)	(0.025)	(0.035)
		No. Treated	1686	747	402	216
		No. Controls	76576	54362	38237	27244
Skill Intensity	Low	ATT	-0.014	0.004	0.086**	0.099**
			(0.016)	(0.026)	(0.037)	(0.050)
		No. Treated	1086	406	191	90
		No. Controls	30592	20469	13645	8953
	Medium	ATT	0.026***	0.046***	0.043***	0.025
			(0.009)	(0.013)	(0.017)	(0.025)
		No. Treated	3306	1517	844	472
		No. Controls	37772	27997	20343	14916
	High	ATT	0.062***	0.057**	0.063**	0.104***
			(0.017)	(0.025)	(0.033)	(0.041)
		No. Treated	1258	569	319	181
		No. Controls	8212	5896	4249	3120
Number Of Workers	Low	ATT	0.056***	0.074***	0.108***	0.082
			(0.015)	(0.026)	(0.042)	(0.060)
		No. Treated	1443	423	153	68
		No. Controls	39564	25645	16386	10862
	Medium	ATT	0.057***	0.059***	0.069***	0.084***
			(0.010)	(0.014)	(0.018)	(0.024)
		No. Treated	3161	1407	764	411
		No. Controls	33433	25722	19349	14321
	High	ATT	0.031	-0.023	-0.036	0.035
			(0.019)	(0.024)	(0.030)	(0.040)
		No. Treated	1046	662	437	264
		No. Controls	3579	2995	2502	2061
R&D	None	ATT	0.033***	0.041***	0.055***	0.039*
			(0.008)	(0.012)	(0.015)	(0.022)
		No. Treated	4678	2040	1080	598
		No. Controls	73923	52426	36829	26816
	Low	ATT	0.005	-0.008	0.000	0.066
			(0.035)	(0.041)	(0.049)	(0.066)
		No. Treated	351	188	122	66
		No. Controls	825	605	455	302
	Medium	ATT	-0.007	0.031	-0.024	0.055
			(0.030)	(0.038)	(0.056)	(0.068)
		No. Treated	446	199	114	61
		No. Controls	1201	881	637	453
	High	ATT	0.049	-0.014	-0.029	0.089
			(0.047)	(0.062)	(0.086)	(0.132)
		No. Treated	175	65	38	18
		No. Controls	627	424	298	180

Table A.2. Productivity Gain of Starters by Industry: LS Procedure

Industry		s=0	s=1	s=2	s=3
Food	ATT	0.074** (0.036)	0.077 (0.052)	0.031 (0.063)	0.100 (0.064)
	No. Treated	273	132	90	58
	No. Controls	4868	3837	2939	2224
Textile and Apparel	ATT	0.118*** (0.016)	0.128*** (0.024)	0.145*** (0.030)	0.113*** (0.042)
	No. Treated	1316	561	293	150
	No. Controls	17415	11983	8374	5743
Wood and Pulp	ATT	0.033 (0.036)	0.029 (0.051)	0.009 (0.059)	0.003 (0.097)
	No. Treated	240	102	56	22
	No. Controls	8888	6466	4726	3557
Chemical	ATT	0.038** (0.019)	0.031 (0.030)	0.086** (0.037)	0.091* (0.047)
	No. Treated	695	332	181	102
	No. Controls	6188	4462	3198	2329
Metal	ATT	0.052* (0.027)	0.046 (0.040)	0.123** (0.054)	0.044 (0.064)
	No. Treated	313	138	73	42
	No. Controls	5707	4346	3287	2554
General Machinery	ATT	0.015 (0.014)	0.016 (0.022)	-0.020 (0.034)	-0.017 (0.043)
	No. Treated	1427	604	325	170
	No. Controls	18280	12732	8572	5895
Electronics	ATT	0.002 (0.023)	0.020 (0.033)	0.010 (0.042)	-0.026 (0.048)
	No. Treated	615	268	148	89
	No. Controls	5541	3837	2639	1815
Precision Instrument	ATT	0.028 (0.043)	0.009 (0.062)	0.087 (0.078)	0.139 (0.091)
	No. Treated	207	93	50	32
	No. Controls	1225	820	560	368
Transport Equipment	ATT	-0.019 (0.038)	0.010 (0.048)	0.016 (0.075)	0.124* (0.075)
	No. Treated	245	120	68	37
	No. Controls	3473	2465	1705	1251
Other	ATT	0.043 (0.028)	0.043 (0.040)	0.108** (0.051)	0.101 (0.087)
	No. Treated	319	142	70	41
	No. Controls	4991	3414	2237	1508

Table A.3. Average Productivity Gain of Starters by Export Destinations: LS procedure

		t = 0	t = 1	t = 2	t = 3
Higher-income	ATT	0.021** (0.010)	0.025 (0.015)	0.019 (0.022)	0.016 (0.027)
	No. Treated	3080	1327	713	406
	No. Controls	46758	33239	23549	16247
Lower-income	ATT	0.034*** (0.011)	0.034** (0.016)	0.078*** (0.021)	0.091*** (0.030)
	No. Treated	2541	1155	636	335
	No. Controls	29267	20713	14378	9652
Other lower-income	ATT	0.057*** (0.015)	0.068*** (0.022)	0.104*** (0.026)	0.091*** (0.038)
	No. Treated	1354	615	346	178
	No. Controls	15804	11297	7990	5228
East Asia	ATT	0.025* (0.015)	0.062*** (0.021)	0.011 (0.032)	0.029 (0.042)
	No. Treated	1187	540	290	157
	No. Controls	13463	9416	6388	4424

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CHAPTER 9

Vertical and Horizontal FDI Technology Spillovers: Evidence from Thai Manufacturing

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This paper examines Foreign Direct Investment (FDI) spillover, using an unbalanced panel data set of the manufacturing survey of Thailand during the period 2001-03. In this paper, not only are both horizontal and vertical FDI technology spillovers examined, but the former is also assumed to vary across industries. The key hypothesis is that horizontal FDI spillovers depend on the trade policy regime as well as the absorptive capability of locally owned plants. Our panel data econometric analysis highlights the important role of the trade policy regime as a conditional gain of horizontal FDI spillovers. In particular, positive horizontal FDI spillovers are found only in an industry operating in a relatively liberal environment. Interestingly, imposing an assumption of identical horizontal FDI spillovers across industry could result in biased estimates of vertical FDI spillovers. The key policy inference highlights the relative importance of the trade policy regime in harnessing the gain from foreign presence. Liberalizing the foreign investment regime thus has to go hand in hand with liberalizing the trade policy to gain FDI technology spillovers. Our finding here gives a warning not to overemphasize the role of linkages. It is the quality rather than magnitude of linkages that should be used a proxy of the magnitude of vertical FDI spillovers.

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1. Issues

Enticing multinational enterprises (MNEs) to set up affiliations is placed high on the policy agenda in many countries, especially developing ones, as their entry would bring in much-needed capital, new production technologies, marketing techniques and management knowhow. While all of these potential benefits of Foreign Direct Investment (FDI) are viewed as important, particular emphasis is placed on technological gains in the productivity and competitiveness of the domestic industry, known as FDI technology spillovers (henceforth referred to as FDI spillovers). As a result, the expectation of gaining from technology spillover persuades many developing countries to offer various incentives in order to attract FDI. Nonetheless, only in some investment-receiving (host) countries are FDI spillovers empirically found.

While tangible efforts have recently been made to gain a better understanding of the factors that determine the presence of FDI spillovers, they have not thus far borne fruit (Crespo& Fontoura, 2007). The existing literature divides into two broad themes. First, horizontal FDI spillovers are assumed not to be automatic but are hypothesized as being a function of the economic environment and domestic policies in host countries. In this literature, two determinants have been generally recognized as conditioning gains from FDI. These are the trade policy regime and the absorptive capability of locally owned enterprises.[3] While both of these factors are acknowledged, most researchers have examined only the role of absorptive capability. This may be because of the difficulty of finding a reliable proxy for protection across industries. So far only a few studies (e.g. Kokko *et al.*, 2001; Kohpaiboon, 2006a) have examined empirically the role of thetrade policy regime. Additionally, there is a dearth of studies that bring absorptive capacity and the trade policy regime together in examining FDI spillovers. A major caveat of literature in this field is that it concentrates only on spillovers taking place within a given industry, (i.e. horizontal FDI spillovers).

[3] See the comprehensive survey in Görg & Greenaway (2004), Crespo & Fontoura (2007), and Hayakawa *et al.* (2008).

In fact, a number of recent studies[4] argue that it is more likely that FDI spillovers would take place through backward and forward linkages (i.e. vertical FDI spillovers) as opposed to horizontal ones. That is, where foreign investors involve themselves with indigenous enterprises in upstream and/or downstream industries, it is very likely that the latter will gain technological benefit from the former. MNEs would have an incentive to prevent information leakage to their competitors, including local enterprises, thereby reducing the possibility of horizontal spillover taking place. By contrast, there would be incentive for them to transfer knowledge to their local suppliers because such knowledge transfer would benefit the MNEs in terms of getting better input quality and/or cheaper costs, and receiving inputs on time. It is also plausible that spillovers from MNEs in upstream industries exist to provide inputs that either were previously unavailable in the country or to make them technologically more advanced or less expensive, or to ensure that they are accompanied by the provision of complementary services (Javorcik, 2004).

Empirical studies examining the presence of vertical FDI technology spillovers are sparse (Blomström *et al.* 2000; Lin & Saggi, 2005). The notable exception is Javorcik (2004) and Blalock & Gertler (2008) which examined cases in Lithuanian and Indonesian manufacturing sectors, respectively. Their key finding supports the relative importance of vertical against horizontal FDI spillovers. In particular, it was found that vertical FDI spillovers were statistically significant. Nevertheless, a major caveat in these two studies is that their empirical model contains the implicit assumption that horizontal FDI spillovers are identical for all industries. As argued above such an assumption is rather restrictive. In addition, the correlation between protection and the extent of industries generating backward linkages tends to be positive, and omitting the trade policy regime in examining FDI spillovers could create bias in the results.

Against this backdrop, this paper examines the presence of FDI technology spillover in Thai manufacturing. Panel data econometric analysis is conducted, using the Industrial Survey conducted by the Office of Industrial Economics, Ministry of Industry, during the period 2001-2003. This is the most up to date and reliable plant survey available so far. In the empirical model, we follow the general practice in this

[4] They are Rodŕigueze-Clare (1996), Markusen & Venables (1999), Javorcik (2004), Lin & Saggi, (2005), Blalock & Gertler (2008).

research area, in which the productivity equation of locally owned plants in the manufacturing sector is estimated and the statistical relationship between plants' productivity and the extent of foreign presence is examined. This paper contributes to the existing literature in two ways. First, in our econometric analysis both horizontal and vertical FDI spillovers are examined. So far there have been few studies (e.g. Javorcik (2004) and Blalock & Gertler (2008) examining both spillovers simultaneously. Additionally, our measure of backward and forward linkages takes into consideration both direct and indirect (inter-sectoral) repercussions. This is different from Javorcik (2004) and Blalock & Gertler (2008) in which only the direct linkage is included. Secondly, we allow horizontal FDI spillovers to vary across industries. Trade policy regime and absorptive capability are included in the empirical model as the key factors determining the extent of horizontal FDI spillovers.

Thai manufacturing is a good laboratory for the issue in hand for two reasons. First, Thailand has been a large FDI recipient throughout the past three decades. However, few studies have examined technology spillover in Thai manufacturing. So far there have been two studies, Kohpaiboon (2006a) and Kohpaiboon and Jongwanich (forthcoming), both of which are based on the Industrial Census of 1996. Hence, this paper not only provides up-to-date evidence but also re-examine the relative importance of spillover channels, and horizontal versus vertical spillovers. Secondly, Thai manufacturing is broad-based as opposed to neighbouring countries, covering a wide range of industries from traditional labour- intensive industries like garment and footwear to several key industries in the machinery and transport equipment sector such as automotive, electronics, and electrical appliances. Hence, evidence drawn from Thai manufacturing would provide an insightful lesson for other countries.

The paper is organized as follows: Section 2 provides an analytical framework illustrating possible channels where FDI spillover could take place as well as the role of key determinants conditioning FDI spillovers. In Section 3, patterns of labour productivity across industries are discussed and related to the extent of the foreign presence and the effective rate of protection. The following section explains the empirical model used in this paper (Section 4). Section 5 presents data and variable construction and regression results are in Section 6. Conclusion and policy inferences are in the final section.

2. Analytical Framework

While MNEs have the potential to generate considerable impact on host countries' economies, it is often argued that spillovers are the most desirable benefit of all. In general, there are at least three channels through which FDI spillovers can occur. The first channel is the demonstration effect. The presence of foreign firms can have a demonstration effect that allows local firms to become familiar with superior technologies, marketing and managerial practices used in foreign affiliates. Thus, spillover can take place in the form of imitating the foreign subsidiaries' technology. Over and above this, the presence of foreign affiliates can exert pressure on local firms exhibiting technical or allocation inefficiencies to adopt more efficient methods. This allows local firms to survive successfully or even compete with foreign firms. Since both demonstration and competition effects are likely to occur simultaneously, these two effects are regarded in the literature as a single channel of spillover.

Linkage is the second channel of FDI spillovers. Where foreign investors are linked to upstream and downstream industries in host countries, the linked indigenous firm has the possibility of gaining technological benefits. The former is referred to as backward linkage and the latter as forward linkage. By backward linkage, foreign investors establish an inter-firm relationship with local suppliers and create demand for inputs from local suppliers in upstream industries. When these local firms are engaged to supply certain raw materials, the high quality, reliability and speed of delivery that MNE affiliates demand force them to enhance productivity. Moreover, in some cases, local suppliers in upstream industries receive technical and managerial training in the production of the required inputs. This is likely to generate additional economic activity and income, and to transfer technological and management skills to the host country.

Similarly, forward linkage effects are created when one industry uses another industry's output as its inputs. Every activity that does not by its nature cater exclusively to final demand induces attempts to utilize its outputs as inputs in other industries. Benefits for domestic suppliers resulting from the presence of MNEs may be extended to other domestic firms that produce end-user consumer goods. The most

evident link is observed in the MNEs' supply of higher quality inputs and/or at a lower price to domestic producers of end-user consumer goods. The sum of the backward and forward linkages gives a total linkage effect, which can be seen as the growth in other new industries induced by establishing an MNE affiliates.

The last channel is labour mobility. Foreign affiliates generally play a more active role than local firms in educating and training local labour. Through this training and subsequent work experience, workers become familiar with the foreign affiliates' technologies and production methods. FDI spillovers through this channel occur when employees of foreign affiliates move on to local employers or set up their own business, using knowledge gained during their previous employment.

Empirically, most econometric studies have only examined the presence of FDI spillovers through the demonstration and linkage channels simply because of data availability. Analysis of labour mobility is very limited as researchers must have access to information about top managers' backgrounds. Unfortunately, such information is not usually available.[5] Secondly, in theory, FDI spillovers through the demonstration effect can take place either within the same industry or across industries. In practice, it is very difficult to measure the demonstration effect across industries so that spillovers through demonstration effects are usually referred to as horizontal FDI spillovers. On the other hand, FDI spillovers through linkage occur when MNEs are located in a given industry, and benefit upstream and downstream industries. These are regarded as FDI vertical spillovers.

The recent studies such as Rodŕigueze-Clare (1996); Markusen & Venables (1999); Lin & Saggi (2005); Javorcik (2004); and Blalock & Gertler (2008) highlight the relative importance of vertical FDI spillovers as opposed to horizontal ones. In particular, they argue that vertical FDI spillovers are likely. For example Blalock & Gertler (2008) argue that it is hard to believe that horizontal FDI spillovers are likely. Firstly, the technology gap between foreign and domestic firms may often be wide. Local firms may lack the absorptive capacity needed to recognize and adopt new technology. Similarly, the degree to which foreign and domestic firms actually compete in the same market will also vary. It is possible, for example, that domestic firms may

[5] To the best of our knowledge so far, the only econometric analysis of spillovers through labour mobility is undertaken by Görg and Strobl (2002), using firm level data in Ghana.

produce for the local market while MNEs produce for export. Because of differences in quality and other attributes, exported and domestically consumed goods may entail different production methods thereby reducing the potential for technology transfer. In contrast, technological benefits to local firms through vertical linkages are much more likely simply because MNEs have incentives to improve the productivity of their suppliers with the expectation of input cost reduction and quality improvement in return. Moreover, MNEs are likely to procure inputs requiring less sophisticated production techniques for which the gap is narrower.

The key finding of Javorcik (2004) and Blalock & Gertler (2008) supports the core hypothesis, i.e. only vertical FDI spillovers through backward linkages are found. Noticeably, the empirical model in both studies implicitly assumes that horizontal FDI spillovers, if they exist, must be identical in all industries. In particular, locally owned enterprises operating in two different industries (e.g. capital versus labour intensive industries, restrictive versus liberal trade regime) would benefit identically from foreign presence in their industries. This assumption seems to contradict a number of studies pointing out the heterogeneity of spillovers (Görg & Greenaway, 2004; Crespo & Fontoura, 2007; Hayakawa *et al.* 2008).

In fact, the recent effort is to clarify what kinds of heterogeneity in MNEs and/or indigenous firms are crucial. So far there have been two factors identified, namely the absorptive capability of indigenous firms and the trade policy regime. Whether a local firm benefits from MNC presence depends on its capacity for assimilating knowledge-its absorptive capability (Kokko *et al.* 1996; Girma *et al.*, 2001; Girma & Görg, 2003; Kinoshita, 2001; Girma, 2005). The hypothesis in the literature points out that the higher the absorptive capability, the greater the spillover the local firm in the host country can expect. Note that the absorptive capability is referred to as the technological gap between MNE affiliates and indigenous firms (Kokko, 1994; Blomstrom & Sjohölm, 1999; Sjohölm, 1999).

The trade policy regime is another factor to be considered, although there are few empirical studies examining its role in conditioning FDI technology spillovers. As pioneered by Bhagwaiti (1973) as an extension to his theory of immiserizing growth and further developed by Bhagwati (1985, 1994); Brecher & Diaz-Alejandro (1977); and Brecher & Findlay (1983), technology spillover tends to be smaller, or possibly

even negative, under a restrictive, import substitution (IS) regime compared with a liberalizing, export promotion (EP) regime (referred to as the 'Bhagwati's hypothesis'). FDI inflows enticed by an import substitution (IS) trade regime tend to be market-seeking and are invested mostly in the industries where proprietary assets are important. This creates barriers to entry for local firms and thus constrains technology and efficiency spillovers. In contrast, the export promotion (EP) regime is more conducive to generating favorable spillover effects because, under such a regime, FDI is mostly attracted to industries in which the country has comparative advantage, i.e. efficiency-seeking FDI. In such industries local firms have a greater potential to catch up with foreign firms and achieve productivity improvement. Additionally, domestic firms already exposed to foreign competition will probably have a great capacity not only to absorb foreign technology but also to counter the competition provided by MNEs in the local market, thereby precluding a negative impact through the competition channel (Crespo & Fontoura, 2007).

While recognizing the important role of absorptive capability, trade policy is highlighted in this paper because it is highly policy relevant and there is room for improvement in the context of developing countries. While progress on tariff reduction has occurred as a consequence of the Uruguay Round, it is clear that much remains to be done. There has been a considerable decline in average tariff rates in developing countries, especially in Asia and Africa, but this has occurred in an uneven manner thereby increasing tariff dispersion. This implies that countries with low average tariff rates are likely to have very high tariff peaks and exhibit escalation at higher levels of disaggregation (Jongwnaich & Kohpaiboon, 2007).

More importantly, ignoring these two key determinants from econometric analysis of FDI spillovers studies could result in biased estimates as a consequence of omitting relevant variables. This is especially true for the trade policy regime simply because there is likely to be a positive correlation between protection and the extent of industries generating backward linkage. This is in line with the infant industry argument. Pioneered by Hirschman (1958), investible resources should be geared toward industries that have maximum linkages with the rest of economy. Such industries are usually capital intensive and economies of scale still matter; so that protection against foreign competition is always granted to give them time to gain more production efficiency.

The widely cited example is the development strategy for automotive industry in developing countries which are likely to be a combination between restrictive local content requirement measures and a high cross-border protection. Although industrial linkages were a part of import substitution industrialization strategy that has became less important since the 1980s, promoting linkages and policy-induced ones in particular have continued to linger in the minds of policymakers and development analysts (Athukorala, 1998; Pursell, 2001).

3. Patterns of Labour Productivity and Foreign Presence in Thai Manufacturing

This section aims to illustrate productivity difference between foreign and indigenous plants across industries disaggregated into 4 digit ISIC classification in the Thai manufacturing sector. As well, the productivity difference is examined together with key variables in the paper's core analysis, namely capital-labour ratio, the extent of foreign presence (*FOR)*, effective rate of protection (*ERP)*, and backward linkages index (*BLI)*.[6] Productivity here is measured by labour productivity, value added per workers. Difference in labour productivity between foreign and locally owned plants as a per cent of the latter's productivity is calculated.[7] The calculated productivity difference is plotted together with difference in capital labour ratio between these two types of firms as shown in Figure 1 to reveal whether the former is more productive than the latter after accounting for difference in the capital-labour ratio. These indicators are the average figure during the period 2001-03.

[6] See full detail in Appendix 1.

[7] We do not report absolute number of labour productivity simply because they vary largely across industries. For example, value added per worker of indigenous plants in 2001 was widely ranged from 95,891 baht/workers (ISIC 2029: other special purpose machinery) to 67,800,000 baht/workers (ISIC 1554: Soft Drink Industry). Since our interest here is to address the issue whether foreign plants always exhibit higher labour productivity than indigenous ones instead of explaining difference of labour productivity across industries, we decide to report only the percentage difference. Absolute value added per workers is available upon the author's request.

The scattered plot in Figure 1 suggests that foreign plants generally have higher labour productivity than locally owned ones. Most of industries stay above the horizontal axis implying the positive productivity difference. The difference is averaged out at 107 per cent with the maximum of nearly 400 per cent in dairy product (ISIC 1520) and the minimum of -61.8 per cent in alcoholic beverages (ISIC 1551). Nevertheless, the positive productivity difference is largely due to the fact that foreign plants tend to be more capital intensive than their local counterparts as indicated by the observed positive relationship between productivity and capital-labour ratio differences. A (Spearman) rank correlation between difference in labour productivity and capital-labour ratio is about 0.44 and statistically significant at the conventional level (5 per cent). Hence, the observed figure of positive labour productivity difference is inadequate to conclude that foreign plants are superior to local ones unless the capital-labour ratio is taken into consideration.

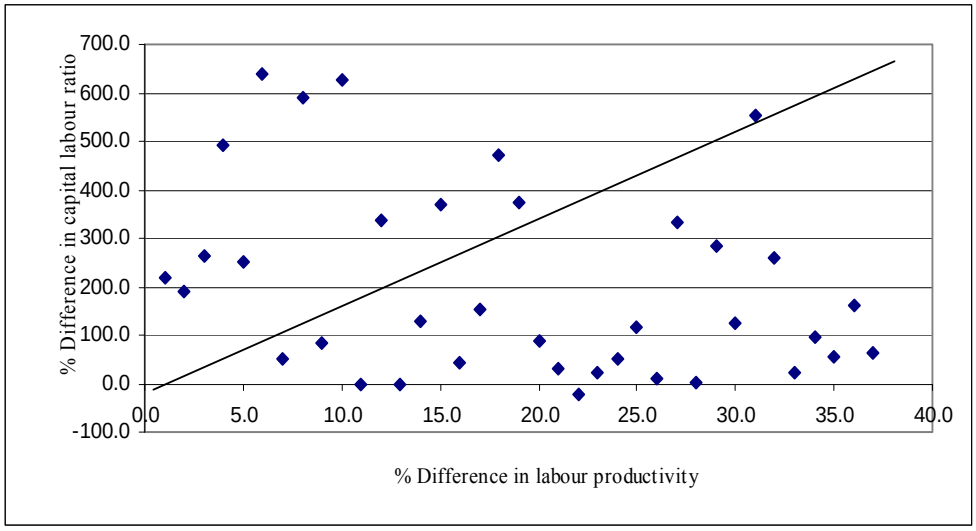
There are six industries experiencing a negative and significant (greater than 30 per cent) difference in labour productivity: i.e. locally owned plants have higher labour productivity than foreign ones. They are alcoholic beverages (ISIC 1551), Tobacco (ISIC 2925), veneer sheets (ISIC 2021), Paper pulp and paperboard (ISIC 2101), Toys (ISIC 3694) and animal feeds (ISIC 1533). A common pattern observed among them is there are Thai conglomerates playing important roles. One obvious example is alcoholic beverages (ISIC 1551) dominated by two Thai conglomerates such as Thai Beverages Public Company, and the Singha Corporation. Similarly, in animal feeds and paper pulp industries, there are two Thai MNEs, the Chareon Pokphand Group (CP Group) and Siam Cement Group, respectively.

We also examine foreign presence (*FOR*) measured in terms of output share[8], effective rate of protection (*ERP*) and backward linkage index (*BLI*) in order to view their correlation with the average of plant productivity. *BLI* here is constructed based on the Leontief inter-industry accounting framework which provides for the capture of both direct and indirect (inter-sectoral) repercussions in the measurement process. It shows the total units of output required, directly and indirectly, from all sectors

[8] See further discussion on why output share is our preferable choice in this study in Section 4.

(including the unit of output delivered to final demand by the given sector) when the demand for the industry's product rises by one unit.

Figure 1. Correlation between Productivity Gap and Difference in Capital-labour Ratio between Foreign Establishment and Indigenous Plants during the Period 2001-03



Notes: Productivity gap %Δ(*VA*/*L*) $\%\Delta(VA/L)$ is measured as the difference in labour productivity between foreign establishment and indigenous plants as a per cent of labour productivity of the latter. % Difference in capital labour ratio between foreign establishment and indigenous plants %Δ(*K*/*L*) is measured in the similar way as productivity gap. Linear line here is based on the simple ordinary least square estimation in which %Δ(*VA*/*L*) $\%\Delta(VA/L)$ is a dependent variable and %Δ(*K*/*L*) as the explanatory variable. This is to draw general statistic inference.

$$\%\Delta(VA/L) = \underset{(7.01)^{***}}{77.8} + \underset{(5.86)^{***}}{0.14}\ \%\Delta(K/L)$$

$$\%\Delta\left(\frac{VA}{L}\right) = \underset{(7.01)^{***}}{77.8} + \underset{(5.86)^{***}}{0.14}\ \%\Delta\left(\frac{K}{L}\right)$$

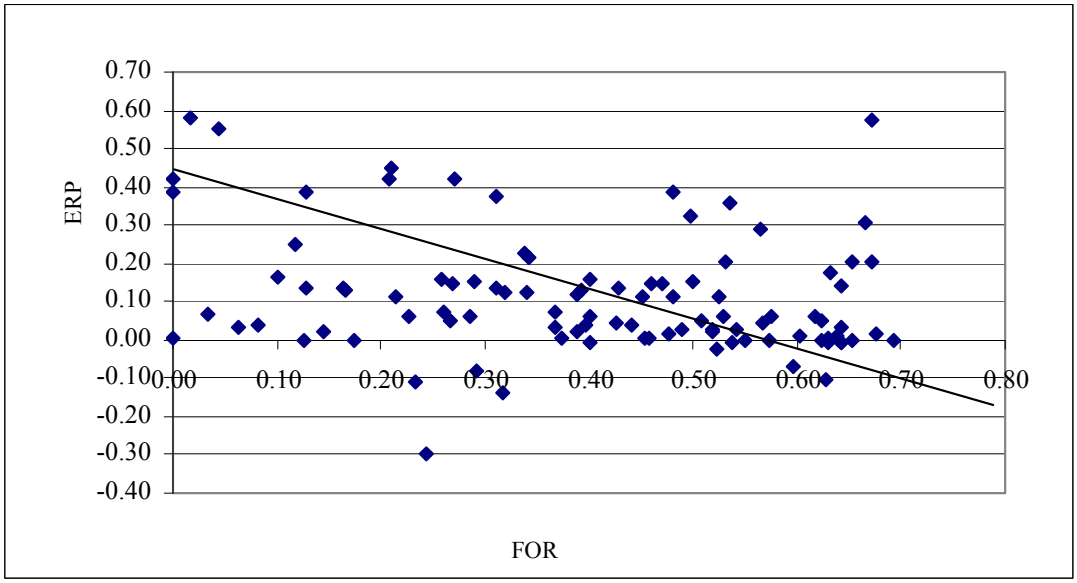
, where t-statistics is in parentheses.

Sources: Author's compilation. See the full data in Appendix 1.

Generally, foreign plants tend to locate in industries having a low effective rate of protection, as we found a negative correlation between *FOR* and *ERP* of -0.25 (Figure 2). The negative correlation is consistent with the trend of FDI inflows at the more aggregated level. Up to the late 1970s, FDI was predominantly in import-substitution industries such as textiles, automobiles, and chemicals. From then on, an increasing share of FDI was directed to more export-oriented activities. To begin with, export-oriented FDI went into light manufacturing industries such as clothing, textiles,

footwear and toys. More recently, labour-intensive assembly activities in the electronics and electrical goods industries have been the main attraction to foreign investors. Interestingly, there is no clear relationship between *FOR* and *BLI* as their simple correlation approaches zero (Figure 3). This reconfirms the proposition that FDI inflows in Southeast Asia including Thailand predominantly belong to the efficiency-seeking/export-oriented categories (Hill & Athukorala, 1998).

Figure 2. Correlation between Foreign Presence (*FOR)* and Effective Rate of Protection (*ERP*)



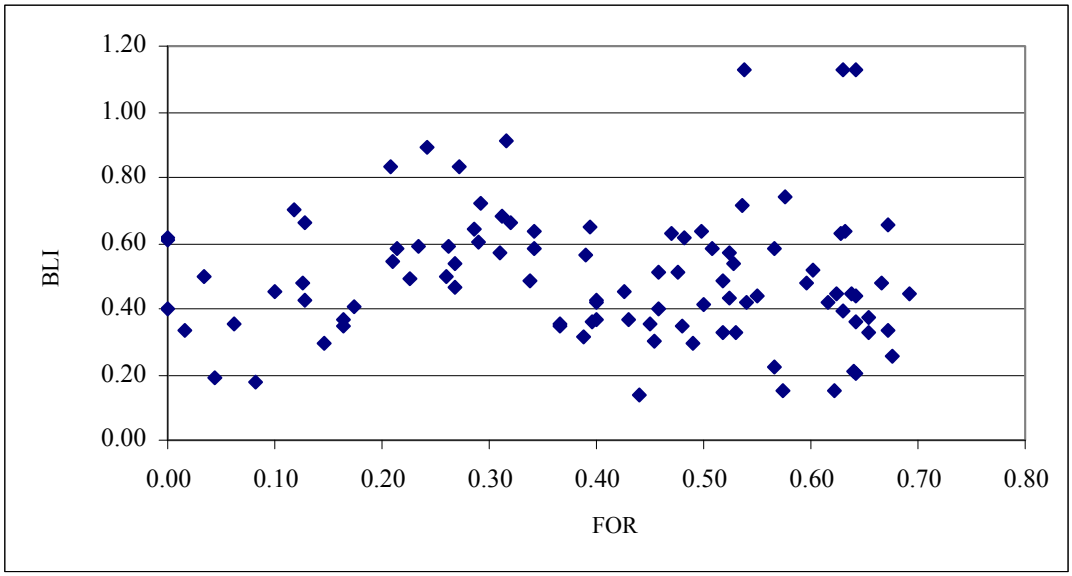
Notes: Linear line here is based on the simple ordinary least square estimation in which *FOR* is a dependent variable and *ERP* as the explanatory variable. This is to draw general statistic inference.

$$FOR = \underset{(18.7)^{***}}{0.44} - \underset{(-2.66)^{***}}{0.33}\ ERP$$

, where t-statistics is in parentheses.

Sources: Author's compilation. See the full data in Appendix 1.

Figure 3. Correlation between Foreign Presence (*FOR)* and Backward Linkage Index (*BLI*)



Notes: The statistical relationship between *FOR* and *BLI* is not significantly different from zero based on the simple ordinary least square estimation in which *FOR* is a dependent variable and *BLI* as the explanatory variable.

$$FOR = \underset{(12.9)^{***}}{0.41} - \underset{(-0.08)}{0.004\ BLI}$$

, where t-statistics is in parentheses.

Sources: Author's compilation. See the full data in Appendix 1.

4. Model

To examine the presence of technology spillover, we follow the standard practice in the literature. This begins with estimating the production function of locally owned enterprises (Griliches, 1992; Javorcik, 2004; Crespo & Fontoura, 2007; Blalock & Gertler, 2008) A translog functional form is chosen to avoid the restriction imposed in the Cobb Douglas forms that were popular in the previous empirical studies of Thai manufacturing (e.g. Khanthachai *et al.*, 1987; Tambunlertchai & Ramstetter, 1991), i.e. unity of elasticity of substitution and log-linear relationship between inputs and outputs. The translog function form also controls for input levels and scale effects on value added. It is specified as equation (1);

$$\ln Y_{ij} = \beta_0 + \beta_1 \ln K_{ij} + \beta_2 \ln PL_{ij} + \beta_3 \ln NL_{ij} + \beta_4 \ln K_{ij} \ln PL_{ij} + \beta_5 \ln K_{ij} \ln NL_{ij} + \\ + \beta_5 \left(\ln PL_{ij}\right)^2 + \beta_6 \left(\ln NL_{ij}\right)^2 + \beta_7 \left(\ln K_{ij}\right)^2 + \beta_8 X_{ij} \quad (1)$$

where Y_{ij} = value added of plant *i* of industry *j*,
PL_{ij} = number of production workers of plant *i* of industry *j*,
NL_{ij} = number of non-production workers of plant *i* of industry *j*,
K_{ij} = fixed assets of plant *i* of industry *j,* and
X_{ij} = controlling variables in affecting plant productivity of plant *i* of industry *j*.

In equation 1, there are three primary inputs, physical capital and two types of labour (i.e. production and non-production workers). The latter is done to allow marginal products from them to be different. Controlling variables include both firm- and industry-specific factors.

The first controlling variable is the plants' market orientation nature (MKT_{ij}). One clear-cut finding in the literature of the export-productivity nexus is that exporters are found to have higher productivity than non-exporters as firms would expect more intense competition in the global market than in the domestic market. In addition, there are sunk costs induced by exports.[9] Hence, the nature of market orientation is included in the model with the theoretical expected positive sign. MKT_{ij} is measured a binary dummy variable which equals to 1 if firms' export-sale ratio exceeds 25 per cent and zero otherwise. The rationale of not using an actual export-output ratio is because the relationship between market orientation and productivity could be non-linear. Firms planning to export must enhance their productivity to a certain level before export so that a positive relationship between market orientation and productivity is expected within a certain range of the export-output ratio only. In this study, 25 per cent is arbitrarily used so that sensitivity analysis is conducted by using 20 and 30 per cent as alternative cutting points. Nevertheless, the regression results are not sensitive to the cutting points.[10]

[9] Even though there is ongoing debate about whether firms become more productive before export (self-selection) or experience productivity gains after export (learning from export). See the recent survey in Wagner (2007) and works cited therein.

[10] Results are available upon author's request.

As guided by the theory and previous empirical work on the determinants of plant productivity differences, two industry-specific factors are taken into consideration. These are producer concentration and trade protection. Because of its ease of measurement, producer concentration is often used by policy makers to signal the intensity of product market competition and justify any action in preventing any possibly anti-competitive behaviour. Here producer concentration is measured by output share of the four largest firms (*CR4*). The formulae to calculate *CR4* are in equation (2).

$$CR4_j = \frac{\sum_{i=1}^{4} s_{ij}}{\sum_{i=1}^{n} s_{ij}} \qquad (2)$$

The impact of *CR4* on plant productivity remains ambiguous nonetheless. On the one hand, pioneered by Schumpeter (1942), productivity-enhancing activities typically involve large fixed costs, are irrecoverable upon exit, and are subject to a large degree of risk and uncertainty. Hence, the expectation of some form of transient *ex post* market power is required for firms to have the incentive to invest in such activities. This is especially true in the context of developing countries whose domestic market remains small (Roberts & Tybout, 1996). Perfect competition is not necessarily conducive for productivity improvements. On the other hand, the market power required is not a sufficient condition for firms to commit to these activities as suggested by a number of empirical studies (Symeonidis, 1996; Ahn, 2002). In fact, as these activities are not costless, a certain degree of market competition is needed to force each individual firm to speed up the adoption of new technology (Porter, 1990; Aghion, et al. 1999). In many circumstance, the high level of producer concentration could retard productivity improvement.

Protection is the second industry-specific variable controlled in the model. The effect of protection on plant productivity has been long recognized in numerous previous studies but is ambiguous (e.g. Corden, 1974: Hart, 1983; Martin & Page, 1983; Scharfstein, 1988; Rodrik, 1991). While protection can create economic rents that can be used for productivity improving activities, in practice an opposite effect can be seen.

By insulating firms from foreign competition, high protection tends to induce producers to become 'unresponsive' to improved technological capability as well as to requests for improvement in the quality and price of what they offer (de Melo and Urata, 1986; Moran, 2001). This in turn results in a general deterioration of technological and management skills. Hence, the sign of trade protection is theoretically ambiguous. Protection is proxied by the effective rate of protection (*ERP*). Even though there is no consensus between *ERP* and the nominal rate of protection (*NRP*) amongst economists as to choice of one over the other (Corden, 1966; Cheh, 1974), political bargains in Thai manufacturing are struck over *ERP* rather than *NRP* based on the econometric evidence of Jongwanich & Kohpaiboon (2007).

An interaction term between CON_j and ERP_j is introduced to rectify the major weakness of producer concentration in measuring the degree of product market competition. At best, producer concentration cannot capture dynamic aspects of competition especially from imports. As mentioned above, competition is important for the positive impact of concentration on productivity. In the competitive environment, the less productive firms tend to be "weeded out", so a highly concentrated industry structure would be more conducive for firms to continue their innovative activities. By contrast, in the absence of significant market competition, economic rents generated as a result of high producer concentration are likely to be captured by its managers (and workers) in the form of managerial slack or lack of effort. All in all, this suggests that the impact of producer concentration tends to be conditioned by the degree of market competition so that the interaction term is introduced. The coefficient corresponding to the interaction is expected to be negative.

The extent of foreign presence in an industry j (FOR_j) is introduced to examine horizontal technology spillovers, in some previous empirical studies, foreign presence can be captured by either output, employment or capital shares. Expressing the foreign presence as an employment share tends to underestimate the actual role of foreign affiliates because MNE affiliates tend to be more capital intensive than locally non-affiliated firms.[7] On the other hand, the capital share can easily be distorted by the presence of foreign ownership restrictions. Such a restriction was in effect in Thailand during the study period (Kohpaiboon, 2006b). Hence, the output share is the preferred proxy.

As suggested in the previous studies, horizontal spillovers can be either positive or negative, depending on the absorptive capability of local plants and the nature of the trade policy regime. The absorptive capability of the local plant is measured by the ratio of supervisory and management workers to total employment (*QL*) as supervisory and management workers are regarded as skilled labour. The higher the ratio, the higher the labour quality. The expected sign of the corresponding coefficient is positive. Trade policy regime is proxied by *ERP*. The higher the *ERP*, the less the horizontal spillovers, so that the negative sign of the interaction term is expected.

As argued above, FDI can also generate vertical spillovers through the linkage channel. To do so, inter-industry linkage is established according to the Leontief inter-industry accounting framework. Consider an input-output framework of the 'complementary import' type (i.e. the input-output table, in which the import content of each transaction is separately identified and allocated to an import matrix)[11];

$$X = A^d X + Y^d + E \tag{3}$$

where X = column vector of total gross output,

$A^d = \left[a_{ij}^d \right]_n$, $a_{ij}^d = X_{ij} / X_j$ = domestic input-output coefficient matrix,

Y^d = column vector of domestic demand on domestically produced goods, and
E = column vector of export demand on domestically produced goods.

Solving equation (1) for X ,

$$X = \left(1 - A^d\right)^{-1} \left[Y^d + E \right] \tag{4}$$

where $(1\text{-}A^d)^{-1}$ is the Leontief domestic inverse (LDI) matrix.

Consider a row vector *j,* each element in the row, say b_{ij}, indicates amount of industry *j*'s output demand by an additional unit of industry *i*'s output produced, i.e. derived demand for industry *j*'s output from industry *i's* production. Note that b_{ij} captures both direct and indirect (inter-sectoral) repercussions in the measurement

[11] Another type of Input-output (I-O) table is a 'competitive import' type in which all imports (intermediate plus final) are treated as competing with domestic production and thus imports are not separated from domestic transactions (Bulmer-Thomas, 1982).

process. This is different from Blalock (2001), Schoors & van der Tol (2001) both cited in Javorcik (2004: 612) and Blalock & Gertler (2008) whose backward linkage proxy captures only the direct demand for industry *j*, an element in input-output matrix. A product between each element in row vector *j* and its corresponding degree of foreign presence (FOR_j) measures to a certain extent derived demand from foreign presence for industry *j*'s output. Hence, the sum of the product from column 1 to n indicates total derided demand for industry *j*'s products from foreign plants, backward linkages from foreign plants. The higher the $BACK_j$, the greater the backward linkages. This implies the greater vertical spillover through backward linkages and the positive sign of coefficient corresponding to $BACK_j$ is expected. Note that inputs supplied within the industry *j* are excluded as they are already captured by FOR_j.

In a column vector *i* in LDI matrix, each element, say b_{ik}, indicates demand for industry *k*'s output to be used as inputs for producing a unit of industry *i*'s output. When we multiply each element in column vector *i* with its corresponding foreign share (FOR_k), the product indicates intermediates of industry *i* supplied by foreign plants located in in industry *k*. Hence, the sum of products would reflect a fraction total intermediates used in industry *i* supplied by foreign plants, i.e. the forward linkage from foreign presence. The greater the value of $FORW_j$, the larger, the extent of foreign presence in upstream industries. Hence, the corresponding coefficient is hypothesized to be positive. For the same reason as before, inputs purchased within the industry *j* are not included.

Finally, two sets of binary dummy variables are included in the model. First, two time dummy variables (*t2002* and *t2003*) are included to capture time-specific fixed effects, with 2001 as the base dummy. Secondly as argued in a number of studies such as Cohen & Levin (1989) and Moulton (1990), studies of the firm size-innovative activity relationship need to control for industry effects at a high level of aggregation, e.g. 2-digit level, especially when using a sample covering many industries. In particular, standard errors are corrected to take into account the fact that the measures of potential spillovers are industry-specific while the observations in the dataset are at the firm level. Falling to make such a correction could lead to a serious downward bias in the estimated errors thus resulting in a spurious finding of statistical significance of the aggregate variation of interest. It becomes even more important for those undertaken in

the context of developing countries where large firms are likely to be diversified and operate in more than one industry.[12] As a result, industry dummy variables at the 2 digit ISIC industry classification are introduced.

All in all, the estimating equation of FDI technology spillover is as follows (theoretical expected sign is given in parenthesis);

$$\begin{aligned}\ln Y_{ijt} = {} & \gamma_0 + \gamma_1 \ln K_{ijt} + \gamma_2 \ln PL_{ijt} + \gamma_3 \ln NL_{ijt} + \gamma_4 \ln K_{ijt} \ln PL_{ijt} + \gamma_5 \ln K_{ijt} \ln NL_{ijt} + \gamma_6 \ln NL_{ijt} \ln PL_{ijt} + \gamma_7 \left(\ln NL_{ijt}\right)^2 \\ & + \gamma_8 \left(\ln PL_{ijt}\right)^2 + \gamma_9 \left(\ln K_{ijt}\right)^2 + \gamma_{10} MKT_{ijt} + \gamma_{11} CR4_j + \gamma_{12} ERP_j + \gamma_{13} CR4_j * ERP_j + \gamma_{14} FOR_j \\ & + \gamma_{15} ERP_j * FOR_j + \gamma_{16} QL_{ijt} * FOR_j + \gamma_{17} BACK_j + \gamma_{18} FORW_j + \gamma_{19} t2002 + \gamma_{20} t2003 + \gamma_{21} ID_j + \mu_{ij}\end{aligned} \tag{5}$$

where

$\ln Y_{ijt}$	=	Value added of plant *i* in industry *j* at time *t* ,
$\ln PL_{ijt}$	=	Number of production workers of plant *i* in industry *j* at time *t* ,
$\ln NL_{ijt}$	=	Number of non-production workers of plant *i* in industry *j* at time *t* ,
$\ln K_{ijt}$	=	Fixed assets of plant *i* in industry *j* at time *t* ,
CON_i (+/-)	=	Producer concentration of industry *j* measured by the sum of market share of top four plants ,
ERP_j (+/-)	=	Effective rate of protection in industry *j* ,
MKT_{ijt} (+)	=	Market orientation of plant *i* in industry *j* at time *t* measured alternatively by binary dummy variable, which equals to 1 if the export-output ratio exceeds 25 per cent and zero otherwise,
FOR_j (+/-)	=	Foreign presence in industry *j* measured by output share of foreign plants to total sales captured horizontal spillovers,
$FOR_j * QL_{ijt}$ (+)	=	MNE technology spillover gain conditioned by QL_{ijt} (i.e. Absorptive capability hypothesis) ,
$FOR_j * ERP_j$ (-)	=	MNE technology spillover gain conditioned trade policy regime (i.e. Bhagwati's hypothesis) ,
QL_{ijt}	=	Quality of labour of plant *i* in industry *j* at time *t* measured by the ratio of supervisory and management workers to total employment ,
$BACK_j$ (+)	=	Backward linkages spillover from foreign presence to industry *j*,
$FORW_j$ (+)	=	Forward linkages spillover of foreign presence to industry *j* ,
t2002	=	Time dummy for 2002 which is one if observation is in 2002 and zero otherwise,
t2003	=	Time dummy for 2003 which is one if observation is in 2003 and zero otherwise,

[12] The conglomerate nature of large firms is very prominent in Southeast Asian economies (Studwell, 2007).

ID_j = Industry dummy at 2 digit ISIC classification, and

μ_{ijt} = A stochastic error term, representing the omitted other influences.

5. Data and Variable Construction

In this study, the Industry Survey by the Office of Industrial Economics, Ministry of Industry (OIE Survey) during the period 2001-03 is used.[13] The survey is available from 2001 to 2006 but the quality of unpublished returns of the last three years survey (2004-6) is rather problematic. In particular, they are subject to inconsistency in industry identification of samples, to a matching problem between sales figures and other plants' basic information allocated in separated sheets, and to a sharp decline in sample number.[14] Hence, only the OIE survey during the period 2001-03 is used in this paper.

There are 4,365, 3,986, and 3,521 plants in the 2001, 2002 and 2003 Surveys, respectively (Table 1). The survey was first cleaned up by identifying duplicated samples (i.e. plants belonging to the same firm which filled in the questionnaire using the same records) in the survey. The procedure followed in dealing with this problem was to treat as duplicates the records that report the same values of the five key variables of interest in this study, namely registered capital, output value, domestic sales, domestic raw materials, imported raw materials. As a consequence, nine samples were identified and dropped. Secondly, plants were removed which had not responded to one or more of the key questions and which had provided seemingly unrealistic information such as the negative value added, no report of worker numbers, capital stocks, or the initial capital stock of less than 10,000 baht. Finally, we excluded micro-enterprises which are defined as plants with less than 10 workers. After the data cleaning above the number of samples dropped to 3,373, 3,328 and 3,153 samples for Survey 2001, 2002 and 2003. On average, the coverage of the OIE survey accounted for around 40.1, 49.6, and 24.8 per cent of value added, gross output, and workforce,

[13] The alternative data set is the 1997 industrial census that is quite dated and has been empirically used in a number of studies (e.g. Kohpaiboon, 2006a; Kohpaiboon & Ramstetter, 2008; Jongwanich & Kohpaiboon, 2009; Kohpaiboon & Jongwanich, forthcoming).

[14] In particular, the number of plants covered in the OIE Survey 2006 dropped sharply to less than 2,000 plants.

respectively, of the manufacturing sector. Table 1 provides a summary of survey characteristics and the extent to which it represents the whole manufacturing sector.

Table 1. Sample Coverage of Office of Industrial Economics Survey

Year	% of Thai Manufacturing Sector			Number of Plants	
	Value Added	Output	Employment	Before Cleaning	After Cleaning
2001	45.3	52.6	24.5	4,365	3,373
2002	41.1	53.7	25.5	3,986	3,328
2003	33.8	42.4	24.5	3,521	3,153
Average	40.1	49.6	24.8		

Source: Author's compilation from OIE Survey whereas value added and output of the manufacturing sector are from National Economics and Social Development Board (NESDB). Labor force is from Key Indicators for Asia and the Pacific 2008, Asian Development Bank.

All nominal variables are converted to real terms (1988 price) by the corresponding producer price deflator at the 4-digit ISIC classification. Value added is defined as the difference between gross output and raw materials net of changes in inventories, whereas capital stock is represented by the value of fixed assets at the initial period. The other information related to plant-specific variables (i.e. *OWN* and *MKT*) are reported in the survey.

CR4 is obtained from Kophaiboon & Ramstetter (2008) in which the concentration is measured at the more aggregate level (e.g. many measured at the 4-digit whereas some at the 3-digit ISIC classification) to guard against possible problems arising from the fact that two reasonably substitutable goods are treated as two different industries according to the conventional industrial classification at high level of disaggregation. Data on *ERP* estimates are from Jongwanich & Kohpaiboon (2007). They are *ERP* 2003 estimates, reflecting the protection structure in 1997-2003 as there was no major change in tariff during this period. In addition, the *ERP* series used is the weighted average of import-competing and export-oriented ERP. The latter is referred to ERP estimates for exporters who are eligible for various tariff rebate programs. Since ERP is based on the input-output (IO) industrial classifications, the official concordance is used

to convert them into 4-digit ISIC. In a case that there is not one-to-one matching in the concordance, the weighted average is applied using value added as a weight.

The ideal dataset for measuring $BACK_j$ and $FORW_j$ is detailed information of inter-industry relationship between local and foreign enterprises, how much the former sells to or buys from the latter. Nevertheless, our choice is driven in part by data limitations. Hence inter-industry relationship to measure $BACK_j$ and $FORW_j$ is based on Thailand's input-output table consisting of 180 economic activities (42 in agriculture and primary sectors 93 in the manufacturing sector and the rest in the service sector). One caveat when using Thailand's input-output table is that car assembly and several metallic parts manufactures such as body parts and inner panels are lumped into a single category, (IO 125 motor vehicle) so that backward linkages measured would be to a certain extent underestimated. The same procedure applied for *ERP* is used to match input-output (IO) industrial classifications to 4-digit ISIC.

To measure *FOR* using OIE survey would be problematic as the survey coverage is rather limited. As discussed the surveys cover at most 50 per cent of the manufacturing sector's gross output and it is likely that foreign affiliates are covered in the survey because of their relatively large firms. Hence, *FOR* measured from the survey tends to be overestimated and reflect the extent of foreign plants in the survey rather their actual presence in the sector. This would also mitigate any possible simultaneity bias in estimating the spillover equation (see below for further discussion). Hence, in this study, *FOR* is constructed using the Industrial Census 1996 which accounted for 76.2 per cent of the manufacturing sector's gross outputs. In the census, all plants with FDI (regardless of the magnitude of the foreign share in their capital stock) are considered to be foreign rather than local plants. The cutting point (i.e. zero per cent) seems to be slightly higher than what is widely used by the International Monetary Fund (IMF) and other institutes such as the Organization for Economic Co-operation and Development (OECD), the US Department of Commence as well as several scholars studying multinational firms (IMF, 1993; Lipsey, 2001), i.e. 10 per cent. However, the choice is dictated by data availability. Information on foreign ownership in the census is reported with a wide range, i.e. zero, less than 50, greater 50 and 100 per cent foreign shares. Tables 2 and 3 provide a statistical summary of all variables discussed above and their correlation matrix.

Table 2. A Statistical Summary of the Key Variables

	Unit	Mean	SD	Min	Max
VD_{iit}	(ln) million baht	16.32	1.92	6.00	24.00
K_{iit}	(ln)million baht)	16.11	2.36	5.00	24.00
NL_{iit}	(ln) workers	2.71	1.35	0.00	7.00
PL_{iit}	(ln) workers	4.50	1.44	0.00	9.00
MKT_{iit}	zero-one dummy	0.29	0.45	0.00	1.00
CON_i	(ln) proportion	0.44	0.11	0.23	0.69
ERP_i	(ln) proportion	0.12	0.14	-0.30	0.58
FOR_i	(ln) proportion	0.36	0.15	0.00	0.69
QL_{iit}	(ln) proportion	0.16	0.11	0.00	0.67
$BACK_i$	(ln) proportion	1.08	0.90	0.02	7.17
$FORW_i$	(ln) proportion	1.23	1.00	0.00	5.27

Notes: (a) Mean = simple average; SD = standard deviation; Min = minimum; and Max = maximum; (b) Estimates of VD_{ijt}, K_{ijt}, NL_{ijt} and PL_{ijt} are the logarithmic transformation of their value. The other variables are converted into logarithmic form as log (1+x) where x is the variable

Source: Author's computations based on data sources described in the text.

Table 3. Correlation Matrix of the Variables

	VD_{ijt}	K_{ijt}	NL_{ijt}	PL_{ijt}	MKT_{ijt}	CON_j	ERP_j	FOR_j	QL_{ijt}	$BACK_j$	$FORW_j$
VD_{ijt}	1.00										
K_{ijt}	0.75	1.00									
NL_{ijt}	0.71	0.65	1.00								
PL_{ijt}	0.77	0.66	0.72	1.00							
MKT_{ijt}	0.28	0.19	0.27	0.40	1.00						
CON_j	-0.11	-0.13	-0.06	-0.07	0.05	1.00					
ERP_j	0.01	-0.05	0.01	0.09	0.12	0.15	1.00				
FOR_j	-0.03	-0.05	-0.07	-0.05	-0.01	0.11	-0.15	1.00			
QL_{ijt}	-0.10	-0.04	0.30	-0.36	-0.22	0.00	-0.12	-0.02	1.00		
$BACK_j$	0.01	-0.01	-0.03	-0.01	-0.01	0.10	-0.03	0.25	-0.01	1.00	
$FORW_j$	-0.11	-0.05	-0.13	-0.20	-0.22	0.04	-0.23	0.19	0.09	0.09	1.00

Source: Author's computations based on data sources described in the text.

6. Regression Results

To examine the presence of spillover from FDI, an unbalanced panel econometric procedure is applied. We used the random effect estimator as our preferred estimation technique. The alternative fixed effect estimator is not appropriate because our model

contains a number of time-invariant variables (CON_j, ERP_j and FOR_j, $BACK_j$, and $FORW_j$) all of which are central to our analysis. A major limitation of the random effect estimator compared to its fixed effect counterpart is that it can yield inconsistent and biased estimates if the unobserved fixed effects are correlated with the remaining component of the error term. However, this is unlikely to be a serious problem in our case because the number of explanatory variables is larger than the number of 'within' observations (Wooldridge 2002, Chapter 10). The random effect estimator also has the added advantage of taking caring of the serial correlation problem. The results are reported in Table 5. Nevertheless, the corresponding pooled cross-section estimations are reported for the purpose of comparison. The random-effects and pooled cross-section estimates are remarkably similar, suggesting that unobserved effects would be relatively unimportant in our model.

Studies of FDI spillovers are subject to a criticism about a possibility of a simultaneity problem. The positive relationship between foreign presence and plant productivity might be interpreted as reflecting the fact that foreign investment gravitates towards more productive industries rather than representing any technology spillover from FDI (Haddad & Harrison, 1993; Aitken & Harrison, 1999). The general response in the literature is to undertake fixed-effect panel estimation. Nevertheless, our estimation results are less likely to be subject to a simultaneity problem as *FOR* in this study is a pre-determined variable obtained from the 1996 industrial census. In theory, it is arguable that a pre-determined variable might contain expectations of future outcomes hence the simultaneity problem remains unsolved. For example, current investment of MNEs would be a result of their expectation of productivity gains in the future. This argument is less likely to apply for this study since foreign presence here is measured by output share of current economic activities, and is unlikely to contain any future expectation. Even though *FOR* reflects the distribution of foreign presence in 1996, as argued in Ramstetter (2003), the relative importance of foreign firms remains unchanged during the past decade starting in 1996.

6.1. Is the Foreign Plant More Productive than The Locally-owned One?

Before we examine whether there are FDI spillovers and its relative importance between horizontal and vertical spillovers, we ask a simple question; is the foreign plant is more productive than the locally owned one? Even though it is theoretically expected that MNC affiliates should be more productive than locally non-affiliated firms (Caves, 2007), it is not always true as suggested in several empirical studies such as Ramstetter (2006) in the case of Thai manufacturing. Menon (1998) and Oguchi *et al.* (2002) in the case of Malaysian manufacturing.

To do so, Equation 5 discussed above is modified. First, the sample will cover both foreign- and locally owned plants. Second, *FOR* and its related variables (its interaction terms with ERP_j and QL_{ijt} as well as $BACK_j$, and $FORW_j$) are replaced by ownership variable (*OWN*) measured by a binary dummy variable which equals to 1 if foreign ownership is greater than 10 per cent and zero otherwise. By definition, FDI reflects the objective of an entity resident in one country to obtain a long-term relationship between the direct investor and the host country enterprise, in which the former has a significant degree of influence on the management of the latter. However, the significant degree does not necessarily mean majority ownership. Hence this study follows the dominant current definition by the International Monetary Fund (IMF) and other institutes such as the Organization for Economic Co-operation and Development (OECD), the US Department of Commence as well as several scholars studying multinational firms, which use 10 per cent.[15] Nevertheless, we also use the actual foreign ownership share (*OWN1*) as an alternative measure to examine the sensitivity of results. A statistical significance of *OWN* indicates the productivity difference.

The result of the productivity determinant equation is reported in Table 4. The first and second columns are the results of pooled cross-sectional and random-effected estimations, respectively. Our following discussion will be based on the latter because of the reasons discussed above. The estimated equation passes the *Wald*- test for overall statistical significance at the 1 per cent level. The statistical significance of coefficients corresponding to the primary inputs (capital, production workers and non-production workers), their interactions, and some of their squared terms suggests that the assumption imposed in the Cobb-Douglas production function is not supported by plant-

[15] For example, the early Harvard studies under the direction of Raymond Vernon: Vaupel & Curhan, (1969: p.3) and Wilkins (1970), both cited in Lipsey (2001)

level panel data of Thai manufacturing. Even though translog functional form specification is likely to be affected by the multicollinearity problem and standard error is inflated, coefficients associated with the squared values of capital and production workers are statistically significant at the one per cent level or better. It suggests that such a multicollinearity problem would not create any severe effect on the regression outcome. In particular, in the presence of the multicollinearity problem the effect still shows up, simply because the true value itself is so large that even an estimate on the downside still shows up as significant (Johnson, 1984: 249).

A coefficient corresponding to *OWN* is statistically significant. It suggests that all other things (e.g. inputs level and scale effects) being equal, the foreign plant tends to exhibit higher value added than the locally owned one. The coefficient of 0.21 indicates that the productivity difference between foreign and locally owned plants is about 21 per cent on average after controlling input levels and scale effects. We also find that exporting firms tend to exhibit a higher level of productivity than non-exporting ones as the coefficient corresponding to *MKT* turns out to be positive and significant. Such evidence supports the consensus in the literature of the export-productivity nexus that export-oriented plants tend to be more productive than domestic-oriented plants.

Impacts of producer concentration and trade protection on plant productivity are to certain extent consistent with the findings of previous studies, i.e. Kohpaiboon & Jongwanich (forthcoming) using the , Industrial Census 1996 data set. That is, the net impact of producer concentration on plant productivity is not automatic, but does depend on the degree of tariff protection. Tariff reduction must reach a certain level before the potential positive impact of producer concentration on productivity is observed. Similarly, insulating firms from foreign competition is not sufficient to promote plant productivity improvement. In a highly concentrated industry, high protection tends to induce producers to become 'unresponsive' to improved technological capability and to retard productivity growth.[16]

[16] Statistical significance of the interaction coefficient is very marginal at 15 per cent (one-tailed test). As seen in Section 6.2 when the sample covers only locally owned firms, the interaction term turns out to be statistically significant at five per cent. This would be consistent to the aggregate trend discussed in Section 3 that foreign plants in Thailand tend to be located in efficient-seeking industries especially electronics, electrical appliances and automobiles. In fact FDI in automobile industry started with the traditional tariff-hopping style which aimed for a highly protected domestic market. As argued in Kohpaiboon (2006b and 2007), FDI inflows increased significantly in the

Table 4. Regression Results of Productivity Determinants

	OLS	RE
INTP	11.99 (48.70)***	11.88 (48.32)***
$\ln K_{ij}$	-0.17 (-6.01)***	-0.14 (-5.21)***
$\ln K_{ij}^{2}$	0.01 (8.71)***	0.01 (8.76)***
$\ln NL_{ij}$	0.41 (8.50)***	0.41 (9.25)***
$\ln NL_{ij}^{2}$	-0.002 (0.20)	0.005 (0.62)
$\ln PL_{ij}$	0.40 (10.35)***	0.36 (10.35)***
$\ln PL_{ij}^{2}$	0.024 (2.74)***	0.02 (2.43)**
$\ln K_{ij} \ln NL_{ij}$	0.02 (4.08)***	0.01 (3.73)***
$\ln K_{ij} \ln PL_{ij}$	0.01 (1.8)**	0.01 (2.67)***
$\ln NL_{ij} \ln PL_{ij}$	-0.09 (-10.20)***	-0.09 (-10.94)***
$t2002$	-0.04 (-1.76)*	-0.04 (-2.06)**
$t2003$	-0.037 (-1.50)	-0.03 (-1.42)
MKT_{ij}	0.07 (3.11)***	0.08 (2.62)***
OWN_{ij}	0.21 (8.82)***	0.21 (6.51)***
Industry-specific		
CON_j	0.63 (3.53)***	0.72 (3.36)***
ERP_j	0.79 (2.11)**	0.88 (1.94)**
$CON_j ERP_j$	-1.01 $(-1.05)^{\delta}$	-1.09 $(1.02)^{\delta}$
# Observations	9,815	9,815 (3,963 groups)
F-stat	1132.9 ***	19788.5 ***
R-sq	0.78	0.78
RESET	1.50 (p=0.21)	

Notes: OLS = Ordinary Least Squares whereas RE = Random Effect Estimation; The number in the parenthesis of OLS is *t*-statistics constructed from robust standard error whereas that of RE

1990s with a shift in investment motivation to efficiency-seeking. Such foreign plants are keen to improve their production efficiency and strengthen their international competitiveness. This occurs even in a highly concentrated environment. Therefore, when foreign plants are included, this could weaken the proposed non-linear relationship among productivity, producer concentration and protection to some extent.

is *z*-statistics. RESET is the RESET- functional form misspecification tests; ***,**, * and $^{\delta}$ indicates a statistical significance at 1, 5, 10 and 15 per cent level, respectively.

Sources: Author's estimation.

6.2. Horizontal and Vertical FDI Spillovers

In this subsection the core hypothesis of this paper, namely the presence of horizontal and vertical FDI spillovers, is addressed. Their regression results are reported in Table 5. While both pooled cross-sectional and random-effect estimations are reported in the first two columns of Table 5 for the sake of comparison, our discussion will emphasise random-effect estimations. The overall significance test (*Wald* test) is passed at the one per cent level. In general, most of the firm- and industry-specific variables (i.e. *K*, *NL*, *PL*, *MKT*, *CR4, ERP* and $CR4*ERP$) turn out to be statistically significant and are in line with what are found in the productivity determinant equation in the previous section.

Regression results support the hypothesis that horizontal FDI spillovers can vary across industry. The found negative coefficient of *FOR*ERP* fails to reject the 'Bhagwati hypothesis'. Given the extent of foreign presence, locally owned plants operating in industries with more liberal trade regimes exhibit higher value added than those operating in the less liberal regimes. The evidence that the coefficient of *FOR* is not statistically different from zero points out that foreign presence could either negatively or positively affect the local plant's productivity, depending on the nature of the trade policy regime, i.e. *ERP* greater or less than zero. As shown in Figure 2, there are many export-oriented industries experiencing negative ERP such as processed foods (ISIC 1511 and 1512), leather products (ISIC 1911). The negative figure is largely due to the presence of cost in tariff drawback schemes (e.g. bank guarantees). The econometric findings in these studies are also in line with those in previous studies, i.e. Balasubramanyam *et al.* (1996), Athukorala & Chand (2000), Kohpaiboon (2003: 2006a) and Kokko *et al.* (2001).

Table 5. Regression Results: Horizontal and Vertical FDI Technology Spillover

	Heterogeneous Horizontal Spillovers		Identical Horizontal Spillovers	
	Pooled-cross Section	RE	Pooled-cross Section	RE
INTP	11.92 (39.39)***	11.92 (38.56)***	12.03 (39.32)***	12.08 (39.48)***
$\ln K_{ij}$	-0.15 (-4.19)***	-0.13 (-4.01)***	-0.15 (-4.25)***	-0.14 (-4.14)***
$\ln K_{ij}^{2}$	0.009 (5.06)***	0.01 (5.51)***	0.009 (5.22)***	0.009 (5.64)***
$\ln NL_{ij}$	0.37 (5.81)***	0.36 (6.38)***	0.37 (6.00)***	0.36 (6.46)***
$\ln NL_{ij}^{2}$	-0.01 (-0.85)	-0.002 (-0.18)	-0.01 (0.91)	-0.002 (-0.23)
$\ln PL_{ij}$	0.36 (7.43)***	0.32 (7.64)***	0.36 (7.47)***	0.32 (7.65)***
$\ln PL_{ij}^{2}$	0.01 (1.19)	0.01 (1.33)	0.01 (1.07)	0.01 (1.18)
$\ln K_{ij} \ln NL_{ij}$	0.02 (4.21)***	0.018 (3.84)***	0.02 (4.14)***	0.02 (3.93)***
$\ln K_{ij} \ln PL_{ij}$	0.02 (2.52)***	0.02 (2.77)***	0.02 (3.02)***	0.02 (3.27)***
$\ln NL_{ij} \ln PL_{ij}$	-0.08 (-6.76)***	-0.08 (-7.50)***	-0.08 (-7.08)***	-0.08 (7.63)***
$t2002$	-0.04 (-1.42)	-0.04 (-1.75)*	-0.04 (-1.41)	-0.39 (-1.74)*
$t2003$	-0.04 (-1.42)	-0.03 (-1.42)	-0.04 (-1.43)	-0.03 (-1.42)
MKT_{ij}	0.10 (3.66)***	0.10 (2.71)***	0.10 (3.62)***	0.10 (2.65)***
Industry-specific				
CON_j	0.90 (3.77)***	0.99 (3.56)***	0.88 (3.70)***	0.95 (3.41)***
ERP_j	2.07 (4.50)***	2.14 (3.68)***	1.66 (3.40)***	1.51 (2.71)***
$CON_j ERP_j$	-2.85 (-2.12)**	-2.11 (-1.57)*	-3.66 (-2.86)***	-2.98 (-2.25)**
FOR_j	0.25 (1.28)*	0.26 (1.09)	-0.75 (-0.57)	-0.18 (-1.13)
$FOR_j ERP_j$	-2.55 (-2.85)***	-3.53 (-3.65)***		
$FOR_j QL_{ijt}$	-0.18 (-0.27)	-0.16 (-0.23)		
$BACK_j$	0.02 (0.66)	0.02 (0.82)	0.03 (1.29)*	0.04 (1.77)*
$FORW_j$	-0.01 (-0.67)	-0.01 (-0.50)	-0.01 (-0.54)	-0.01 (-0.35)
# Observations	6,907	6,907 (2,843 groups)	6,907	6,907 (2,843 groups)
F-stat	565.3***		597.2***	
Wald-test (χ^2)		11194.6***		11122.52***
Overall R-sq Within Between	0.74	0.74 0.02 0.80	0.74	0.74 0.02 0.80
RESET	0.55 (p=0.65)		0.82 (p=0.48)	

Notes: OLS = Ordinary Least Squares whereas RE = Random Effect Estimation; The number in the parenthesis of OLS is *t*-statistics constructed from robust standard error whereas that of RE is *z*-statistics. RESET is the RESET- functional form misspecification tests: ***, **, * and $^{\delta}$ indicates a statistical significance at 1, 5, 10 and 15 per cent level, respectively.

Sources: Author's estimation.

The interaction between foreign presence and absorptive capability is not statistically different from zero. The statistic insignificance does not reject the role of absorptive capability in conditioning gains from horizontal FDI spillovers. The failure to uncover its statistic significance could be due to a measuring problem. In particular, the definition of non-production workers in the survey is wide, covering not only supervisors and management workers but also clerical and administrative staff. Interestingly when identical horizontal spillovers are relaxed, statistical significance of vertical spillovers from both backward and forward linkages is not found. The coefficient corresponding to $BACK_j$ is positive but not statistically different from zero. The coefficient corresponding to $FORW_j$ turns out to be negative but insignificant.

In general, the key finding in this study (that there are only horizontal spillovers, not vertical ones) run counter to that of Javorcik, (2004) and Blalock & Gertler (2008) relating to Lithunian and Indonesian manufacturing sectors, respectively. They have uncovered a statistically significant positive spillover through backward linkages but not horizontal spillovers. We suspect that the failure to appropriately control for relevant explanatory variables may have biased the results of these studies. Interestingly, our data set permits us to replicate their results through similar (arbitrary) variable choice. That is, equation 5 is re-estimated by dropping two interaction terms with horizontal FDI spillovers, i.e. imposing an assumption of identical horizontal spillovers. The results are in line with Javorcik (2004) and Blalock & Gertler (2008). Only the coefficient corresponding to $BACK_j$ is statistically significant at 10 per cent.

We rather argue that our model is more preferable as the results seem to be in line with the industrialization path in developing countries including Thailand. As argued in Hugh (2001) several developing Southeast Asian economies pursue the so called 'dualistic approach' in opening up international trade, i.e. they are still reluctant to cut tariffs but opt for tariff drawback schemes as a key instrument to promote an export-led industrialization strategy. For instance, Thailand has been conservative in opening the door for foreign made goods for the past three decades, as indicated in the fact that its applied tariff rates remain at the highest of the six original ASEAN countries (Jongwanich & Kohpaiboon, 2007).

Under such a policy setup, two options are available for entrepreneurs, including MNEs. In Option 1, entrepreneurs aim to be a part of the global economy in which resource allocation is directed according to factor proportion consideration for neo-classical efficiency. Firms in this option tend to be more export-oriented. By contrast, Option 2 encourages entrepreneurs to set up plants and supply highly protected local markets in order to benefit from protection-induced economic rents. Even though MNEs can occur in both options, MNEs existing in the first option (efficiency-seeking MNEs) tends to be more beneficial than those in the second option (market-seeking MNEs) argued in Athukorala and Chand (2000) based on US MNEs experience.

In this circumstance, backward linkages would hardly occur and nor would vertical spillovers. Export-oriented firms including MNEs are unlikely to source local intermediates because of the presence of intermediate tariffs so that they seem to operate in 'enclaves' in isolation from local suppliers. In the meantime, highly protected domestic markets encourage indigenous suppliers to find their own niche markets that are not directly related to what exporting firms want. As long as the policy-induced incentive structure still creates the economic rents, it would be difficult to find qualified suppliers.

That would explain why MNEs which have played an important role in Thailand's industrialization generate limited backward linkages to indigenous firms. Limited backward linkages are observed in several leading export-oriented industries in Thailand such as the automotive, garment and hard disk drive industries (Kohpaiboon, 2006b; 2007 and 2008 and 2009). For example, while locally assembled vehicles in Thailand are reliant largely on locally manufactured parts, as illustrated by the proportion of imported parts to vehicle production, the number of purely Thai firms must be around 10 suppliers, comparing to 287 MNE suppliers. Another example, the ratio of imported fabric to garment production in Thailand has been increasing since 1996 (Kohpaiboon, 2008: Figure 4). The same evidence is also found in the case of the Hard Disk Drive industry (Kohpaiboon, 2009).

7. Conclusion and Policy Inferences

This paper examines FDI spillovers in Thai manufacturing, using industrial surveys during the period 2001-03. A panel data econometric analysis of plant productivity determinants of locally owned plants is undertaken. The paper goes beyond the existing literature in two ways. First, both horizontal and vertical FDI spillovers are tested. In addition, both direct and indirect (inter-sectoral) repercussions are captured in the measurement process of industrial linkages. Secondly, horizontal FDI spillovers are allowed to be different from one industry to the other instead of assuming identical values across industries.

The key finding is that advanced technology associated with MNE affiliates does not always spill over to the local plants operating in the same industry. The extent of spillovers depends on the nature of the trade policy regime. Only industries operating under a liberal trade policy regime experience positive horizontal FDI spillovers. Neither backward nor forward spillovers are found in our study. This seems to be in contradiction with the existing literature highlighting the relative importance of backward linkages as a likely FDI spillover channel. Statistical significance of vertical spillovers through backward linkages is found only if an assumption of identical horizontal FDI spillover is in place. Such an assumption seems to be restrictive. The finding that export-oriented plants have higher productivity than domestic-market-oriented ones further highlight the role of trade policy regime on plant productivity improvement process. Trade liberalization and its induced contestability environment are an effective catalyst for firms to continue to improve their productivity. Besides, only in low tariff environment, the positive impact of producer concentration on plant productivity is observed.

Two policy inferences can be drawn from this study. First these results further highlight the relative importance of the trade policy regime for productivity enhancement and thus development policy. Liberalizing the foreign investment regime thus has to go hand in hand with liberalizing trade policy to maximize gains from MNE presence. Trade liberalization itself also creates contestability environment that is conducive for firms to continue improving their productivity. Secondly, while the

relative importance of the linkage channel and its corresponding spillovers seems to be a convincing argument, our work here provides a warning for policymakers not overemphasize it. The conducive role of the backward linkage channel is a result of natural links that are driven by economic concerns and can be distorted by policy measures. The ability of the policy domain to forge linkages seems to be limited. Policy-induced linkages are not perfectly substitutes for natural linkages. This issue is increasingly important under a rising threat of the return of nationalism and protectionism in the incoming global economic recession. The *magnitude* of linkages is not a good proxy of the magnitude of vertical FDI spillovers. The *quality* of backward linkages is a far better indication. Where quality is concerned, backward linkages driven by economic concerns as well as motivated by capability of indigenous suppliers are by far superior to that induced by policy measures.

Appendix 1: Patterns of Labour Productivity (%Δ(VA/L)), Capital-Labour Ratio (%Δ(K/L)), Foreign Presence (*FOR*), Backward Linkage Index (*BLI*) and Effective Rate of Protection (*ERP*) of Thai Manufacturing

ISIC	Description	$\%\Delta\left(\frac{VA}{L}\right)$	$\%\Delta\left(\frac{K}{L}\right)$	*FOR*	*BLI*	*ERP*
1511	Production, processing and preserving of meat and meat products	13.1	105.6	0.32	0.91	-0.14
1512	Processing and preserving of fish and fish products	10.2	-46.2	0.29	0.72	-0.08
1513	Processing and preserving of fruit and vegetables	0.8	42.8	0.27	0.47	0.15
1514	Manufacture of vegetable and animal oils and fats	30.9	-27.2	0.13	0.42	0.39
1520	Manufacture of dairy products	391.7	24.2	0.21	0.58	0.12
1531	Manufacture of grain mill products	42.6	-61.5	0.13	0.66	0.14
1532	Manufacture of starches and starch products	160.9	277.7	0.39	0.57	0.12
1533	Manufacture of prepared animal feeds	-36.2	14.8	0.23	0.59	-0.11
1541	Manufacture of bakery products	80.1	104.4	0.12	0.70	0.25
1542	Manufacture of sugar	16.0	47.4	0.21	0.84	0.42
1543	Manufacture of cocoa, chocolate and sugar confectionery	72.2	295.5	0.32	0.66	0.12
1544	Manufacture of macaroni, noodles, couscous and similar farinaceous products	40.4	64.4	0.27	0.84	0.42
1549	Manufacture of other food products n.e.c.	122.0	-43.8	0.51	0.59	0.05
1551	Distilling, rectifying and blending of spirits; ethyl alcohol production from fermented materials	-61.8	-36.7	0.00	0.61	0.42
1552	Manufacture of wines	n.a.	n.a.	0.67	0.65	0.57
1553	Manufacture of malt liquors and malt	249.1	281.2	0.02	0.34	0.58
1554	Manufacture of soft drinks; production of mineral waters	84.4	111.8	0.48	0.51	0.02
1600	Manufacture of tobacco products	217.4	-57.1	0.04	0.19	0.55
1711	Preparation and spinning of textile fibres; weaving of textiles	102.2	121.0	0.47	0.63	0.15
1712	Finishing of textiles	n.a.	n.a.	0.34	0.58	0.22
1721	Manufacture of made-up textile articles, except apparel	8.1	-68.4	0.54	0.71	0.36
1722	Manufacture of carpets and rugs	n.a.	n.a.	0.58	0.74	0.06
1723	Manufacture of cordage, rope, twine and netting	n.a.	n.a.	0.34	0.64	0.12
1729	Manufacture of other textiles n.e.c.	118.9	244.6	0.63	0.64	0.18
1730	Manufacture of knitted and crocheted fabrics and articles	-0.6	37.9	0.39	0.65	0.13
1810	Manufacture of wearing apparel, except fur apparel	18.0	-11.4	0.31	0.68	0.37
1911	Tanning and dressing of leather	65.2	161.9	0.24	0.89	-0.30
1912	Manufacture of luggage, handbags and the like, saddlery and harness	25.9	196.6	0.34	0.49	0.23

ISIC	Description	$\%\Delta\left(\frac{VA}{L}\right)$	$\%\Delta\left(\frac{K}{L}\right)$	*FOR*	*BLI*	*ERP*
1920	Manufacture of footwear	-8.7	-16.0	0.29	0.64	0.06
2010	Sawmilling and planing of wood	27.8	186.0	0.15	0.29	0.02
2021	Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board and other panels and boards	-49.0	-10.3	0.37	0.35	0.03
2022	Manufacture of builders' carpentry and joinery	61.3	49.4	0.06	0.35	0.03
2029	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	n.a.	n.a.	0.21	0.54	0.45
2101	Manufacture of pulp, paper and paperboard	-44.6	106.5	0.52	0.33	0.03
2102	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	53.2	78.5	0.16	0.35	0.13
2109	Manufacture of other articles of paper and paperboard	112.3	100.3	0.50	0.41	0.15
2221	Printing	23.3	-20.6	0.10	0.46	0.17
2320	Manufacture of refined petroleum products	370.3	817.6	0.44	0.14	0.04
2411	Manufacture of basic chemicals, except fertilizers and nitrogen compounds	87.0	160.7	0.37	0.35	0.07
2413	Manufacture of plastics in primary forms and of synthetic rubber	81.0	88.7	0.46	0.51	0.15
2421	Manufacture of pesticides and other agro-chemical products	n.a.	n.a.	0.64	0.44	0.03
2422	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	97.8	164.2	0.60	0.52	0.01
2423	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	276.1	56.0	0.17	0.41	0.00
2424	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	284.8	424.7	0.52	0.49	0.02
2429	Manufacture of other chemical products n.e.c.	n.a.	n.a.	0.53	0.54	0.06
2430	Manufacture of man-made fibres	75.2	120.0	0.63	0.63	-0.10
2511	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	282.2	156.0	0.57	0.58	0.29
2519	Manufacture of other rubber products	-3.8	38.1	0.29	0.61	0.15
2520	Manufacture of plastics products	45.8	70.1	0.31	0.57	0.14
2610	Manufacture of glass and glass products	188.9	404.5	0.49	0.30	0.03
2691	Manufacture of non-structural non-refractory ceramic ware	111.0	140.7	0.39	0.31	0.02
2692	Manufacture of refractory ceramic products	205.8	444.0	0.52	0.57	0.11
2693	Manufacture of structural non-refractory clay and ceramic products	249.5	110.1	0.03	0.50	0.07
2694	Manufacture of cement, lime and plaster	100.3	154.5	0.13	0.48	0.00
2695	Manufacture of articles of concrete, cement and plaster	143.1	53.5	0.27	0.54	0.05
2696	Cutting, shaping and finishing of stone	-24.4	-71.8	0.08	0.18	0.04
2710	Manufacture of basic iron and steel	154.2	175.8	0.23	0.49	0.06
2720	Manufacture of basic precious and non-ferrous metals	386.3	3501.8	0.40	0.42	-0.01

ISIC	Description	$\%\Delta\left(\frac{VA}{L}\right)$	$\%\Delta\left(\frac{K}{L}\right)$	*FOR*	*BLI*	*ERP*
2731	Casting of iron and steel	374.6	1223.0	0.63	1.13	0.00
2811	Manufacture of structural metal products	76.1	53.6	0.45	0.35	0.11
2812	Manufacture of tanks, reservoirs and containers of metal	159.0	161.2	0.48	0.34	0.12
2891	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	n.a.	n.a.	0.54	1.13	0.00
2892	Treatment and coating of metals; general mechanical engineering on a fee or contract basis	32.3	219.0	0.64	1.13	0.00
2893	Manufacture of cutlery, hand tools and general hardware	162.1	188.8	0.40	0.37	0.16
2899	Manufacture of other fabricated metal products n.e.c.	187.0	264.9	0.37	-2.70	0.00
2911	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	265.9	491.4	0.64	0.44	0.01
2912	Manufacture of pumps, compressors, taps and valves	129.9	252.5	0.43	0.45	0.05
2913	Manufacture of bearings, gears, gearing and driving elements	311.3	640.6	0.65	0.33	0.20
2914	Manufacture of ovens, furnaces and furnace burners	113.7	52.0	0.63	0.39	0.00
2915	Manufacture of lifting and handling equipment	285.9	589.8	0.64	0.36	0.14
2919	Manufacture of other general purpose machinery	207.8	82.2	0.54	0.42	0.03
2922	Manufacture of machine-tools	157.4	625.8	0.46	0.40	0.00
2924	Manufacture of machinery for mining, quarrying and construction	n.a.	n.a.	0.16	0.37	0.14
2925	Manufacture of machinery for food, beverage and tobacco processing	-59.2	338.2	0.00	0.40	0.00
2929	Manufacture of other special purpose machinery	n.a.	n.a.	0.55	0.44	0.00
2930	Manufacture of domestic appliances n.e.c.	64.7	128.8	0.62	0.44	0.05
3000	Manufacture of office, accounting and computing machinery	9.5	368.5	0.69	0.44	0.00
3110	Manufacture of electric motors, generators and transformers	114.2	43.2	0.45	0.30	0.00
3120	Manufacture of electricity distribution and control apparatus	79.7	151.6	0.64	0.20	-0.01
3130	Manufacture of insulated wire and cable	219.7	469.6	0.62	0.42	0.06
3140	Manufacture of accumulators, primary cells and primary batteries	234.1	372.8	0.60	0.48	-0.07
3150	Manufacture of electric lamps and lighting equipment	48.8	87.1	0.40	0.36	0.04
3190	Manufacture of other electrical equipment n.e.c.	17.1	29.5	0.57	0.23	0.04
3210	Manufacture of electronic valves and tubes and other electronic components	32.1	-24.1	0.68	0.26	0.02
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy	45.3	23.5	0.57	0.15	0.00
3230	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods	-16.0	51.4	0.62	0.15	0.00
3311	Manufacture of medical and surgical equipment and orthopaedic appliances	35.5	117.1	0.52	0.43	-0.02

ISIC	Description	$\%\Delta\left(\frac{VA}{L}\right)$	$\%\Delta\left(\frac{K}{L}\right)$	*FOR*	*BLI*	*ERP*
3312	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	99.3	10.0	0.64	0.21	0.00
3320	Manufacture of optical instruments and photographic equipment	198.9	333.2	0.65	0.38	0.00
3410	Manufacture of motor vehicles	235.7	1.4	0.67	0.33	0.20
3420	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	9.5	285.4	0.53	0.33	0.20
3430	Manufacture of parts and accessories for motor vehicles and their engines	86.3	126.2	0.43	0.37	0.14
3591	Manufacture of motorcycles	226.4	553.3	0.48	0.62	0.39
3592	Manufacture of bicycles and invalid carriages	201.8	259.8	0.00	0.62	0.39
3610	Manufacture of furniture	49.6	23.5	0.26	0.50	0.16
3691	Manufacture of jewellery and related articles	11.5	94.0	0.40	0.42	0.06
3693	Manufacture of sports goods	22.7	56.5	0.67	0.48	0.31
3694	Manufacture of games and toys	-39.7	162.8	0.26	0.59	0.07
3699	Other manufacturing n.e.c.	68.0	62.9	0.50	0.64	0.33
	Average	106.93	204.87	0.40	0.46	0.11
	Max	391.67	3501.79	0.69	1.13	0.58
	Min	-61.79	-71.76	0.00	-2.70	-0.30

Sources: Author's compilation. See details of variables construction in the text.

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CHAPTER 10

Plant Entry in a More Liberalised Industrialisation Process: An Experience of Indonesian Manufacturing during the 1990s[1]

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Some major policy changes towards a more open trade and investment regime occurred in Indonesia during the 1980s and 1990s. The impact of these policy changes on the country's industrialisation has been generally favourable. However, little is known about the impact on the dynamics of plant in the country's manufacturing. This study addresses this subject, examining the extent and determinants of plant entry in Indonesian manufacturing over the period 1993-96, and asking how the policy reforms affected plant entry. The key finding suggests that the policy reforms increased the extent of competition within industry. This, however, does not seem to be very strong, and the study puts forward some possible explanations. The discussion reaches a consensus that maybe, during the period under this study, the process of the reform had not really been completed and, at the same time, the (predicted) positive impact of the liberalisation had not been fully realised.

[1] This report revises an earlier version of the final draft report, based on the comments made by the participants in a workshop on the research project, held in the ERIA office Jakarta, February 9, 2009. The author thanks, and is grateful for the comments provided by the participants in the workshop.
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1. Introduction

Some major policy changes towards a more open trade and investment regime occurred in Indonesia for about a decade over the late 1980s and early 1990s, in response to various events experienced by the Indonesian economy. After about 15 years of an import substitution policy, sheltered by large oil revenues, the policy direction shifted dramatically towards outward orientation. The policy changes took place in a series of bold and comprehensive reforms aimed at liberalising the economy, increasing investment and promoting exports.

The impact of the policy changes on industrialisation is apparent. The Indonesian manufacturing sector transformed rapidly during this time and had become an important source of growth by the mid 1990s. The share of the sector in GDP increased from 12 per cent in 1975 to 24 per cent in 1995, manufacturing exports increased substantially in the 1990s, and there was also an increase in foreign participation over the reform period.[3]

Notwithstanding the favourable industry performance, little is known about the impact of the policy reforms on the dynamics of plant in Indonesian manufacturing. This study addresses this subject, by examining the extent and determinants of plant entry in the Indonesian manufacturing sector over the period 1993-96. It addresses the question of how the reforms affected the entry of plants, the importance of the reforms in determining the extent of the entry, and the role of other industry-level factors – if any – in explaining the level of entry over the period.

The rest of this paper is organised as follows. Section 2 briefly reviews the policy reforms in that occurred in the decade of 1980s and 1990s. Section 3 describes the impact of the policy reforms on the extent of plant entry over the period 1993-96. Section 4 briefly reviews some theoretical consideration on the determinants of plant/firm entry, which provides some basis for the econometric component of the study. Section 5 presents the hypotheses. Section 6 describes the statistical framework and variable measurements used in the econometric exercise, and section 7 present the results of the exercise. Section 8 summarises and concludes the findings of the study.

[3] See Hill (1996) for a presentation of the favourable Indonesian manufacturing performance during the 1990s.

2. Policy Changes Affecting the Manufacturing Sector during the 1980s and 1990s

The key policy direction governing the Indonesian manufacturing since early 1970s to mid of 1980s had been an import substitution strategy. Within this period, the government implemented tariff and non-tariff barriers (NTB) to support the strategy. According to Thee (1994), tariffs were implemented to support the earlier stage of import substitution which focused on the downstream industries (i.e. final consumer goods) and NTB were used to support the second stage of import substitution, which focused on upstream industries (i.e. intermediate and capital goods). As in other developing countries, this policy had a 'cascading effect', which sets higher tariff rates for consumer goods compared to intermediate and capital goods (Ariff and Hill 1985).

The government implemented a wide range of measures. The most significant were the restrictions on foreign investment and imports. In 1973 the government established the Investment Coordinating Board (*Badan Koordinasi Penanaman Modal, BKPM*). The board was given discretionary authority to approve both foreign and domestic investment. BKPM published an annual Priority Investment List that detailed the economic sectors in which investment was allowed, for both domestic and foreign investors. The number of industries that were closed to foreign investors continuously increased during this import-substitution period.

Despite the inward orientation of the industrial strategy, some reforms were introduced in the early 1980s in response to falling oil and commodity prices. Exchange rate devaluation and banking sector deregulation were undertaken. The latter included removal of the interest rate ceiling, the credit ceiling and a reduction in liquidity credits. Apart from the macroeconomic and financial sector reforms, the government also introduced tax and trade reforms during this period.

Two other major trade reforms were undertaken in 1985. The first was the rationalisation of tariffs, in the form of an across-the-board reduction in the range and level of nominal tariffs. The range of tariffs was reduced from an initial 0-225 % to 0-60 %, with most tariffs ranging from 5-35 %. The second reform was the improvement

of customs and port procedures. All operations relating to import and export goods by the customs department were handed over to private companies.

The continuing threat of falling oil prices between 1982 and 1986 forced the government to initiate an export promotion policy objective. The government reacted quickly by devaluating the Rupiah by a massive 45 per cent in 1983, while at the same time controlling inflation using monetary and fiscal policies. In addition, a series of deregulation packages aiming to liberalise trade and investment regimes, and the financial sector, were introduced.

For trade liberalisation, bold measures were taken to reduce the export bias. Included in these were measures to reduce the costs of exports and to increase the flow of investment. In May 1986, a new and improved duty drawback scheme was introduced. Unlike the old system, this scheme allowed exporters to source imported input at international prices and exempted them from all duties and regulation on imported inputs. Moreover, the scheme also allowed exporters to import directly without having to deal with import licensing.

The measures to reduce protection included the reduction of the general level of tariffs and the removal of many NTBs. These were undertaken in a series of deregulation packages from 1987 to 1997 before the 1997/98 crisis. The NTB removal was done by transforming them to equivalent tariffs and export taxes. One example was the removal of the import monopoly on plastics. Before the reform, the right to import plastic raw materials had been awarded to a single government trading company, which then appointed a sole agent from a well-connected group. All of the imports had to be undertaken by the agent, who charged a fee and took a longer time to deliver the goods than would have happened if they had been imported directly.

Concerning the liberalisation in the investment regime, equity restriction and divestment rules were gradually removed in a series of deregulations between 1986 and 1995.

As noted by some (e.g. Hill 1996; Pangestu 1996), policy governing foreign direct investment (FDI) before mid 1980s was very restricted, reflecting the conflict between establishing foreign links to accelerate industrialisation and some possible 'foreign domination' resulting from such links. Essentially, the perception at that time was foreign investment supplements domestic investment. All these were translated into

some restrictive provisions in laws and/or regulations governing direct investment before mid 1980s, and these are reflected in the following characteristics of multinational operation during that time (Pangestu 1996):

i. Multinationals operation are restricted in only some sectors of the economy;
ii. Multinationals are subject to many operating licences and strictly controlled in accessing domestic capital market;
iii. Multinationals are not entitled to benefit of the government incentive programs;
iv. Multinationals are subject to some specific regulations in regard to minimum capital requirement, minimum share of domestic ownership, and eventual transfer of the foreign share of the investment to domestic investors (i.e., the 'phasing-out provision').[4]

As results of the restrictive policy approach, Indonesia had become substantially less competitive than its neighbouring countries for hosting multinationals.

Significant reforms were undertaken between 1992 and 1994 to respond to the perceived decline in the investment climate in Indonesia (Pangestu 1996). Several policy changes were important during this period. Firstly, the obligation for foreign firms to establish joint ventures with Indonesian partners was relaxed. In particular, joint venture with a maximum of 95 percent of foreign ownership was allowed, which had not been the case earlier. In addition, and more importantly, the government also allowed 100 percent of foreign ownership albeit this is only applied to only nine public sectors which are now opened for foreign investment. Secondly, the minimum capital for foreign investment was reduced from about $1 million to $250,000 in 1992 and finally removed in 1994. Thirdly, the government finally opened up nine sectors which had previously been closed for foreign investment, which are ports, electricity generation, telecommunications, shipping, air transport, drinking water, railway, automatic generation plants, and mass media.

[4] As stated in Pangestu (1996), the minimum capital requirement for FDI was set to be $1 million based on the 1967 Investment Law. Meanwhile, the phasing-out provision, as defined in the Law, requires that foreign investors must transfer their shares to Indonesian investors in a certain period of time after a (generally 30 years), otherwise the company is subject to mandatory liquidation.

Fourthly, the obligation to divest the majority of capital over a certain period of time was substantially relaxed. The divestment rule for a joint-venture with at least 5 percent domestic ownership is not longer mandatory, and the divestment decision is left to shareholders. Meanwhile, for companies with 100 percent of foreign ownership, there is still phasing-out provision, but it is relaxed significantly, and that is, the amount of the divested investment is not officially ruled and left to the investors' decision. Lastly, the provision governing the foreign investment license was made greatly less restrictive. The 30-years of license is now automatically be renewed as long as the Investment Board acknowledges that the investment brings positive benefit for the economic development in general. Earlier, under the 1967 Investment Law, the 30-years license is non-renewable, and at the end of 30-years limit, foreign ownership must all be transferred to domestic investors, or else the company will be mandatory liquidated.

The government introduced a major financial sector reform in 1988, which principally removed entry restrictions for new banks. Foreign banks could enter Indonesia as joint ventures, with equity up to 85 % and without any product or geographical restrictions. As a result of this reform, the banking sector boomed and funds available to firms were greatly increased.

Although economic reforms supporting export orientation were the dominant feature of policy changes between 1985 and 1995, there were remaining regulations that preserved the protectionist industrial policy. Some sectors remained closed to foreign investors and untouched by the reforms. In terms of NTBs, some industries continued to be assisted by restrictive licensing, administratively determined local-content requirements, restrictive marketing arrangements and export taxes (WTO 1998).

3. Plant Entry over the Period 1993-96

3.1. Key Hypothesis

This section attempts to gauge the impact of the policy reforms described in the previous section on the extent of plant entry over the 1993-96 period. Before presenting

the description, it is useful to seek some guidance from theory on the likely impact of the policy reforms.

Theory, unfortunately, does not give a clear-cut prediction of this impact. On the one hand, the change towards a more open trade and investment regime could increase plant/firm entry, and this is for the reason of the profit expected by potential entrants. The classical firm entry model of Orr (1974) postulates that entry occurs as long as there is a positive difference between the expected – or short-run – profits and the long-run – or competitive-level – profits.

On the other hand, a more open trade and investment regime could deter entry. This prediction comes, however, as a potential 'second-round' effect of the increased extent of entry due to an exposure of the expected profits of the potential entrants. The rationale for this entry-deterrence effect comes from theories on the relationship between collusive behaviour and business cycles. These are, in particular, the models put forwards Rotemberg and Saloner (1986) and Rotemberg and Woodford (1992), which hypothesise that the likelihood of collusion break-down is small when demand is low. The firm that lowers its price relative to another is not likely to capture a large portion of the market since the market price has already been lowered. Meanwhile, "punishment" from the deviation could be large if the demand resumes to its normal state. The benefit from deviating may be exceeded by its costs. Thus, based on these models, because expected profits would be likely to attract entry, the incumbents should predict a fall in demand – since the entry increases the number of firms in the industry – and when this happens, incumbents could increase the extent of their collusive behaviour, hence deterring entry.

3.2. Data and Measurement of Entry

The main data are drawn from the annual manufacturing surveys of medium- and large-scale establishments (*Statistik Industry*, or SI) from 1992 to 1996. The surveys are undertaken by the Indonesian Statistics Agency (*Badan Pusat Statistik*, or BPS) and the establishments are defined as those with 20 or more employees. The data cover a wide range of information on the establishments, including some basic information (ISIC classification, year of starting production, location), ownership (share of foreign, domestic and government), production (gross output, stocks, capacity utilisation, share

of output exported), material costs and various type of expenses, labour (head-count and salary and wages), capital stock and investment, and sources of investment funds.

The sample consists of 72 manufacturing industries at the four-digit level. The number of industries is smaller than the number of industries available in the data base. Oil and gas industries (ISIC 353 and 354) were dropped because they are largely monopoly state-owned companies. Some other industries were also dropped because of the difficulty in matching the ISIC code with SITC (the classification used in trade statistics) and because of the unavailability of average tariff rates. Despite these eliminations, the sample still represents a large variety of industries in Indonesian manufacturing.

It is worth mentioning here that in its first draft, this study considered the other period of data, namely the period post the 1997/98 economic crisis. The inclusion of this period should have been very useful in the context of this study, owing to the accelerated trade and investment reforms during the crisis period (1997-2000). A close examination of the data for this period, as well as many econometric experiments using the period's data, however, revealed a major weakness of the data, which results in unreliable results. The examination indicates that the number of observations (i.e., plants) for the period is significantly under-enumerated, resulting in a continuously declining plant entry rate over the period 2001-05. While the declining entry could reflect the real-world situation (i.e., plant entry does not seem to recover post the crisis), it could also be the result of statistical error, in the form of under numerated observations. The latter seems to have some support based on the most recent data published by BPS, the SI data of 2006, whereby the number of plants enumerated in this data set jump by about 30 per cent of the average number of the plants over the 2001-05 period. Because the 2006 data were only very recently available to the author, the assessment of the data, and, therefore, the assessment of the entry for the post crisis period are not covered in this study.

As commonly adopted in other research (e.g. Davis et al. 1996), this study defines entry rate in terms of the number of plants and employment. The entry rate in terms of number of plants is labelled as $EN1$, while the entry rate in terms of employment is labelled as $EN2$. $EN1$ for industry j between t and $t-1$ is defined as

$$EN1_{j,t} = \frac{NEP_{j,t}}{NTP_{j,t-1}} \ ,$$

where: $NEP_{j,t}$ = total number of plants that enter industry j between t and $t-1$,

$NTP_{j,t-1}$ = total number of plants in industry j in year $t-1$.

EN2 for industry *j* between t and *t*-1 is defined as

$$EN2_{j,t} = \frac{EMPL\_EN_{j,t}}{EMPL\_T_{j,t-1}} \ ,$$

where: $EMPL\_EN_{j,t}$ = total employment of plants that enter industry j between t and $t-1$,

$EMPL\_T_{j,t-1}$ = total employment of plants in industry j in $t-1$.

As applied in some other studies, this study also includes the measurement of entry in terms of output, as another alternative measure of entry in addition to measurement in terms of employment. Entry rate in terms of output is labelled as *EN3*, for industry j between t and $t-1$, it is defined as

$$EN3_{j,t} = \frac{VA\_EN_{j,t}}{VA\_T_{j,t-1}} \ ,$$

where: $VA\_EN_{j,t}$ = total value added of plants that enter industry j between t and $t-1$

$VA\_T_{j,t-1}$ = total value added of plants in industry j in year $t-1$

Here, plants' value added is adopted as the basis for computing the entrants' output, instead of plants' output. This approach is adopted to avoid the 'double-counting' issue in computing output at aggregated industry level.

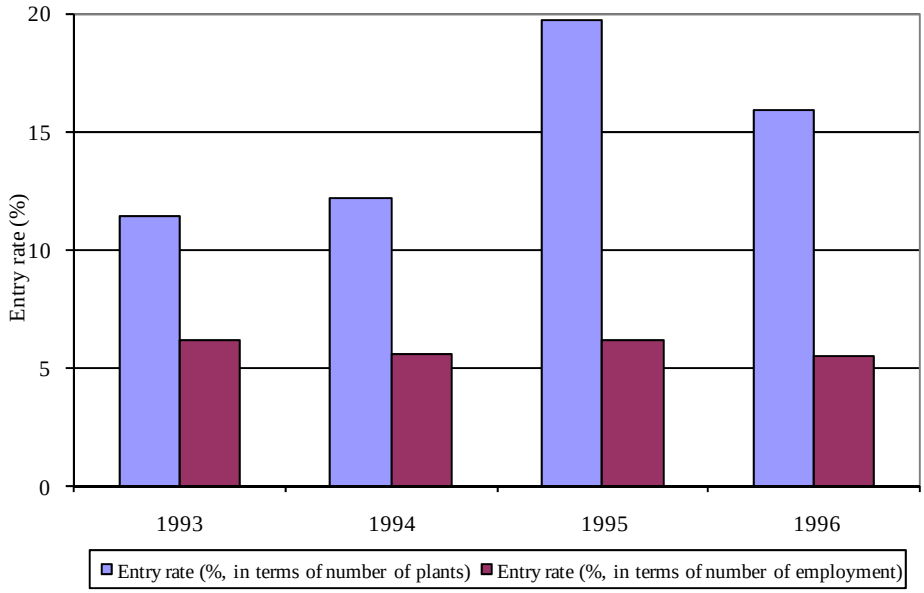
There are different types of entry. Within the entry category, entry can occur through acquisition of the established production units or creation of new ones

(greenfield entry). There is a substantial difference in the effect of these types of entry. A greenfield entry affects industry's supply directly and immediately, while it is not clear whether or not the effects of acquisition entry are immediate (Baldwin 1998). This difference would, ideally, lead to separation of the analysis according to each type of entry. The separation, however, cannot be done, because the information needed (i.e. the reasons for firms entry and exit) is unavailable. Consequently, this study assumes that the entry is greenfield entry.

3.3. The Impact of the Trade and Investment Reforms on Plant Entry over the Period 1993-96

Figures 1 shows the extent of plant entry in terms of number of plants and employment, respectively. It seems to suggest a positive impact on the extent of plant entry resulting from the trade and investment policy reforms undertaken by the government during the 1980s and early 1990s. The entry rate (EN1) increased substantially over the four years from 1993; as described in Section 2, the early 1990s was the period when the government implemented bold liberalisation measures on the trade and investment policy front. The entry rate peaked in 1995, and it was very high, reaching almost about 20 %, which was about twice the rate in 1993.

Figure 1. Entry Rate in the Indonesian Manufacturing (%), 1993-96



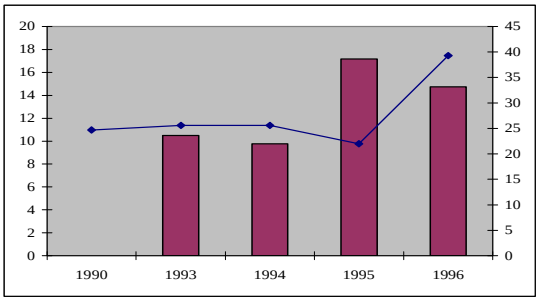
A quite different picture, however, is shown when the entry rate is measured in terms of employment, and that is, that the extent of entry had moved up and down over the period. It declined in 1994, increased in 1995, but declined again in 1996. Therefore, the indication from Figure 1 of a positive impact does not seem to have been quite robust.

It is worth mentioning here that the difference between EN1 and EN2 is quite high. This indicates that many of the entries over this period were of relatively small plants. While this indication might not be favourable in terms of industrialisation – because large plants tend to perform better than smaller ones, due to the advantage arising from economies of scale – it is consistent with the general characteristics of entry drawn from empirical studies of entry in other countries.

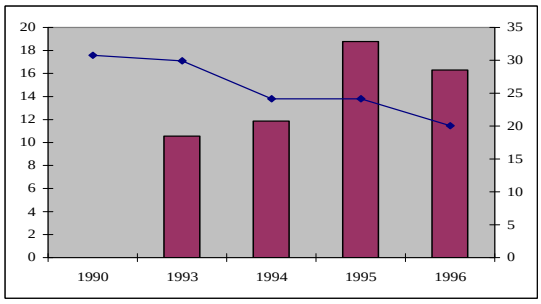
Figure 2 (a) to (h), which show the entry rate (in terms of number of plants) for the period by broad industry group, and the trend in the nominal tariff rate over the 1990-96 period, provide a more detailed picture of the effect of the reforms on the extent of plant entry. Here, as the key observation, however, the comparison of the rate of entry and the tariff rate over the period, and across the groups, , does not seem to show a consistent picture of the impact, i.e., whether it is positive or negative. Looking at the comparison for the industry group of ISIC 32, 33, 34, and 35 (i.e., textile-garments, wood products, paper products, and chemical products, respectively), the policy reforms are suggested to have increased plant entry, and hence indicate a positive impact. The declining trend in the tariff rate is accompanied by a pattern of increasing entry for these industries.

Figure 2. Entry Rate (in terms of Number of Plants) in the Indonesian Manufacturing and Nominal Tariff Rate by Broad Industry Group, 1993-96

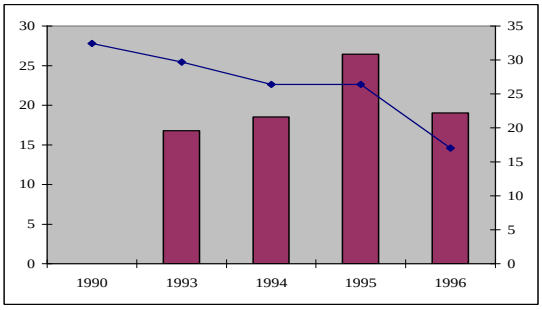
a. ISIC 31 Food and beverages



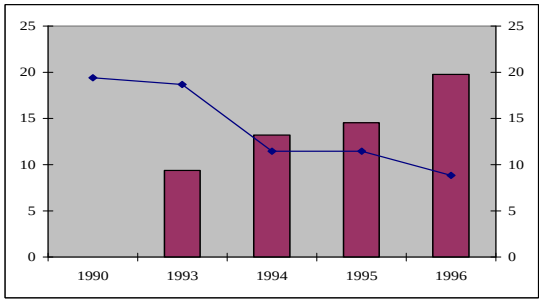
b. ISIC 32 Textiles and garments



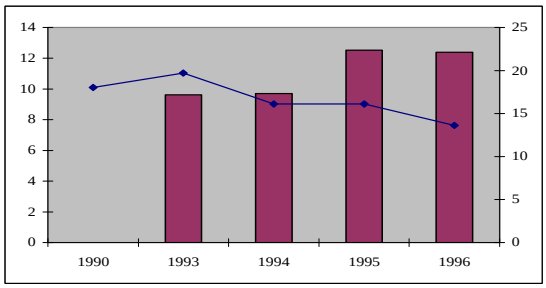
c. ISIC 33 Wood products



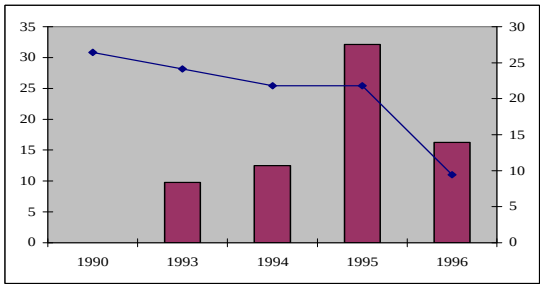
d. ISIC 34 Paper products



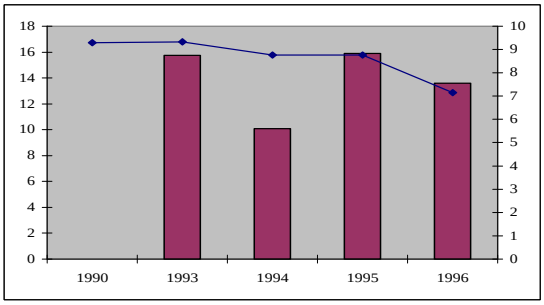
e. ISIC 35 Chemical, rubber, and plastics



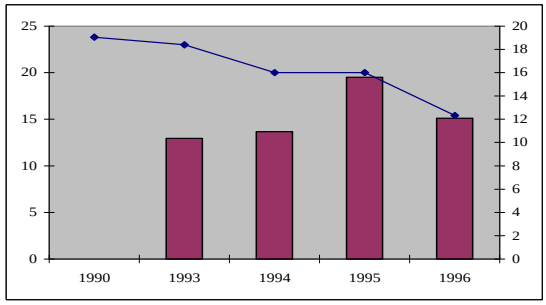
f. ISIC 36 Non-metallic minerals



g. ISIC 37 Basic metal



h. ISIC 38 Machinery and transport equipment



Legend:
: Entry rate (%, in terms of number of plants)
: Nominal tariff rate (%, simple average)
X-axis (left) : Entry rate
X-axis (right) : Nominal tariff rate
Y-axis : Year

In contrast, the comparison for the industry group of ISIC 36, 37, and 38 (i.e., non-metallic minerals, basic metal, and machinery-and-transport equipment, respectively) suggests that the reforms deterred entry, and hence indicate a negative impact. For these industries, the declining trend in the tariff rate is matched by either declining or relatively low entry rate.

All in all, the description above indicates that indeed the reforms create some impact on the extent of plant entry, and this is recorded in the period covered by this study. The description, however, clearly shows a varying impact, particularly in terms of the direction of the impact (i.e., whether it is a positive or negative impact). Another variable impact is in terms of the magnitude. In other words, there is no robust answer on how the reforms affected plant entry.

Given the varying impact, few immediate questions can be asked. These include, for example, did the reform really have some impact on the entry? If indeed the reforms played some role in shaping plant entry in the period, in which direction were these reforms really affecting the entry rate? Were they increasing, or decreasing the entry rate? Equally important is the question of what other factors shaped the dynamics and variation of entry across industries in the period. This question assumes the importance of the other factors in determining entry, as suggested by the literature.

In an attempt to find some answer to these questions, this study proceeds with an econometric exercise that gauges the determinants of entry over the period 1993-96. To facilitate the search for answers, some variables that can be associated with the policy reform variables are included in the exercise.

4. Some Theoretical Considerations

To facilitate the rest of the empirical analysis, this subsection briefly reviews the theoretical framework that explains firm entry.

4.1. Prevailing Views about Firm Entry

There are two major approaches to the analysis of the determinants of entry. These are the limit-price model and the stochastic-replacement process.

4.1.1. Limit Price Model

This approach assumes entry is an equilibrating process which is attracted by, and serves to bid away, the excess profit. Entry is hypothesised to occur whenever the expected post-entry profit exceeds the level of profit in the long run. The approach adopts the concept of a limit-price model (Bain 1949), which posits that there exists a limit price which is low enough for incumbents to be able to deter entry.

The extent to which the limit price deters entry is determined by two factors, namely the size of the market and the entrant's average costs curve. The latter gives rise to a cost advantage for incumbents over new entrants who may have to pay a substantial fixed entry cost. This implies the average cost curves of entrants and incumbents are not the same. According to Bain (1956), the cost advantages of incumbents over entrants are determined mainly by economies of scale, product differentiation and some absolute cost advantages

.

4.1.2. Stochastic Replacement View

This approach considers entry as a stochastic process which does not necessarily respond to profit and may occur even if price equals marginal cost (Baldwin and Gorecki 1987). Baldwin and Gorecki argue two situations in which profit is irrelevant to the entry process. The first is related to how easily entrants can enter and capture a market share. This is governed by market demand growth. In a growing market, additional firms entering the market are unlikely to depress the market price. Hence incumbents are less threatened by entrants and are therefore less likely to act aggressively. The second is a situation where entrants simply replace some existing firms, even when long run profits are zero.

4.2. Interdependence between Entry and Exit[5]

As in the limit price approach, entry takes place when profit is positive. Accordingly, exit should occur when profit is negative and entry andexit are expected to be negatively correlated. In contrast, several studies found the correlation to be positive (e.g. Dunne et al. 1988; Dunne and Roberts 1991; Austin and Rosenbaum 1991; Lay 2003). For example, Dunne and Roberts found that entry and exit are positively correlated with the price-cost margin for US manufacturing, implying that higher profit encourages both entry and exit. Lay documented that the correlation coefficient of instantaneous entry and exit for Taiwan manufacturing was positive and relatively high (about 0.5).

The literature records several explanations for the positive correlation, often termed as "interdependence". Geroski (1995) argues that entry and exit seem to be part of an evolutionary process in which a large number of new firms displace a large number of existing firms without much changing the total number of firms in an industry. This argument is similar to the 'stochastic-replacement' view of entry (Baldwin and Gorecki 1987) which posits that entry can still be expected even when industry's profitability is zero. Entry in this view simply replaces some existing firms.

Shapiro and Khemani (1987) offer two reasons for the interdependence. First, to the extent that cost heterogeneity exists, there might be some high-cost incumbents who can be displaced by low-cost entrants. Second, to the extent that barriers to entry are also barriers to exit (Caves and Porter 1976; Eaton and Lipsey 1980), potential displacement is limited and incumbents are deterred from exiting. The symmetrical relationship between entry and exit barriers arises from investments with sunk cost characteristics (i.e. investment in durable and specific assets). Sunk cost creates barriers to entry because it represents a higher opportunity cost that has to be met by entrants, and higher risk owing to the large losses associated with unsuccessful entry. At the same time, sunk cost also creates barriers to exit because incumbents are limited by inability to divest, owing to the non-recoverable nature of the assets (Shapiro and Khemani 1987, p.16).

[5] A useful review of the interdependence is provided by Fotopoulus and Spence (1998).

Shapiro and Khemani's displacement effect implies that entry is responsible for exit. Fotopoulus and Spence (1998) consider that the process could be the other way around. That is, exit creates room for new entry. If the two directions hold, entry and exit are causally related and the interdependence may be due to some 'displacement-replacement' effect.

5. Model Specification and Hypotheses

5.1. Model Specification

This study follows a specification of entry model similar to those in the literature. An exit model is also specified for the reason that entry and exit might be causally related, as discussed in the previous section. Ignoring industry and time subscripts, these are

$$EN = f_1(X_1, Y_1, Z_1, REPL) \quad (1)$$

$$EX = f_2(X_2, Y_2, Z_2, DISP) \quad (2)$$

where EN (EX) is entry (exit) rate, X_1 (X_2) is a vector of incentives for entry (exit), Y_1 (Y_2) is a vector of entry (exit) barriers, Z_1 (Z_2) is a vector of other relevant variables, $REPL$ is replacement entry and $DISP$ is displacement entry. $DISP$ and $REPL$ are included to represent displacement and replacement behaviour, respectively.

As is commonly done in the literature, $REPL$ and $DISP$ are assumed to be a function of exit and entry, respectively. Thus, equations (1) and (2) can be expressed as

$$EN = f_1(X_1, Y_1, Z_1, EX) \quad (3)$$

$$EX = f_2(X_2, Y_2, Z_2, EN) \quad (4)$$

Having specified displacement and replacement behaviour, the discussion now turns to the specification of other vectors. Consider, first, X_1. The specification of X_1 is derived from Orr's (1974) model, which posits that entry (E) is expected to occur whenever expected post entry profits (π^e) are above the entry-precluding level (π^*).

The entry-precluding level refers to profits which would be earned by incumbents in the long-run after all entry has ceased. Orr's model is

$$E = f(\pi^e - \pi^*) \qquad (5)$$

Adopting the concept of a limit-price model (Bain 1949 and 1956), Orr assumes π^* depends on a vector of entry barriers (ENB) and market risk (R), that is

$$\pi^* = f(ENB, R) \qquad (6)$$

Substituting (6) into (5), Orr's model becomes

$$E = f(\pi^e, ENB, R) \qquad (7)$$

To incorporate the stochastic replacement view of entry, industry growth (GR) is added to equation (7).[6] So that it becomes

$$E = f(\pi^e, GR, ENB, R) \qquad (8)$$

This study uses pre-entry profitability to proxy π^e and price-cost margin to proxy profitability (PCM_{t-1}). Market risk is proxied by the variability in industry profitability, defined as the standard deviation of PCM ($SDPCM$). Following Shapiro and Khemani (1987), GR is deflated by the minimum efficient scale (MES) to reflect a situation that there must be sufficient growth to justify additional capacity in an industry. The deflation is defined as $ROOM$ variable.

The use of pre-entry profitability as a proxy for π^e has been the usual procedure in empirical studies. However, the procedure is unlikely to proxy π^e properly. The (naïve) entrants neglect the effect their entry may have on profits because profitability between post- and pre-entry is assumed to be the same (Geroski 1991). Moreover, employing the naïve expectation may open up the possibility for incumbents to manipulate pre-entry profit and hence could discourage entry. An alternative approach is to assume that entrants form rational expectations to make the entry decision. The

[6] Baldwin and Gorecki (1987) introduced market size to capture replacement entry. This study does not follow this approach since replacement entry has been assumed to depend on exit.

rational expectation assumption leads to the procedure of forecasting profit based on an autoregressive model of profit. Several studies, e.g. Highfield and Smiley (1987) and Jeong and Masson (1991), provide evidence that using forecasted profits performed better than pre-entry profits. Although the alternative approach is more reasonable, it is not possible in this study because there are not enough time-series observations in the data base.

Two variables are included to represent barriers to entry: economies of scale (ES) and capital requirement (KR). Economies of scale acts as an entry barrier if industry output accounted for by minimum efficient scale (MES) constitutes a significant part of the quantity demanded at a competitive price. Potential entrants could enter on a large scale but would trigger retaliation by incumbents. Capital requirement is included to capture the extent of cost disadvantages faced by entrants. According to Bain (1956), borrowers' lack of information about potential entrants provides incumbents with an absolute cost advantage over entrants, which results in difficulties for entrants in raising investment funds.

Seller concentration is included in Y_1 to capture the strategic deterrence actions by incumbents. These are likely to occur in the post-entry period. Examples of these actions include predatory pricing, aggressive advertising campaigns and credible threats to compete hard against new rivals (Evans and Siegfried 1992). However, seller concentration may also attract entry. It facilitates collusion that in turn provides a higher survival chance given that entry has occurred. Chamberlin's (1933) model predicts that once concentration levels reach a certain point, oligopolies recognise their interdependence and that together they produce a monopoly output for the market.

The specification of vector X_2 in equation (4) follows earlier empirical work on the determinants of exit (e.g Deutsch 1984; MacDonald 1986; Shapiro and Khemani 1987; Flynn 1990; Doi 1999) and is similar to that of vector X_1 and Y_1 in the entry equation.

According to models of firm bankruptcy (e.g. Schary 1991), a firm decision to shut down depends on a short-term cash flow problem and assessment of long term prospects. Therefore, profitability (PCM) and industry growth (GR) are included in X2.

As noted earlier, exit barriers arise from sunk costs. The relationship between sunk costs and the probability of exit relates to the 'duration' view of sunk costs (Rosenbaum

and Lamort 1992, p.299). That is, a longer production time is needed to recover sufficient returns from investment as the resale value of the non-recoverable assets cannot be added to the stream of income generated by these assets. The implication is that firms with high sunk-capital costs are forced to stay in an industry longer than firms with low sunk-capital costs.

Therefore, the ideal proxies for exit barriers are those that can represent the extent of sunk costs. The strategy commonly applied in empirical studies is to create some proxies based on characteristic sunk costs, which are durability and specificity in assets. The only problem here is that it is often difficult to obtain such proxies as a result of the specificity characteristics. Despite this, Caves and Porter (1976, p.44) argue that each source of entry barrier identified by Bain can also be erected as a barrier to exit. In this argument, the durability and specificity of assets can to some extent be captured by Bain's entry barriers. For example, it is often argued that incumbents must have some resources which are at least temporarily specific to allow them to create some cost advantages over potential entrants. Otherwise, potential entrants could easily duplicate the resources and enter. Following Caves and Porter, Y_2 is specified to be identical to barriers to entry.

$CR4$ is also included in Y_2. Seller concentration facilitates collusion, which could increase the probability of survival and hence may discourage exit. Despite this, low exit rates in highly concentrated industries may also be possible simply because firms are likely to be the established firms (Flynn 1990).

Vectors Z_1 and Z_2 are specified to include variables related to trade and international competition. The first is foreign ownership (FOR). The impact of concentration of foreign ownership on entry is ambiguous. On the one hand, it could discourage entry, for the reason that foreign firms are usually large, and therefore, they tend to have economies of scale in their production, which raises some barriers to entry into the industry. Moreover, a strong chance of survival for foreign firms in the presence of economic shocks, vis-à-vis domestic firms, implies a greater likelihood that foreign firms will stay in the industry in the event of an economic shock. This, in turn, suggests a negative relationship to entry. On the other hand, high concentration of foreign ownership in an industry could also encourage entry, and this could simply be

due to the signalling effect activities "must" be highly profitable in an industry with such a high foreign ownership concentration.

The second variable is export orientation (EXP). The greater profit opportunities provided by the export market are likely to attract entry and hinder exit. In contrast, a higher degree of export orientation could also discourage entry and encourage exit, because it signals a greater intensity of competition in the industry. Nevertheless, the pressure for higher exit is likely to be weak since established firms must have paid substantial costs for participating in export markets.

This study includes import penetration (IMP) and trade protection ($TARIFF$) to represent the effect of international competition on entry. At the same time, these variables also represent the variables that are related to, or can be associated with, the reforms which are the focus of this study. It is often argued that greater trade protection tends to facilitate non-competitive behaviour, such as collusion, and protects less efficient firms. Therefore, incumbents in a protected industry could collude and deter entry. However, entry could also be encouraged because the trade protection which allows incumbents to behave non-competitively could also be a more important incentive than the profit incentive.

Meanwhile, the effect of import competition on entry and exit is ambiguous. Higher import competition could be expected to reduce entry unless it widens the domestic market. However, it could also encourage exit as more firms increase competition and reduce the survivability of incumbents.

The other variables considered in the model aim at capturing the industry factor-intensity (FI) effect. It could be predicted that the extent of entry should be higher in the industries where the country has some comparative advantage . In this study, a set of dummy variables representing industry factor intensity is considered, and these are the dummy for labour-intensive industries, resource-based but labour-intensive industries, resource-based but capital-intensive industries, and footloose capital-intensive industries.

To sum up, the entry and exit equations can be specified as follows

$$EN = f(PCM, ROOM, SDPCM, ES, KR, CR4, FOR, EXP, IMP, TARIFF, FI, EX) \quad (9)$$

$$EX = f(PCM, GR, ES, KR, CR4, FOR, EXP, IMP, TARIFF, FI, EN) \quad (10)$$

The definition of the variables in these equations is given in the next section.

5.2. Hypotheses

The following paragraphs present the hypotheses to be tested in the econometric exercise, based on the theoretical discussion of the previous sections.

5.2.1. Trade Protection and Import Competition

This is the key hypotheses to be tested. Based on the brief theoretical discussion in Section 3.1, the effect of trade protection (*TARIFF*) in attracting entry might not have been clear. It could have increased entry, for the reason that lowered tariff and other international trade barriers reveal the positive expected profits for potential entrants. Lowered tariff protection, however, could have also deterred entry. As discussed, the threat from potential entrants could increase the extent of collusive behaviour, which in turn could increase the strength of entry barriers. This reasoning also suggests that higher import competition (*IMP*) could have been negatively related to entry – higher competition from imports could trigger or increase the extent of collusive behaviour, hence raising the entry barriers.

5.2.2. Symmetrical Relationship between Entry and Exit

The symmetrical relationship between entry and exit might hold. This is because, for any potential entrant, the opportunity cost for any new investment is likely to have been relatively low during the period. As noted, there was a bold banking sector deregulation that increased the role of financial intermediaries in the sector. In addition, the period covered by the study was a rapidly growing period in the Indonesian economy, and, therefore, there should be a favourable profitability for doing business in this period. Meanwhile, for the established firms, the role of sunk costs as exit barriers may not have been very important, since many firms were unlikely to find themselves in depressing situations during this period.

5.2.3. Displacement and Replacement Entry

Displacement entry should not have been more important. This is because favourable economic conditions tend to shelter the inefficient firms, helping them to

survive. This situation therefore reduces the opportunity for low-cost potential entrants to enter and successfully compete with the incumbents.

5.2.4. Demand Situation

In theory, profitability (*PCM*) and market growth (*ROOM*) are expected to have been important in attracting entry. Even so, they may not have been vitally important. In a developing country like Indonesia, a situation that creates the expectation of a stable profit – instead of the expected profit itself – could have been the determining factor. It is often argued in the literature that the existence of imperfect markets, low levels of competition, and trade protection are the major source of this situation. Given these contrasting arguments, there could have also been the conflicting effect of market risk (*SDPCM*) in determining entry.

5.2.5. Entry Barriers

According to the limit-price model, economies of scale (*ES*) and capital requirements (*KR*) should be negatively related to entry.

Meanwhile, the effect of strategic entry deterrence behaviour, proxied by $CR4$, is difficult to predict a priori. Strategic behaviour might have been positively related to entry (i.e. it encouraged entry), for the reason that retaliatory behaviour is unlikely to occur when demand is growing, which was the situation for the period covered by this study.

However, as discussed earlier, there are models that predict that the probability of collusion is lower in a high demand situation (e.g. Rotemberg and Saloner 1986; Rotemberg and Woodford 1992). This implies that the effect of industry concentration can be expected to have been negative.

5.2.6. Foreign Ownership

The effect of foreign ownership (*FOR*) is also difficult to predict a priori. As noted, the economies of scale effect raised by high concentrations of foreign ownership suggests a negative relationship, but the signal of a profitable industry that the high concentration provides could also result in a positive relationship.

5.2.7. Export Orientation[7]

Export orientation (*EXP*) is expected to have strongly attracted entry. The reasoning is clear, and that is that higher export orientation provides higher expected profitability. Export orientation, however, could also imply a higher competitive threat from firms in the global economy, and this could in contrast lower the expected profitability. The effect of export orientation, therefore, could have also been negative.

5.2.8. Factor Intensity

Given the comparative advantage that Indonesia has, labour-intensive industries are predicted to encourage more entry than any other industry, particularly the capital-intensive industries.

6. Methodology

6.1. Statistical Framework

Equations (9) and (10) form the basic equations to be estimated. Before outlining the estimating equations, it is important to discuss several relevant issues.

First, the literature does not clearly indicate whether EX in the entry equation or EN in the exit equation should enter as current or lagged variables. Several studies, e.g. Austin and Rosenbaum (1991), Evans and Siegfried (1992) and Fotopoulus and Spence (1998), specified EX and EN as their current variables. In other words, EX and EN are assumed to be endogenous in entry and exit equations, respectively. Other studies, such as Sluewagen and Dehandschutter (1991) and Lay (2003), specified EX and EN as their lagged variables, treating them as weakly exogenous variables.[8] Because the literature is silent on which approach is more appropriate, this study experimented with both.

[7] The inclusion of foreign ownership and factor intensity as two determinants of entry were motivated and suggested by a participant in the workshop of this research project.

[8] In one of their specifications Shapiro and Khemani (1987) include the lagged exit in the entry equation but include the current entry in the exit equation, rendering equations (3) and (4) a recursive system model.

Secondly, it might not be reasonable to assume the effect of profitability and growth in the entry equation is exactly mirrored in the exit equation. Following previous studies, *ROOM* is assumed to have one lag structure in the entry equation while *PCM* and *GR* are assumed to have no lags in the exit equation.[9] This approach follows Shapiro and Khemani (1987), who assume that exit responds more quickly to profit and growth than entry. However, the approach does not mean the exit process is instantaneous. Shapiro and Khemani were aware that there are lags between the time when exit is considered and when it actually occurs. The assumption simply tries to capture the idea that entry is likely to be a better-prepared action than exit.

The third issue relates to the specification of entry and exit barriers. Certain types of barriers are likely to be omitted from the regression based on equations (9) and (10). For example, Geroski (1991) noted it is difficult to measure the control of incumbents over some strategic resources. Further, and as noted, specificity implied by sunk cost suggests many exit barriers are unlikely to be captured in the structural variables in the equations. To solve this problem, fixed effects – in the form of industry dummy variables – are introduced into equations (9) and (10) to capture the unobserved entry and exit barriers. This introduction is justified because entry and exit barriers tend to be constant over time, at least in the short and medium term.

This study assumes all structural variables are exogenous. To secure this assumption, lagged values are used instead of current ones.

Finally, as entry and exit are measured in relative terms (i.e. proportion), the dependent variables in theory and practice are bounded between zero and one. Therefore, it is reasonable to assume that the sample is not drawn from a normal distribution and this may lead to bias and inconsistent least square estimates. To solve this problem, logistic transformation on the dependent variables was carried out. With EN and EX (entry and exit rates) as the observed variables, the transformations are

$$EN' = \ln(EN/1-EN) \text{ and}$$
$$EX' = \ln(EX/1-EX),$$

[9] Rosenbaum and Lamort (1992) also adopt a similar approach.

where EN' and EX' are the logistic transformation of EN and EX, respectively. These transformations allow the dependent variables in the regression to be drawn from a normal distribution and the estimations by a least squares approach.

While useful, this transformation approach has two limitations (Wooldridge 2002, p.662). First, it cannot be used when EN and EX take the boundary values of either zero or one. As is commonly done in other cases, this study manipulated the boundary values by substituting the value zero with 0.1111 and value one with 0.9999. The data manipulation is a common approach adopted both in general empirical studies (Wooldridge, 2002) and studies on firm entry (e.g. Khemani and Shapiro 1986; Mata 1993).

The second limitation is that the parameters are difficult to interpret. According to Papke and Wooldridge (1996), further assumptions on the distribution of errors are needed to obtain the expected value of dependent variable conditional on the explanatory variables and, even with these assumptions, it is still non-trivial to obtain the expected value. Notwithstanding this limitation, this study proceeds with the transformation approach, because the focus here is on the change in the effect of the explanatory variables between two periods of time rather than on the magnitude of the effect.

The discussion has established two pairs of estimating entry and exit equations, specified as follows:

Model I:

$$\begin{aligned} EN'_{j,t} = {} & \alpha_1 PCM_{j,t-1} + \alpha_2 ROOM_{j,t-1} + \alpha_3 SDPCM_{j,t-1} + \alpha_4 ES_{j,t-1} + \alpha_5 KR_{j,t-1} + \\ & \alpha_6 CR4_{j,t-1} + \alpha_7 EXP_{j,t-1} + \alpha_8 IMP_{j,t-1} + \alpha_9 TARIFF_{j,t-1} + \\ & \alpha_{10} EX_{j,t-1} + \alpha_j + \mu_{j,t} \end{aligned} \tag{11}$$

$$\begin{aligned} EX'_{j,t} = {} & \beta_1 PCM_{j,t} + \beta_2 GR_{j,t} + \beta_3 ES_{j,t-1} + \beta_4 KR_{j,t-1} + \beta_5 CR4_{j,t-1} + \beta_6 EXP_{j,t-1} + \\ & \beta_7 IMP_{j,t-1} + \beta_8 TARIFF_{j,t-1} + \beta_9 EN_{j,t-1} + \beta_j + \varepsilon_{j,t} \end{aligned} \tag{12}$$

Model II:

$$\begin{aligned} EN'_{j,t} = {} & \alpha_1 PCM_{j,t-1} + \alpha_2 ROOM_{j,t-1} + \alpha_3 SDPCM_{j,t-1} + \alpha_4 ES_{j,t-1} + \alpha_5 KR_{j,t-1} + \\ & \alpha_6 CR4_{j,t-1} + \alpha_7 EXP_{j,t-1} + \alpha_8 IMP_{j,t-1} + \alpha_9 TARIFF_{j,t-1} + \\ & \alpha_{10} EX_{j,t} + \alpha_j + \mu_{j,t} \end{aligned} \tag{13}$$

$$EX'_{j,t} = \beta_1 PCM_{j,t} + \beta_2 GR_{j,t} + \beta_3 ES_{j,t-1} + \beta_4 KR_{j,t-1} + \beta_5 CR4_{j,t-1} + \beta_6 EXP_{j,t-1} + \beta_7 IMP_{j,t-1} + \beta_8 TARIFF_{j,t-1} + \beta_9 EN_{j,t} + \beta_j + \varepsilon_{j,t} \quad (14)$$

where, t = 1994, 1995, 1996

j = industry j

EN' = logistic transformation of the entry rate

EX' = logistic transformation of the exit rate

EN = the entry rate

EX = the exit rate

PCM = price-cost margin

$ROOM$ = industry room

GR = annual industry growth

$SDPCM$ = standard deviation of PCM

EOS = economies of scale

KR = capital requirement

$CR4$ = seller concentration

EXP = export intensity

IMP = import penetration

$TARIFF$ = trade protection

α_j, β_j = industry fixed effect of industry j

Model I and II are different in the way right-hand-side EX and EN are specified.

The equations in Model I were first considered as independent, assuming no interdependence between entry and exit, and estimated by OLS. Next, the equations were estimated by the SURE method to account for the interdependence. The SURE method is considered because it is able to take into account the non-zero contemporaneous correlation in the error terms between the two equations. The equations in Model II were estimated by the 2SLS method. This is because $EN_{j,t}$ and $EX_{j,t}$ can be thought to be determined simultaneously.

6.2. Measurement of Variables

6.2.1. Dependent Variables (Entry and Exit Rates)

The entry rates have been presented earlier. As for the exit rates, this study adopts two exit rate measures, in terms of number of plants, employment and value added, labelled as $EX1$, $EX2$, and $EX3$, respectively.

$EX1$ for industry j between t and $t-1$ is defined as

$$EX1_{j,t} = \frac{NXP_{j,t}}{NTP_{j,t-1}} \ ,$$

where: $NXP_{j,t}$ = total number of plants that exit industry *j* between *t* and $t-1$

$NTP_{j,t-1}$ = total number of plants in industry j in year $t-1$

EX2 for industry *j* between t and *t*-1 is defined as

$$EX2_{j,t} = \frac{EMPL\_EX_{j,t}}{EMPL\_T_{j,t-1}} \ ,$$

where: $EMPL\_EX_{j,t}$ = total employment of plants that exit industry between t and $t-1$

$EMPL\_T_{j,t-1}$ = total employment of plants in industry j in $t-1$

EX3 for industry *j* between t and *t*-1 is defined as

$$EX3_{j,t} = \frac{VA\_EX_{j,t}}{VA\_T_{j,t-1}} \ ,$$

where: $VA\_EX_{j,t}$ = total value added of plants that exit industry j between *t* and $t-1$

$VA\_T_{j,t-1}$ = total value added of plants in industry j in year $t-1$

6.2.2. Independent Variables

All of the variables are defined for industry j, which is defined at the four digit level.

- Price-cost margin (PCM)

  PCM is defined as the ratio of gross profit to sales, and for industry *j*, it is defined as:

$$PCM_j = \frac{output_j - inputs_j - wages_j}{output_j}$$

Gross profit is computed as the value of output minus inputs and wages and salary. Included in inputs are raw material, fuel and electricity.

- Seller concentration ($CR4$) and Herfindahl Index (HHI) to proxy the extent of competition

  CR4 for industry *j* is defined as

$$CR4_j = \frac{\sum_{i=1}^{4} VA_i}{\sum_{i=1}^{n} VA_i}$$

While *HHI* for industry *j* is defined as

$$HHI_j = \sum_i \left(\frac{VA_i}{\sum VA_i} \right)^2$$

where VA_i is the value added of plant i in industry j.

- Import penetration (IMP)

  IMP for industry j is defined as

$$IMP_j = \frac{M_j}{Q_j}$$

where Q_j and M_j are the domestic production and imports in industry j, respectively.

- Industry growth (GR)

GR is measured as the percentage change in real value added of industry j between t and $t-1$

$$GR = \frac{RVA_{j,t} - RVA_{j,t-1}}{RVA_{j,t-1}}$$

where *VA* is the value added of industry j. The industry value added is deflated by the wholesale price index (*WPI*) at the three digit ISIC level.

- Industry room ($ROOM$)

ROOM is measured as *GR* divided by *MES*. *MES* is defined as the average plant size accounting for 50 percent of industry output (Caves et al. 1975). Plant size is measured by total number of workers.

- Standard deviation of profitability ($SDPCM$)

SDPCM is measured by the standard deviation of *PCM*, defined at the three digit level of ISIC.

- Economies of scale (ES)

ES is defined following (Caves et al. 1975) as a compound variable using *MES* and cost-disadvantages ratio (*CDR*), that is

$$ES = (1 - CDR) * MES$$

CDR is defined as

$$CDR = \frac{(VA/L)^{\text{smallest}}}{(VA/L)^{\text{largest}}}$$

where $(VA/L)^{smallest}$ is the value added per labour for the smallest plants accounting for 50% of industry output and $(VA/L)^{largest}$ is the value added per labour for the largest plants accounting for the largest 50% of industry output.

- Capital requirement (KR)

  KR is measured following Caves et al. (1980) as

$$KR = \frac{K}{Q} * MES$$

where K/Q is the ratio of capital to labour. In the absence of reliable capital stock estimates, K/Q is proxied by the ratio of energy expenditure to production labour. This proxy follows the approach taken by Globerman et al. (1994), which was motivated by some previous studies which show that capital and energy are complementary inputs in production. Thus,

$$KR = \frac{\text{energy expenditure}}{\text{L}^{\text{prod}}} * MES$$

where L^{prod} is the number of production workers.

- Export intensity (EXP)

  EXP is measured as the ratio of export to industry output.

$$EXP = \frac{\text{exports}}{\text{output}}$$

- Trade protection ($TARIFF$)

  This study uses the average nominal tariff rate to proxy $TARIFF$. The data for the tariff rate are derived from WITS database for the period of 1994-96.

7. Some Descriptive Analysis and Estimation Results

Before presenting and analysing the estimation results, it is useful to briefly present some descriptive analysis of the impact of tariff on some of the entry determinants.[10] Here, based on the discussion in the theoretical background, we selected some of the determinant variables for the description, namely price-cost margin (*PCM*), industry concentration variables (*HHI*), and industry export share (*EXP*).

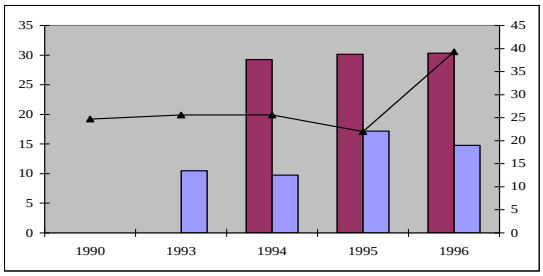
Consider, first, the impact of the declining tariff rate on price-cost margin, of which the picture is presented in Figure 3 for the entry rate in terms of number of plants. While the Figure does not seem to show any obvious pattern, the decline of tariff rate over the period 1990-96 seems to have increased price-cost margin in the non-metallic and basic metal industry (i.e., ISIC 36 and 37, respectively) and decreased the price-cost margin in textile-and-garments, paper products, chemical products, and transport-and-machinery equipments (i.e., ISIC 32, 34, 35, and 38, respectively).

The decline in price-cost margin, along with the declining trend in the tariff rate, indicates an increase in the extent of competition from a more open economy. As for the increase in the price-cost margin, however, it suggests two scenarios. Either there is still a substantial market opportunity that had not been explored until the industry experienced the decline in the tariff rate, or some firms in the industries engaged in some collusive behaviour which could be triggered by more open industries. The pictures based on entry rate in terms of employment and output, which are not shown here, also deliver the same message, and in fact show very similar pictures across the industry groups.

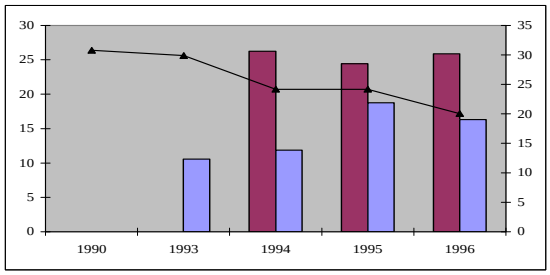
[10] The description is provided in the light of a comment made during the workshop of this research project.

Figure 3. Entry Rate (in terms of the Number of Plants) and Price-cost Margin (*PCM*) in the Indonesian Manufacturing and Nominal Tariff Rate, by Broad Industry Group, 1993-96

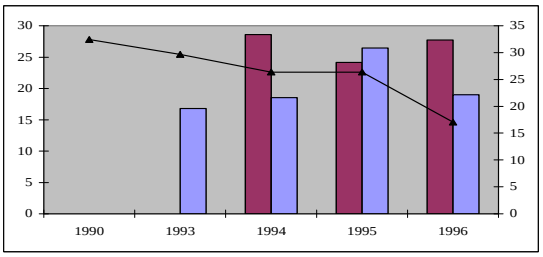
a. ISIC 31 Food and beverages



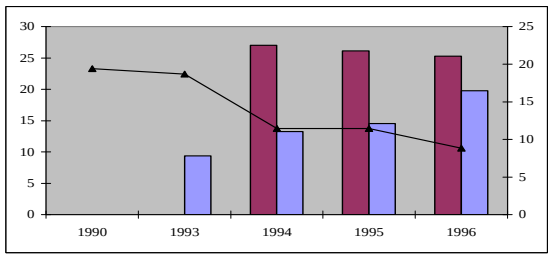
b. ISIC 32 Textiles and garments



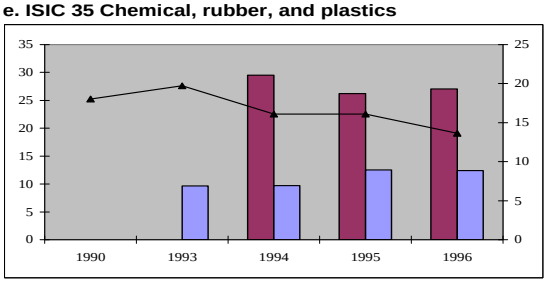
c. ISIC 33 Wood products



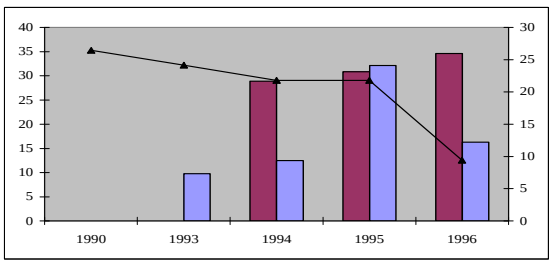
d. ISIC 34 Paper products



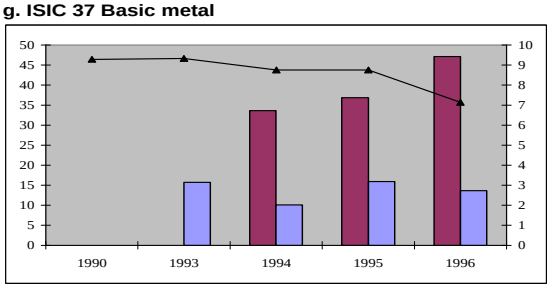
e. ISIC 35 Chemical, rubber, and plastics



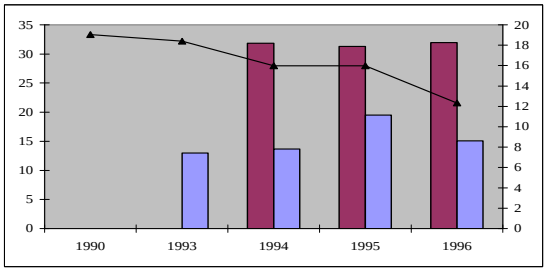
f. ISIC 36 Non-metallic minerals



g. ISIC 37 Basic metal



h. ISIC 38 Machinery and transport equipment



Legend:

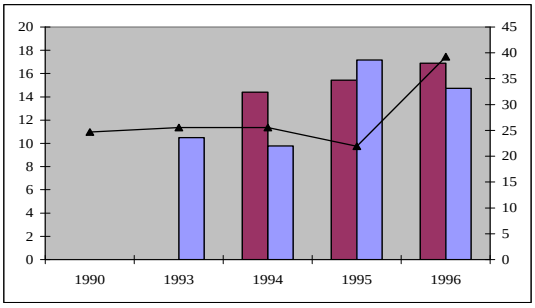
: PCM (%, simple average)
: Entry Rate (%, in terms of the number of plants)
: Nominal Tariff Rate (%, simple average)
X-axis : Year
Y_1-axis (left) : Entry Rate, PCM
Y_2-axis (right) : Nominal Tariff Rate

Turning to the impact of the declining tariff rate on the seller concentration, as noted in Figure 4 for the *HHI* measure of the concentration and entry rate in terms of number of plants, again there is a mixed picture and no clear pattern for the impact. The Herfindahl Indexes for the food-and-beverage, basic metals, and transport-and-machinery equipment industries (i.e., ISIC 31, 37, and 38) show an increase in the Index over the period 1994-96. This is in contrast to the decline in the Index for the textile-and-garments, paper products, non-metallic minerals, and transport-and-machinery equipment industries. At the experimental stage, some graphs for CR4 were also derived and show similar results, although they were not as robust as those produced by the Herfindahl Index.

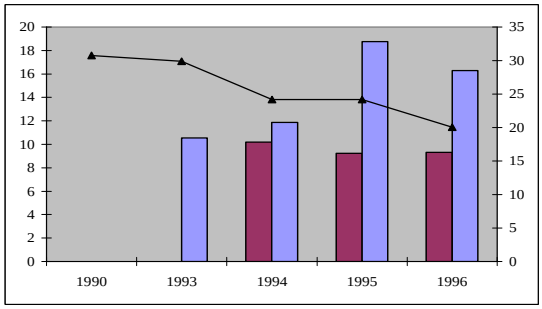
Figure 4 gives the message that for industries experiencing an increase in seller concentration over the period – and at the same time looking at the trend in the tariff rate – there is a possibility that the extent of collusive behaviour, or the motivation for it, in these industries could have been wiped out by the more open industries, indicated by the declining trend of the tariff rate. Using the same rationale, it is suggested that the extent of or motivation for collusive behaviour could have strengthened in some industries that experienced an increasing trend in seller concentration. The two contrasting possibilities are consistent with the previous graph on the impact of the declining tariff rate on price-cost margin. Although they are not shown here, the inference drawn from the picture of the impact when using entry rate in terms of employment and output is the same.

Figure 4. Entry Rate (in Terms of the Number of Plants) and Herfindahl Index (*HHI*) in the Indonesian Manufacturing and Nominal Tariff Rate, by Broad Industry Group, 1993-96

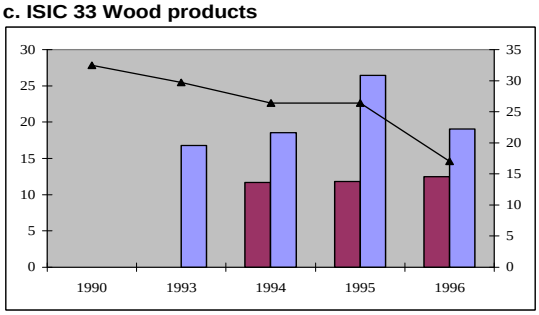
a. ISIC 31 Food and beverages



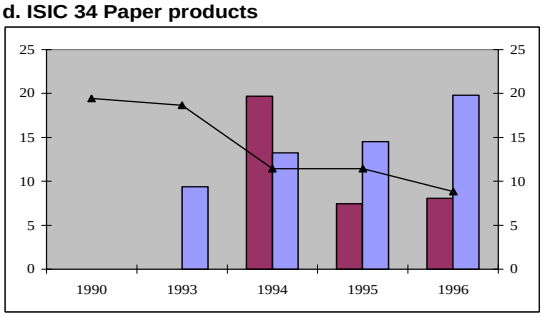
b. ISIC 32 Textiles and garments



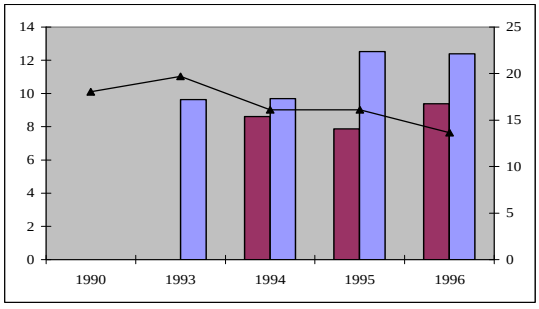
c. ISIC 33 Wood products



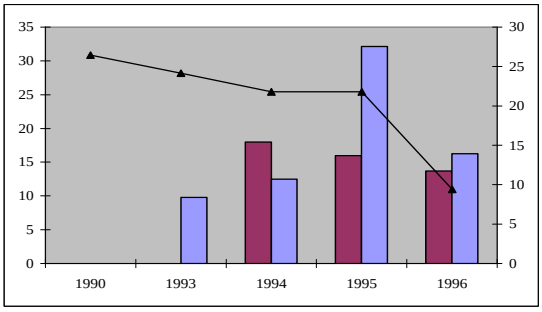
d. ISIC 34 Paper products



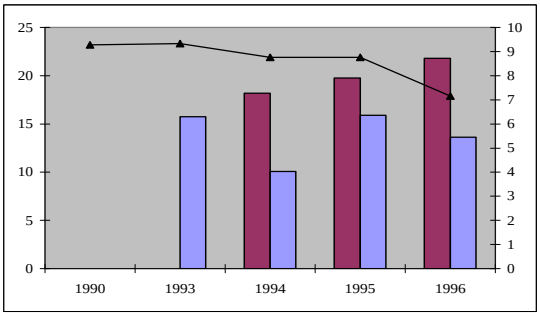
e. ISIC 35 Chemical, rubber, and plastics



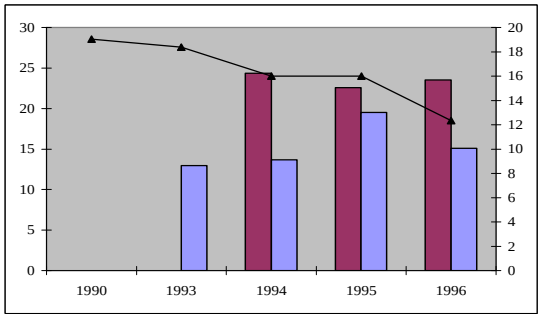
f. ISIC 36 Non-metallic minerals



g. ISIC 37 Basic metal



h. ISIC 38 Machinery and transport equipment



Legend:

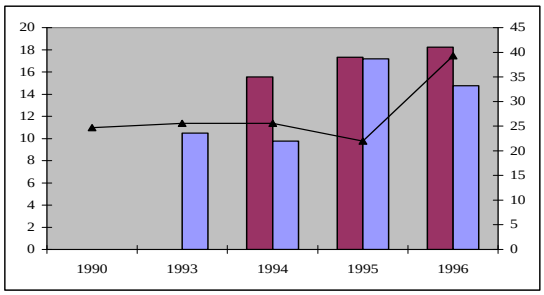
: HHI (simple average)
: Entry Rate (%, in terms of the number of plants)
: Nominal Tariff Rate (%, simple average)
X-axis : Year
Y_1-axis (left) : Entry Rate, HHI
Y_2-axis (right) : Nominal Tariff Rate

Figure 5 provides a picture of the impact of the declining tariff rate on industries' export share. Unlike the previous two tables, there is a clearer picture of the impact. In particular, the declining tariff rate is suggested to have increased the export share of some industries, namely textile-and-garments, wood products, chemical products, non-metallic mineral products, and transport-and-machinery equipment. The impact is not so clear in the case of the paper and basic metal industries.

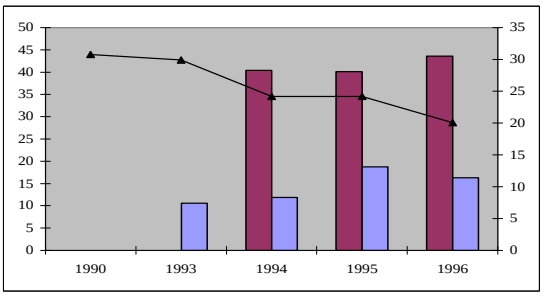
This rather solid finding suggests that trade liberalisation benefited some sectors substantially. While encouraging, in terms of entry, this does not necessarily mean that increased exports could immediately result in an increase of the entry rate, although it is worth noting that the pattern in the entry rate over this short time period seems to follow the trend in industry export share. In short, here the key point is that the positive impact of the declining tariff rate on an industry's export share is not suggested to have fully 'transferred' to an equally higher entry rate. Thus, the increase in the export share should partly come from some firms that have already established themselves in the industry (i.e., the incumbents).

Figure 5. Entry Rate (in Terms of the Number of Plants) and Industry Export Share (*EXP*) in the Indonesian Manufacturing and Nominal Tariff Rate, by Broad Industry Group, 1993-96

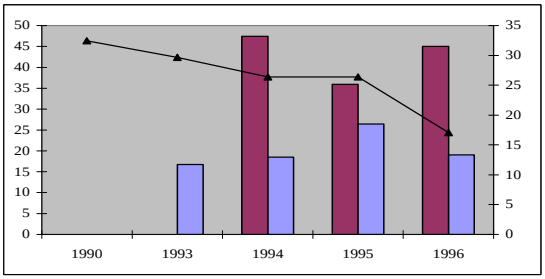
a. ISIC 31 Food and beverages



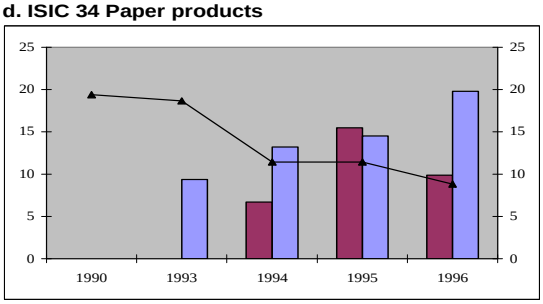
b. ISIC 32 Textiles and garments



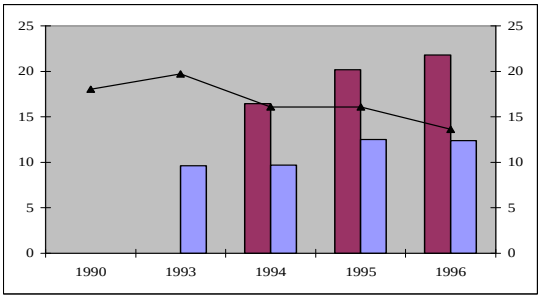
c. ISIC 33 Wood products



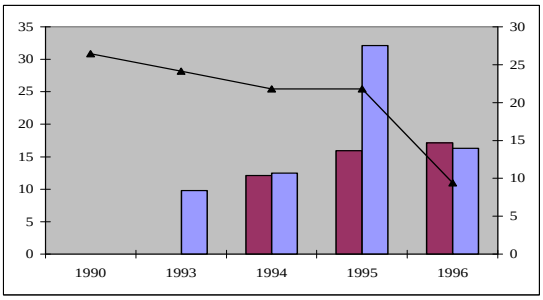
d. ISIC 34 Paper products



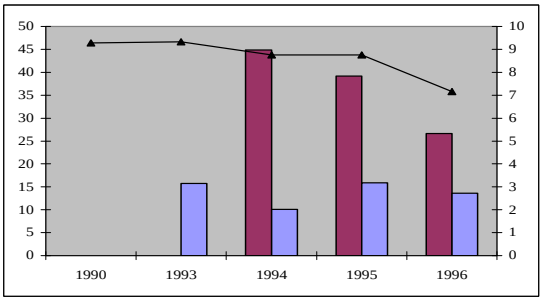
e. ISIC 35 Chemical, rubber, and plastics



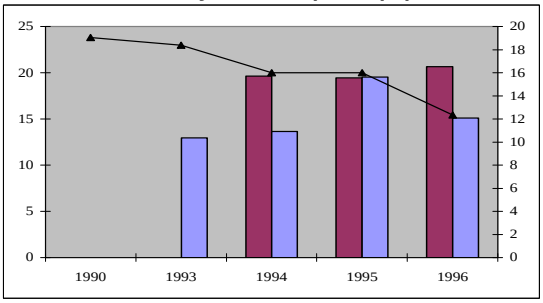
f. ISIC 36 Non-metallic minerals



g. ISIC 37 Basic metal



h. ISIC 38 Machinery and transport equipment



Legend:

: EXP (%, simple average)
: Entry Rate (%, in terms of number of plants)
: Nominal Tariff Rate (%, simple average)
X-axis : Year
Y_1-axis (left) : Entry Rate, EXP
Y_2-axis (right) : Nominal Tariff Rate

7.1. The Estimation Results

Equations in Models I and II are estimated using entry and exit rates in terms of number of plants and employment (*EN1*, *EX1*, $EN2$, $EX2$, *EN3*, and *EX3*). Model II was dropped from the analysis because the estimation results of model II using the 2SLS method rendered almost all the variables in the equations insignificant. Although this is obviously not a good result, several studies have obtained similar results (e.g. Shapiro and Khemani 1987; Austin and Rosenbaum 1991; Fotopoulus and Spence 1998).

Several industries were identified as outliers using the Hadi (1992) method. This study controls the outliers by removing them from the sample. The usual approach of introducing dummy variables that identifies them was not adopted because it results in a perfect collinearity with the fixed industry effects (the industry dummy variables).

Table 1 presents the estimation results for Model I using the SURE method, with $EN1'$ and $EX1'$ as the dependent variable.[11] Breusch-Pagan Lagrange Multiplier (LM) statistics are employed to test whether the error terms of the entry and exit equation in Model I are contemporaneously correlated. The null hypothesis of equal error terms in the entry and exit equation is rejected at the 1 per cent significance level.[12] Therefore, it can be concluded that entry and exit in the period were correlated. Accordingly, the results obtained by the SURE method provide the basis for the analysis (Table 7.4), and the OLS results are not reported here. The coefficients produced by the SURE method are similar to those obtained by OLS and have the same signs. However, the t-statistics improve in some estimated coefficients, which indicates the improvement in efficiency and justifies the reference to the SURE results.

[11] Three alternative specifications of entry were experimented with. The first was as in equations (11) or (13), the second was where *ROOM* was replaced by *GR* and the third was where *ROOM* was retained but *ES* was dropped. The specifications are motivated by the way *ROOM* is generated, which raises possible colinearity with *ES*. As presented, *ES* is measured as *ES*=(1-*CDR*)**MES*, where *CDR* is the cost disadvantage ratio. The experiment shows that the results did not differ greatly from one specification to the other. But because the first specification performed better in terms of F-statistics, it was chosen as the basis for the analysis.

[12] The degree of freedom for the LM tests is one.

Table 1. The Determinants of Entry and Exit, 1994-96: Regression Results of Model I

Dependent variable	Method: SURE	
	$EN1'_{i,t}$ (1)	$EX1'_{i,t}$ (2)
$PCM_{i,t-1}$	0.638	
	(1.13)	
$SDPCM_{i,t-1}$	0.002	
	(0.00)	
$PCM_{i,t}$		-0.581
		(1.21)
$ROOM_{i,t-1}$	-0.139	
	(0.38)	
$GR_{i,t}$		0.055
		(0.75)
$ES_{i,t-1}$ a)	-0.005	-0.036
	(0.18)	(1.36)
$KR_{i,t-1}$ a)	0.0185	2.811
	(0.09)	(1.50)
$CR4_{i,t-1}$	0.251	0.656
	(0.94)	(2.81)**
$FOR_{j,t-1}$	-0.560	-0.283
	(1.73)+	(0.96)
$EXP_{j,t-1}$	0.502	0.666
	(1.95)+	(2.76)**
$IMP_{j,t-1}$	-0.018	-0.012
	(1.88)+	(1.44)
$TARIFF_{j,t-1}$	0.014	0.002
	(1.90)+	(0.21)
$EN1_{i,t-1}$		1.058
		(2.42)*
$EX1_{i,t-1}$	2.888	
	(2.66)**	
DUMMY LABOUR INTENSIVE INDUSTRIES	0.099	0.064
	(1.53)	(0.77)
DUMMY RESOURCE-BASED, LABOUR INTENSIVE INDUSTRIES	0.002	0.163
	(0.01)	(0.92)
DUMMY FOOTLOOSE, CAPITAL INTENSIVE INDUSTRIES	0.061	0.004
	(1.86)+	(0.08)
YEAR DUMMY 1995	-2.499	0.000
	(9.64)**	(.)
YEAR DUMMY 1996	-2.654	0.336
	(10.90)**	(3.49)**
Constant	0.000	-3.394
	(.)	(10.28)**
Observations	165	165
R-squared	0.26	0.30

Note: 1) t-statistics in parentheses

2) Significance level: ** significant at 1%; * significant at 5%; + significant at 10%

a) The coefficients were multiplied by 103 to improve presentation.

This study employs an analysis based on the fixed-effect panel estimation approach.[13] This approach assures that a large portion of the unobserved variables is taken into account and hence we are more confident that the results are unbiased, although it perhaps does not give satisfactory results in terms of statistical significance. Adopting this approach is particularly important because large variables representing entry and exit barriers can be unobserved or industry specific (Geroski 1991).

The results presented in Table 1 include all entry-barrier variables in one regression model. At the experiment stage, there were three other sets of estimations which were done by including the entry-barrier variables one-by-one.[14] The results of these experiments did not give substantially different results compared to those presented in Table 1, and because the F statistics of the estimations in Table 1 are substantially higher than those drawn from the experimental estimations, the experimental estimations were not used for the discussion. Partial correlations between the dependent and all independent variables are presented in Appendix 1.

7.2. The Structural Determinants of Entry

7.2.1. Entry

Of the trade-related variables, $TARIFF_{t-1}$ is positively related to entry and is statistically significant. Therefore, trade protection seems to have attracted entry in this period. However, this impact cannot confidently be applied across all industries, because the estimated coefficient is only marginally statistically significant (i.e., at the 10 per cent level). This marginal importance is emphasised by a rather low correlation between the dependent variable and $TARIFF_{t-1}$, which is 0.29 (see Appendix 1). Meanwhile, the coefficient of IMP_{t-1} shows a negative sign but is only moderately significant (i.e. significant at the 10 per cent level). Thus, a higher extent of competition from imports seems to have discouraged entry during the period under the

[13] This is different from other studies (e.g. Fotopoulus and Spence 1998) who based their analysis on results without inclusion of fixed industry effects.

[14] These experiments respond to the comment made by a participant of the workshop of this research project.

study. This result is also consistent with an earlier finding by Anagnostaki and Louri (1995) that import penetration is negatively related to entry and exit.

None of the entry barrier variables appears to explain entry. The coefficient of all of these variables is statistically insignificant. Moreover, while not significant, the coefficients are all positive, which contradicts the theoretical prediction.

While it does not seem statistically to explain entry, it is worth discussing the result of $CR4_{t-1}$ as an entry barrier variable. Its positive coefficient implies that seller concentration induced, rather than impeded, entry. A possible explanation is that this finding supports the argument that concentrated industries provide a higher survival chance once entry has occurred. This comment is further supported by the coefficient of KR_{t-1} which also shows a positive correlation, although, again, it is not statistically significant.

The coefficient of FOR_{t-1} is negative, and statistically significant at the 10 per cent level. Therefore, a high concentration of foreign ownership in an industry is expected to reduce the extent of entry. This finding thus provides some support for the argument of the superiority of foreign firms in terms of economies of scale, which provides some insulation of these firms from potential entrants, through the ability of the firms to charge a competitive level of industry price by exercising their economies of scale.

The result of EXP_{t-1} is encouraging in terms of entry. The coefficient of EXP_{t-1} is positive and statistically significantly, although only at the 10 per cent level. This finding reflects the descriptive analysis presented earlier on the rather clear positive impact of the declining tariff rate on industry export share, and to some extent on the trend of firm entry. Supporting this even further, the partial correlation of this variable to the dependent variable is small, that is, 0.23 (see Appendix 1).

The results on the dummy variables for industry groups, by their factor intensity, do not give satisfactory results. The extent of entry in the labour-intensive industry group does not seem to have been high, compared to that in the resource-based capital-intensive industry group which acts as the base-dummy variable.

7.2.2. The Determinants of the Interdependence between Entry and Exit

This section seeks evidence concerning the validity of the displacement-replacement effect and the symmetry hypothesis implied by entry and exit determinants.

The results provide some support for the symmetry hypothesis. All entry barrier variables (ES_{t-1}, KR_{t-1} and $CR4_{t-1}$) show the same sign in both the entry and exit equations. The estimated coefficients are similar across equations, indicating a similar effect from these variables in inducing or deterring entry and exit.

It is worth noting that the process involved with the symmetry hypothesis is unlikely to be the same as the one originally hypothesised by Caves and Porter (1976). Instead of a discouraging effect, entry barriers seem to encourage both entry and exit at the same time. Two of the entry barriers variables, $CR4_{t-1}$ and KR_{t-1}, show positive signs in both the entry and exit equations.

It is worth mentioning here the large impact of seller concentration on exit, indicated by the strong estimate of the $CR4_{t-1}$ estimate. This suggests an existence of collusive behaviour that warrants some profitable profit margin, based on the theory postulated by limit price model.

Some support for the symmetry hypothesis is also displayed by the other variables. IMP_{t-1} appears to moderately prevent both entry and exit. As argued by Fotopoulus and Spence (1997), one reason might be that expansion in markets with high import penetration is not enough to ensure new plant creation or capacity expansion at the minimum efficient scale while, at the same time, lack of expansion in the domestic market tends to sustain collusive behaviour among incumbents. EXP_{t-1} is positively related to entry and exit. This confirms earlier findings (e.g. Anagnostaki and Louri 1995; Sleuwagen and Dehandschutter 1991) that the extent of the external market encourages both entry and exit in domestic industries. While it seems to contradict a stylised fact from the micro exporting literature, which suggests that exit should have been lower in exporting industries – because firms in these industries tend to be more efficient than those in other industries –, the positive relationship on exit might occur if there was a co-existence of efficient and inefficient firms in the exporting industries (Anagnostaki and Louri, 1995). According to Anagnostaki and Louri, inefficient firms

are likely to be displaced by more efficient firms entering the industries, which are most likely be attracted by the profit opportunity provided by export markets.

Despite these findings, the results do not strongly validate the symmetry hypothesis. EXP_{t-1} is only statistically significant in the exit equation.

The results provide some indications on displacement and replacement entry. Both $EN1_{t-1}$ and $EX1_{t-1}$ in the exit and entry equation respectively, are positive. Moreover, the displacement effect is suggested to have been strong, indicated by a very high level of statistical significance of the $EN1_{t-1}$ and $EX1_{t-1}$ coefficient. This inference is also supported by a strong correlation of these variables to their relevant dependent variables, as written in Appendix 1 (i.e., 0.35 and 0.36 for $EN1_{t-1}$ and $EX1_{t-1}$, respectively). The estimated coefficient of $EX1_{t-1}$, which is about 2, suggests a rather large effect of replacement under a one year adjustment structure.

7.2.3. Estimation Results using the Alternative Entry and Exit Measure

In the preceding analysis, entry and exit rates are measured in terms of the number of plants. The equations in Model I are now re-estimated using entry and exit rates measured in terms of employment ($EN2'$ and $EX2'$) and output ($EN3'$ and $EX3'$) to provide robustness for the earlier findings. The results are presented in Table 2 and 3, for the entry-exit rate in terms of employment and output, respectively. The equations are estimated using the SURE method, as the LM tests conclude that the error terms in the entry and exit equations are correlated. In terms of model fit, the results are generally satisfactory. In the equations presented, the R^2s' do not deviate much from the ones in $EN1'$ and $EX1'$ equations and the F tests are significant at the 1 per cent or better level.

Table 2. The Determinants of Entry and Exit, 1993-96: Regression Results of Model I with EN2' and EX2' as the Dependent Variable

Dependent variable	Method: SURE	
	$EN2'_{j,t}$ (1)	$EX2'_{j,t}$ (2)
$PCM_{j,t-1}$	-0.473	
	(0.56)	
$SDPCM_{j,t-1}$	-0.571	
	(1.27)	
$PCM_{j,t}$		-1.004
		(1.19)
$ROOM_{j,t-1}$	0.139	
	(0.26)	
$GR_{j,t}$		0.116
		(0.90)
$ES_{j,t-1}$ a)	0.032	-0.041
	(0.73)	(0.87)
$KR_{j,t-1}$ a)	-0.624	-0.023
	(2.03)*	(0.07)
$CR4_{j,t-1}$	-0.216	0.271
	(0.54)	(0.65)
$FOR_{i,t-1}$	-0.278	0.097
	(0.57)	(0.18)
$EXP_{j,t-1}$	-0.354	0.782
	(0.92)	(1.83)+
$IMP_{j,t-1}$	-0.028	-0.025
	(2.04)*	(1.65)+
$TARIFF_{j,t-1}$	0.011	0.002
	(0.95)	(0.12)
$EN2_{j,t-1}$		1.525
		(2.00)*
$EX2_{j,t-1}$	5.681	
	(3.56)**	
DUMMY LABOUR INTENSIVE INDUSTRIES	0.004	0.150
	(0.04)	(1.02)
DUMMY RESOURCE-BASED, LABOUR INTENSIVE INDUSTRIES	0.103	0.208
	(0.57)	(0.67)
DUMMY FOOTLOOSE, CAPITAL INTENSIVE INDUSTRIES	0.039	0.069
	(0.79)	(0.88)
YEAR DUMMY 1995	-2.787	-4.153
	(7.20)**	(7.17)**
YEAR DUMMY 1996	-2.914	-3.964
	(8.01)**	(7.12)**
Constant	0.000	0.000
	(.)	(.)
Observations	165	165
R-squared	0.22	0.19

Note: 1) t-statistics in parentheses

2) Significance level: ** significant at 1%; * significant at 5%; + significant at 10%

a) The coefficients were multiplied by 10^3 to improve presentation.

Table 3. The Determinants of Entry and Exit, 1993-96: Regression Results of Model I with EN3' and EX3' as the Dependent Variable

Dependent Variable	Method: SURE	
	$EN3'_{j,t}$ (1)	$EX3'_{j,t}$ (2)
$PCM_{j,t-1}$	-2.926	
	(2.19)*	
$SDPCM_{j,t-1}$	-0.007	
	(0.01)	
$PCM_{j,t}$		-2.915
		(2.28)*
$ROOM_{j,t-1}$	-1.65	
	(1.92)+	
$GR_{j,t}$		0.328
		(1.38)
$ES_{j,t-1}$ a)	-0.034	-0.041
	(0.48)	(0.57)
$KR_{j,t-1}$ a)	0.202	0.091
	(0.41)	(0.18)
$CR4_{j,t-1}$	-1.938	-0.393
	(3.04)**	(0.63)
$FOR_{j,t-1}$	0.339	-0.739
	(0.44)	(0.93)
$EXP_{j,t-1}$	-0.243	0.946
	(0.40)	(1.45)
$IMP_{j,t-1}$	-0.036	-0.033
	(1.63)	(1.44)
$TARIFF_{j,t-1}$	-0.006	0.018
	(0.35)	(0.83)
$EN3_{j,t-1}$		2.411
		(2.09)*
$EX3_{j,t-1}$	4.125	
	(1.63)	
DUMMY LABOUR INTENSIVE INDUSTRIES	0.055	0.075
	(0.36)	(0.34)
DUMMY RESOURCE-BASED, LABOUR INTENSIVE INDUSTRIES	0.481	-0.160
	(1.66)+	(0.34)
DUMMY FOOTLOOSE, CAPITAL INTENSIVE INDUSTRIES	0.124	0.079
	(1.60)	(0.66)
YEAR DUMMY 1995	-1.761	0.000
	(2.86)**	(.)
YEAR DUMMY 1996	-1.960	0.141
	(3.39)**	(0.55)
Constant	0.000	-4.183
	(.)	(4.78)**
Observations	164	164
R-squared	0.18	0.23

Note: 1) t-statistics in parentheses

2) Significance level: ** significant at 1%; * significant at 5%; + significant at 10%

a) The coefficients were multiplied by 10^3 to improve presentation.

In general, some results from the estimations using the alternative entry-exit measures are different from the previous results, and hence one could claim that the earlier results are not really robust. However, and as noted earlier, the results using entry rate in terms of number of plants (i.e., *EN1* and *EX1*) should be given more weight for the basis of analysis. This is theoretically justified since measures of market structure, which is one of the key determinants of entry, often stress the significance of the number of firms (Baldwin 1998, p.12).

Nonetheless, it is useful to mention the key differences between the previous results and the results presented in Tables 2 and 3.

Consider, first, the results of using the entry-exit rate in terms of employment. The coefficient of KR_{t-1} is negative and very statistically significant (i.e., at the 1 % level). This suggests that the initially required capital, which determines other aspects of firm size at entry, seems to have been material in determining entry in terms of employment. The other difference is that the coefficient of EXP_{t-1} is very disappointing, as is FOR_{t-1}. In particular, the coefficient of EXP_{t-1} is negative, which contradicts the earlier finding. But, more importantly, the coefficient of these two variables is statistically insignificant, which suggest that foreign ownership and export share does not seem to have attracted entry at all in terms of employment.

However, there are at least a few similar findings. First, the coefficients of $TARIFF_{t-1}$ and FOR_{t-1} are in accordance with the results of using the entry-exit variable measured by the number of plants. But these coefficients are statistically insignificant. Secondly, the same finding is also shown for the displacement and replacement effect. Moreover, the results based on employment entry-exit suggest that the replacement effect is very strong and large, since the coefficient of $EX2_{t-1}$ in the entry equation is very large, as well as highly statistically significant.

Turning to the estimation results based on entry-exit in terms of output, the first difference is that there seems to have been a strong displacement effect, but very weak replacement effect, since the latter is not statistically significant. $CR4_{t-1}$ in the entry equation now has a negative coefficient and is highly statistically significant. This indicates that much of the entry comprises many small firms in terms of output.

Meanwhile, EXP_{t-1} and FOR_{t-1} do not seem to have attracted entry when the entry is measured in terms of output. The t-statistics are very low, implying very low statistical confidence for the relationship. A disappointing result also applies to the key variables of the econometric exercise, which are the $TARIFF_{t-1}$ and IMP_{t-1}. The most unsatisfactory result is for the coefficient of $TARIFF_{t-1}$, which is statistically insignificant.

8. Summary and Discussion

This study examines the impact of major trade and investment reforms that took place in the 1980s and 1990s on the extent of plant entry in Indonesian manufacturing. The descriptive picture does not give a clear indication of the impact. Specifically, while for some industry groups the generally declining pattern of trade protection seems to have been followed by some increase in the extent of plant entry over the period covered by this study, which is 1993-96, this does not seem to have been the case for other industry groups. Industries that produce textile and garments, wood products, and paper products, for example, are those which recorded some increase in the plant entry rates, while the industries that produce machinery and transport equipment are those which evidently experienced lower plant entry rate over the time.

An attempt to further assess the importance of the reforms with an econometric exercise somewhat helps the study to provide a general hypothesis on the impact of trade and investment liberalisation. In particular, recalling the estimated coefficient of *TARIFF*, there is stronger guidance on the impact of the trade and investment liberalisation on the extent of firm entry in Indonesian manufacturing. As noted, the descriptive analysis earlier in this study was not able to clearly define the direction of the impact (i.e., either positive or negative). The results suggest that the trade and investment liberalisation occurring between the mid 1980s and the mid 1990s tended to deter entry. Based on the theory, this further indicates that the industry became more competitive, in terms of lower motivation to collude, although this comes with a lower profit margin. This message is consistent with the results that come from the import-

penetration ratio which suggests a negative relationship between increased competition from import, and firm entry.

Why was it that a more liberalised trade and investment regime did not lead to higher plant entry? As noted, this tends to conflict a conventional belief that the impact of such a regime would be positive. While clearly more research needs to be done, there are at least possible explanations for this, which may have been specific only to the case of Indonesia, at least during the period covered by this study. It could be the case that there was still a quite high level of trade protection during the period. The source of this high protection level is likely to have come from NTBs, owing to the fact that the nominal tariff rate declined substantially during the early 1990s. In fact, as reviewed, there were still some NTBs that were implemented during the period, despite the major trade reforms occurring at the same time. Moreover, as also reviewed, there were also some regulations that preserved a protective industrial policy.

This explanation thus implies that the Indonesian experience does not necessary conflict with the common prediction of the positive impact of trade and investment liberalisation; that is, some protectionist policies and measures that still existed at that time caused the (predicted) positive impact of the liberalisation not to be fully realised.

The explanation is also consistent with the finding from the estimation in regards to the interdependence between entry and exit. As presented above, displacement entry does not seem to have been as large as the extent of replacement entry. This implies that some inefficient plants were still able operate. At the same time, it also suggests that the decline in tariff protection at that time was perhaps not able to induce the level of competitive pressure that brings about strong competition between firms. Indeed, the revealed positive relationship between industry concentration and the entry level support this argument. This itself suggests that non-competitive behaviour, such as collusive action, tended to exist.

Appendix 1. Correlation Matrix

	$EN1'_{j,t}$	$EX1'_{j,t}$	$EN2'_{j,t}$	$EX2'_{j,t}$	$EN3'_{j,t}$	$EX3'_{j,t}$	$PCM_{j,t-1}$	$ROOM_{j,t-1}$	$SDPCM_{j,t-1}$	$ES_{j,t-1}$	$KR_{j,t-1}$	$CR4_{j,t-1}$	$FOR_{j,t-1}$	$EXP_{j,t-1}$	$IMP_{j,t-1}$	$TARIFF_{j,t-1}$	$EX1_{j,t-1}$	$EN1_{j,t-1}$	$EX2_{j,t-1}$	$EN2_{j,t-1}$	$EX3_{j,t-1}$	$EN3_{j,t-1}$	DUMMY LABOUR INTENSIVE IND.	DUMMY RESOURCE-BASED, LAB. INT. IND.	DUMMY FOOTLOOSE, CAPITAL INT. IND.
$EN1'_{j,t}$	1.00																								
$EX1'_{j,t}$	0.26	1.00																							
$EN2'_{j,t}$	0.68	0.18	1.00																						
$EX2'_{j,t}$	0.33	0.73	0.40	1.00																					
$EN3'_{j,t}$	0.39	0.11	0.75	0.33	1.00																				
$EX3'_{j,t}$	0.28	0.55	0.36	0.81	0.36	1.00																			
$PCM_{j,t-1}$	0.11	-0.07	-0.03	-0.07	-0.19	-0.22	1.00																		
$ROOM_{j,t-1}$	-0.06	0.00	0.01	0.02	-0.15	0.10	-0.03	1.00																	
$SDPCM_{j,t-1}$	0.02	0.08	-0.11	-0.02	-0.05	-0.03	0.13	0.10	1.00																
$ES_{j,t-1}$	-0.04	-0.05	-0.04	-0.09	0.01	-0.02	-0.19	-0.04	0.01	1.00															
$KR_{j,t-1}$	0.00	0.10	-0.16	-0.08	-0.03	-0.06	-0.04	-0.09	0.00	0.53	1.00														
$CR4_{j,t-1}$	0.12	0.21	0.02	0.09	-0.22	-0.04	0.19	0.14	-0.05	-0.06	0.15	1.00													
$FOR_{j,t-1}$	0.04	0.04	-0.02	0.11	-0.12	-0.04	0.30	0.00	0.00	-0.13	-0.15	0.40	1.00												
$EXP_{j,t-1}$	0.23	0.26	-0.01	0.23	0.03	0.25	-0.13	-0.10	0.07	-0.04	-0.01	-0.14	0.20	1.00											
$IMP_{j,t-1}$	-0.22	-0.10	-0.20	-0.13	-0.10	-0.12	-0.07	0.06	-0.02	0.01	0.06	-0.11	-0.09	-0.10	1.00										
$TARIFF_{j,t-1}$	0.29	0.09	0.11	0.11	-0.01	0.19	0.02	0.01	-0.02	-0.03	-0.02	-0.04	0.10	0.44	-0.19	1.00									
$EX1_{j,t-1}$	0.36	0.27	0.34	0.30	0.09	0.27	0.08	0.08	-0.02	-0.11	0.02	0.32	0.07	0.16	-0.12	0.20	1.00								
$EN1_{j,t-1}$	0.41	0.35	0.22	0.29	0.01	0.22	0.05	0.25	-0.03	-0.06	-0.07	0.13	0.07	0.23	0.05	0.05	0.20	1.00							
$EX2_{j,t-1}$	0.15	0.11	0.25	0.18	0.04	0.19	-0.02	0.22	-0.09	-0.10	-0.05	0.21	0.01	0.06	-0.05	0.16	0.75	0.10	1.00						
$EN2_{j,t-1}$	0.29	0.21	0.39	0.32	0.20	0.29	-0.07	0.43	0.02	0.03	-0.10	0.02	-0.04	0.01	0.02	0.00	0.14	0.67	0.13	1.00					
$EX3_{j,t-1}$	0.03	0.09	0.23	0.18	0.14	0.21	-0.05	0.24	-0.08	-0.07	-0.08	0.12	0.02	0.03	0.05	0.07	0.54	0.19	0.77	0.21	1.00				
$EN3_{j,t-1}$	0.06	0.01	0.17	0.16	0.14	0.19	-0.09	0.43	0.04	-0.02	-0.13	-0.06	-0.05	0.01	-0.02	-0.09	-0.01	0.29	0.07	0.58	0.10	1.00			
DUMMY LABOUR INTENSIVE IND.	0.12	0.11	-0.03	0.16	-0.06	0.12	-0.01	-0.01	0.04	0.00	-0.10	0.08	0.31	0.24	-0.02	0.17	0.06	0.11	0.07	0.00	0.02	-0.06	1.00		
DUMMY RESOURCE-BASED, LAB. INT. IND.	-0.08	0.06	0.03	-0.01	0.13	0.01	-0.12	0.05	-0.07	-0.04	0.07	-0.20	-0.36	-0.08	0.00	-0.02	-0.08	-0.10	-0.07	0.04	-0.12	0.12	-0.34	1.00	
DUMMY FOOTLOOSE, CAPITAL INT. IND.	0.08	-0.07	0.11	0.05	0.03	0.06	0.19	0.03	-0.02	0.06	-0.09	0.23	0.15	-0.23	0.02	-0.21	0.10	0.06	0.07	0.03	0.10	0.04	-0.21	-0.28	1.00

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CHAPTER 11

Maximizing Benefits from FTAs in ASEAN

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FTA has proliferated in East Asia. Currently, there are more than thirty RTAs enforced involving East Asia, of which fourteen are intra-regional RTAs. However, we do not know how intensively Asian FTAs are actually utilized. The regionalism in the ASEAN+6 region is consolidating the hub-and-spoke FTA structure with ASEAN as the hub and other East Asian countries as the spokes. The spaghetti bowl problem may not be serious since the hub-and-spoke FTA structure can be viewed as a trade agreement matrix. However, the utilization rates of FTAs may seem rather low in East Asia. The paper investigated the reasons of it by using the econometric analysis. We obtained the results that FTAs are selectively utilized: textile and automobile are well utilized while electronics and electrical machinery not. We find also that the larger the firms' scale, the more likely they would be to utilize FTA schemes. Lastly, and equally importantly, firms in the Philippines and Vietnam are less likely to utilize FTA schemes. Thus, these estimated results might suggest that the operational procedures to obtain certificates are cumbersome, in particular, in those countries, and that East Asia has to improve the operational procedures in order to maximize the benefits of FTAs.

1. Introduction

FTA has proliferated in East Asia. Currently, in fact, there are more than thirty RTAs enforced involving East Asia, of which fourteen are intra-regional RTAs, either bilateral agreements or plurilateral agreements. There are numerous ex ante studies on the impacts of FTAs which use the computable general equilibrium (CGE) models. Assuming that any firm can maximize profits and completely utilize FTAs under perfect information, those studies predict that FTAs substantially increase welfare and income (Harrigan *et al*, 2006, and Kawai and Wignaraja, 2007). However, we do not know how intensively Asian FTAs are actually utilized. Hiratsuka *et al*. (2008 and 2009) pointed out that Japanese firms and their affiliates operating in ASEAN are not very familiar with FTAs, and that the operational procedures to meet the conditions of the rules of origin (ROOs) are cumbersome, and concluded that high administrative costs to obtain certificate of origin impedes the utilization of FTAs.

In addition, ROOs, operational procedures to obtain certificate of origin, sensitive lists that are excluded from tariff elimination schedule, and phase-out tariff elimination schedules differ by FTA in East Asia. Preferential tariffs, therefore, vary by product and by FTA. This raises a concern about the overlapping FTA problem or the so-called spaghetti bowl problem that administrative costs that firms which utilize FTAs would be high, and as a result, some FTAs are utilized but some are not.

In August 2008, ASEAN revised the ROO system from the 40% value content rule to the option system of value content rules and change of tariff line. The new system is expected to increase the utilization of AFTA. The AEC blueprint, which presents the schedule to realize the ASEAN Economic Community (AEC), ASEAN reviewed all the

ROOs implemented by ASEAN member countries, individually and collectively, and explored possible better mechanisms.

At the onset of the proliferation in East Asia, it is a critical task to evaluate the existing FTAs, and suggest the best practices of FTAs to maximize benefits to the region. With the aim of suggesting the best practice of the ASEAN CEPT ROOs and the other East Asia' FTA ROOs, this study will identify the revealed and potential problems of existing bilateral and plurilateral FTAs involving ASEAN and explore best practices to facilitate trade in the region.

2. Proliferation of FTAs in East Asia

2.1. The ASEAN hub- and others-spoke Structure

ASEAN has led regionalism in East Asia. ASEAN Free Trade Area (AFTA) will eliminate import duties on all products placed on normal track to be 0% and tariffs on products placed in sensitive lists to be 0-5% by 2010 for ASEAN-6 (Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand). On the other hand, the new member countries of Cambodia, Laos, Myanmar and Vietnam will eliminate tariffs on normal track to be 0% by 2015, and tariffs on products placed in sensitive lists to be 0-5% by 2013 for Vietnam, by 2015 for Laos and Myanmar, and by 2017 for Cambodia.

It should also be noted that the regionalism in the ASEAN+6 region is consolidating the hub-and-spoke FTA structure with ASEAN as the hub and other East Asian countries as the spokes. Tariffs between ASEAN-6 and China, and between ASEAN-6 and Korea, will be eliminated to be 0% on products placed on the normal track in the

ASEAN-China FTA and ASEAH-Korea FTA respectively. Furthermore, the ASEAN-Japan FTA has been partially implemented since December 2008, and the ASEAN-CER (Australia and New Zealand) FTA will be enforced in 2009. The ASEAN-hub FTA networks are expanding rapidly in East Asia. Currently, in total, five ASEAN+1 FTAs are enforced or are under negotiation.

In contrast, East Asia's region-wide FTAs are still at a phase of conceptualization. In the ASEAN+3 process, the East Asia Study Group (EASG) proposed the East Asian Free Trade Area (EAFTA) as one of the nine long-term measures proposed at the eighth ASEAN+3 Summit in November 2004. A feasibility study on the proposed EAFTA conducted by a Track Two study (an academic expert group study) chaired by a Chinese national was presented in brief at the 2006 ASEAN+3 Economic Minister Meeting. The ASEAN ministers, however, insisted on the necessity of expeditiously concluding ASEAN-plus-one FTAs before concluding an EAFTA. The ASEAN+3 Summit in January 2007 welcomed South Korea's proposal to conduct a Phase II EAFTA study focusing on a sector-by-sector analysis, and on the other hand, the summit leaders decided to examine other possible FTAs, such as the Comprehensive Economic Partnership in East Asia (CEPEA) to cover the ASEAN+6 countries, proposed by Japan. The EAS in January 2007 agreed to launch a Track Two study on CEPEA and requested the ASEAN Secretariat to prepare a time frame for the study. Study group meetings on CEPEA have already been held several times with Japan as chair, and participants have been assigned to report on issues related to CEPEA. At the strong request of ASEAN, the ASEAN-hub and six-countries-spoke FTAs are progressing before the region-wide FTAs such as EAFTA and CEPEA.

2.2. Spaghetti Bowl Phenomenon

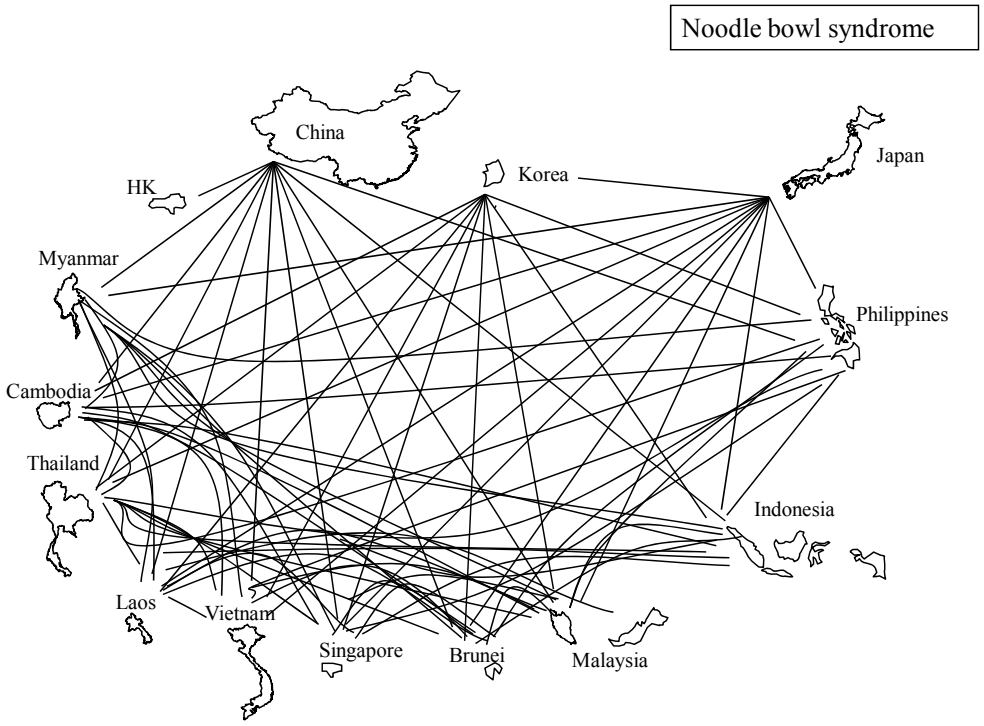
The proliferation of FTAs in East Asia might have caused a spaghetti bowl phenomenon. As of December 2008, AFTA, ASEAN-China FTA, ASEAN-Korea FTA, and ASEAN-Japan FTA have become effective, and ASEAN-CER (Australia and New Zealand) will be implemented in 2009. Each FTA sets several tariff levels such as a 0% tariff, 0%-5% tariff, 50% tariff and so on. Each FTA has a different phase-out tariff elimination schedule. ROOs vary by products and by FTA. Kawai and Wignaraja (2007) showed the different ROOs applied on automobile and auto parts. Consequently, exporters are faced with different tariffs, phase-out schedules and ROOs on a product depending on the destination.

Baldwin (2008) pointed out that the degree of market access available to an AFTA exporter of any particular product varies according to the ASEAN destination market concerned, meaning AFTA is not a single FTA but is composed of 45 (10×9÷2=45) bilateral FTAs (see Figure 1)[1]. This means that one ASEAN+1 FTA creates 55 (11×10÷2) bilateral FTAs, since each member can freely offer FTA preferential tariffs on a product. Three ASEAN+1 FTAs have been forced so far: ASEAN-China, ASEAN-Korea, and ASEAN-Japan. These three ASEAN+1 FTAs mean 165 (3×11×10÷2) bilateral FTAs. In addition, ASEAN-CER FTA was signed in February 2009, which creates 66 (12×11÷2) bilateral FTAs since it is composed of twelve countries. If regional-wide FTAs are realized, the number of bilateral FTAs in the region will increase further. The ASEAN +3 FTA potentially creates 78 different bilateral FTAs (13×12÷2), and ASEAN+6 produces 120 different bilateral FTAs (16

[1] AFTA is composed of ten member countries. Each of the ten members freely places sensitive lists with nine partners. This includes the same match, i.e., Singapore –Thailand and Thailand-Singapore. So, ten member countries can generate forty-five (10×9÷2=45) cases.

×15÷2). After all, East Asia potentially creates 474 bilateral FTAs. This complexity has been created by the system that each country can freely place strategic products on sensitive lists. So, as long as each country can freely set tariffs on products, the complex situation caused by the proliferation of FTAs will be serious.

Figure 1. Spaghetti/Noodle Bowl Syndrome



Source: Baldwin (2008).

Will the overlapping FTAs in East Asia really cause complexity for firms? Petri (2008) doubted such a view raised by Baldwin (2008) and argued that the complexly intertwined FTAs should be viewed as a trade agreement matrix. In fact, exporters in ASEAN use AFTA when they export within the region, but do not use other ASEAN-related plurilateral FTAs such as ASEAN-China FTA and ASEAN-Japan FTA.

They use ASEAN-China FTA when exporting to China. However, it is possible that one FTA may lessen the effects of other FTAs.

2.3. Evaluation of East Asia's FTA

Kawai and Wignaraja (2007) undertook the CGE analysis by using a variant of the GTAP model. The model is characterized by an input-output structure that captures the linkages by modeling firms' use of factors and intermediate inputs. They estimated the impacts of the five East Asian FTA scenarios: (1) ASEAN+China FTA; (2) ASEAN+Korea FTA; (3) ASEAN+Japan FTA; (4) ASEAN+3 (free trade among the 10 ASEAN members, China, Japan and Korea) FTA; and (5) ASEAN+6 FTA scenario (free trade among the 10 ASEAN members, PRC, Japan, Korea, India, Australia and New Zealand). The two East Asia-wide FTA scenarios—ASEAN+3 FTA and ASEAN+6 FTA offer larger gains to world income than any of the three ASEAN+1 FTA scenarios. ASEAN+6 generates larger impacts than ASEAN+3: 0.45% and 0.54% on world income, and 5.23% and 5.66% on ASEAN income.

Harrigan *et al.* (2006) evaluated East Asia's FTAs such as AFTA, ASEAN+3, ASEAN+6, the ASEAN-hub+3 spokes (China, Japan and Korea), and the ASEAN-hub+6 spokes (ASEAN FTA plus PRC, Japan, Korea, India, Australia, and New Zealand). The results show that region-wide FTAs, such as the ASEAN+3 FTA (liberalization among +3 countries) or the ASEAN+6 FTA (liberalization among +3 countries), are likely to generate greater benefits for global economies than other FTAs (Table 1). Looking at the impact by country, the consequences differ. They predict that ASEAN can reap a larger benefit from the ASEAN-hub+6 spokes than the ASEAN+6 FTA although the difference is very small.

Table 1. Welfare Effects of Trade Liberalization (as % of Baseline GDP)

	ASEAN	ASEAN+3	ASEAN+6	ASEAN-HUB+3 spokes	ASEAN-HUB+6 spokes
East Asia	0.00	0.27	0.34	0.03	0.03
Japan	0.00	0.17	0.24	0.04	0.04
PRC	0.02	0.16	0.25	0.04	0.03
Hongkong, China	0.00	0.21	0.21	0.04	0.02
Taipei,China	0.04	-0.26	-0.31	-0.10	-0.11
ASEAN	0.57	2.01	2.45	2.00	2.52
Indonesia	0.29	0.38	0.94	0.46	1.11
Malaysia	0.34	2.36	3.70	2.61	4.11
Philippines	0.02	0.86	0.88	1.21	1.29
Singapore	-0.01	1.15	1.01	-0.04	-0.41
Thailand	0.21	3.80	4.19	4.07	4.72
Vietnam	0.00	6.76	6.81	7.00	7.06
India	0.59	-0.04	1.34	-0.02	1.33
Australia&New Zealand	-0.01	-0.02	0.89	-0.02	-0.01
USA	0.00	0.00	0.00	0.00	0.00
Europe	0.00	0.01	0.01	0.00	0.00
Latin America	0.00	-0.01	-0.02	0.00	-0.01
Global	0.01	0.09	0.14	0.04	0.07

Source: Harrigan (2006), GEMAT simulations.

However, to what extent those estimated benefits are realized is not certain: some firms may use several FTAs but some may use none at all, meaning that FTAs are not fully utilized. Then a question arises: what consequences will be brought about by the reality that several FTAs exist at the same time? Oyamada (2004) developed a forward-looking, multi region, and multi sector model that make it possible to catch the impacts overtime when one FTA is implemented in a period, and sequentially another FTA is implemented in another period. He found that sequential implementation of two FTAs produced quite different consequences on regions from the expected results if each FTA were to be implemented individually. To put it differently, one FTA may offset the impact of other FTAs.

3. The Utilization of FTA by Custom Clearance Base

So, how intensively FTAs involving East Asia is utilized is a great concern not only to academicians but also to policy makers. How intensively FTAs are utilized can be measured by the utilization rates of custom recorded FTA utilized export (import) value to total export (import) value on a product by HS code. These records can be collected by the custom offices. However, due to the custom trade data collection software systems in East Asia have not been arranged to collect information on the FTA preferential trade, except in Malaysia and Thailand. Thailand and Malaysia have released the values of their trade utilizing FTAs, and these values are basic data for evaluating the status of FTA utilization in Asia. The total value of Thai exports taking advantage of AFTA amounted to 30.9% of the total value of exports in 2007, while the figure for Malaysia was 19.1%; these are the highest figures on record since 1998 (JETRO, 2008a). As for the ASEAN-China FTA, the value of Thai exports to China in 2007 that took advantage of preferential tariffs accounted for only 11.1% of the total.

Kohpaiboon (2008) analyzed administrative records for AFTA implementation of Thai exporters for the period 2003-06. This allows us to undertake a systematic analysis of AFTA utilization by Thai exporters. Transactions recorded in the administrative records of AFTA implementation, which indicate the response of the private sector to AFTA export creation. The utilization of AFTA (AFTAU) measured by the ratio of administrative records to total export was low at around 15-20% during the period 2003-06. The utilization rates on the import side were around 11-16 per cent, lower than the rates corresponding to the export side. AFTAU observed from both export and import sides are low by international standards. Kohpaiboon (2008)

concluded the AFTA utilization rates were lower than the performances of NAFTA: the utilization rate of Mexican exports to the United States under NAFTA was at around 60 per cent in 2004-05. The utilization rate of Chilean exports to the United States was around 55-56 per cent in 2005-06 (James, 2006).

4. JETRO Survey of Japanese-affiliate Firms in Asia

JETRO has carried out a survey of the state of Japanese affiliates operating in Asia for 22 years since 1987. The study had been targeted on manufacturing companies at first, but in the wake of the growth of the service sector, it started to include non-manufacturing companies as well in 2008 (the 21st survey). The 22nd survey conducted in 2009 was expanded from 7 countries consisting of ASEAN 6 (Indonesia, Thailand, Malaysia, the Philippines, Singapore and Vietnam) and India to 13 countries including Myanmar, Pakistan, Sri Lanka, Bangladesh, Australia and New Zealand. While the WTO multinational negotiations toward trade liberalization are under difficult conditions these days, Asia-Pacific countries/areas lay more emphasis on FTAs and EPAs. To study the influence of this trend, the JETRO survey has added a question on how manufacturing companies take advantages of them in the last 3 surveys. The last survey results are summarized into "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania." FY2008 Survey was conducted, from September 25th to October 31st, on 5107 Japanese affiliates operating in ASEAN7 (Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam), Bangladesh, India, Pakistan, Sri Lanka, Australia and New Zealand. Of these, 1852 valid responses came from the thirteen

countries, for the valid respondent rate, 36.3%. Among the 1852 respondents, 1354 are in ASEAN 7, 235 are in South-East Asia, and 263 in Oceania (see Table 2).

Table 2. Number of Valid Respondents by JETRO Survey

	FY2006 (11/27/06 - 12/27/06)		FY2007 (10/29/07 - 12/3/07)				FY2008 (9/25/08 - 10/31/08)			
	Response	Valid Respons	Response	Mfg.	Non-Mfg	Valid Respons	Response	Mfg.	Non-Mfg	Valid Respons
Total	830	40.1	1,051	637	414	40.3	1,852	944	908	36.3
ASEAN Total	793	39.7	994	601	393	40.3	1,354	786	568	33.7
Indonesia	141	35.8	110	82	28	26.1	166	110	56	22.3
Malaysia	134	55.8	247	145	102	45.6	180	108	72	52.0
Myanmar	-	-	-	-	-	-	20	6	14	100.0
Philippines	162	57.0	188	129	59	57.5	172	115	57	53.3
Singapore	86	53.8	135	60	75	40.5	194	48	146	26.1
Thailand	202	24.8	261	158	103	35.4	493	317	176	31.4
Vietnam	68	67.3	53	27	26	49.1	129	82	47	46.6
SW Asia Total	37	50.0	57	36	21	41.3	235	107	128	50.5
Bangladesh	-	-	-	-	-	-	35	18	17	42.7
India	37	50.0	57	36	21	41.3	139	61	78	51.9
Pakistan	-	-	-	-	-	-	32	13	19	68.1
Sri Lanka	-	-	-	-	-	-	29	15	14	42.6
Oceania Total	-	-	-	-	-	-	263	51	212	42.4
Australia	-	-	-	-	-	-	201	35	166	38.8
New Zealand	-	-	-	-	-	-	62	16	46	60.8

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

4.1. The Utilization Rates of FTA

FTA use by Japanese firms differs, depending on whether they are exporting or importing. When exporters make use of FTAs, they must secure certificates of origin (COO) certifying that goods were locally produced, for which they must prepare every document that the investigating authorities require. The additional cost burden for certificate issuance, personnel, and procedures is unavoidable, and the exporting company must complete these procedures before the tariff reductions in question are applied by the importing countries. In contrast, when importers take advantage of

FTA, they need only present the COO they have acquired from the exporter at customs. Those who benefit from this arrangement are the importers, who formerly had to pay tariffs. The exporters and those who produce the parts that go into exported goods for which these procedures are necessary do not benefit directly, despite having to bear the burden of going through the necessary procedures.

In most cases, Japanese firms doing business in ASEAN have operated on the assumption of relatively low labor costs and seen ASEAN countries as a base for finishing and export. Many export-oriented firms have taken advantage of investment incentives provided by national governments and, thus, do not pay import duties. In some cases, the investment incentives for parts manufacture and export have eliminated duties altogether and have also made it unnecessary to secure COO.

In recent years, however, purchasing power has increased in ASEAN countries and elsewhere in the region, making markets there more attractive. As a result, the ASEAN operations of Japanese firms now supply local demand as well as producing for export to a third country. As described above, putting aside special cases like Vietnam, export-oriented Japanese operations, with exports accounting for 70% or more of sales, are declining. Among ASEAN nations, the role of the lower tariffs through FTA in developing markets in Indonesia and Thailand, the largest ASEAN economies, which have a low percentage of export-oriented Japanese operations, is significant indeed.

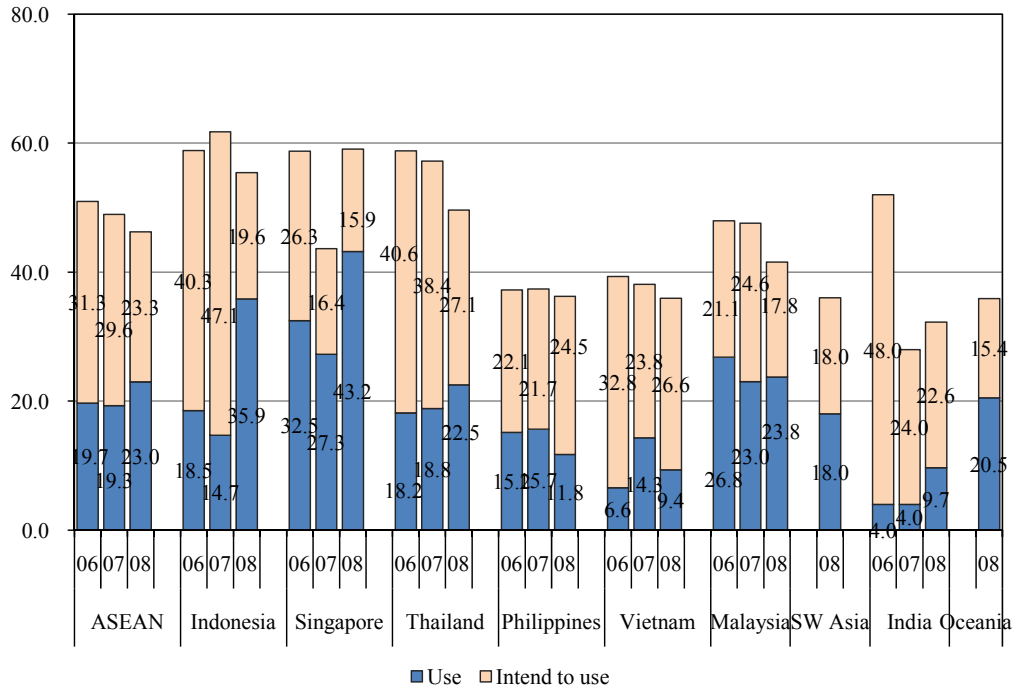
For this report, we have surveyed the use of FTA for exports and imports (with 670 exporters and 635 importers responding). When exporters decide whether to use FTA, important considerations include the following: (1) how much reduction in tariffs will result from using an FTA? (2) Can tariffs on the item in question be eliminated altogether by investment incentives provided by the destination country? (3) Are the

added paperwork costs in line with export volume? And (4) do the products in question satisfy local content criteria?

4.1.1. Exports

Of 670 Japanese affiliates with export operations in ASEAN nations, 154 affiliates (23.0%) take advantage of FTA. The highest level of FTA usage is in Singapore (43.2%), followed by Indonesia (35.9%) and Thailand (22.5%). In contrast, in the Philippines and Vietnam, which are positioned primarily as processing bases for export, the ratio is less than 10%. In Southwest Asia and Oceania, the corresponding figures are 18.0% and 20.5% respectively (Figure 2).

Figure 2. Utilization of FTA by Exporter



Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania.

Among the firms responding to our survey, around one in four (23.3%) are considering taking advantage of FTA in their ASEAN operations, a proportion almost identical with those already doing so. When answers are broken down by country, the highest scores were for Thailand (27.1%), Vietnam (26.6%), and the Philippines (24.5%), where hopes for benefits from FTA/EPA run high. When we combine "already using" and "considering use" scores, the resulting shares for "firms interested in FTA/EPA" include 46.3%, nearly half, for ASEAN as a whole. High scorers include Singapore (59.1%), Indonesia (55.5%), and Thailand (49.6%).

Next, we looked at exporter use of particular FTAs of which ASEAN countries are signatories. To eliminate high scores due to small numbers of cases in the denominator, we restricted our analysis to agreements for which (1) we had qualified responses from 20 or more firms and (2) the proportion of firms taking advantage of the agreements was 5% or more (Table 3). The most widely used FTA around the Pacific Rim is Singapore's AFTA. Of Japanese manufacturing firms in Singapore, 31.8% make use of this agreement. The next most commonly used agreement is JIEPA, the EPA concluded between Japan and Indonesia, at 21.7%. JIEPA went into effect in July 2008, and, while this survey was conducted only four months later, one firm in five was already utilizing it. Of Japanese firms operating in Indonesia, those taking advantage of JIEPA for exports to Japan come mainly from the textiles, apparel, cloth products, lumber and wood products, and plastic products industries. The third most commonly used agreement is ACFTA, the ASEAN-China FTA, which is utilized by 18.2% of Japanese firms in Singapore. Here the most active users are firms in the food and agricultural and fisheries products, chemicals, and electrical and electronic components categories. Japanese firms based in Singapore are more likely to be exporting to China

than those based in neighboring countries; China accounts for 11.4% of their exports on average.

Figure2 show that the use of these agreements has grown in Indonesia, Singapore, Thailand, and India in these three years. The signing of the JIEPA agreement between Japan and Indonesia in July 2008 added to this trend. Another important factor was the agreement with Thailand, which became effective as of November 2007. (The AJECP agreement with Vietnam was signed on December 1, 2008, after this survey was conducted, so its effects do not appear in these results, and the usage rate therefore is not reported to have risen.) If we combine the figures for firms already using or considering use of FTA in a single "proportion of firms interested in FTA" score, we find this total score steadily declining over the past three years in the ASEAN countries. Conversely, the number of firms responding that they have no interest in FTA has gradually increased. The major reasons for these trends are that tariffs have already been lowered, and Japan has no FTAs with export destination countries in Europe and America. (Details will be included in another analysis.)

Turning to use of FTAs by Japanese firms broken down by country or region, we find that 5 out of 16 cases, nearly a third, involve operations in Singapore. Singapore has, since the signing of its first bilateral FTA, with New Zealand, in 2001, vigorously pursued additional agreements with its export partners, concluding further agreements in the Asia-Pacific region with Japan (2002), Australia (2003), India (2005) and Korea (2006). As a result, it now possesses Asia's largest network of FTAs, and Japanese firms have benefited from these agreements.

The FTA most utilized by Japanese firms with operations in the Pacific Rim is the ASEAN Free Trade Area (AFTA; six participants) and four countries' EPA with Japan.

Table 3. Utilization of FTA by Exporter (20+ Valid Responses, Usage Rate at 5% or More)

Rank	Base Country	FTA Partner	Valid Responses	Use FTA %	FYI: % of firms in the country using FTA
1	Singapore	ASEAN	44	31.8	43.2
2	Indonesia	Japan	92	21.7	35.9
3	Singapore	China	44	18.2	43.2
4	Australia	New Zealand	24	16.7	20.8
5	Malaysia	ASEAN	101	14.9	23.8
6	Thailand	ASEAN	262	13.7	22.5
7	Malaysia	Japan	101	12.9	23.8
8	Thailand	Japan	262	11.5	22.5
9	Singapore	Japan	44	11.4	43.2
10	Singapore	Korea	44	9.1	43.2
11	Singapore	Australia	44	9.1	43.2
12	Philippines	ASEAN	102	8.8	11.8
13	Vietnam	ASEAN	64	7.8	9.4
14	Indonesia	ASEAN	92	6.5	35.9
15	India	Thailand	31	6.5	9.7
16	Malaysia	China	101	5.0	23.8

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

When AFTA went into effect in 1993, the reduction in tariffs attracted great attention. According to materials from the ASEAN Secretariat, as of August 2008, Singapore had eliminated tariffs on all listed items. Brunei had eliminated tariffs on 85.4% of listed items, the Philippines on 82.9%, Malaysia on 82.6%, Thailand on 80.6% and Indonesia on 80%. All the ASEAN-6 countries had, thus, achieved the agreement's 80% mid-term target. As a result, by 2008, the average tariff had fallen in ASEAN-10 countries to 1.95% and, in the ASEAN-6, to less than one percent (0.97%). The ASEAN countries are now in the final stage towards complete elimination of tariffs in 2010. August 2008 also saw changes in conditions for utilizing AFTA, which were hoped to

promote greater use of the agreement. The criterion for taking advantage of AFTA had been 40% local or regional added value. Alternative criteria now included Product Specific Rules (PSR, i.e. Change in Chapter (CC) or Change in Tariff Heading (CTH) or Change in Tariff Sub Heading (CTSH) or Process Rule). As a result, it suddenly became possible to enjoy AFTA's preferential tariff rates, the lowest in Asia, for previously excluded products.

In contrast, for most of Japan's EPA, apart from that with Singapore, have only been in effect since 2006, and tariffs have not yet been eliminated. Nonetheless, Indonesia at 21.7%, followed by Malaysia, Thailand and Singapore, all rank high in the share of exports covered by FTA. Japan's own tariffs on manufactured and other nonagricultural goods are the lowest in the world. According to the WTO' World Tariff Profiles 2008, Japan's tariffs in the nonagricultural sector average 2.6%, lower than either the USA (3.2%) or the EU (3.8%). Japan retains, however, an average 21.8% tariff on agricultural and processed agricultural products, including 154.7% on dairy products and 64.3% on grains and grain-based products. As of February 2009, Japan has given a generalized tariff preference (GSP) status, imposing lower than the usual tariffs, on 337 agricultural and fisheries products and 5,980 mineral products from developing nations. Under Japan's EPA, for GSP items on which the GSP rate is lower than the EPA preferential rate, the GSP rate can be applied. Since, however, in almost all cases, the EPA tariff is lower, these items are excluded from GSP coverage. This explains why we find in this survey that many companies are now taking advantage of the EPA has switched from the GSP.

For example, Thailand's FTA with Japan came into effect in November 2007. Following the FTA's coming into effect, use of GSP shrank dramatically. According to

Thailand's Department of Commerce, the total value of exports to Japan taking advantage of GSP between January and November 2008 was US$127.08 million, an 88.8% decline from the US$1.1345 billion reported for the same period in the previous year. Exporters were switching from use of the GSP to the FTA.

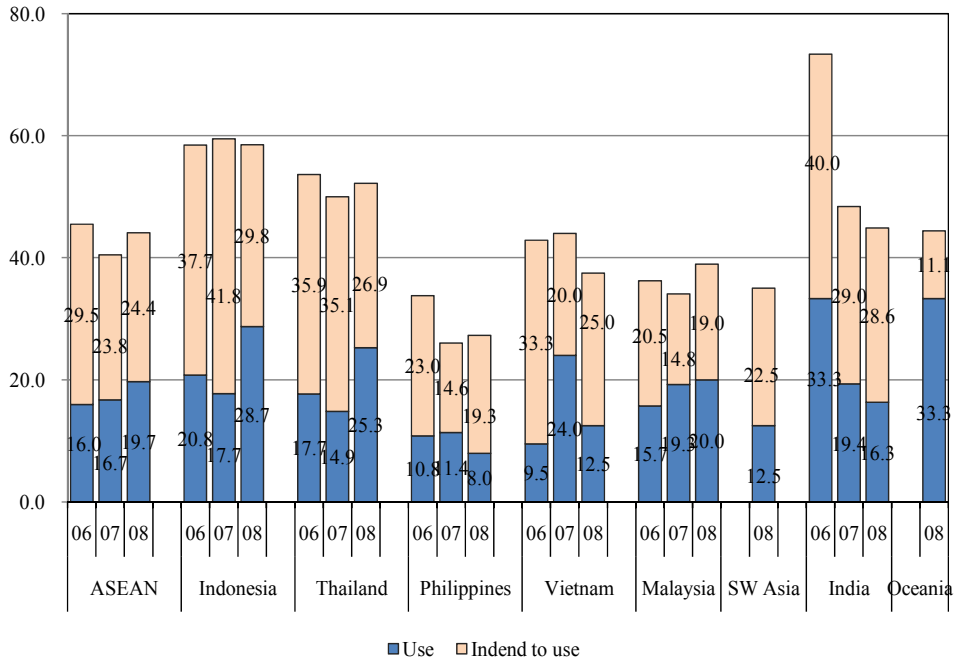
4.1.2. Imports

For ASEAN as a whole, of 635 Japanese affiliates with import operations in the ASEAN nations, 131 firms (20.6%) utilize FTA for imports, slightly less than the 23% for exports. Use of FTA for imports is especially prevalent in Oceania (33.3%); 42.1% of Japanese firms doing business in Australia report taking advantage of these agreements. Next come firms doing business in Indonesia (28.7%), Thailand (25.3%) and Malaysia (20.0%). Looking back over our latest three surveys, we find that the share of importers taking advantage of FTA has increased in Indonesia, Thailand, and Malaysia. As reported for exports, for imports too, the substantial increase in the usage rates in Indonesia and Thailand in 2008 demonstrates the impact of the FTA concluded between Japan and these countries. Of the 27 firms with operations in Indonesia that take advantage of FTA, the majority are making use of JIEPA, the FTA between Japan and Indonesia. Of the 27, 23 import goods from Japan, of which 16 (70%) take advantage of JIEPA. Three are firms in the iron and steel and metal products sector. Two are suppliers of transportation equipment.

The proportion of Japanese firms with operations in ASEAN that report that they are considering making use of these agreements is 24.4%. If we combine these firms with those already taking advantage of FTA, we see little change over the last three years in the interest in them, with the proportion about 45% for ASEAN as a whole.

We see similar figures from Oceania and India, included for the first time in the survey reported here. The degree of interest varies from country to country but is relatively high in Indonesia (Figure 3).

Figure 3. Utilization of FTA by Importer



Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania.

Note: Singapore put tax on only 6 alcoholic items including beer. Therefore Singapore is omitted from this figure.

To calculate the proportion of FTA usage by countries in which Japanese firms operate, we use the same method for imports as for exports, using only agreements for which we have valid answers from 20 or more firms and usage rates of 5% or more. The agreement most often made use of is JIEPA, the Japan-Indonesia FTA, at 17%. Next come Japan's EPA with Malaysia and Thailand. Thus, the top three are EPAs

with Japan. Except for TIFTA, Japan's FTA with India, with its early harvest lowering of tariffs at No. 5, all of the other agreements are within the ASEAN Free Trade Area (AFTA) (Table 4).

Table 4. Utilization of FTA Importer (20+ Valid Responses, Usage at 5% or More)

Rank	Base Country	FTA Partner	Valid Responses	Use FTA %	FYI: % of firms in the country using FTA
1	Indonesia	Japan	94	17.0	28.7
2	Malaysia	Japan	95	12.6	20.0
3	Thailand	Japan	253	12.3	25.3
4	Thailand	ASEAN	253	10.3	25.3
5	India	Thailand	49	10.2	16.3
6	Malaysia	ASEAN	95	9.5	20.0
7	Vietnam	ASEAN	64	9.4	12.5
8	Philippines	ASEAN	88	8.0	8.0
9	Indonesia	ASEAN	94	7.4	28.7

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

In Oceania, the Thailand-Australia FTA (TAFTA) came into effect in January 2005. Major Japanese corporations took advantage of this FTA to import cars and electrical products produced in Thailand into Australia. Since only 19 firms provided valid responses from Australia, these responses are not included in Figure 9. We should note, however, that 31.6% of Japanese firms active in Australia take advantage of the TAFTA, which, of the FTA into which Australia has entered, is the most often used. Among cars imported into Australia, passenger cars produced in Thailand rank No. 3, after cars from Japan and Germany. In the commercial vehicle segment, it is the largest source of imported vehicles, topping Japan and the USA.

4.2. Reasons for Not Utilizing FTA/EPA

Since the year 2000, awareness of FTA/EPA has increased sharply throughout Asia. Because, however, there is great variation from country to country, we still find that more than half of the firms we surveyed neither take advantage of nor consider making use of these agreements. As far as exports are concerned, the major reasons for not utilizing FTA/EPA in the ASEAN region are, first, "The countries to which we export have already reduced tariffs; FTA offers no additional benefit" (123 firms, 37.6%). Second is, "There are no FTA/EPA with the countries to which we export" (75 firms, 22.9%). Some companies say, "Tariffs are already low in the countries to which we export; there is no additional benefit to using FTA" (65 firms, 19.9%). When manufactured goods are sent back to Japan, tariffs are either extremely low or have been eliminated altogether, making it unnecessary to employ FTA or EPA, a point that underlies the results reported for ASEAN. In the cases of Southwest Asia and Oceania, however, nearly 40% of all the responding companies note that there are no FTA/EPA with the countries to which they export (Table 5).

Turning, then, to imports, we find that the overwhelmingly most important reason why FTA are neither employed nor considered is that in the ASEAN region, investment incentive schemes have already eliminated tariffs, a reason cited by 157 (48.9%) of the 351 firms that responded to that question. Other reasons mentioned include "low levies on products sold domestically" (13.4%) and "no FTA/EPA with the countries from which we import" (13.1%). In Oceania and Southwest Asia, however, the absence of FTA/EPA is the reason cited by 50% and 42.6% of responding firms respectively (Table 6).

Table 5. Reasons for not Using FTA (%): Exports

	Low tariff, no benefit from FTA	Tariff exempt, no benefit from FTA	COO hurdle too high	High cost of COO	COO procedures too complex	Unaware of FTA/EPA or can't get paperwork	Many different COO rules within the various FTA/EPA; too	No FTA/EPA with destination	Other
ASEAN (n=327)	19.9	37.6	4.0	2.5	4.6	1.5	4.6	22.9	22.6
Indonesia (n=34)	17.7	38.2	2.9	8.8	5.9	2.9	5.9	26.5	35.3
Malaysia (n=55)	23.6	52.7	-	-	1.8	-	1.8	14.6	14.6
Myanmar (n=4)	-	75.0	25.0	-	-	-	-	25.0	-
Philippines (n=61)	9.8	32.8	4.9	-	3.3	1.6	9.8	21.3	27.9
Singapore (n=15)	6.7	40.0	-	13.3	13.3	6.7	6.7	20.0	26.7
Thailand (n=122)	26.2	32.8	6.6	2.5	6.6	1.6	4.1	22.1	22.1
Vietnam (n=36)	19.4	33.3	-	-	-	-	-	38.9	16.7
SW Asia (n=37)	16.2	18.9	-	-	-	2.7	2.7	37.8	29.7
India (n=19)	10.5	5.3	-	-	-	5.3	-	42.1	42.1
Oceania (n=24)	12.5	29.2	-	-	-	-	-	41.7	25.0

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

Table 6. Reasons for not Using FTA (%): Imports

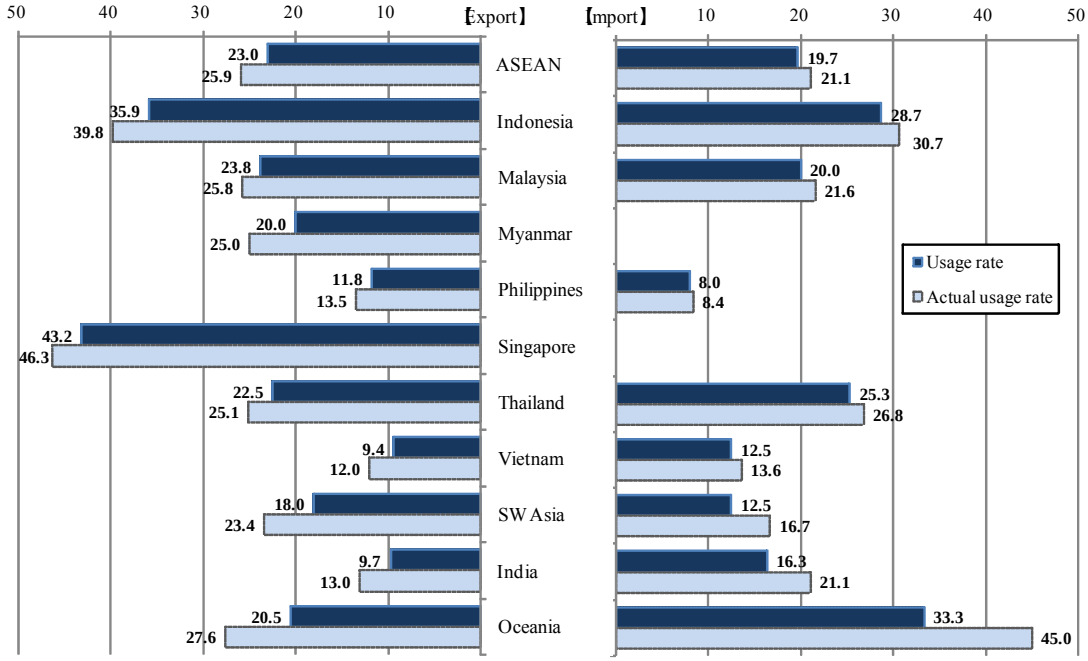
	Investment incentive scheme already lowers tariffs	Few domestic sales on which tariffs	Procurement sources unaware of FTA/EPA	FTA not applicable to intermediary trades	Ordinary tariffs low, no benefit from FTA	No benefit from stepwise FTA reduction	No FTA/EPA with source	Other
ASEAN (n=321)	48.9	13.4	2.2	0.3	12.8	4.1	13.1	15.9
Indonesia (n=35)	34.3	14.3	-	-	11.4	5.7	17.1	31.4
Malaysia (n=55)	45.5	20.0	-	1.8	14.6	3.6	12.7	10.9
Myanmar (n=5)	20.0	60.0	20.0	-	-	-	40.0	-
Philippines (n=60)	61.7	8.3	3.3	-	5.0	-	8.3	16.7
Singapore (n=18)	-	22.2	5.6	-	22.2	-	16.7	38.9
Thailand (n=113)	51.3	10.6	2.7	-	15.9	8.0	12.4	14.2
Vietnam (n=35)	68.6	8.6	-	-	11.4	-	14.3	2.9
SW Asia (n=47)	29.8	4.3	4.3	-	2.1	4.3	42.6	14.9
India (n=23)	4.4	-	8.7	-	4.4	8.7	47.8	30.4
Oceania (n=14)	-	-	-	-	14.3	7.1	50.0	28.6

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania.

Unless an FTA exists between the importing and exporting countries, their utilization is simply impossible. Thus, when calculating FTA usage ratios, we first subtract from the qualified responses that form the denominator of the fraction those which indicate that no FTA exists between the importing or exporting countries in question and then recalculate our results. With this correction, both export and import usage increase. Export usage rises from 23.0% to 25.9%, while import usage rises

from 20.6% to 22.1%. In the case of Oceania the increase is dramatic, from 7.1% to 27.6% for exports and from 11.7% to 45.0% for imports (Figure 4).

Figure 4. FTA Usage and Real Usage Rates



Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania.

Note: Singapore put tax on only six alcoholic items such as stout & porter, samsu, etc. Therefore Singapore Import is omitted from this figure.

4.3. The Preferential Tariff Margin and Use of FTA/EPA

As noted above, when exporters make use of an FTA/EPA, they incur the added cost of securing COO. Thus, only when the preferential tariff margin gained by using FTA/EPA is greater than the additional cost of procedures involved will companies consider utilizing FTA. All the companies responding to this survey, both those that make use of FTA and those considering making use of FTA, compare the preferential tariff margin, the tariff reduction, from utilizing an FTA with that available Most

Favored Nation (MFN) status in deciding whether to use FTA. Of the 390 manufacturing firms doing business in Asia and Oceania, the largest proportion (28.2%) state that they would consider using an FTA with a preferential tariff margin in the 3%-5% range. Another 27.9% said that they would consider it if the margins were between 5-7%. At the other extreme, 15.6% of those companies reported that they would not consider making use of FTA unless the tariff margin is at 10% or more. Most of that group of companies have small volumes of exports and think that it would take a preferential tariff margin of 10% or more to over the added costs of obtaining COO.

Using the median in each category, we calculated the average preferential tariff margin at which Japanese firms will make use of FTA/EPA; the result is a trigger value of 5.3%. By region, that trigger is at its lowest in ASEAN (5.2%), followed by Oceania (5.9%) and Southwest Asia (6.2%). In ASEAN, securing COO is already a relatively widespread practice; since those costs are, thus, often already in the equation, the preferential tariff margin that will trigger FTA/EPA usage is lower. Indonesia, for example, is the ASEAN country in which, in terms of required paperwork, is the easiest to use FTA/ETA. There, the screening for local origin is carried out promptly, as early as the day of application or no later than three days of application, and the COO is then issued immediately. JIEPA, Japan's EPA with Indonesia, only came into effect in July 2008, but Japanese firms report that in most cases they have no trouble obtaining a COO, usually within one day. Thus, for Indonesia, the preferential tariff margin that would trigger the use of EPA was only 4.3%, 1% lower than the ASEAN average. Countries differ in the costs of the paperwork and procedures required to acquire COO; the more complicated the procedures, the higher the preferential tariff margin needs to

be. In general, however, more companies would start to use FTA if the added benefit of lower tariffs in the destination country was in the neighborhood of 5%-6% on average (Table 7).

Table 7. Preferential Tariff Margin Needed to Consider Use of FTA (# of firms): Exports

	Asia-Oceania	ASEAN	Thailand	Indonesia	Malaysia	Philippines	Vietnam	SW Asia	Oceania
Response	390	339	152	66	39	36	26	34	17
<1%	26	23	11	7	2	1		2	1
1-3%	56	50	26	10	5	5	3	3	3
3-5%	110	98	36	27	10	14	6	8	4
5-7%	109	97	44	15	17	6	9	9	3
7-9%	10	9	6	3				1	
9-10%	18	16	10	1	1	2	2	2	
≥10%	61	46	20	3	4	8	6	9	6

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

4.4. Investment Incentive Management Costs Affect Use of FTA/EPA

As reported above, nearly half (48.9%) of the Japanese firms not utilizing FTA in ASEAN already enjoy lower tariffs due to investment incentive schemes. In many ASEAN countries, incentives to promote inbound investment reduce or eliminate tariffs on materials or parts imported for assembly and exported as finished products. In these cases there is no need to make use of FTA/EPA. Specifics vary from country to country, but to take advantage of investment incentive schemes, normally requires, first, permission to invest, plus applications and licenses for imports. Regular reports must be submitted to the authorities in charge of these schemes, and parts and materials imported and assembled to meet local demand must be accounted for separately from the management of parts and materials imported and assembled for export.

For companies to switch from investment incentive schemes to taking advantage of

FTA would require that the costs of switching to FTA be lower than the management costs incurred by participation in the investment incentive scheme in question. When we asked firms doing business in Asia about the added management cost of participating in investment incentive schemes, nearly half answered that they were less than 1% of the cost of imported materials or parts. The next most common answer (33.3%) was between one to three percent. Calculations based on the median score in each category suggest that the cost of participation in investment incentive schemes, is, on average, 1.9% of the cost of imported materials or parts for all of Asia and for ASEAN, and 2.3% for Southwest Asia. A breakdown by country shows that the highest management cost is in Thailand (2.2%), followed by Vietnam (2.2%) and Malaysia (1.7%). The lowest cost is in Indonesia (1.3%) (Table 8).

Table 8. Ratio of Investment Incentive Scheme Management Costs to Imported Materials and Parts Costs (%)

	Asia-Oceania	ASEAN	Thailand	Indonesia	Malaysia	Philippin	Vietnam	SW Asia	Oceania
Response	390	339	152	66	39	36	26	34	17
<1%	6.7	6.8	7.2	10.6	5.1	2.8	0.0	5.9	5.9
1-3%	14.4	14.7	17.1	15.2	12.8	13.9	11.5	8.8	17.6
3-5%	28.2	28.9	23.7	40.9	25.6	38.9	23.1	23.5	23.5
5-7%	27.9	28.6	28.9	22.7	43.6	16.7	34.6	26.5	17.6
7-9%	2.6	2.7	3.9	4.5	0.0	0.0	0.0	2.9	0.0
9-10%	4.6	4.7	6.6	1.5	2.6	5.6	7.7	5.9	0.0
≥10%	15.6	13.6	13.2	4.5	10.3	22.2	23.1	26.5	35.3
Average	5.3	5.2	5.3	4.3	5.2	5.6	6.3	6.2	5.9

Source: Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania

At present, the FTA/EPA that has made the greatest progress in reducing tariffs is AFTA. Because of AFTA, in 2008 the ASEAN-6 reduced tariffs to an average of 0.97%. The cost of tariffs fell below the management cost of participating in

investment incentive schemes. However, the ASEAN share of Japanese firms' procurements is still limited. Our previous survey found that the proportion of procurements from ASEAN countries to total procurements (including local procurements) was at most 11.5%, far smaller than that of procurements from Japan (37.8%) or local procurements (40.0%). Thus, on the import side, most Japanese firms are still waiting for further tariff reductions before participating in individual EPA between ASEAN countries and Japan or the ASEAN-Japan Comprehensive Economic Partnership (AJCEP) agreement. Except for Singapore, EPA between Japan and ASEAN countries first became effective with Malaysia in July 2006, followed by Thailand in 2007, and Indonesia in 2008; the EPA to which Japan is a signatory requires up to 10 years to eliminate tariffs completely. Thus, Japanese firms now mainly importing materials or parts from Japan under investment incentive schemes are likely to continue to do so.

5. Econometric Analysis on FTA Utilization

This section is aimed to clarify firm characteristics encouraging or discouraging firms' use of FTA scheme by conducting econometric analysis for the firm-level data introduced in the previous section. Thus our sample is Japanese overseas affiliates in 2006, 2007, and 2008. In order to fix sample countries identical across years, we restrict to such affiliates in six ASEAN member countries: Thailand, Malaysia, Singapore, Indonesia, the Philippines, and Vietnam. Therefore, the main FTA scheme

in our mind here is CEPT scheme, though there are also other FTA schemes available for firms in ASEAN countries.

5.1. Empirical Framework

In this paper, we employ the following probit model, given by:

$$\Pr(FTA_i=1|X_i) = \Phi(X_i'\beta),$$

where $\mathbf{X}_i$ = (ln *Employment*$_i$, *Zero tariff share*$_i$, *Local input share*$_i$, *Local input share*^2$_i$). $\Phi(\cdot)$ is the standard cumulative normal probability distribution. FTA_i is an indicator variable taking unity if a firm *i* uses bilateral or multilateral FTAs and zero otherwise. We examine three kinds of firm characteristics: *Employment*, *Zero tariff share*, and *Local input share*. The second one is presumed to be important for the utilization in importing, and the first and last ones are for that in both importing and exporting.

First, a variable *Employment* embodies a firms' scale. In utilizing FTA schemes, firms generally have to incur some costs to prepare documents, i.e. employing additional indirect staff to cope with the matters of FTAs, which become a kind of fixed cost for them. The well-known Melitz model indicates that only firms with higher productivity can afford to pay expenses for exporting (Melitz, 2003). Applying this argument to our context, such document costs generate selection effects in firms' use of FTA according to firms' productivity. To examine this claim, we introduce firms' employment as an independent variable because our dataset does not have convincing productivity measures, i.e. value-added and so on. Since firms with higher productivity produce more output and thus employ more employees, the use of the employment as a proxy for productivity would be plausible to some extent. As a result, the larger the firms' scale, the more likely they would be to utilize FTA schemes.

Next, in order to examine the influence of alternatives to benefit from zero import duty schemes on firms' FTA utilization, we introduce a variable *Zero tariff share*. This variable represents a share of imports with zero tariffs through channels other than FTA, in total imports. There are several channels to import goods through without paying tariffs. The first is an enjoyable one for all firms. When firms decide not to utilize FTA, they will pay general tariff rates, usually Most Favored Nations rates (MFN rates). Thus, as mentioned in section 4.3, if the MFN rates are already zero, they do not have to pay any import duties. Also, most of the information technology-related products can be traded without tariffs due to the Information Technology Agreement (ITA). The second is a channel for foreign-owned firms. They tend to obtain some investment promotion schemes from host countries' governments particularly when entering those countries. An example is tariff exemption on imported inputs for export purposes. If firms already have these alternatives, they do not need to further utilize FTA schemes, as mentioned in section 4.4. As a result, firms that already import without tariff burdens are less likely to utilize FTA in importing.

Last, a share of local inputs in total inputs, *Local inputs share*, is introduced. In utilizing an FTA scheme in exporting, exported goods must comply with ROOs. In CEPT scheme, for example, inputs from ASEAN member countries must account for at least 40 percent of their gross output value (regional value content rule[2]). Thus, given inputs from the other ASEAN countries, affiliates with the larger local inputs share in an ASEAN member country are more likely to be able to utilize CEPT scheme in exporting their products to other ASEAN countries. On the side of FTA utilization in importing, however, their extremely large share might discourage the use of an FTA scheme. This

[2] Since 1 August 2008, the CEPT ROOs include "Change in Tariff Headings Rule". But, since our sample hardly covers such period, we focus on the regional value content rule.

is because their larger share implies a smaller share of imports, which is more likely to fail to cover fixed costs, e.g. documentation costs, for an FTA scheme in importing. As a result, the share of local inputs is positively and negatively associated with FTA utilization in exporting and importing, respectively.

Before reporting data issues and estimation results, there are two points to be noted in our construction of a dependent variable. First, this paper takes as firms utilizing FTAs, not only firms that currently use any existing bilateral or multilateral FTAs already in force but also firms that are considering using them. This contributes to avoiding difficulties in our dataset. Although it is desirable to restrict our sample to firms exporting to or importing from countries with FTAs with countries in which those firms locate, our dataset cannot identify trading partner countries in each firm. However, such a restriction turns out to be not always necessary if we include firms under consideration. Furthermore, it also might not be necessary that the trading partner countries have already concluded FTAs. Hereafter, not only firms that currently use FTAs but also firms that are considering using them are collectively called "firms using FTAs".

Second, in this paper, we examine the correlation of the above-proposed firms' characteristics with FTA schemes in importing and exporting simultaneously, not separately. That is, our dependent variable takes unity if FTAs are used in either importing *or* exporting. There are two reasons for such simultaneous examination. The first one is based on an empirical fact: The FTA scheme tends to either be utilized in both importing and exporting or be not utilized at all. Indeed, in Japanese affiliates in ASEAN countries, the former type of affiliate occupies 37% of all the affiliates, and

the latter type 48%, as shown in Table 9[3]. Thus, from the empirical point of view, there are no qualitative differences in results between the separate examination and the simultaneous examination. The other is based on the above-mentioned theoretical prediction in *Local inputs share*. In order to utilize FTA in both importing and exporting, a medium share of local inputs would be optimal. If this prediction is correct, affiliates not utilizing FTA would have either a large or small share of local inputs. As a result, taking the above empirical fact into consideration, we will not obtain sharp results in *Local inputs share* in the separate examination.[4] In sum, there might be inverse U-shaped relationship between firms' FTA use and a share of local inputs. To examine such non-linear relationship, we also introduce the square term of local inputs ratio, *Local inputs share*^2.

Table 9. FTA Utilization between Exporting and Importing

ALL		Exporting	
		NO	YES
Importing	NO	48% (793)	10% (166)
	YES	5% (84)	37% (623)

Source: Authors' compilation by using "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania"

5.2. Data and Basic Statistics

The source of our data for estimation is the one that was explored in the previous section, "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania." After some cleaning, the total observations turn out to be 1,666 firms in 2006, 2007, and

[3] As argued above, also in this table, firms utilizing FTAs include those planning to use FTAs.
[4] Indeed, we could not obtain significant results in *Local inputs share* at all in the case of separate examination.

2008, as shown in Table 10. Although some items are answered within a certain range, we evaluate the answers of such items in their median. For example, a share of local inputs in total inputs is chosen among 0, 0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80, 80-90, 90-100, and 100. These shares are replaced with 0, 5, 15, 25, 35, 45, 55, 65, 75, 85, 95, and 100, respectively.

Table 10. Basic Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FTA	1,666	0.524	0.500	0	1
ln Employment	1,666	5.476	1.444	0.000	11.608
Zero Tariff Share	1,666	0.576	0.430	0	1
Local Input Share	1,666	0.382	0.319	0	1

Source: Authors' compilation by using "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania".

Next, employing this dataset, we present another overview on the FTA utilization and firms' characteristics by country. Table 11 shows FTA utilization between exporting and importing by country. There are three points to be noted. First, as in table 9, we can see in any countries that the FTA scheme tends to either be utilized in both importing and exporting or not being utilized at all. Second, affiliates in Indonesia are more likely to use FTA schemes in both exporting and importing than those in the other ASEAN countries. There are a larger number of firms using these in both exporting and importing than firms not using these at all. Third, contrary to the second point, affiliates in the Philippines are less likely to use FTA schemes. Those in Malaysia and Vietnam also tend not to use these.

Table 11. FTA Utilization between Exporting and Importing, by Country

Thailand		EXP	
		NO	YES
IMP	NO	202	42
	YES	41	227

Singapore		EXP	
		NO	YES
IMP	NO	67	20
	YES	1	52

Philippines		EXP	
		NO	YES
IMP	NO	202	29
	YES	5	81

Malaysia		EXP	
		NO	YES
IMP	NO	166	40
	YES	5	96

Indonesia		EXP	
		NO	YES
IMP	NO	81	28
	YES	25	124

Vietname		EXP	
		NO	YES
IMP	NO	75	7
	YES	7	43

Source: Authors' compilation by using "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania"

Table 12 shows mean values of the firms' characteristics in our analysis by country. In this table, two points are noteworthy. First, zero tariff shares are low in Thailand and Indonesia and are high in Malaysia, Philippines, and Vietnam. In these countries, incentive schemes are equally available, resulting in the pushing up of their zero tariff shares. One source of differences in the shares might be a main sector of Japanese affiliates in each country. For example, their main sectors in Thailand and Malaysia are automobile and electrical machinery, respectively. The automobile sector has relatively high tariffs, while the electrical machineries have zero MFN rates in many products under the ITA. As a result, such a difference might contribute to yield differences in zero tariff shares across countries. The second noteworthy point is that local input shares are high in Thailand and are low in Vietnam. The high share in Thailand might be again due to the general tendency of a high local procurements ratio in the automobile sector. In addition, differences in the maturity of local suppliers between Thailand and Vietnam should give rise to these differences in the local input shares.

Table 12. Mean Values in Variable, by Country

	Obs	Mean	Obs	Mean	Obs	Mean
	Thailand		Malaysia		Singapore	
FTA	512	0.605	307	0.459	140	0.521
ln Employment	512	5.619	307	5.267	140	4.185
Zero Tariff Share	512	0.368	307	0.734	140	0.678
Local Input Share	512	0.513	307	0.400	140	0.293
	Indonesia		Philippines		Vietnam	
FTA	258	0.686	317	0.363	132	0.432
ln Employment	258	5.766	317	5.720	132	5.625
Zero Tariff Share	258	0.419	317	0.783	132	0.718
Local Input Share	258	0.401	317	0.261	132	0.184

Source: Authors' compilation by using "Survey of Japanese-Affiliated Firms in ASEAN, India, and Oceania"

5.3. Empirical Results

Regression results are reported in Tables 13. The column (I) shows our baseline result, which is completely consistent with our expectation. The coefficient for *Employment* is significantly positive, indicating that the larger the affiliate, the more likely it is to utilize an FTA. Also, affiliates that often import their inputs with zero tariffs do not need to consider the use of FTAs significantly. This result confirms that investment promotion incentives and low general tariff rates surely play an alternative role to FTA utilization. In addition, we can find the significant inverse U-shaped relationship between FTA use and a share of local inputs. Calculating the maximum share (= - $\beta_{Local\ inputs\ share}$ / (2 $\beta_{Local\ inputs\ share\^2}$)), we can see that affiliates with 42% are most likely to utilize FTAs. It is interesting that such a maximum share of local inputs almost completely coincides with the required share of inputs from ASEAN countries in value content rule, 40%. This result might indicate that Japanese affiliates minimize costs for FTA utilization in both importing and exporting accurately to some extent, particularly in the share of local inputs.

Table 13. Empirical Results: Probit for FTA Utilization

Sample	ALL			Trading Affiliates		
Equation	(I)	(II)	(III)	(IV)	(V)	(VI)
ln *Employment*	0.084***	0.097***	0.096***	0.081***	0.094***	0.093***
	[0.022]	[0.027]	[0.027]	[0.022]	[0.027]	[0.027]
Zero Tariff Share	-0.627***	-0.339***	-0.346***	-0.634***	-0.348***	-0.354***
	[0.076]	[0.088]	[0.088]	[0.076]	[0.088]	[0.088]
Local Input Share	1.236***	1.046***	1.044***	1.148***	1.012***	1.012***
	[0.351]	[0.383]	[0.384]	[0.355]	[0.387]	[0.387]
Local Input Share ^2	-1.480***	-1.502***	-1.501***	-1.350***	-1.452***	-1.452***
	[0.373]	[0.403]	[0.404]	[0.380]	[0.411]	[0.412]
Maximum	42%	35%	35%	43%	35%	35%
Year dummy	NO	YES	NO	NO	YES	NO
Sector dummy	NO	YES	YES	NO	YES	YES
Country dummy	NO	YES	NO	NO	YES	NO
Country-year dummy	NO	NO	YES	NO	NO	YES
Observations	1,666	1,666	1,666	1,652	1,652	1,652
Pseudo R2	0.041	0.111	0.112	0.111	0.110	0.111

Notes: Robust standard errors are in parentheses. ***, **, and * show 1%, 5%, and 10% significance, respectively.

We conduct several kinds of robustness checks. The first one is to introduce fixed effects into our equation, and its results are reported in columns (II) and (III). Particularly in (III), we control all of the time-variant country specific characteristics such as potential administrative costs in each country. In fact, since August 2008, AFTA has employed the option system of ROO criterion, and Japan has lifted the obligation to submit invoices attached to documents. Therefore, potential administrative costs might change by country and by year. To control these changes, we introduce a country-year fixed effect into our equation. As a result, we can see that the results in firm characteristics are qualitatively unchanged with the previous one. That is, we can say that an affiliates' scale is important to cover some kinds of costs for preparing documents for FTA utilization, and that low tariff schemes serve as an

alternative to FTA schemes. In addition, affiliates with the larger share of local inputs are likely to comply with ROOs in exporting, but their extremely large share fails to cover fixed costs for FTA schemes in importing.

The second robustness check is to restrict our sample only to affiliates that are importing and/or exporting. Although, as argued above, it is not a severe problem basically to include non-trading firms in our sample because our dependent variable includes firms that are considering an FTA scheme, such a restriction would yield a cleaner picture on the choice of FTA utilization. These results in firm characteristics are reported in columns (IV), (V), and (VI), and are qualitatively unchanged with our baseline result. That is, an affiliates' employment is positively related to their FTA use, while their share of imports with zero tariffs is negatively associated with that. We can say that the maximum share of local inputs is again around 40%.

In this purer examination, the results of fixed effects are also worth being reported. They are in Table 14 and have three noteworthy points. First, the likelihood of affiliates' FTA utilization falls significantly from 2006 to 2008. Thus, we can say that the rise of FTA utilization in some countries, which was detected in Section 4, is induced by changes of firms' attributes in those countries rather than by the improvement of FTA scheme. In order to clarify the causes of such negative significance, the further investigation will be necessary. Second, the FTA is more likely to be utilized in textile and automobile sectors and is less likely in plastic products, electrical machinery and electronic equipment, and electric and electronic parts and components. The contrast between automobile and electrical machineries would be attributed to the differences in tariff rates. As pointed out above, most of the IT products can be imported without paying import duties under the ITA, while

automobile products including parts and components usually has high import duties. Interestingly, the estimated result on the textile industry shows positive signs at significant levels. This reflects that since FTAs by ASEAN mostly reduce tariffs on textiles to a low level and the units of trade volumes is rather big, the benefits are expected to be large in this industry. To put it differently, the large reduction of tariffs might encourage utilizing FTAs. Lastly, and equally important, even after controlling other factors including those due to the differences in the main sectors, firms in the Philippines and Vietnam are less likely to utilize FTA schemes. Thus, these estimated results might suggest that the operational procedures to obtain certificates in those countries are more cumbersome than other countries.

Table 14. Dummy Coefficients in Equation (IV)

Year Base: 2006		Sector Base: Food				Country Base: Thailand	
2007	-0.109	Textiles	1.358***	Glass and glass produc	-0.444	Malaysia	-0.121
	[0.082]		[0.460]		[0.315]		[0.102]
2008	-0.172**	Wearing apparel	0.355	Basic iron and steel	-0.221	Singapore	0.019
	[0.079]		[0.315]		[0.235]		[0.140]
		Wood products	0.061	Non-ferrous metals	-0.22	Indonesia	0.16
			[0.412]		[0.236]		[0.105]
		Furniture	-0.528	Metal products	-0.296	Philippine	-0.527***
			[0.400]		[0.201]		[0.106]
		Paper products	0.122	General machinery	-0.193	Vietnam	-0.315**
			[0.439]		[0.226]		[0.137]
		Chemicals	-0.15	Electric machinery	-0.493**		
			[0.207]		[0.205]		
		Petroleum product	0.391	Electric parts	-0.764***		
			[0.391]		[0.203]		
		Plastic products	-0.598***	Automobile	0.541*		
			[0.219]		[0.301]		
		Medical products	0.152	Automobile parts	0.227		
			[0.517]		[0.195]		
		Rubber products	-0.122	Precision machinery	-0.342		
			[0.258]		[0.343]		
				Others	-0.337*		
					[0.196]		

Notes: Robust standard errors are in parentheses. ***, **, and * show 1%, 5%, and 10% significance, respectively.

Furthermore, we conducted some estimation. The decline of firms using FTA schemes in either exporting or importing from the sample does not change our results at all. In addition, we eliminated firms located in Singapore. As argued before, answers for FTA utilization are doubtful in Singapore. Indeed, also in our sample, 53 firms answer that they utilize FTA schemes in importing (see Table 11). However, by dropping the firms in Singapore we obtained the qualitatively unchanged results. As a result, we conclude that our empirical results are robust.

6. Issues on Current FTAs

Rule of origin is at the center of discussions, when it comes to spaghetti bowl phenomenon. Currently, 19 FTAs have already come into effect in ASEAN + 6 region making up ASEAN10, Japan, China, Korea, Australia, New Zealand and India, however rules of origin adopted within those FTAs differ from each other.

There are three main issues to be discussed in relation to the rules of origin, which are 1) criterion to determine the origin of goods, 2) procedure to certify the origin of goods, and 3) intermediary trade. Rules of origin is likely to countervail custom tariff eliminations under FTAs to some extent through increasing administrative costs and affecting lead times, even though they are a prerequisite for any FTA except for complete customs union, in order to avoid circumvented imports from non-statutory countries. In other words, FTA needs rules of origin, but creates additional costs to countervail the benefits of an FTA. Therefore it is critical to discuss what a cost-efficient rule of origin is. A flexible criterion and a procedure to certify origin of

goods may be able to reduce them and increase its utilization.

6.1. A Flexible Criterion will Eliminate Administrative Costs

There are four main types of criteria to determine the origin of goods; these are 1) a value added content criterion, 2) a change in tariff classification criterion, 3) an optional criterion to allow firms a choice of whether to be of either a value added content criterion or a change in tariff classification criterion, and 4) a dual criterion to require firms the use of both of them. It is generally recognized that an optional criterion is the most flexible and cost efficient criterion because firms are allowed to choose one of the criterion they will use. As the value added content criterion would be generally more appropriate for goods using large numbers of components and the change in tariff classification criterion would be more suited for goods using less numbers of components, the optional criterion may contribute to help reducing administrative costs since firms can choose either of the cost efficient criterions.

On the other hand, a dual criterion unquestionably leads firms to cover higher administrative costs, because meeting both of the criteria simply causes increased costs in comparison with the optional criterion. Since it is the least cost efficient way to determine origin of goods, it should be avoided being adopted as the rule of origin in principle.

The change in tariff classification criterion is also an effective way in the sense of flexibility and predictability next to the optional criterion in general, because it is not affected by currency fluctuations or prices of imported components which may cause an alteration to the origin under a value added content criterion.

Table 15. Rules of Origin Adapted in Major FTAs in Asia Pacific Region

FTA	Criteria to determine origin	Procedures to certify origin
Japan-Malaysia FTA	Optional criterion	Third party certificate system
ASEAN-Korea	Optional criterion	Third party certificate system
Japan-Thailand FTA	Optional criterion	Third party certificate system
AFTA	Optional criterion. Shifted from Value added content criterion in 2008.	Third party certificate system
Japan-Singapore FTA	Change in tariff classification criterion	Third party certificate system
Thailand-Australia FTA	Change in tariff classification criterion	Third party certificate system
Thailand-New Zealand FTA	Change in tariff classification criterion	Self-certificate system
Australia-New Zealand FTA	Change in tariff classification criterion. Shifted from Value added content criterion in 2007.	Self-certificate system
ASEAN-China FTA	Value added content criterion	Third party certificate system
Singapore-New Zealand FTA	Value added content criterion	Self-certificate system
Singapore-Australia FTA	Value added content criterion	Hybrid system(approved product system)
Thailand-India FTA(Early Harvest or	Dual criterion	Third party certificate system
Singapore-India FTA	Dual criterion	Third party certificate system

Table 15 shows which criterion each FTA in the Asia Pacific region adopts to determine the origin of goods. Although criteria differ by FTAs, it is a tendency that the number of FTAs adopting the optional criterion or change in a tariff classification criterion has incremented in recent years. For instance, AFTA, which adopted a value added content criterion for a period of time after 1993, when AFTA came into effect, introduced an optional criterion after August 2008. In addition, the Japan-Malaysia FTA, Japan-Thailand FTA and ASEAN-Korea FTA, which recently have been in effect, adopted this flexible rule. The Japan-Singapore FTA, Thailand-Australia FTAs and Thailand-New Zealand FTA adopt a change in tariff classification criterion. Furthermore, the Australia-New Zealand FTA has been shifted to its rule of origin to a

change in tariff classification criterion from a value added content criterion in 2007. Meanwhile, India-Thailand FTA and India-Singapore FTA, which India is involved, require firms to use dual criterion.

6.2. Flexible Procedure to Certify Origin of Goods may Exclude Risks Affecting Lead Time

The other significant issue in terms of rules of origin is a procedure to certify origin of goods, because it may affect the lead time of goods from an exporting country to an importing country. The procedure has not yet been discussed in detail in relation with FTAs in the Asia Pacific region, even though discussion on criteria to determine the origin of goods has been made frequently.

There are mainly three methods of procedure to certify the origin of goods, 1) a third party certificate system, 2) a self-certificate system, and 3) a hybrid system of third party certification and self-certification.

A third party certificate system is literally a system that a third party officially appointed by a statutory government takes a role in issuing a certificate of origin after judging an application filed by firms utilizing a preferential rate of FTAs. A relevant ministry or a chamber of commerce is usually appointed as a third party to judge an application. Most of the FTAs in effect in the Asia Pacific region adopt this system. In the meantime, under a self-certificate system, all exporters declare an origin of goods on their own without external assistance or on a designated form, which is broadly adopted in FTAs involving the U.S. (see Table 16).

Table 16. Classification of Operational Certificate Procedures

Classification		Outline of System	Examples of Applicable FTA
Third-party certificate system		An exporter provides a third-party organization (government or designated agency) with information to prove that its export products satisfy rules of origin and the third-party organization, upon judgment of the origin of such products, issues a certificate of origin.	Japan-Singapore, Japan-Mexico, Japan-Malaysia, Japan-Thailand, Japan-Chile, AFTA, ASEAN-China, ASEAN-ROK, Singapore-India, etc.
Hybrid type	Approved products system (Third-party certification in the initial stage followed by invoice declaration for a limited period)	For all exporters, a third-party organization will certify origins of the products at the first time of exportation. In a limited period thereafter, certificates of origin for individual exports are not required.	Singapore-Australia
	Approved exporter system	The self-certificate system and other more simplified methods of application are made available to exporters authorized by the government or designated authorities. Other exporters than those approved by the government or designated authorities are required to apply for judgment of origin by a third-party organization.	EU -EFTA (excluding Switzerland), EU-Mexico, EU-Chile, EFTA-Mexico, EFTA-Chile
Self-certificate system		All exporters certify origins of their products on their own responsibility.	NAFTA、US-Australia, US-Singapore, Trans-Pacific, Singapore-New Zealand, Mexico-Chile, Thailand-New Zealand, US-ROK (not in effect yet), etc.

Note: Trans-Pacific is joined by Singapore, Brunei, New Zealand and Chile.
Source: 2008 JETRO White Paper on International Trade and Foreign Direct Investment (Original source: The websites of the respective countries and the 2008 Report on the WTO Inconsistency of Trade Policies by Major Trading Partners).

Both of the third party certificate and self-certificate systems have pros and cons. The self-certificate system can reduce a part of the administrative costs, mainly a fee for issuance of a certificate of origin, in comparison with a third party certificate system. However internal administrative costs to certify an origin cannot be reduced, because applicants have to judge an origin of goods, abiding by a criterion stipulated under each FTA, and are required to retain documents to certify the origin of goods for a certain period stipulated by FTA as well as the third party certificate system. In addition, a self-certificate system consequently requires firms to govern themselves more than a third party certificate system, in order to avoid an unintentional false declaration. In the case of a third party certificate system, a third party may be able to hold the function

to check an application and provide consultation to firms. In the U.S. which adopts a self-certificate system, there was a case that a heavy fine was imposed on a firm for a false declaration.

Furthermore, a self-certificate system may hold a disadvantage increasing the chances of circumvented imports from non-statutory countries. Allowing firms to declare an origin of goods on their own, it may be relatively more difficult to detect a fraudulent declaration than a third party certificate system.

On the other hand, a self-certificate system has an advantage that it can completely exclude possibility of affecting the lead time of goods in a negative manner. A certificate of origin under a third party certificate system is usually issued right after completing the shipping of goods, since a bill of landing is one of documents required for the issuance of a certificate of origin. Therefore it might be possible to create a case of delay in reaching a certificate of origin at an importing country. The delay would add the unnecessary costs of warehouse fees or administrative costs like the tax refund, in the case imports of goods which are permitted along with a tentative payment of custom duty. In this regard, the self-certificate system is free to accumulate extra costs to partially counteract the benefits of FTAs.

Even under the third party certificate system, sometimes it is possible to avoid those unnecessary costs, if a bill of landing is not required by a third party or a certificate of origin is issued prior to shipping. In Japan, it is not required by a third party, while it is generally demanded to be presented to third parties in ASEAN countries.

A hybrid system is a certificate system that allows an approved exporter to use the self-certificate system, which is broadly adopted by EU in their FTAs. Under the system, approved exporters are qualified, under a criterion of the number of exports in a

year and a degree of governance by an authority, to use a self-certificate system, while the rest of the exporters utilize a third party certificate system. It is characterized as a system involving benefits of both systems.

6.3. Allowing an Intermediary Trade will Contribute to an Increase in FTA Utilization

A final issue, which can avoid countervailing benefits of the elimination of custom duties, is an intermediary trade, which is defined as re-invoicing and back to back certificates.

An intermediary trade is defined as a trade going through a third country, and is widely observed in trades in the Asia Pacific region. Particularly large scale firms operating in the region generally have regional headquarters in a country of ASEAN such as in Singapore, which control the entire management of group firms in the region. Re-invoicing means a way of billing that an invoice is issued not by a firm manufacturing a product in one country but by a firm in another country where the regional headquarters are generally located. Taking AFTA for instance, a regional headquarters in Singapore purchases products manufactured by a group firm in one country of ASEAN and sells them to the other ASEAN countries, along with this, goods are directly exported to an importing country. In other words, it means that a commercial transaction flows indirectly while a distribution of goods passes through directly.

There is another way of intermediary trade that both a commercial transaction and a distribution of goods go through indirectly. In this case, in order to take advantage of an FTA in an importing county, a back to back certificate is required to be presented,

which is re-issued by a statutory country based on a certificate of origin issued in advance by the other statutory country in which a firm actually manufactures a product. Therefore, a back to back certificate is applicable to an FTA making up of more than three statutory countries.

The significant advantage of the above mentioned method is that firms are able to keep inventories of their products at the most convenient place and export part of them depending on demands separately, if it is allowed under the FTA.

However, whether these ways of trade are allowed also differs by FTAs in effect in the Asia Pacific region. Some FTAs such as AFTA, Japan-Thailand FTA and Japan-Malaysia FTA explicitly incorporate a provision permitting use of intermediary trade in the operational certificate procedure parts of agreements. On the other hand, some FTAs or some of the statutory countries do not permit using it, because these agreements do not incorporate the relevant provisions. There are some cases that firms gave up utilizing FTAs due to an intermediary trade being unavailable in their countries.

A rule of origin is indispensable with FTAs, while it is also true that it incurs additional costs to countervail the benefits of customs elimination. Therefore it is of vital importance that a flexible criterion, procedure and rules are effective in addressing this issue, which will contribute to an increased utilization of FTAs in effect.

7. Conclusions

1. Almost all of the customs offices in East Asia have failed to collect transaction records on export and import to utilize FTA preferential tariffs. It might be costly

to establish a system to collect the transaction records. Instead, a business survey method may be reasonable and useful to investigate the utilization of FTAs. JETRO has conducted the business survey which contains several questions concerning FTAs. The survey, however, covers only Japanese affiliates. ERIA should conduct a business survey to investigate the operations of indigenous firms and other foreign affiliates in ASEAN.

2. The utilization rate of FTAs in terms of number of firms is not high in ASEAN. It is rather low compared to that in NAFTA although the rules of origin criterion are less restrictive in ASEAN than in NAFTA. This fact suggests that administrative costs to use FTAs in ASEAN are high due to the demanding operational procedures and inefficient administrative procedures. Operational procedures to certify the origin of goods has not yet been discussed in detail in relation with FTAs in the Asia Pacific region.
3. The investment promotion schemes that exempt tariffs on intermediate goods for export purpose are widely utilized in ASEAN. Such schemes, however, are viewed as opposed to the Trade Related Investment Measures (TRIMs). The administration costs of investment promotion schemes are about 1.9% on average within ASEAN. If the administrative costs in obtaining the FTA preferential tariffs are reduced to be lower than this figure, FTAs would be utilized more.
4. Firms in Malaysia, the Philippines, and Vietnam are less likely to utilize FTA schemes. These estimated results suggest that the operational procedures to obtain certificates in those countries may be more cumbersome than in other countries.
5. Econometric analysis obtained the results that Firms with a larger size in the number of employees tend to utilize FTAs more. This suggests that current FTAs

don’t benefit all equally. To realize an equitable development for SMEs and small countries, tariffs reductions at the WTO Doha round should be pursued at the same time.

6. FTAs in the ASEAN countries seem to be selectively utilized according to each industry: the textile industry utilizes FTAs well but electrical machinery, electronics and precision machinery don’t use FTAs. This indicates that the margin between the MFN tariffs and FTA preferential tariffs provide incentive to utilize FTAs. A substantial reduction in FTA's preferential tariffs might encourage FTA utilization within these nonparticipating industries.

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CHAPTER 12

A Survey of Micro-data Analyses in Indonesia

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Globalizing corporate activities, deepening economic integration and its impact on the performance of local firms has increasingly become a subject of extensive discussion. As a result, a growing body of literature on this subject has developed rapidly. This paper provides a survey and evaluation of this literature. It seeks to find in the literature answers to important questions such as: why some firms export abroad and others do not, why some firms fail to survive under intense pressure from globalization, whilst others do and why some choose to invest abroad rather than export. Since MNE is becoming more important, it is also necessary to survey the impacts of the presence of MNE and exporting activities on domestic firms. However, analysis on the subject for developing countries is sparse. This paper, therefore, pays particular attention to the empirical micro analysis of Indonesian firm performance

1. Introduction

Interest in the impact of globalizing corporate activities and deepening economic integration on the performance of local firms has developed over the last decade. The interest has led to a new and rapidly expanding body of literature on the subject. As a result, the literature has generated new insights on why some firms export abroad and others do not, why some firms fail to survive under intense pressure from globalization, whilst others do and why some choose to invest abroad rather than export. Another strand of literature seeks to answer the question whether the presence of MNE and exporting activities has a positive impact on domestic firms. In short, the new literature sheds light on the key drivers of globalization and the impact of the phenomenon on local firms' performance.

It goes without saying that the impact of globalization and economic integration differs between countries, depending on the stages of economic development, industrial structures and policy environment within which firms operate. The extent to which important questions posed above can be answered also depends on the nature and the quality of the available dataset. It is therefore important to review the literature in the context of the specific conditions surrounding a country. This paper reviews the rapidly growing literature of micro-data analyses on the themes in Indonesia.

2. Export Decision

Recent empirical literature on international trade has put heterogeneity as its core aspect. One important aspect of this heterogeneity is firms' participation in international trade: some firms export abroad and others do not. It raises an obvious question: what are the determinants of firms participation in exports. For example, using a sample of 650 Columbian firms throughout the 1980s, Roberts and Tybout (1997) found a significant impact of sunk costs on the decision to export. In their paper, they detected the presence of

sunk costs by testing if the previous export activity of the firm could be used to explain its current status, and found that previous participation in exporting increases the probability of current export activity by up to sixty percent.

Another important hypothesis is whether sunk costs can be affected by spillovers from other firms. Aitken, Hanson and Harrison (1997), for example, suggest that a firm in an export intensive sector may find its cost of entering the foreign market reduced by the export activity of other firms. Moreover, Aitken et al. hypothesise that such spillovers would be even larger from multinational companies. The reason they suggested is that the presence of MNC might operate as a "natural conduit for information about foreign markets, foreign consumers, and foreign technology" to domestic firms. Aitken et al tests this hypothesis empirically on a sample of Mexican firms from 1986-1990, and found that multinational firms do have a positive spillover effect on the probability of domestic firms exporting

Sjoholm and Takii (2003) focus their analysis on the role of foreign network on export participation of Indonesian firms. In particular, they hypothesized that foreign contracts may increase the likelihood of exports. The model they use is profit maximizing firms decision to export (or not to export) under the existence of sunk entry costs. They use firm level Indonesian manufacturing panel data between 1990 and 2000. The dataset contains 197,195 observations for 26,987 plants during 1990-2000. From the model, they derive time- specific dummy variables and time-variant plant-specific variables, while the amount of foreign contacts was captured by a dummy variable on foreign ownership and a dummy variable for imports of intermediate goods. In addition, they include several control variables, such as public ownership, labor productivity, capital intensity, scale economies, and 3- digit ISIC level industry dummy variables. The paper employed OLS, fixed effect, and GMM approach. Even though, the authors prefer GMM methods due to its superiority in terms of unbiasedness and efficiency, they include OLS and fixed effect model in order to compare the result with previous studies.

The study confirms the relatively high export orientation and flexibility of foreign-owned plants, in the sense that foreign-owned plants that began their operation in Indonesia

by producing only for the domestic market are more likely than domestically-owned plants to start exporting. Inclusion of plant specific variables such as size, capital intensity, and labor productivity do not change the result of the study.

A similar study regarding the role of foreign ownership in exporting can be found in Ramstetter and Takii (2005). Instead of using industry dummy variables, they ran regression to 13 Indonesian manufacturing industries from 1990 through 2000 separately. The foreign influence is captured by dummy variables for minority, majority and wholly-foreign plants, while the control variables are capital intensity, production-worker intensity, size and vintage. There is not much discussion on the econometric technique that they use except that they utilized Tobit estimator.

The results confirm the previous study. They found that differences between MNCs and local plants remained positive and statistically significant even after the influences of factor intensities, plant size, and plant vintage were accounted for. Second, the results indicated that the size of these differences was usually reduced by accounting for the influences of factor intensities, plant-size, and plant vintage. Third, heavily-foreign MNCs tended to have the highest export propensities, but differences among foreign ownership groups were statistically insignificant in about half of the industry-period combinations examined. Statistically significant differences among foreign plants were concentrated in the mid- to late-1990s and in five industries, textiles, plastics, basic metals, metal products, and electric and precision machinery.

Narjoko and Atje (2007) is another literature on the decision to export. The paper tries to explain the sluggish export performance during and after the crisis. It uses the same firm level panel data from Industrial statistics for the period of 1997-2004. They estimate to set of equations. They use the Probit model to estimate the first equation that explains a plant's probability to export. The second equation explains the growth of a plant's export propensity. To avoid selection bias for the second equation, they employ Heckman's two-steps estimation procedure, within which, the computed inverse Mills ratio in the first equation is added in the explanatory variables of the second equation. The explanatory variables for the two equations are more or less similar to the previous study: previous year

export, capital intensity, skill intensity, labor productivity, foreign ownership, size, age, and imported –input dependence. However, since the primary concern is to analyze the impact of the crisis on a firm's export performance, they add financial leverage as an explanatory variable.

The major findings from the econometric analysis can be summarized as follows. First, being an exporter in the previous year significantly increases the probability to remain as an exporter in the current year. However, the result suggests the impact of exporting history was higher in the recovery rather than in the crisis and early recovery period (1999-2000). Second, the results strongly support the self- selection hypothesis, where firms need to be efficient to compete in highly competitive export markets. Third, in general, firms with some foreign ownership are suggested to have a higher chance to participate in exports compared to their domestic counterparts. However, the importance of this effect is shown to have been much weaker during the period 2002-04. Finally, the paper shows that the extent of financial constraint does not matter in determining the export supply response of the exporter.

3. Firm's Survival

The second important question is what determines survival of firms under globalization. There are three channels through which globalization may influence firms' survival: reduction in trade cost, competition from importing products, and foreign capital share.

Studies that look into the impact of foreign capital shares on firms' survival are rare, even for developed economies, and most of the studies show inconclusive results. For example, Bernard and Jensen (2002) found that U.S. multinationals are substantially less likely to close than other U.S. plants over five year intervals. However, after controlling for establishment characteristics, they found the opposite result. Gorg and Strobl (2003) found that Irish plants with majority foreign ownership were less likely to survive. Ozler

and Taymaz (2004) found similar results to that of Bernard and Jensen (2002) for developing countries. Their analysis of foreign and domestic establishments in the Turkish manufacturing industry for the period 1983-96 indicates that foreign establishments have a higher survival probability. However, when the establishment characteristics are controlled for, domestic establishments have the same survival probability.

Bernard and Sjoholm (2003) pose an intriguing concern that reliance on foreign nationals may be a risky development strategy as foreign firms are likely to be less rooted in the local economy and may be quicker to close down production. Using data from 1975-1989[1] and employing semi parametric estimation of the hazard function, they found that plants with some foreign ownership are far less likely to close down compared to completely domestic- owned plants. However, the difference in firms'survival rate is not the result of plants nationality of ownership, but is caused by plant characteristics. Controlling for size and productivity, they reveal that foreign ownership is associated with *increased* probability of closure. Using information on changes of ownership, they further test the result and found that foreign ownership, rather than unobserved plant characteristic, is associated with the lower survival rate.

Narjoko and Hill (2007) analyze firms' survival within an economic crisis situation. They focus their attention on export and ownership variables by regressing the percentage change in RVA on export and foreign ownership over the period 1998-2000. To test whether the level of foreign ownership matters, they include foreign ownership dummy and interaction term between the dummy and foreign ownership level. Various control variables such as size, age, financial leverage, import dependence, industry concentration, import penetration, trade protection, and dummy variables representing region and industry are also included in their equation. Finally, to avoid censoring bias, they employed Heckman's two-step estimation technique.

The result is consistent with studies of other crisis episodes, foreign ownership and prior export orientation are found to be highly significant determinants of survival and

[1] The reason for not using the more recent data is that beginning in 1990, plants were excluded from the sample if their size fell below 20 employees. Thus it is not possible to know if a plant exits in the 1990s because of closure or because of decrease in size.

recovery. The effects of firm size are ambiguous, a result which tends to refute the popular notion that smaller firms are more adaptable in times of crisis. The industry in which firms are located, in particular its factor proportions, is also found to be significant.

4. FDI Spillovers

Multinationals are distinguishable from local firms because the proprietary technology that MNCs owned allows them to compete successfully with local firms. Moreover, the entry of foreign firms disturbs market equilibrium and forces local firms to take action to protect their market share and profits. Those two factors may create various externalities that benefit local firms. The channel through which these externalities spillover to domestic firms are: increased competition, labor turnover, or through demonstration.

Spillover effect has been tested by a large number of papers and summarized by Gorg and Greenway (2004). They found that robust empirical support for positive spillovers is, at best, mixed. There are two explanations for the mixed results, first the positive competition effect from the presence of MNC may be outweighed by the negative impacts of the decrease in production per firm. Second, the heterogeneity of MNC and domestic firms makes it difficult to pin point the impact of MNC since not all types of MNC provide spillover benefits, and not all types of domestic firms have the capacity to obtain spillover effects.

The first important question that needs to be answered is whether foreign firms have a higher level of productivity compared to domestic firms. Applying simple regression techniques to 1991 manufacturing establishment data and after controlling for skill level, capacity utilization, scale and industry dummy, Blomstrom and Sjoholm (1998) found that foreign establishments have comparable high levels of labor productivity. By adding minority and majority owned foreign affiliates dummy, they also show that both minority and majority- owned foreign affiliates are more productive than domestic firms. Moreover,

the coefficients for those two dummy variables are similar in size and a chi-square test can not reject the hypothesis of equal coefficients.

A more detailed and longer time period (1975-2000) analysis by Takii and Ramstetter (2004) confirm the early findings. They found that MNCs generally had much higher average labor productivity than local plants and these differentials persisted after accounting for electricity consumption per worker, size and vintage. They also found that there was also a large variation in productivity differentials across industries and time, with statistically significant differentials most common in chemicals, metal products, and transportation machinery. However, unlike the previous findings, they found significant differences between minority, majority, and heavily-foreign MNCs, with lower labor productivity for minority and heavily-foreign MNCs compared to the majority-foreign MNCs.

The second question relevant to the themes is whether the presence of foreign firm affiliates creates positive externalities that spillover to domestic firms. Blomstorm and Sjoholm (1998) examined the spillover hypothesis by testing whether labor productivity in local firms varies with the degree of foreign production in an industry. They found a positive and statistically significant coefficient of FDI, which suggests that domestic establishment benefit from the presence of foreign establishments in the same 5-digit industry. Given the previous finding of no labor productivity differences between minority and majority- owned foreign affiliates, they expect a larger spillover from minority- owned foreign affiliates. But, regression results contradicted their expectation; the degree of foreign ownership of an establishment did not seem to affect the amount of intra-industry spillovers in Indonesian manufacturing.

Tomohara and Takii (2005) provide an analysis of another channel through which positive externalities from foreign establishment's spillover to domestic establishments. Using the generalized method of moments they estimated the dynamic model using panel data to examine whether foreign direct investment benefit workers employed by domestic companies in a host developing country. They found that the MNCs had positive externalities on the wage level of domestic companies. They also found that employees in

domestic companies enjoyed increased wages through two spillover channels, those resulting from increased productivity and those resulting from equity concerns.

5. Export Spillovers

In the theoretical IO and trade literature, it is often argued that participation in export activities may be beneficial to a country because of increased productivity through reallocation of resources from inefficient firms to more efficient firms (self-selection hypothesis), and through learning by exporting. Moreover, the benefit may be magnified if we can find the existence of productivity spillovers from exporting. Sethupathy (2007) argued that there are three channels for export spillover. First, under economies of agglomeration, the knowledge accumulated from learning by exporting could easily spillover to other firms in the same industry (horizontal spillovers). Second, a highly competitive international market forced the exporting firms to use higher quality inputs. This could result in exporting firms sharing knowledge and technology with their upstream partners in order to improve the inputs that they receive (upstream spillovers). Finally, the exporting firm's improved productivity could lead to higher quality input for its downstream partners, which in turn could have a positive effect on downstream productivity (downstream spillovers).

The export spillover hypothesis has been tested through various studies. Alfarez and Lopez (2006) summarized the studies and stated that: "these studies either do not find evidence that export activity increases the probability of exporting (e.g. Clerides et al., 1998; Barrios et al., 2003; Bernard and Jensen, 2004) or find that only multinational exporters generate spillovers (e.g. Aitken et al., 1997; Greenaway, et al., 2004; Ruane and Sutherland, 2004). The effect of exporting activity on export intensity of exporters is also not clear. While some find a positive effect of exporting activity by multinationals on export intensity (e.g. Greenaway, et al., 2004) others find a negative effect (e.g. Ruane and Sutherland, 2004)".

Using plant-level data from Chile, Alfarez and Lopez (2006), in general, found upstream export spillover. However, distinguishing between foreign and domestic firms, they found heterogeneity in the channel of spillovers. Exporting by foreign-owned plants generates positive spillovers in all directions, while domestic exporters increase productivity of their suppliers and, to a lesser extent, that of plants in the same sector.

Sethupathy (2007) used two-step methodology to estimate the effect of exposure to exporting on productivity. First, he estimated plan level productivity. Second, using GMM he regressed the TFP result with lag TFP, dummy for whether the plant became an exporter in the previous period, and three proxies to measure the extent of exposure to horizontal, upstream, and downstream relationship. He found productivity gains to downstream firms of approximately 2.5-5.0% during the period 1990-1996. However, he did not find the presence of spillovers upstream or horizontally.

6. Industrial Demographics and Productivity Growth

Mainstream economic literature usually uses representative plant approach in the estimation of TFP growth. However, if all plants were identical, the only source of TFP growth would be productivity improvements occurring through simultaneous productivity improvement within plants. However, this simplification is in stark contrast to the fact that plants differ in various characteristics such as, size, age, factor proportions, technology, as well as productivity levels and growth rates. Moreover, representative plant approach masks the microeconomic dynamic due to changing plant demography.

Using yearly Industrial data 1975-1995 at the plant level Vial (2008) decompose TFP growth into intra-plant TFP growth, market share reallocation among incumbents and plant turnover effect. The paper used three decomposition methods: (i) TFP aggregated with market shares, (ii) TFP aggregated with market shares, TFP relative to the average, (iii) TFP aggregated with market shares and time- average market shares, TFP relative to the average – time average)

The author found that the main source of aggregate productivity growth stems from the entry of high productivity plants and the exit of low productivity plants. But, the net entry effects tend to fade as productivity levels of entrants, incumbents, and exiters converge. The author also found that the effects of market share reallocation among incumbents remain unclear, with conflicting results depending on the methodology used. The author distinguished several episode in his/her analysis and found that the highest aggregate productivity gains occur after the de-regulation period of 1986-1994. However, de-regulation seems to have a stronger positive impact on incumbents' productivity gains than on the net entry effect.

7. Conclusion

The empirical literature review in general shows the positive impacts of globalizing corporate activities and deepening economic integration on the performance of local firms. The review pays special attention to the role of MNCs and export oriented firms, and found that in general, firms which are foreign-owned, export-oriented, and particularly both, have higher productivity and are more likely to recover quickly from crisis. More over, the presence of MNCs and exporting activities not only benefits the firms internally but also produces external spillovers that benefits local and non-exporting firms. The decomposition analysis suggests that entry and exit dynamics play an important role in the aggregate productivity level. Another important finding is that the highest aggregate productivity gains occur after the de-regulation period. The survey, therefore, supports the case for open trade and FDI policies within a dynamic flexible market environment that allows aggregate productivity improvements and the spread of the productivity gains through entry, exit, and spillovers.

Despite the accumulated knowledge on the impact of globalizing corporate activities and deepening economic integration on the performance of local firms in Indonesia, there are still many unanswered questions. First, there is anecdotal evidence that the relationship

weakened during and after the crisis. This requires further updates of the analysis. Second, there is no literature that deals with the selection and switching of destination and type of products. Currently, data limitation prevents researchers to dwell on the issue. It is therefore important to supplement the current database with a subsample that provides information on the issues. Finally, the challenges of incorporating specific policies remain. This can be done through finding better proxy variables for the specific policies or supplement the analysis with in- depth case studies.

Appendix 1: Indonesian Manufacturing Industries Data

The data for the Indonesian manufacturing industries are documented by the Indonesian Central Bureau of Statistic (Badan Pusat Statistik, BPS). With some modification to suit Indonesian conditions, BPS uses the International Standard Industrial Classification (ISIC) for all economic activities. The Indonesian Census of Manufacturing is part of a decennial Economic Census, while the Survey of Large and Medium Scale Manufacturing is conducted annually in intercensal years, aimed (not always successfully) at complete coverage of all establishments with 20 or more workers. Depending on the year, there are up to 160 variables including firm identification, sector classification, type of ownership, exports, and input and output variables. The aggregate data at five- digit ISIC level are available in published summary form in Statistik Industri (SI), while the firm level data can be obtained from BPS in electronic form.

The census and survey data attempt to cover all establishments with twenty or more workers. In 1985 BPS changed field procedures and improved them further in 1988 and 1990. Before 1985, field procedures were deficient in identifying new establishments and merely replaced establishments that ceased operation so that the number of firms between 1975 and 1985 remained more or less constant. The new field procedures were conducted through a door-to-door enumeration. As a result, a number of establishments showed a sharp increase in 1985, 1988 and 1990. Realizing the majority of establishments had started before they were included in the annual survey, BPS decided to correct this under-coverage by 'back casting' the history of establishment discovered after entry. The variables back casted are output, value- added and total number of workers.

The biggest impact of the back cast was on the number of establishments, with employment less affected, and nominal value added even less. This pattern occurs because most of the under-enumerated back cast establishments were smaller in terms of employment and value added per worker. In terms of trends, the growth in the number of establishments and employment in the back cast series was far smoother than in the SI data. However, the value added trend remained more or less the same.

The discussion of the data sources above draws attention to the fact that there are two data sources - the SI data and the back cast series. The SI data are superior in terms of the variables they covered but show apparent under-coverage. On the other hand, the back cast data cover all firms in the manufacturing sector but only report four variables, output, intermediate input, value added and number of workers. The under-coverage in the SI data suggests any analysis using this sample, pre and post 1985, may be misleading. This is especially relevant to an examination of the effects of trade reform during the 1980s. Hence, with these data flaws, it will be more difficult to test whether changes in the 1980s are due to trade reform or to the altered sample size of the industry database.

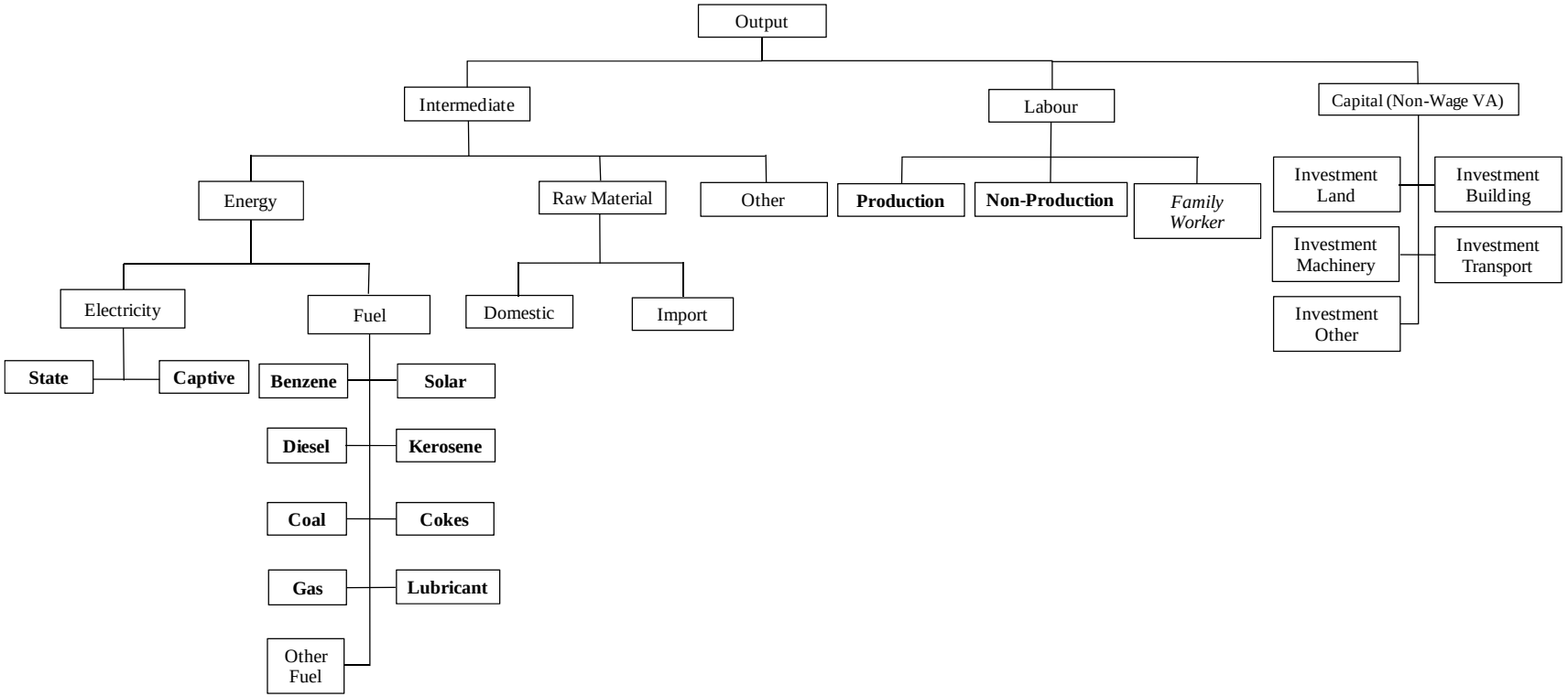
Another complication of using Indonesian manufacturing industries data is the changing in ISIC code. From 1975-1990 there were119 industries (ISIC rev1), from 1991-199. There were 286 industries (ISIC rev2). In 2000, BPS changed the classification into ISIC rev 3 with around 300 industries.

Appendix 2: Data Structure in SI and Back cast Data

Figure 1 gives the input-output relationship and important variables that are available in the back cast and SI data.

The figure shows that SI data cover more extensive classifications of inputs than that of the backcast data. On the other hand, as has been indicated in Figure 4.1, back cast data are more complete in firm's coverage compared with SI data. The most extensive classification in the SI data is the energy input. Unfortunately, the share of energy input in total intermediate input is rather small (6 percent on average), while raw material inputs, which take up more than 80 percent of intermediate inputs on average, have very limited disaggregation.

Figure 1: Data Structure in SI and Back Cast Data



Notes: Bold letter: value and quantity are available. Italics: only quantity is available. Otherwise only value is available

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CHAPTER 13

Assessment of FDI Spillover Effects for the Case of Vietnam: A Survey of Micro-data Analyses

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This paper surveys the growing body of literature on the impact of globalization on local businesses in Vietnam. A special focus of the paper is the analysis of findings of empirical studies on spillovers of foreign direct investment (FDI) from foreign firms to domestic firms in Vietnam, thus showing what aspects are missing in the existing literature as well as suggesting potential topics for future research.

A major data source for empirical studies relating to FDI spillovers in Vietnam was the panel dataset of the annual enterprise survey covering a five-year period from 2000 to 2005. With the analysis of FDI spillovers from different angles, the existing papers yielded a variety of interesting findings that strongly support the hypothesis of positive impacts of FDI on local firms in Vietnam.

The diversity in findings, however, raises the need for more comprehensive research to deepen understanding of the process and mechanism of FDI spillovers. Suggested future research topics include more analysis on the underlying causes for both potential negative and positive impacts of FDI on production and productivity of domestic firms, more research on the relationship between the scope of foreign presence and spillovers as well as possible effects on the market share, and analysis of FDI-induced crowding-out/crowding-in effects with regard to domestic investment.

1. Introduction

Thanks to the introduction of economic reform known as "doi moi" in 1986, Vietnam's economy has enjoyed an impressive performance as one of the world's fastest growing economies with an average growth rate of over 7% annually. The achievements of the Vietnamese economy so far have been matched by sustained efforts in macroeconomic stabilization, an improved investment climate, and outward orientation. In particular, economic growth has been widely recognized as having been closely associated with an expansion of trade and large external capital inflows - mostly in the form of foreign direct investment (FDI). There is a common consensus that the achievements of the economy have been facilitated by an increasing globalization of corporate activities, trade liberalization, and technological advances in conjunction with a rapid increase in cross-border investment globally. In this regard, the FDI sector has occupied a significant share of the Vietnamese economy and its role is becoming increasingly important over time. FDI, as a share of Vietnam's GDP, rose from 13.2% in 2000 to 15.9% in 2006 and to 21.2% in 2007 (CIEM 2007 and CIEM 2008).

Attracting FDI is and continues to be a vital component of the reform policy of Vietnam. Vietnam has become a leading recipient of FDI flows – in relation to the size of its economy. With the adoption of a series of measures to attract FDI, triggered by a belief that foreign presence is connected to advanced technology and stimulates export-led orientation together with more employment created, FDI inflow has rapidly increased over the time particularly in recent years, from a small pledge of about 342 million USD in 1988 to 21.3 billion USD in 2007 and 60.3 billion USD in 2008[1], turning Vietnam into one of the most attractive investment destinations in the world in general and in the region in particular.

In East Asia in general and in ASEAN in particular, Vietnam is considered as a typical case to study the impacts of FDI on a host country. It can be seen that Vietnam's experience in attracting FDI in association with its rapid economic growth over time, has attracted increasing attention and a growing body of written research on FDI and its impacts on domestic sectors.

[1] According to data provided by the General Statistical Office of Vietnam (GSO)

This paper surveys the growing body of literature on the effects of multinational corporations' activities on Vietnam's local firms, which typically focuses on the survey of expanding literature of FDI and its spillover effects on Vietnamese domestic enterprises. The objective of the paper is to analyze major findings from the previous studies, thereby detecting what aspects are missing in the existing literature as well as recommending potential elements that could be considered for future research.

The paper is organized as follows: following an introductory note, the analysis begins with a brief examination of the general analytical framework on spillover effects of FDI from foreign firms to domestic ones. Section 3 reviews in detail empirical studies on FDI spillover effects in Vietnam. Finally, some concluding remarks and suggestions for future research are provided in Section 4.

2. Analytical Framework on FDI Spillover Effects: A Brief Note

The purpose of this section is to take a snap-shot in order to get an overview understanding of the possible channels of spreading out FDI spillover effects found in related empirical studies as well as fundamental modeling notes of analyzing FDI spillover effects. A possible reason for spillover effects to occur is the existence of a gap between foreign and domestic firms, with the former dominating in term of capital intensity and technological advances. In fact, subsidiaries or joint ventures set up by MNCs normally have competitive advantages over domestic firms; this is especially true in developing economies. With the presence of multinational corporations (MNCs), particularly with regard to their powerful participation in the market, domestic firms normally have to adjust their behavior in an effort to maintain market share. In this connection, spillover effects may be considered as the consequence of the performance of foreign firms and the resulting adjustment of behavior of domestic firms.

2.1. Possible Channels of Spreading Out FDI Spillover Effects

As analyzed by Nguyen Thi Tue Anh *et al.* (2006), spillover effects can be divided into the four major groups of effects, including: (i) backward-forward effects, i.e., effects associated with input-output structure of the firms; (ii) demonstration effects, i.e., effects associated with technology diffusion and transfer; (iii) competition effects, i.e., effects associated with domestic market shares; and (iv) effects associated with labor skills or human capital.

The occurrence of the spillover effects of the first category (backward-forward effects) can be observed when there is an exchange of business relationship relating to materials/inputs or intermediate products between foreign invested firms and domestic ones. Depending on whether local firms act as distributors or suppliers, the effects are forward or backward respectively. Particularly when acting as suppliers of inputs for FDI enterprises, the latter is likely to induce the former to enlarge their production capability and reduce average total costs upon recognition of the result of economies of scale. At the same time, in order to ensure a long-term working relationship, domestic firms see the need for and seek to satisfy requirements imposed by foreign firms, thus their competitiveness will eventually improve, particularly in medium and long-term perspectives. To some extent, domestic suppliers may face difficulty in meeting demanding requirements of FDI firms, in a majority of cases, domestic firms become more competitive in the product market, implying that the backward effect is thus highly expected in the developing economies.

The demonstration effects, which are related to technology diffusion and transfer, play an important role, which are particularly desirable for poor and developing nations. For these types of effects, domestic firms can also imitate and adopt products and production techniques of MNCs. In practice, domestic firms expect to benefit from opportunities to approach technological advances brought in by foreign- invested enterprises, mainly through know-how leakage, which result from the cooperation between foreign firms and domestic ones through a popular form of joint ventures. A significant issue here is whether the poor economies have adequate capability to absorb technology diffusion and transfer or not. In this aspect, as indicated in a number of theoretical studies conducted by Blomstroem and Sjoholm (1999); Haddad and

Harrisons (1993), the scope of technology diffusion and transfer depends on the absorptive capability of domestic enterprises.

The third category of spillover effects (competition effect) is subject to the market structure and technology level in the host country. The impacts of these types of spillovers are mixed. On the one hand, the presence of foreign firms may lead to more severe competition in the receiving country market, thus forcing domestic firms to manage the use of existing resources more efficiently or to search for new technologies. On the other hand, in a number of cases, these kinds of effects are found to be undesirable. A simple example is that the launch of new products developed by FDI firms may potentially affect the existence of domestic firms that previously produced these kinds of products. The presence of FDI in this case may lead to a drop in production output of domestic enterprises in the short and medium term. In this circumstance, if pressures on domestic firms are high enough, the overall effects of FDI on the productivity of domestic firms become negative as a result.

Last but not least, the fourth important channel of spillover effects is that it creates more employment, together with the diffusion of managerial knowledge and labor skills to a host country. It can be seen clearly in such popular cases when foreign invested enterprises hire local people to be in charge of management, professional duties, research and development. Knowledge spillovers also occur when technical workers receive training in local and at parent companies. In this regard, it is seen that relatively skilled employees in the recipient economies are normally required by MNCs, thus stimulating the need to organize training courses to strengthen skills of employees. Training can take many forms such as on-the-job training, seminars, schooling, overseas training or R&D activities in domestic firms. For type of spillover effects, it is noted that spillovers normally happen in case of the mobility of employees trained by MNCs from FDI enterprises to domestic ones or run their own businesses. Then these trained employees will bring with them managerial and technological skills and knowledge that help to spread out spillover effects. In reality, it is challenging to quantify spillover effects associated with labor mobility (Nguyen Thi Tue Anh *et al.* 2006). For instance, domestic firms that receive labor mobility may be unable or reluctant to provide appropriate working conditions for those workers, thus their abilities are unable to be fully utilized.

Empirical studies show mixed evidence on FDI effects through horizontal, forward and backward linkages, thus direct comparison of results between one economy and another is not appropriate to solve the issues facing developing economies. This is particularly true because developing nations vary enormously in terms of characteristics such as economic conditions, traditional and political aspects that in turn affect estimation results.

2.2. Analytical Modeling Notes in Association with Empirical Studies

With the use of micro-data, researchers have conducted a large number of empirical studies aiming to assess the impacts of MNCs presence on the host countries in different periods of time. It is noted that the analytical framework of the majority of researchers are relatively similar. Spillover effects are analyzed through a measurement of impacts of foreign presence on the output level or labor productivity of domestic enterprises. In this connection, in addition to factors that are assumed to have influence on productivity of domestic firms or industries including capital intensity, labor quality, production scales, competitiveness of the market, the proxy for foreign presence is normally included as an independent variable in a linear or log-linear regression, where labor productivity of the domestic sector is treated as a dependent variable. Upon estimation results, a positive spillover is stated following the finding of a significant positive sign of the coefficient of the foreign presence and vice versa.

Empirical studies on FDI spillover effects can be divided into the two major groups: (i) Empirical studies in support of the spillover effects; and (ii) Empirical studies in opposition to the spillover effects

2.2.1. Empirical Studies in Support of the Spillover Effects

As one of earliest quantitative analyses, Caves (1971) tested the spillover benefits of FDI in the manufacturing sectors of Canada and Australia. The hypothesis for Canada was that if FDI is capable of increasing allocation efficiency, the profit rate of domestic firms should react inversely to the competitive pressure caused by the presence of foreign firms. The results indicated that profit in Canadian manufacturing industries had a weak tendency to vary inversely with the foreign share. Using foreign firms' share of industry employment as a proxy for foreign presence, the paper shows

that the higher the subsidiary share, the higher the productivity level in competing domestic firms. The estimated results indicate strong evidence of the presence of spillovers.

Using data for 230 Mexican manufacturing industries at four-digit level in 1970 and 1975, Blomstrom (1986) examined spillovers of foreign presence on the roductivity of local firms. The independent variables included the Herfindahl index, market growth variables, defined as the relative growth of employment of each industry within the 1970-1975 periods, the rate of technological progress, defined as the changes in labor productivity in the plants within each industry, and foreign share, defined as the share of employees in foreign plants. Blomstrom (1986) found that foreign presence had a significant effect on the average productivity of each industry. It is noted that although the presence of MNCs in Mexico did not promote the transfer of technology FDI speeded up efficiency with increased competition.

As a replication of the aforementioned approach of Caves (1971), Globerman (1979) conducted a study that used annual census data for four digit Canadian manufacturing industries in 1972. In terms of model specification, the dependent variable was defined as the ratio of total value added per employee in locally- owned manufacturing plants. Explanatory variables include factors that may influence labor productivity such as the foreign share of the industry, differences in the capital labor ratio between Canadian and comparable US industries, differences in labor quality measured by wage per worker in the affiliates, etc. The FDI variable was defined by the gross book value of assets depreciated at the end of 1971, divided by the total employees in 1972, in US industries. The results also strongly supported the hypothesis that spillover effects benefit domestic firms.

Differences in term of productivity growth between domestic and foreign firms in Mexican manufacturing industries from 1965 to 1984 were analyzed by Blomstrom and Wolff (1989). The paper examined the degree to which the presence of foreign-owned firms in a sector influences the productivity of local firms in that sector, and whether there is any possibility of convergence between that industry's productivity level and that of the US. The results show a convergence of productivity levels between local firms in Mexico and foreign-owned firms. Furthermore, both the rate of productivity growth of local firms and the rate of catch-up of these firms to MNCs are positively

related to the degree of foreign ownership of an industry. The results thus provide a firm support for positive spillover effects.

2.2.2. Empirical Studies in Opposition to the Spillover Effects

It is noted that existing empirical studies differ in their ways of estimating the magnitude and significance of spillovers. Most studies indicate that foreign presence will generate spillover effects. Nevertheless, some studies have found that FDI inflows result in no productivity growth or even have a negative effect on output growth of domestic firms.

Using firm-level data for Japanese investment in the industry of US auto parts during the period from 1982 to 1992, Okamoto (1999) examined whether the spillover effects were positive or negative. The study discovered two major important findings. Firstly, in contrast to expectations, Japanese-owned firms were found to be less productive than their US counterparts, at least in 1992. Secondly, it seemed that Japanese assemblers contributed only slightly to the improvement in performance of the US-owned suppliers. Accordingly, the improvement in productivity in the 1980s and in the early 1990s seemingly did not result from technology transfer but from increasing competitive pressure.

In an attempt to find evidence of spillovers from foreign firms to local firms in the case of Venezuela, Aitken and Harrison (1999) estimated the production function of a group of Venezuelan plants with the use of panel data on Venezuelan plants. The paper found that the level of foreign presence as a share of equity is positively correlated with plants' productivity; this relationship is, however, only robust for small firms. It is noted that FDI had a dominant negative effect on productivity growth of domestic firms when examining spillovers from joint ventures to plants without foreign investment. Accordingly, joint ventures seem to hold all benefits from foreign investment, thereby suggesting that less emphasis should be paid to spillover effects of FDI.

3. Empirical Studies on FDI Spillovers in Vietnam

3.1. Data Set: The Annual Enterprise Survey

Empirical studies on possible impacts of FDI in Vietnam are heavily reliant on the enterprise survey conducted annually by the General Statistics Office of Vietnam (GSO) for analysis. It is noted that since 2000, the enterprise survey has followed a new and consistent approach so that the quality of data is much higher than before. Before 2000, the data of enterprises was mainly collected by the so-called statistical reporting system. The main feature of the survey at that time was aimed to take full enumeration of State-Owned Enterprises (SOEs). Enterprises filled in standardized data sheets issued by GSO and forwarded them to statistical offices according to identified reporting data . Nevertheless the response rate was quite low and there was an absence of basis to ensure data comparability.

Since 2000, the enterprise survey has been conducted using a new approach in which enterprise data are collected annually for all sectors and industries started at the date of 1st March. Accordingly, the coverage of the survey includes almost all enterprises in 29 sectors and industries in three industrial groups (4 sectors in mining and quarrying, 23 in manufacturing, and 2 in electricity, gas and water supply), providing a wide range of information on the property structure of enterprises, output, capital stock, investment, employment, location, wages, sales, etc. The general objectives of the survey are to: (i) collect business information needed to compile national accounts; (ii) to gather up-to-date information for business register and sample frame for other business sample surveys; and (iii) to update the statistical database of enterprises.

In terms of questionnaires, in spite of some adjustments over the period, the enterprise survey is characterized by the two basic types of questionnaires. The first type of questionnaire is for full enumeration to provide major information of enterprises. Each enterprise is surveyed with this type of questionnaire either in long form or in short form depending on the ownership structure and the size in terms of number of employees. Accordingly, the long form is applied to all FDI enterprises, all SOEs, all non-state enterprises with 10 or more employees and 20% of non-state

enterprises with fewer than 10 employees. The shorter form is applied to the remaining non-state enterprises with less than 10 employees not to be surveyed with the use of the long form.

The second basis type of questionnaire is the questionnaire for sample survey on business costs, aiming to provide information for compiling indicators on outputs, intermediate consumption and value added of enterprises. The sample size of enterprises to be surveyed with this type of questionnaire accounts for about 10-15% of total enterprises.

Access to the full data set of the enterprise survey is generally neither too difficult nor too costly.

3.2. Review of Empirical Studies on FDI Spillovers

In Vietnam, a majority of the current literature on FDI and its impacts employs a qualitative approach based on statistical data, the number of empirical quantitative studies using micro-data has been on the rise in recent years.

With the use of panel data at firm level for Vietnamese industries from 2000 to 2004 provided by the General Statistical Office of Vietnam (GSO)[2], Le Quoc Hoi (2007) examined wage spillovers from foreign firms to local enterprises both horizontally (intra-industry) and vertically (inter-industry). In this paper, he estimates wage spillovers through a semi-log linear regression[3] with the dependent variable being

[2] The data sets cover an increasing number of firms from 10945 firms in 2000 to 23121 firms in 2004. Taking out firms with missing values, the author found a usable unbalanced panel of 7140 domestic firms and 1461 foreign firms. In the estimation model of the author, all variables are deflated to 1994 fixed prices. The data sets provide information on the property structure of enterprises, output, capital stock, investment, employment, location, wages, sales, etc. Sectoral classification of firms is applied at the two-digit level of Vietnamese Standard Industrial Classification (VSIC), covering 29 sectors in three industrial groups with 4 sectors in mining and quarrying, 23 in manufacturing, and 2 in electricity, gas and water supply. High-wage industries are considered to include chemicals, television and telecommunication devices, computer and office equipment and low-wage industries are regarded to consist of food and beverages, and textiles.

[3] $\ln W_{ijt} = \beta_1 HS_{jt} + \beta_2 VS_{jt} + \beta_3 X_{ijt} + S_j + D_t + L_i + \varepsilon_{ijt}$, where i, j and t denote firm, industry and year respectively. W_{ijt} represents average wage of firm i in sector j in year t. HS_{jt} is the horizontal wage spillover measured as the share of employment accounted by all foreign firms in industry j where the firm operates, indicating the extent of foreign penetration in each industry and competitive pressures from foreign firms that motivates local firms to increase wages so as to be able to attract workers. VS_{jt} measures the level of contacts between foreign and domestic firms between different industries. X_{ijt} denotes the vector of firm i's characteristics, S_j denotes the dummy for industry fixed effects, D_t denotes time dummies, L_i dummy for regional fixed effects., and ε_{ijt} is a random noise term.

the natural logarithm of wage while independent variables including horizontal spillover effect, vertical spillover effect, vector of firms' characteristics which possibly influence the level of wages with the control for capital intensity, technology, scale and concentration, and skill levels, dummy for industry fixed effects, time dummies to account for aggregate shocks and dummy for regional fixed effect.

Empirical results strongly support the presence of wage spillovers from foreign firm to domestic firms in Vietnam. Sectors with a higher presence of foreign firms witnessed higher wage levels whereas domestic firms with backward linkages with foreign firms can benefit from productivity spillovers and pay higher wages to their employees. The paper indicate that horizontal wage spillovers have impacts on firms by all ownership types in both medium and low- technology industries, while vertical spillovers only affects private firms in low- technology industries. While firms of all size groups are affected by horizontal spillovers effects, only small and medium firms are impacted by vertical wage spillovers. Horizontal spillovers affect firms regardless of their training provision, while vertical wage spillovers only impact local firms with training. In this regard, horizontal and vertical wage spillovers are both present when the foreign firm has training activity, however, not in the absence of training by the foreign firm. It is noted that the vertical wage spillovers are of no significance when the local firm has no training activity.

In another research, with the same data set at firm level from 2000 to 2004, Le Quoc Hoi (2008) uses an estimation model derived from the Cobb-Douglas production function and homogeneous of degree one to explore technology spillover effects of FDI from foreign firms to domestic firms in Vietnam through horizontal and backward linkages and at the same time to analyze the impact of the characteristics of industries, foreign and domestic firms on the occurrence and scope of such spillovers.

Estimated results indicate that backward linkage is the most important mechanism for technology transfer from foreign firms to local ones. Le Quoc Hoi (2008) shows that domestic firms in industries with a high level of foreign presence enjoy higher productivity than other firms. In this connection, it is noted that the backward spillover is affected by the size of the domestic firms, quality of the labor force and technology gap. The paper reveals a negative impact of the horizontal presence of foreign firms on domestic productivity. This finding suggests that the competition effect induced by

foreign presence is stronger than the potential technology transfer between foreign firms and their domestic rivals. The emergence of this competition effect is subject to characteristics of the firm and industry. In addition, Le Quoc Hoi (2008) also indicates that domestic productivity is negatively affected by the presence of fully-owned foreign firms, but not with the presence of partially-owned foreign firms. Estimated results show that while domestic-oriented foreign firms produce negative impacts on the productivity of domestic firms, export-oriented foreign firms do not generate significant impacts.

Le Thanh Thuy (2007) attempted to determine major channels and estimate to what extent spillover effects occur in Vietnam using industry- level data for the two sub periods of 1995-1999 and 2000-2002 provided by the General Statistical Office of Vietnam. The paper aims to define factors affecting the magnitude of spillovers of MNCs presence on domestic productivity, thereby drawing policy implications to strengthen FDI spillovers effects in Vietnam. More concretely, the paper measures the impacts of the size of the technology gap between foreign and domestic firms, industry features such as capital-intensive or labor-intensive and the linkage role of the domestic private firms with the use of an industry-level panel data set[4] that includes a total of 29 sectors from three industrial groups of mining and quarrying, manufacturing & electricity, gas and water supply (see appendix 1).

Derived from the production function of Cobb-Douglas form, the labor productivity of the domestic sector is estimated through a log-linear regression[5]. In addition, by adding interaction terms between foreign presence with proxies for technology gap,

[4] Data sets cover information on gross output, fixed assets and employment. In this connection, it is noted that data on gross output and employment are of availability separately for all given economic sectors, whereas data on fixed assets are of availability only for foreign sector and total domestic sector, with an absence of further division inside domestic sector

[5] $\ln (Y_{it}^{d}/L_{it}^{d}) = \mu + \alpha \ln (K_{it}^{d}/L_{it}^{d}) + \beta\, GOV + \gamma\, FOR_{it} + \varepsilon_{it}$, where *d* denotes domestic, *i* denotes industrial sector, *t* denotes time, (Y_{it}^{d}/L_{it}^{d}) denotes average labor productivity of the domestic sector *i* at time *t*, measured by the ratio of gross output to total employees in the domestic sector; (K_{it}^{d}/L_{it}^{d}) is the capital-labor ratio of the domestic sector *i* at time *t,* measured by the ratio of total fixed assets to total employees in the domestic sector; *GOV* is used as a proxy for concentration of industry, measured by the share of SOEs in total output of each industry, taking into account a particular feature of Vietnam that industries with higher presence of SOEs are probably more concentrated; *FOR* is the proxy to measure the degree of foreign presence in each industry, measured by the percentage of the foreign sector's employees of overall industry's employees.

capital intensity and domestic private activities, the paper measures the magnitude of factors affecting spillovers of foreign presence on domestic productivity[6].

It is noted that the technology gap is one of the important factors leading to spillover effects; however, if the gap is too large, negative impacts may occur with respect to domestic firms because of the emergence of the crowding-out effects. The paper finds that given the export-oriented features of the labor-intensive industrial sectors of Vietnam's industry, these export-oriented sectors are quite efficient and highly technological compared to other sectors, implying that spillover effects of MNC presence are more favorable to labor-intensive industries compared to capital-intensive industries. Results of regressions show strong support for the hypothesis of "absorptive capability" of the host country. As a developing country with backward technologies, only Vietnam's industries or firms with quite advanced technologies are able to absorb advanced technologies associated with the presence of MNCs. This impact, however, will disappear with the passage of time when technology gaps are negligible across industrial sectors. By analyzing FDI effects through two sub-periods of 1995-1999 and 2000-2002, this study indicates that FDI spillover effects are much larger in the period of 1995-1999 than in the period of 2000-2002. The paper also confirms the important role of the private domestic sector in expanding FDI spillover effects, thus suggesting that policies enhancing the development of the private sector should be encouraged.

Impacts of FDI on technical efficiency of local firms are analyzed by Nguyen Dinh Chuc *et al.* (2008), where horizontal spillovers are evaluated through imitation, competition and labor mobility and horizontal spillovers are evaluated through backward and forward linkages on technical efficiency. The authors use panel data from 2002 and 2004 combined from the productivity and the investment climate enterprises survey conducted by the World Bank[7] in 2005 and Vietnam IO table in

[6] Estimation equation is now as follows: $\ln (Y_{it}^{d}/L_{it}^{d}) = \mu + \alpha \ln (K_{it}^{d}/L_{it}^{d}) + \beta\, GOV + \gamma\, FOR_{it} + \lambda\, FOR_{it}{*}proxy_{it} + \varepsilon_{it}$, where *proxy* = technology gap (PRG), which is productivity gap, defined by the ratio of gross output per employee in the foreign sector to that of the whole industrial sector; capital intensity (CAI), defined as the capital-labor ratio of foreign sector in each industry, showing that whether a industrial sector is labor-intensive or capital-intensive; domestic private activities (PRI), defined as the percentage of domestic private sector's output in the whole industrial sector's output.

[7] Data set is freely accessible at http://www.enterprisesurveys.org/. The fundamental objective of this firm survey level is to deepen understanding of Vietnam's investment climate. The survey was conducted in 2005 covering more than 1000 manufacturing firms in Vietnam. In relation to the paper by Nguyen Dinh Chuc *et al.* (2008), a 3-year panel data from 2002 to 2004 was formed using

2000. Estimation strategy of technical efficiency of the paper involves the stochastic frontier analysis (SFA) approach[8], which is justified by the argument that real production output of firms is only on or under the optimal production frontier. Accordingly, the empirical frontier model[9] used in the paper is in the form of a Cobb-Douglas production function, where appropriate specification[10] is made to detect FDI spillover effects on technical efficiency of local firms.

The paper investigates possible channels of spillover impacts from FDI on the performance of local manufacturing firms as well as delving into the analysis of the labor mobility effects of foreign invested enterprises to local enterprises in the same industry. Though in term of horizontal spillovers, the labor mobility effects of the technical efficiency from foreign invested enterprises to domestic ones are not seen as theoretically expected but the competition and demonstration effects are recognized in the relationship between foreign- invested and local manufacturing firms. Accordingly, the paper concludes that FDI presence measured in output help to improve production efficiency of domestic manufacturing firms. In this connection, the paper shows that the production efficiency of domestic firms is improved through their increased access to new, improved or less costly intermediate inputs supplied by foreign invested firms. The paper also indicates an upward trend in production efficiency of local manufacturing firms over time.

Nguyen Ngoc Anh *et al.* (2008), using firm-level panel data formed from the enterprise surveys 2000-2005 conducted by GSO, has conducted an empirical research aiming to find evidence of technological spillover effects of MNCs presence in Vietnam. Inheriting and advancing from previous FDI-related studies, this paper

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information from the labor relations and productivity sections of the survey. As indicated in the dataset, there are a total of 17 different manufacturing sectors.

[8] The stochastic production frontier model is as follows: $\ln y_i = \beta_0 + \Sigma_n \beta_n \ln x_{ni} + v_i - u_i$, where y_i: the scalar output of producer i; x_i: the vector of n inputs used by producer i; v_i: the two-sided noise component of the error term; u_i: the nonnegative technical inefficiency component of the error term.

[9] $\ln Y_{ijt} = \alpha + \beta_1 \ln K_{ijt} + \beta_2 \ln L_{ijt} + \beta_3 Year_{it} + v_{ijt} - u_{ijt}$, where Y_{ijt}: total revenues of firm i in sector j at time t; K: total assets of firm; L: the measure of labor, defined as the total permanent employees at year end; *Year*: indicates the year of observation to account for Hicks neutral technological progress over the year.

[10] $u_{ijt} = \delta_0 + \delta_1 Horizontal_{jt} + \delta_2 Forward_{jt} + \delta_3 Backward_{jt} + \delta_4 Year_{it} + w_{jt}$, where *Horizontal, Forward* and *Backward* are used as proxies for the horizontal and vertical effects of FDI on local enterprises; w_{jt} is the random variable, defined by the truncation of the normal distribution with zero and variance σ^2; *Year* is to account for linear change of inefficiency over time.

explores not only horizontal spillover effects but also the backward and forward linkages, which covers not only the manufacturing sector as seen previously but also expands to the service sector. In term of horizontal spillover effects of FDI, the paper also attempts to make a distinction between the horizontal output spillovers, which capture demonstration effects and competition effects, and the horizontal employment spillovers, which capture the labor mobility effects. The econometric model used in the paper is in the form of an augmented Cobb-Douglas production function. The basic model[11] is first estimated using a pooled OLS method to obtain the results to be used as an exploratory analysis. Taking advantage of a panel data set, the paper deals with the issue of a possible correlation between the unobserved productivity shock and the inputs by estimating the basic model using the random effects and fixed effects models. Finally, the first difference form of the model is developed[12] and estimated to deal with the issue of exogeneity.

It is noted that the two sectors of manufacturing and services experience different channels of spillovers. The authors find the presence of positive spillovers through the backward linkages in the manufacturing sector while the backward and forward spillovers seem not to exist in the service sector. Regarding horizontal spillover effects, the paper recognizes the existence of spillovers through labor mobility in the manufacturing sectors, though the horizontal output spillovers are not found in this sector. For the service sector, nevertheless, authors recognize the evidence of horizontal spillovers through both the output channel and through the labor mobility channel. Accordingly, the paper suggests a more detailed policy that encourages FDI into sectors associated with expanded technological spillovers.

Nguyen Phi Lan (2008) conducted a study on FDI technology spillover effects to domestic firms' productivity through both horizontal and vertical linkages, at the same time examining the degree of variance of FDI across regions of Vietnam in Vietnamese manufacturing firms. The paper uses data from the annual enterprise survey conducted

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[11] The basic model is as follows. $\ln Y_{ijt} = \alpha + \beta_1 \ln K_{ijt} + \beta_2 \ln L_{ijt} + \beta_3 \ln M_{ijt} + \beta_4 Horizontal_{jt} + \beta_5 Backward_{jt} + \beta_6 Forward_{jt} + \alpha_i + \alpha_t + \varepsilon_{ijt}$, where Y_{ijt}: real output of firm i in sector j at time t; K: capital of a firm, defined as the value of assets at the beginning of the year; L: the measure of labor, defined as the number of employees; M: material inputs; $Horizontal_{jt}$: the presence of foreign firm in sector j at time t.

[12] The first differenced model is as follows. $\Delta \ln Y_{ijt} = \alpha + \beta_1 \Delta \ln K_{ijt} + \beta_2 \Delta \ln L_{ijt} + \beta_3 \Delta \ln M_{ijt} + \beta_4 \Delta Horizontal_{jt} + \beta_5 \Delta Backward_{jt} + \beta_6 \Delta Forward_{jt} + \alpha_i + \alpha_t + \varepsilon_{ijt}$.

by GSO from 2000 to 2005 with the focus on manufacturing firms. In terms of modelling, the author assumes a Cobb-Douglas production function[13] for both the industry and firm level data estimations. The specific estimated equation[14] is as follows:

$$Y_{ijt} = f\begin{pmatrix} K_{ijt}, L_{ijt}, Humancapital_{ijt}, Scale_{ijt}, Concentration_{jt}, \\ Technologygap_{ijt}, FinancialDevelopment_{ijt}, FDISpillover_{ijt} \end{pmatrix}$$

The model is estimated with the two stage least squares technique with the correction for heteroskedasticity. At the same time, dummy variables for industry, region and time are included in the model, together with lagged values of relevant variables of horizontal, backward and forward linkages, to avoid endogeneity that may result from FDI presence and characteristics of industries.

Different from some other previous empirical studies, the most noticeable finding of the paper study is that the whole period 2000-2005 witnessed positive impacts of horizontal and backward linkages of FDI on productivity of the Vietnamese manufacturing firms, while negative impacts are only seen with regard to forward linkage effects on domestic productivity. This critical finding implies that horizontal and backward linkages act as important channels of technology transfer from foreign firms to domestic firms.

As mentioned above, some previous empirical studies of developing countries show that domestic productivity may be negatively impacted because of horizontal linkage effect due to effective competition of foreign firms with advanced technology compared to domestic ones, forcing domestic firms to reduce their productivity. However, the paper by Nguyen Phi Lan (2008) finds that Vietnam's domestic firms may benefit from the technology leakage of foreign firms through observing and imitating behaviors. The

[13] $Y_{ijt} = A_{ijt}f(K_{ijt}, L_{ijt})$, where Y_{ijt}, K_{ijt}, and L_{ijt} denote output capital, human capital, and employment of domestic firm i in industry j at time t, respectively. A_{ijt} represents the total factor productivity (TFP) of firm i in industry j at time t

[14] Where Y_{ijt}, K_{ijt}, and L_{ijt} are in log form; $Humancapital_{ijt}$: total wages and training costs in log form; $Scale_{ijt}$: firm sales relative to the average firm sales in the same sector; $Concentration_{jt}$: the level of concentration in industry j at time t, applying the Herfindahl index for domestic firms; $Technologygap_{ijt}$: the percentage difference between the percentage productivity of foreign firm and that of domestic firm in the same industry; $FinancialDevelopment_{ijt}$: the financial development variable measured as working capital over total assets; $FDISpillover_{ijt}$: FDI spillovers via horizontal, backward and forward spillovers.

horizontal and backward linkage effects on the domestic productivity are also reliant on the absorptive capacity of Vietnamese firms. Firms with higher human capital stock, better financial development and lower technology gap will benefit from technology spillovers of FDI and consequently they will have higher productivity. However, the paper also indicates that technology spillovers vary from firm to firm, from industry to industry, and from region to region. In terms of technological structure, the presence of FDI produces negative effects on the productivity of domestic firms in industries with low technologies.

Additionally, Nguyen Phi Lan (2008) notes that the main concentration of FDI in industries of both low and high technologies generates benefits for domestic firms from backward linkages with foreign firms. However, only industries of medium technologies benefit from forward linkages with foreign firms. This reflects the fact that domestic firms in industries of medium technology can have intermediate goods of better quality and lower cost. As a result, they can increase their productivity and generate greater economies of scale.

Another important finding of this paper lies in its realization that private firms are very active in looking for technical assistance and technology transfer from foreign firms through the provision of intermediate goods to foreign firms and in turn foreign firms help domestic ones to improve the quality of their products through training courses, technical assistance and technology transfer. Moreover, large firms with high technology have greater opportunities to receive more technology spillovers from foreign firms than small and medium firms.

Another finding of the study is that all regions of Vietnam benefit from the technology spillovers of FDI. However the spillover effects vary enormously across regions. As Nguyen Phi Lan pointed out, the estimation results indicate that backward spillovers occur mainly in four regions namely the Red River Delta, the North East, the South Central Coast, and the South East which have advanced conditions of infrastructure, human capital stock and technology, and in which most of Vietnam's imports and export activities take place. However, they do not benefit from horizontal linkages because of the high concentration of nearly 80 percent of FDI in these regions. As a result, the crowded presence of foreign firms generally brings competition effects to their local rival firms in the three regions. In contrast, domestic firms in remote

regions do not have any backward linkages but benefit from horizontal linkages with foreign firms. Domestic firms in the remote regions may reform their own production methods, learn from foreign firms and improve their technological levels, thus helping them to increase their productivity.

Pham Xuan Kien (2008) uses the data of Enterprise Survey 2005 by the General Statistics Office of Vietnam to test possible impacts of FDI on labor productivity in Vietnam as a whole. The paper focuses on the data at the firm level in four sub-industries: food processing, textile, garment and footwear, electronics and mechanics with a total of 441 enterprises including domestic and FDI firms located over the country. The author has attempted to answer four main question: (i) Does the FDI have positive effects on the labor productivity in Vietnam?; (ii) Does the impact depend on the skills, scale and capital intensity gaps between the domestic and FDI firms?; (iii) Does the impact vary across locations?; and (iv) Is there any different effect of FDI on the labor productivity due to different types of FDI?.

The paper finds that the spillovers of FDI to the overall labor productivity in Vietnam are unambiguous and strongly positive. This, once again, stresses the crucial role of foreign capital in economic development of developing economies like Vietnam. Through Foreign Direct Investment, the host countries obtain not only the necessary capital, but also obtain modern technology, management skills, and marketing skills. The author agrees with the view that the presence of FDI firms facilitates competition between enterprises in the host countries, which induces them to use resources more efficiently, improve technology as well as management and in turn improve labor productivity as a whole.

As analyzed by the author, the spillovers of FDI in Vietnam are reliant on the skills, scale, and capital intensity gaps between FDI and domestic firms. The negative impacts of skills and capital intensity gaps on the overall labor productivity suggest that Vietnam may stimulate FDI firms that tend to apply labor-intensive technologies to employ the labor force, which is abundant and relatively cheap in the short run. However, in the long run, it should focus on narrowing the technology gap between domestic and foreign firms.

Furthermore, the author recognizes that improving the skills of local workers is crucial because it seems that relatively cheap labor will no longer be a competitive

factor to attract FDI in the near future. Thus, the Vietnamese government should pay attention to improving skills for labor through vocational colleges and training programs. The government should also develop domestic enterprises, particularly small and medium enterprises by providing them with more training on new technologies. The government should help these firms to renew their technologies, machines and so on to catch up and compete with FDI firms in domestic markets as well as to compete with foreign firms in the international markets.

To some extent, the author shares a common view with Nguyen Phi Lan (2008) that spillovers of FDI in Vietnam are found to be different across locations. The regression results illustrate that FDI flows tend to concentrate on the two biggest cities, Hanoi, the capital in the North and HoChiMinh city in the South as well as their surrounding cities such as HaiDuong, BacNinh or BaRia-VungTau, BinhDuong, DongNai. This implies that to assure equitable development among the regions in order to achieve sustainable economic development, the government should encourage investors, including domestic and foreign firms, to invest in the relatively less developed regions such as mountainous provinces in the North or remote areas in the middle of Vietnam through policies such as tax and investment incentives. The government, besides proving tax incentives, could spend the national budget on infrastructure systems including roads, markets and schools to improve comparative advantages of these areas in order to attract more investment.

In addition, Pham Xuan Kien (2008) also finds that there are some differences in the spillovers of FDI in Vietnam due to different types of FDI. Joint ventures and other types of FDI, excluding 100% foreign-owned capital, were found to have a very strongly positive impact on the labor productivity as a whole. This finding suggests that in developing countries such as Vietnam, working in joint ventures as well as other FDI contacts enables local workers to learn more about knowledge, management, and marketing skills than working in 100% foreign- owned capital firms where most of the high positions might be hold by foreign experts.

The critical review of literature on FDI spillovers in the case of Vietnam strongly shows that foreign presence is predominantly positive to Vietnam's economic development in various aspects, ranging from the promotion of transfer of technology and managerial skills from foreign firms to local ones, particularly with regard to those

which act as suppliers to MNCs, to the strengthening of total- factor productivity. In this connection, as concluded by Giroud (2007) the level of linkages as well as knowledge sharing between foreign firms and local suppliers in Vietnam, however, remain small. Moreover, it is noted that FDI spillovers would also benefit workers not directly employed by the multinational operation with the creation of positive externality when workers could get higher wages than they would otherwise received.

4. Concluding Remarks and Suggestions for Future Research

This paper reviews micro-data analyses of FDI spillovers in Vietnam. Recent years have witnessed a growing number of econometric studies at micro-level using the panel dataset constructed from the annual enterprise survey, particularly during the five-year period from 2000 to 2005.

Existing empirical studies under review in this paper strongly agree that FDI spillovers from foreign firms to local firms of Vietnam are overwhelmingly positive in various aspects. As analyzed, there are multiple channels through which local firms in Vietnam can benefit from the presence of foreign firms. Nevertheless, the magnitude of spillovers varies across regions, industries and firms; cases spillovers are even negative in some cases and aspects. The diversity in findings could be due to various causes, particularly with regard to methods of estimation and data quality, triggering the need for more research work in this area.

In the current literature, there remains a lack of analysis on the underlying causes for the potential negative or positive impacts of FDI on production and productivity of domestic firms. In this connection, it is noted that some empirical studies state that spillovers are more pronounced in low-tech industries that have a low level of technology gap between domestic and foreign firms. The implications of these studies should be further considered and verified, particularly with regard to the design of FDI-related policies, given the current context of increasing FDI inflows in Vietnam and the wishes to encourage the inflow of FDI in high- tech industries.

Another area of concern is the need to consider more analysis of the relationship

between the scope of foreign presence and spillovers as well as possible effects on the market share so as to be able to define suitable policy suggestions to minimize negative effects in association with the growing volume of FDI over time.

Also, given the importance of an appropriate investment strategy for rapid and sustainable development, there should be more research to explore the relationship between FDI and domestic investment, to identify whether FDI substitutes or complements domestic investment.

In term of data for future research, the dataset constructed from the annual enterprise survey is believed to continue being the primary source of micro-data for empirical quantitative studies, given its wide range of coverage and reliability and accessibility.

Appendix 1. Industrial Sectors

C	**Mining and Quarrying**
C10	Mining of coal and lignite; extraction of peat
C11	Extraction of crude petroleum and natural gas
C12	Mining of metal ores
C13	Other mining and quarrying
D	**Manufacturing**
D15	Food and beverage
D16	Cigarettes and tobacco
D17	Textile Products
D18	Wearing Apparel, dressing and Dying of Fur
D19	Leather Tanning and Dressing
D20	Wood and Wood Products
D21	Paper and Paper Products
D22	Printing, Publishing and Reproduction of Recorded Media
D23	Coke and Refined petroleum products and Nuclear fuel
D24	Chemicals and Chemical products
D25	Rubber and Plastic products
D26	Other Nonmetallic Mineral products
D27	Basic Metals
D28	Fabricated metal products
D29	Machinery and Equipment, n.e.c.
D30	Office, accounting and computing machinery
D31	Electrical machinery and apparatus, n.e.c.
D32	Radio, TV, communication equipment
D33	Medical and precision and optical instruments
D34	Motor vehicles trailers and semi-trailers
D35	Other transport equipment
D36	Furniture, N.e.c
D37	Recycling
E	**Electricity, gas and water supply**
E40	Electricity, gas steam and hot water supply
E41	Collection, purification and distribution of Water

Source: *Le Thanh Thuy* (2007).

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CHAPTER 14

A Survey of Micro-data Analyses in Australia

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There has been a steady increase in studies on firm behaviour and performance in Australia using large-scale micro datasets since the 1990s. This paper reviews these micro-data analyses, with a focus on findings related to the theme of globalisation and firm performance.

A major data source for these studies was the Business Longitudinal Survey panel dataset that covered a four-year period in the mid 1990s. The topics explored have ranged from the determinants of innovation and export performance to productivity determinants such as the use of information technology and enterprise bargaining.

There were few studies that specifically explored the impact of globalisation on firm productivity, but a number of papers examined relevant aspects of firms' international activities and productivity performance. There were also studies where variables of international integration were included in the analyses even though they were not the central research questions.

The findings yielded by these studies were interesting but at the same time, diverse. They highlight the need for more comprehensive research that is focused on the linkages between globalisation and productivity, so that firmer conclusions of their relationships could be derived.

The most likely data source for any new work in this area is the Business Longitudinal Database (BLD) currently being developed by the Australian Bureau of Statistics. The initial release of the BLD is expected in July 2009. While the BLD promises to be a valuable resource, it also has some limitations. Within the constraints of the BLD, potential topics for priority research can include the link between exporting and productivity, and the impact of economic integration on firm dynamics and resource reallocation.

1. Introduction

There has been a steady build-up of studies on firm behaviour and performance in Australia using large-scale micro datasets since the 1990s. The topics explored have ranged from the determinants of innovation and export performance, growth paths of small and medium enterprises, to productivity determinants such as the use of information technology, enterprise bargaining, innovation, research and development and capital investments. The most commonly used measure of performance was labour productivity. There were also occasional constructions of total factor productivity indices or the use of firm profitability as a performance indicator.

The aim of this paper is to provide an extensive survey of micro-data analyses in Australia, with a focus on findings related to the impact of globalisation (or economic integration) on corporate activities and performance.

The paper is organised as follows. The next section describes the main data sources that have been used for firm-level studies and gives examples of some of the issues that have been investigated. Section 3 reviews in detail studies related to aspects of firms' international activities and productivity performance that fall within the framework for analysing the linkages between globalisation and aggregate productivity enhancements. Section 4 discusses the latest developments in data collection and data access and suggests potential topics of priority research interest in that context. Section 5 concludes.

2. Main Data Sources and Related Studies

Researchers who have carried out studies on larger-scale firm-level datasets have turned to three sources. These are the Business Longitudinal Survey (BLS) conducted by the Australian Bureau of Statistics (ABS), the Australian Workplace Industrial Relations Survey (AWIRS) undertaken by the Department of Industrial Relations (now the Department of Education, Employment and Workplace Relations), and the private-sector IBISWorld database.

These datasets are defined by a few characteristics. Firstly, they have quite comprehensive industry coverage. They contain data across a range of manufacturing and services industries, which is unlike many international micro-datasets where data are collected for the manufacturing sector only. Secondly, the unit of data collection is a firm, not a plant. Thirdly, depending on the specific dataset or access conditions, the dataset can contain data on both small and medium firms and large firms, or only one of the two size categories. Lastly, on the time dimension, only the BLS is a longitudinal database that tracks firm entry and exit.

This section describes each dataset and gives examples of research work that has been conducted using these data. More emphasis is given to describing the BLS and related studies, as a significant body of micro-data analyses in Australia, including many of those reviewed in Section 3, have used the BLS.

2.1. Business Longitudinal Survey

The BLS collected data on an unbalanced panel of around 5700 firms over a four year period from 1994-95 to 1997-98. Survey respondents were management units, defined as the highest level accounting unit within a business for which detailed accounts are maintained (ABS, 2000). In nearly all cases this coincided with the legal ownership entity, although larger diversified businesses might have several management units organised along different lines of business. Each management unit was classified according to the industry that provided its major source of income. Thus, management units generally can be regarded as akin to firms, rather than plants.

The BLS covered only non-agricultural market sectors – that is, mining, manufacturing and a range of services industries - and excluded industries with heavy government involvement, such as health, education and communications services. The BLS was primarily designed to collect data on the growth and performance of small and medium enterprises (SMEs), although data on large firms were collected to allow population estimates. The publicly available dataset (the Confidentialised Unit Record File, or CURF) contains data on SMEs with less than 200 employees only (henceforth termed the ‘SME sample’). The full sample (the Main Unit Record File, MURF) has restricted access.

Each survey included a set of core questions, which were asked each year and a set of one-off questions addressing different policy issues each year. The core questions included employment, ownership, union membership, export status, business practice, financial structure and information in the balance sheet. The specific topics covered were innovation and training (1994-95); labour turnover and business links (1995-96); use of computers (1996-97) and internet use, health and safety practices and training (1997-98).

Businesses were chosen from the ABS Business Register based on the stratified random sampling method, where the stratification was by both industry and employment size classification. From the first phase of 13000 firms, 9000 live responses were collected. These were further stratified into two categories in 1995-96: firms identified as innovators, exporters, or those with high employment or sales growth, which numbered about 3400, continued to be surveyed; of the remaining 5600 live respondents, about 2200 were selected for inclusion in the survey. In addition, a random sample of new firms, or births, was selected for the 1995-96 survey. In subsequent years, all firms surveyed in the previous year were traced, with exits recorded, and births included.

Studies using the BLS are a mix of descriptive exploration of firm characteristics and formal econometric analyses (see Parham (2002) for a selected list for both types of papers). BLS data have been employed to examine topics ranging from innovation, export performance, employment changes, enterprise bargaining to ICT usage – some of them in conjunction with firms' productivity performance. Thus, BLS-related research can broadly be grouped into non-productivity and productivity related studies. The former group has investigated issues such as the growth paths of SMEs (for example, McMahon, 2001; Jones 2004) and determinants of innovation (for example, Battacharya and Bloch 2004; Rogers 2004a). The latter group has examined productivity determinants such as enterprise bargaining, ICT use, innovation and R&D and capital investments (for example, Loundes, Tseng and Wooden 2003; Gretton and Gali 2004). The majority of these papers use labour productivity measure. Where they make use of the panel nature of the data, a balanced panel is typically employed, and both fixed effects and random effects estimators have been used in different papers.

2.2. Australian Workplace Industrial Relations Survey

The AWIRS was carried out in 1990 and 1995. The main survey had a sample of around 2000 workplaces with 20 or more employees. Workplaces were selected from all industries except Agriculture, forestry and fishing and Defence. AWIRS 95 was a larger and more complex survey than AWIRS 90, as it included a panel survey of 698 workplaces sampled in 1990 and an employee survey.

AWIRS data is useful for studies on the determinants of labour productivity. Loundes (1999) investigated a range of determinants on labour productivity level and growth using AWIRS 95, covering indicators of industrial relations, economic incentives for employees, and workplace characteristics. The role of market competition on managerial incentives and productivity were explored in Blanchflower and Machin (1996) and Rogers (2004b).

2.3. IBISWorld Database

The IBIS database contains annual financial and operations information on medium to large firms in Australia across all ANZSIC divisions, from 1979 to the present. This includes data on the top 2000 companies at any time, ranked by turnover. The data are collated from a variety of sources, such as published accounts, the Australian Stock Exchange and surveys. While the IBIS database allows for panel data analysis, it does not track the entry and exit of firms.

The IBIS database is more often used for studies on firm profitability. The book edited by Dawkins, Harris and King (1999) comprises a series of articles on the performance of big business in Australia based largely on the IBIS database, with topics ranging from factors affecting profitability, such as R&D and management principles, to the costs of monopoly and public policy. IBIS data have also been linked to data on intellectual property from IP Australia for research on innovation and R&D issues (for example, Bosworth and Rogers, 2001).

3. Survey of Literature Related to Globalization and Productivity

3.1. Papers Examining Globalisation and its Impact on Firm Productivity

As far as can be ascertained, there were two earlier papers among Australian firm-level studies that specifically examined globalisation and its impact on businesses' productivity performance. These were: Ergas and Wright (1994) on the extent of Australia's international integration, pattern of resource allocation between industries, and the effect of integration on firms' learning, product quality and variety and productivity; and Bloch and McDonald (2001) on how import competition interacted with domestic competition to affect labour productivity level and growth.

Ergas and Wright (1994) analysed the issue using new data from a survey of Australian manufacturers carried out by the ABS on behalf of the Australian Manufacturing Council (AMC). The survey was conducted over December/January 1993/1994 on firms with more than 20 employees. A total of 962 firms responded to the survey, which was equivalent to over 10 percent of the population. The survey contained over 100 questions, many of them involving scalar judgements. The authors tested several hypotheses that were organised around the main argument that integration led to more intense product-market competition which then changed firm conduct and performance. They examined responses to particular questions, reviewed data plots and estimated separate probit equations for the dependent variables of product quality, relative unit costs and export orientation against explanatory variables. Ergas and Wright found that the factors that most sharply distinguished the better performing firms were investment in intangible assets (mainly skills and R&D), less conflictual industrial relations, and a more systematic emphasis on monitoring their performance relative to rivals. These factors seemed to hinge on the international orientation of firms, which determined their exposure to, and willingness and ability to learn from, world best practices.

Bloch and McDonald (2001) studied the impact of import competition on labour productivity. They used a panel dataset of large manufacturing firms with at least $20 million market capitalisation classified at the 2-digit industry level. Two panels were drawn from the IBIS database, the first a balanced panel comprising 265 firms over the

period 1984 to 1993, the second a balanced panel of 434 firms for the period 1988 to 1993. The authors derived expressions for productivity level and productivity growth that allowed for imperfect competition, in the mode of Hall (1988), and both the markup and technology index were treated as functions of competition. Fixed effects estimations were carried out with the variables both in levels and first differences, on sub-samples of firms in industries with high and low industry concentration respectively. The study's key finding was that import competition interacted with domestic competition in influencing productivity level and growth, with the positive impact of increased exposure to import competition rising with the degree of concentration among the domestic producers. Lowering border protection on manufactured imports into Australia had led to enhanced productivity from domestic producers, especially those in highly concentrated industries.

3.2. Papers Examining Aspects of Firms' International Activities or Productivity

Other relevant work focused on particular aspects of firms' international activities or productivity performance. Firms' exporting behaviour, including possible selection in exporting, was covered in Revesz and Lattimore (2001) and Gabbitas and Gretton (2003). A Productivity Commission (2002) paper reported on findings from a survey on offshore investment by Australian firms.

Gabbitas and Gretton (2003) explored the influences of firm size and the magnitude of firms' domestic sales base on the export performance of firms from the full sample of the BLS. The econometric analysis focused on the manufacturing sector, with a sample of over 1500 firms. Two types of regression analysis were conducted. The first was logit regressions which looked at the influence of firm size on the likelihood of firms exporting, the likelihood of firms being regular exporters and the likelihood of exporting firms being regular exporters. The second was fixed effects panel estimation to analyse the relationship between firm size and the level and intensity of exporting. Gabbitas and Gretton found that while many significant exporters also happened to be larger firms, the results did not support the proposition that a firm first had to secure a large domestic sales base in order to compete effectively in export markets. The study suggested that the main determinants of export performance were a range of firm-

specific factors, including product design and quality, marketing expertise and motivation of management.

Revesz and Lattimore (2001) examined the use and impact of some major export facilitation programmes, as well as R&D programmes on Australian firms in trade oriented or R&D intensive sectors. A sample of 1848 firms in the mining, manufacturing, engineering services and computer services sectors were drawn from the BLS full sample. Various regression techniques were used in the analysis, such as logit regressions for participation and transitions and ordinary least squares for labour productivity growth. The study found that only one of a number of export facilitation programmes had a significant effect on the export growth of participants. However, the authors cautioned that the estimates might be imprecise because of the failure to adequately correct for the bias that arose from the self-selection by firms with high export growth to participate in these programmes. The study also found no apparent link between productivity growth and participation in government business programmes, although the authors qualified that 'noise' in the productivity data and other methodological problems might partly explain the results.

A Productivity Commission (2002) paper reported on the findings from a survey conducted in September 2001 of 201 of Australia's largest firms on their offshore investment activities. The paper was descriptive with no econometric analysis. However, given the lack of firm-level studies on Australian FDI, it is nevertheless interesting to highlight some of the key findings. Nearly half of the respondents had offshore direct investment. Of these respondents, 85 percent reported that all or some of their offshore operations were similar to core operations in Australia, indicating that there was a substantial degree of horizontal integration between the Australian and offshore operations of those firms. New Zealand and the Asian region were the most common locations of offshore operations. Commercial factors were much more important than government-related factors in influencing firms to invest offshore. Of these, international market access was the dominant commercial factor, while foreign and domestic tax regimes were leading government-related influences. Only a third of the firms with offshore investment ranked gains from skills and technology in new operating environments as being of moderate to high importance. The impact of offshore operations on firm profits was mixed. Half of the firms reported an increase in

profits, one third indicated no change, while 15 percent indicated that their offshore operations had been a drain on their domestic operations.

3.2.1. Decomposition Analyses

Another strand in the framework for the analysis of globalisation and firm performance is the role of firm dynamics (entry, exit and changing market shares) and resource reallocation in affecting aggregate productivity growth. Trade liberalisation and deregulation is hypothesised to encourage competition and new technology adoption, which would facilitate the contraction and exit of low-productivity firms and the expansion and entry of high-productivity firms. The resulting reallocation of resources from low- to high-productivity firms raises average industry productivity.

There have been several decomposition analyses of employment and productivity using BLS data, although none has yet explicitly explored the association between firm dynamics, resource reallocation and economic integration. Breunig and Wong (2007) carried out productivity decomposition for 2-digit ANZSIC (Australia and New Zealand Standard Industrial Classification) manufacturing and service industries and highlighted the importance of firm dynamics in contributing to Australia's productivity growth. Bland and Will (2001) decomposed the contribution of continuing, entering and exiting firms to productivity growth at the 1-digit ANZSIC level, while Juniper, Mitchell and Myers (2004) examined the rates of job creation and job destruction.

Breunig and Wong (2007) carried out total factor productivity (TFP) decomposition for 25 and 23 manufacturing and service industries at the 2-digit ANZSIC level using the BLS full sample and SME sample respectively. Firm-level TFP indices were constructed from production function estimates that incorporated firm-specific productivity differences and endogenised firm exit decisions, following Olley and Pakes (1996)[1]. Aggregate productivity for each 2-digit industry was then obtained as the sum of firm-level TFP weighted by each firm's share of industry value added.

[1] See Breunig and Wong (2005) for detail of the estimation technique and Breunig and Wong (2008) for the detailed regression results and more information about the data.

The decomposition method used was an extension to a method proposed by Fox (2004) (termed the 'extended-Fox decomposition'), as follows:

$$\Delta P_{0,1} = \sum_{i \in C} \theta_{i0} \Delta P_{i1} + \sum_{i \in C} (1/2) \Delta \theta_{i1} \Delta P_{i1} - \sum_{n \in C} (1/2) \Delta \theta_{i1} (a) + \sum_{i \in N} (1/2) \theta_{i1} (P_{i1} - a) - \sum_{i \in X} (1/2) \theta_{i0} (P_{i0} - a) \quad (1)$$

where $\Delta P_{0,1}$ is the growth of industry TFP between periods 0 and 1; θ_i is the output share of firm *i*, P_i is each firm's productivity level, and *a* is a scaling factor, which is the average aggregate productivity level between the two periods in this formulation. *i* indexes individual firms in C, N and X, which are the sets of continuing, entering and exiting firms, respectively. The five terms on the right hand side represent, in order, the fractions of industry productivity change attributable to 'within-firm' changes, 'between-firm' cross effects, 'pure share' changes, entry and exit.

This decomposition method was a new formulation, and differed from commonly applied decompositions. See elaboration in Box 1.

Results from the extended-Fox decompositions underscored the importance of firm dynamics as a key factor behind changes in Australian industries' TFP performances in the mid-1990s. The between-firm cross effect was positive in nearly all industries, that is, activities had shifted rationally from incumbents with low productivity growth to those with high productivity growth. Many of the industries also had a positive net entry effect. This arose more from the positive impact of firms with below average industry productivity exiting the market, as entrants on the learning curve were more likely to contribute negatively to TFP change in the first few years following entry. In contrast to the reallocation terms, the contribution from within-firm productivity change was negative in over half of the instances. In several industries, especially in the SME sample, overall TFP gain was due entirely to firm dynamics, as the within-firm component was negative. Where industries experiencing TFP growth enjoyed both positive intra-firm and inter-firm contributions, the share of inter-firm reallocation usually was significant. Positive reallocation terms were also important in offsetting negative within-firm effects in industries registering TFP decreases.

Box 1. Issues with Conventional Decomposition Methods

The decomposition method used in Breunig and Wong (2007) is a new formulation that corrects for a problem with the conventional measure of aggregate productivity change in firm-level studies, namely, that it captures a mixture of productivity and market share changes, instead of solely the former. This problem was highlighted in Fox (2004) and the elaboration is as follows: aggregate productivity growth between periods 0 and 1 is conventionally computed as:

$$\Delta P_{0,1}^{A} = \sum \theta_{i1} P_{i1} - \sum \theta_{i0} P_{i0} \qquad (2)$$

The formulation above suffers from a fundamental problem in aggregation, which is the failure to satisfy the basic property of monotonicity. Even if all firms experience an increase in productivity, aggregate productivity can fall. The reason is that the output shares are not held constant in going between periods 0 and 1, and hence quantity changes are confounded with share movements. If this measure is interpreted as one of 'pure' productivity change, which is the case in most studies, analysis is potentially misleading.

The use of an average period share for the aggregate productivity-change indicator will resolve the aggregation problem. This requires applying a Bennet (1920) indicator, as suggested in Fox:

$$\Delta P_{0,1}^{B} = \sum_{i \in I} (1/2)(\theta_{i1} + \theta_{i0}) \Delta P_{i1} \qquad (3)$$

To demonstrate the interpretation problem associated with the use of $\Delta P_{0,1}^{A}$ in Equation 2, Fox (2004) further defined an aggregate share-change indicator in a similar vein to the aggregate Bennet productivity-change indicator in (3):

$$\Delta S_{0,1}^{B} = \sum_{i \in I} (1/2)(P_{i1} + P_{i0}) \Delta \theta_{i1} \qquad (4)$$

and noted that

$$\Delta P_{0,1}^{A} = \sum \theta_{i1} P_{i1} - \sum \theta_{i0} P_{i0} = \Delta P_{0,1}^{B} + \Delta S_{0,1}^{B} \qquad (5)$$

From Equation (5), it is clear that interpreting $\Delta P_{0,1}^{A}$ as a pure productivity change is flawed in that it erroneously conflates productivity and share changes.

The results in Breunig and Wong (2007) contrast with the findings in the only other productivity decomposition study on Australian firms using the BLS SME sample by Bland and Will (2001). Bland and Will had decomposed the average labour productivity change of six 1-digit divisional ANZSIC industries using an earlier decomposition method, so the two studies admittedly are not comparable. Nevertheless, it is interesting to note their conclusion that continuing firms accounted for the bulk of the productivity changes, with the within-firm effect dominating the contribution. They found a generally negative relationship between resource movements and productivity change, as firms that experienced increased labour productivity shed employment. Net 'true' entry effect was negative in half of the six industries studied, and where positive, the net entry effect was relatively small. One point Bland and Will made that was consistent with the observation in Breunig and Wong (2007) was that both departing firms and entrants tended to have lower than average (labour) productivity.

Juniper, Mitchell and Myers (2004) examined the link between firm size and the rates of job creation and job destruction, using the BLS SME sample. They also studied the impact of industrial relations factors on employment generation by small businesses. They reported that larger firms had higher job creation rates and lower job destruction rates in 1997-98. The rate of job creation was 24 percent for the smallest firms (with 1-19 employees) and 51 percent for the largest firms (150 – 200 employees). The rates of job destruction in order of increasing firm size were 8.0 to 1.5 percent. This pattern differed from other studies (for example, Davis, Haltiwanger and Schuh 1996), which observed that smaller plants had both high job creation and high job destruction rates. Juniper et al. also found that of the 'industrial' variables of wage rates, awards coverage, number of unions and percentage of workers compensation and employers' contribution to superannuation of total expenses, there was only the suggestion that greater number of unions in the workplace might retard job creation. However, all of the industrial variables were statistically significant and negatively signed in the regressions on the rate of job destruction. Thus, they concluded that their findings did not support the notion that industrial reforms would assist SME job creation.

3.3. Papers that Included Variables of International Integration

Some studies explored other likely determinants of productivity performance as their central research questions, but included variables measuring firms' export status and/or share of foreign ownership in their regression analyses. Their findings could also shed light on the link between economic integration and business performance. Some examples are given below.

Wong, Page, Abello and Pang (2007) explored the association between innovation and productivity performance using firm-level data that linked the 2003 Innovation Survey to financial data from the ABS' Economic Activity Survey and the Australian Tax Office from 2001-02 to 2004-05. Three sets of equations were estimated using various econometric techniques that included probit and OLS. These were (i) an innovation input equation on the determinants of innovation intensity (share of innovation expenditure in total sales), (ii) four equations that related innovation input to different measures of innovation output, and (iii) productivity equations that examined the relationship between the innovation outputs of product, process and organisational innovations and productivity growth and level. Foreign ownership dummy variables of whether a business had more than 50 percent foreign ownership were included in all the equations. The innovation input equation also included a variable on whether innovation investment was driven by a motive to increase export opportunities. It was found that firms that were driven to increase export opportunities were more likely to engage in innovation activities, while ownership structure did not seem to make a difference to firms' innovation investment decisions. On the link between foreign ownership and various productivity measures, there was some evidence that majority foreign-owned firms were associated with higher labour productivity growth, in particular for small firms. The study also found that the coefficient estimate on majority foreign-owned firms was significant and positive in the total factor productivity level equation, but not in the labour productivity level equation.

Bosworth and Loundes (2002) investigated the interaction of discretionary investments (R&D, capital investment, training and advertising), innovation, productivity and profitability in a dynamic and closed model of firm performance, using a balanced panel of the BLS SME sample. The productivity and profitability equations were estimated using a random effects estimator. The equations included an indicator

of whether a firm exported or not. This variable was not statistically significant in the productivity equation, compared with variables such as investments in intangible assets, availability of business plan, union density and firm age. Coefficient estimate on the export variable was likewise not significant in the profitability equation.

Roger and Tseng (2000) carried out a cross-sectional study on the determinants of labour productivity for manufacturing firms in the BLS full sample in 1996-97. Export status (whether a firm exported in 1997) and foreign ownership (whether a firm has more than 50 percent foreign ownership in 1997) were included as explanatory variables. Sub-sample OLS regressions were conducted for nine manufacturing industries at the 2-digit industry classification level. Both the export and foreign ownership variables did not seem to have a strongly positive relationship with labour productivity, with coefficient estimates on the variables separately statistically significant in only one of the nine industries.

4. Data Sources and Potential Topics for Future Research

4.1. Business Longitudinal Database

The ABS is currently developing a Business Longitudinal Database (BLD), and the first iteration was in 2004-05. The initial release of the BLD is expected in July 2009, and this is the most likely data source for any intended work to examine the relationship between economic integration and performance for Australian firms. As such, this section provides an elaboration of the BLD's key features. More detail can be obtained from the ABS' Discussion Paper, "The first iteration of the Business Longitudinal Database" (2007).

The BLD aims to produce a longitudinal dataset of both characteristics and financial data. It comprises data on organisational characteristics and activities of business from the annual Business Characteristics Survey (BCS), financial data from the Australian Tax Office as well as data on exports and imports from the Australian Customs Service.

The BLD contains a selection of small and medium sized businesses across different industries. For reasons of confidentiality or difficulty in accurately matching characteristics data with financial data for groups of businesses, certain types of businesses or all businesses classified to certain industries have been excluded from the BLD. These include government enterprises, large businesses (that is, with employment of 200 or more), businesses with complex structures, and businesses in industries such as electricity, gas and water supply, finance and insurance, education, and health and community services.

The BLD is made up of overlapping panels of businesses. A panel comprises around 3,000 businesses and a new panel commences each year. Businesses selected into a panel remain in the survey for 5 years. When the BLD is fully populated, there will be five consecutive panels of businesses, totalling approximately 12,000 live businesses, included at all times.

Business characteristics data obtained from the BCS are an important component of the BLD. Each year the BCS will contain a consistent set of core questions. In alternate years, the survey will also contain additional detailed questions relating to either business use of information technology or business innovation. Core questions are organised under several broad themes. The themes and some examples of the specific data collected are as follows:

- *Business demographics*: industry in which business operates, age, percentage of foreign ownership.
- *Workforce compositions*: workforce size, part-time and full-time employees, proportion of permanent to casual stuff, employee pay and condition arrangements, staff commencement and cessation.
- *Business operations*: business management arrangements, practices relating to planning or business monitoring, whether a business exported or imported, access to finance.
- *Markets and competition*: characteristics of main customers, extent and nature of competition, estimate of market share.
- *Innovation and research and development*: whether different types of innovations were introduced: new goods or services, operational processes,

organisational/managerial processes. (Information on the presence and scale of R&D activity undertaken by businesses in the BLD will be sourced from the ABS R&D Survey from 2005-06.)

- *Information technology use*: extent of IT use in various processes, type of Internet connection, whether orders were placed and received over the Internet.

The ABS has stated that the main purpose of the BLD is to facilitate longitudinal analyses of business performance. There are however several limitations of the BLD in its current form. The first is that the BLD contains data for small and medium businesses only, which precludes any analysis of, and comparison with the behaviour of large businesses. Policy implications also cannot be drawn for the business population. The second relates to the quality of any productivity measure that can be constructed for analysis. The conversion of nominal output and intermediate input measures to real measures will pose a challenge as price information are not collected at the firm level, and industry price deflators are not available at a sufficiently disaggregated level. This is particularly so for services industries, where price deflators are available only at the 1-digit or at most 2-digit aggregate level. Any measure of capital services inputs is also likely to be crude given the currently available items for its construction, which are non-current assets with no breakdown by asset type, depreciation and capital expenditure. These are limitations that the ABS has acknowledged but are unlikely to resolve in the near term despite ongoing efforts to address them.

4.2. Access to BLD and Development of a Business Census Dataset

The expected initial release of the BLD will be in the form of a Confidentialised Unit Record File (CURF), covering some 9000 firms. Characteristics data are from 2004-05 to 2006-07, while financial data is a longer series that starts from 2002-03. There are three modes of access to CURFs, with increasing levels of data detail as follows: CD-ROM, ABS Remote Access Data Laboratory (RADL) and ABS Site Data Laboratory. The BLD CURFs are likely to be accessible through the RADL, which is an online database query system.

An even richer database is potentially available in the future, and that is the business census dataset that the ABS is developing. This dataset will integrate all

available data for all businesses. This will include core financial data from taxation records or ABS surveys, merchandise trade data, data from ABS Surveys such as R&D Survey and Venture Capital Survey, and any other available administrative datasets. However, in the immediate term, the BLD is the most feasible and accessible data source. Data requirements beyond what is covered in the BLD would require exploration of options with the ABS.

4.3. Potential Research Topics

Given that the BLD contains relatively extensive information on trade, innovation and information technology use, a specific topic related to firm globalisation that can be analysed using the BLD is the link between exporting and productivity. Two alternative but not mutually exclusive hypotheses can be examined. The first is whether more productive firms self select into export markets. The second is whether exporters become more productive, that is, the 'learning-by-exporting' hypothesis. Although there have been a number of studies on this issue internationally, such a study has not been conducted on Australian data. It is difficult to carry out studies that aim to explore in detail issues of inward and outward foreign direct investment, as the only relevant variable in the BLD is the percentage of foreign ownership of a business operating in Australia.

Another potential research topic is to examine the extent to which firm dynamics and resource reallocation are linked to the hypothesized underlying factors of greater economic integration and increased competition. This extended work on decomposition analyses could be carried out using the decomposition method that was applied in Breunig and Wong (2007).

There are other topics of interest that would benefit from more research using microdata. Some of these studies might require data that are unavailable in the BLD and these data would have be obtained from other sources such as customized data from the ABS or through independent surveys. One topic is Australia's economic integration with its trading partners through free trade agreements (FTAs). The establishment of FTAs has become an integral part of Australia's trade policy in the 2000s. Presently, Australia has FTAs with Singapore, Thailand, the United States and Chile, the last one entering into force in March 2009. An FTA between ASEAN, Australia and New

Zealand was concluded in August 2008, and FTAs with China, Japan and Malaysia are among those under negotiation. Researchers have undertaken simulations using the GTAP (Global Trade Analysis Project) model to assess the welfare effects of Australia's involvement in FTAs. Siriwardana (2006) analyzed various current and potential FTAs and suggested that Australia was likely to gain more from FTAs with countries that had higher trade barriers prior to negotiating FTAs. Siriwardana and Yang (2008) assessed specifically an Australia-China FTA and projected benefits for both Australia and China, with the former gaining more. Where data permit, this issue can be studied using alternative empirical techniques.

Australia's economic relations with its neighbour New Zealand can be another issue of focus. The two countries have a Closer Economic Relations (CER) agreement since 1983. Petersen and Gounder (2002) examined various trade indicators and found that trade complementarity between the two countries increased after the initiation of the FTA, which was likely due to increased specialization of Australia and New Zealand's resources along the lines of comparative advantage. The results indicated Australia gained competitiveness in some primary and some manufactured products while New Zealand gained competitiveness in most primary products but lost competitiveness in most manufactured products relative to Australia over the 1985-1995 period. A study from New Zealand's perspective by Sandrey and van Seventer (2004) of bilateral trade flows at the SITC5 product level found that between 1988 and 2003, New Zealand had widened its export base to Australia beyond the widening of its trade with the rest of the world. The authors identified the CER as a likely factor that had brought this about. Since Statistics New Zealand also produces micro data on business operations, there is potential to combine Australian and New Zealand micro data for further analyses of their economic interactions.

Another potential research area is Australia's international activities in the mining sector, especially in light of intensified interests from Chinese investors in recent months. A study by consulting company OVUM (2003) had examined the use of Information and Communications Technology (ICT) by mining companies, the relationship between Australian miners and Australian ICT providers both domestically and overseas and the prospects for export opportunities for mining ICT providers. A

new study on the mining industry could approach it from the perspective of geographical dispersion and performance effects.

5. Concluding Remarks

This paper reviews micro-data analyses in Australia, with a focus on findings that are related to the theme of globalisation and productivity. Micro-level econometric studies have increased steadily since the 1990s, and a major data source was the Business Longitudinal Survey, which was a panel dataset covering four years in the mid-1990s.

There were few studies that specifically explored the impact of globalisation on performance, but they generally found that internationally oriented firms or import competition was associated with better productivity performance. A number of papers examined aspects of firms' international activities, specifically on their export and offshore investment behaviour. Among the papers' findings were the following: the main determinants of export performance were firm-specific factors rather than a large domestic sales base; few major government export facilitation programmes had a significant effect on the export growth of participants; and Australian firms invest offshore mainly to access international markets and less so for access to skills and technology.

Another strand in the literature on globalisation and firm performance is the role of firm dynamics and resource reallocation in affecting aggregate productivity growth. There had been several decomposition analyses of employment and productivity using BLS data. In particular, Breunig and Wong (2007), using a new decomposition method, highlighted the importance of firm dynamics as a key factor behind changes in Australian industries' TFP performances in the mid-1990s.

There were also studies that examined other likely productivity determinants as the main research question but included export status or foreign ownership variables in their regression analyses. The studies reviewed here generally yielded coefficient estimates on the export and/or foreign ownership variables that were either statistically

insignificant or not strongly significant. These results could be due to various reasons, such as estimation methods and data quality issues. Where the coefficient estimates on other factors were significant, they might also indicate that export orientation and degree of foreign ownership comparatively were not strong and immediate influences on productivity performance.

It can be seen from the summary above that the survey of relevant studies has yielded a set of diverse and interesting results. At the same time, it highlights the relative paucity of comprehensive studies on the linkages between economic integration and business performance that can enable the derivation of firmer conclusions on the dynamics involved. This points to the need for more work in this area. The most likely data source for this kind of analysis is the Business Longitudinal Database that will have its initial release in July this year, covering data from 2004-05 to 2006-07. While the BLD holds much promise, it also has several limitations. Within the constraints of the BLD, potential topics for priority research can include the link between exporting and productivity, as well as the impact of economic integration on firm dynamics and resource reallocation, which then influences aggregate productivity growth. Other topics of interest include Australia's economic integration with its trading partners through FTAs, economic relations with New Zealand, and international activities in the mining sector. However, these studies might require data beyond what are available in the BLD.

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