Chapter 2

Industrial Agglomeration in the Philippines

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March 2008

This chapter should be cited as
Reyes-Macasaquit, M.-L. (2008), 'Industrial Agglomeration in the Philippines', in Ariff, M. (ed.), *Analyses of Industrial Agglomeration, Production Networks and FDI Promotion*, ERIA Research Project Report 2007-3, Chiba: IDE-JETRO, pp.64-122.

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Abstract

The economic reform process in the Philippines was accelerated in the 1980s and 1990s. The reforms were found to have yielded positive results in terms of the nature of industrial agglomeration in the country as this was found to have occurred in the 1990s based on the results of the survey and econometrics analyses. The latter also identified the factors that influenced firms to agglomerate in the country, referring to economic fundamentals and deliberate policy and public action by government. However, industrial upgrading and innovation in the country was found to be weak. Expenditures on R&D are low and linkages between stakeholders are not strong. There are firms that have undergone upgrading in terms of introduction of new goods, upgrading of machineries, and opening of new markets but they tended to rely more on their in-house capabilities probably due to inadequate support from the government's institutional infrastructure and financial system, which came out from the estimation results. The agglomeration strategies that are currently being pursued in the Philippines – establishment of economic zones and industry clustering – have the potential to address some of the issues and problems identified.

INTRODUCTION

Deepening international economic integration or globalization, started to gain impetus in the last two to three decades of the twentieth century. In fact, analysts point to the years between 1970 and 1995 as the period when greater economic harmonization among nations of the world economy became remarkable. They point to 1995 as the

year when the global economic system we now know has emerged, that is, via the World Trade Organization. Nevertheless, increasing economic relations between and among countries, primarily in the form of international trade and direct investments, were found to have accelerated throughout the 1970s and the 1980s (Sachs and Warner, 1995). Participation to this type of trade regime necessitated the institution of trade liberalization and investment reforms as key policy areas. Many developing countries adopted an outward orientation in order to participate in this prevailing global order and reap the benefits of economic integration. This is consistent with the hypothesis of endogenous growth models that claims, international trade and foreign investment are determinants of self-sustaining growth. These two factors bring about greater access to foreign markets and new technology. If successful in penetrating the international market and technology is absorbed, technological progress within a nation is assumed to accelerate leading to increased levels of productivity spawning economic growth (Yap, 2002).

In recent years, an emerging body of ideas has pointed to the importance of selected regions as hubs of economic activities in influencing the economic development of the nation as a whole. In particular, the role of those regions, which serve as hosts to industries engaged in extensive international networks of production. Loosely termed "new economic geography," scholars have and continue to explore the relationship between industrial agglomeration and economic performance, particularly in the developing world.[i]

In the Asian context, a large body of work has been started by, among others, Fujita, Krugman and Venables (1999) in their book on spatial economy, Fujita and Thisse (2002) in their exploration of the economics of agglomeration, Kuchiki (2005) in relation to his development of a theory of a flowchart approach in industrial cluster policy, and Tsuji, et al (2007) in the most recent book they edited compiling relevant examples of industrial agglomeration in Asia, Italy and the Americas. Indeed, the pragmatic examples of the booming Information Technology (IT) industry concentration in Bangalore affecting the positive growth of the Indian economy or the well-touted automobile industry in Thailand show that industrial clusters can be considered drivers of regional and consequently national economic growth. However, this aspect can be facilitated more aggressively if these industrial clusters, whether concentrated by

geography or by specific industry, could attract not only huge domestic investments but foreign capital as well. The literature abounds with discussions on centripetal forces that influence decisions of firms to locate in the cluster, while there are also centrifugal forces that act as deterrent. These opposing forces lead to a "spatial structure of an economy that is a result of a tug-of-war between external economies and diseconomies, between the linkages and information spillovers that foster concentration, and between congestion and other diseconomies that discourage it" (Fujita et al, 1999 as cited in Tsuji et al, 2007, p. 3).

The fundamental question therefore in the development of industrial agglomerations relates to the factors that influence firms to cluster or locate in a specific area. The answers to this question would allow decision makers to make informed policies and programs that could promote these factors while at the same time, addressing those issues that deter and cause these firms to divert and set up shop in other places instead. In addition, there is a need to identify the elements leading to the success of industrial agglomerations. Intuitively, one can point to the overall economic environment in a country that makes it conducive for firms to agglomerate in and sustain or even expand operations. Such environment could pertain to economic fundamentals that attracts investments and to industrial policies that not only serve as magnets for firms to cluster but allow them to thrive via an enabling framework that helps them to maximize the opportunities available in industrial agglomerations.

Trade liberalization is only one of the many policy actions of the government for its economy to face head on the challenges posed by globalization. Other policy areas may be in terms of liberalization, privatization, deregulation, and social protection to those that will be adversely affected. Attractive incentive structures to lure in foreign direct investments (FDIs) are also part of the policy package as well as export oriented strategies. These are a few of the policy fundamentals that contributed to the growth of the so-called East Asian miracle economies.

Compared to its Asian neighbors, notably other ASEAN[ii] countries such as Malaysia, Thailand and Singapore, the levels of FDIs and exports in the Philippines remain miniscule. Its exports, though fast growing in the decades of the 1980s, 1990s and 2000s have seemed to have fallen behind these three countries.[iii] This implies that there are still numerous issues that need to be addressed in order to allow the nation to

latch onto the globalization bandwagon and plausibly reap its benefits. Not least of its concerns is the requisite to ensure the competitiveness of its economy.

1. PHILIPPINE INDUSTRIAL DEVELOPMENT: POLICY PERSPECTIVE

1.1. Trade Liberalization

Even before globalization fully took effect, there was already recognition on the part of Philippine policy makers that three decades of protectionist regime starting in the 1950s, via high tariffs was hurting the economy and that it is not aligned with the country's development aspirations. Official policy then shifted from import substitution to an outward-oriented, export promotion policy. The structural adjustment program that was instituted in the 1980s aimed at pursuing a more efficient and internationally competitive economy and one of the main instruments that were utilized was the so-called Tariff Reform Program.

Since 1981, four Tariff Reform Programs had been implemented, with each one staged on a five-year period (except TRP-IV) to cushion the impact of the changes in the tariff structure. These Tariff Reform Programs were rationalized by the objectives of liberalizing the trade environment, improving access to essential inputs, making available more choices of goods for the consumers, enhancing competitiveness of local industries in the domestic and export markets, and simplifying the tariff structure for ease of customs administration, among others.

As member of the ASEAN Free Trade Area (AFTA), this move of the Philippines towards greater openness is aligned (or at least runs parallel) with its international commitments, which in this case relate to accelerating the liberalization of intra-ASEAN trade and investment through the Common Effective Preferential Tariff Scheme (ASEAN Secretariat, 2008). This example indicates that trade liberalization has indeed become a matter of utmost policy manifested by both unilateral initiative and in compliance with vital international commitments.

The top trading partners of the Philippines are the U.S., Japan, Hong Kong, Taiwan, Malaysia, China, Netherlands, and Singapore. In 2004, the top 3 trading partners were

the United States (U.S.), Japan and Singapore but in 2005 and 2006, the latter was dislodged by China. It may also be noted that the country had deficits with the U.S. and Japan in 2004 and 2005 but by 2006; the Philippines had more exports than imports in these countries. Meanwhile, the country continued to enjoy a fairly large surplus with China.[iv]

1.2. Privatization

Also during the decades of reforms, a three-pronged policy of privatization, liberalization and deregulation was implemented aggressively starting in 1994. This is in line with the objectives of continued economic openness; divestment of state owned and operated enterprises that are most likely being run inefficiently; removal of the hold of monopolies in vital utilities in the country; and promotion of competition to maximize consumer welfare. Republic Act 7721 or the Foreign Bank Liberalization Act authorized the entry of 10 foreign banks in the country subject to three different modes of entry.

In 1995, three major policies were instituted to liberalize three sectors of the economy: telecommunications, water and power. Each is backed by a legal framework manifesting the country's commitments towards pursuing these reforms. For instance, Republic Act 7925 or the Public Telecommunications Policy Act of the Philippines, was enacted in March 1995 highlighting the policy agenda that telecommunications services will be provided by private enterprises to foster a healthy competitive environment. In June 1995, Republic Act 8041 otherwise known as the National Water Crisis Act of 1995 was enacted that led to the privatization of state-run water facilities. In 2001, another vital legislation was passed, Republic Act 9136, also known as the Electric Power Industry Reform Act of 2001 called for key reforms in the sector.

1.3. Foreign Direct Investment Policies

Another major component of the market-oriented reforms that were implemented in accelerated fashion in the 1980s through the 1990s was foreign investment liberalization. The Foreign Investments Act of 1991 or Republic Act 7042 allowed foreign equity participation of up to 100 percent in all areas, whether catering to the domestic or export markets, except those that are included in the Foreign Investment

Negative List (FINL). Prior to this law, participation of 100 percent foreign equity was subject to the discretion of the Board of Investments (BOI) as the prevailing law then allows for only up to 40 percent foreign ownership in general. In 1996 however, the FINL was significantly reduced to allow for greater foreign participation in previously prohibited sectors.

Data shows that from 1980 to 1989, average percentage growth rate of FDI inflows in the country was only 0.2 percent, while the average for 1990 to 1999 was a high 29 percent. This coincides with the period when liberalization policies were taking place. Figures for the last three years had shown marked improvement after significant contractions were experienced in 2001 and 2003. In terms of FDI as percentage of Gross Domestic Product (GDP), it was observed that the highest level was achieved in 2000 at almost 3 percent. Meanwhile, average FDI inflows increased by 1.1 percent of GDP in the 1990s as compared to 0.59 percent in the 1980s. Performance has been looking up in the current decade with the increase in FDI inflows as percentage of GDP averaging 1.47 percent.[v]

1.4. Investment Incentives

The current Philippine investment incentives program is primarily drawn from Executive Order 226 (EO 226) or the Omnibus Investments Code of 1987. A host of incentives have been made available through this law to registered investments and outlines the systematic procedures on how to avail of these incentives. Such incentives are applicable to both Filipino owned and foreign owned investments.

In particular, the Code provides access to fiscal and non-fiscal incentives to preferred areas of investments, categorized as either pioneer or non-pioneer, and to export production as well as to rehabilitation or expansion of existing operations. Pioneer enterprises are registered enterprises engaged in the manufacture and processing of products or raw materials that are not yet produced in the Philippines in large volume. It also involves the design, formula or system applied as well as agricultural, forestry and mining activities, the services and energy sectors. Non-pioneer enterprises refer to all registered producer enterprises not included in the pioneer enterprise list.

Qualified investments, depending on their category, are granted with incentives that include income tax holidays, tax credits, tax and duty exemption for imported raw

materials and equipment, hiring of foreign labor, exemption from contractors' tax, simplified customs procedure, and other tax incentives. Also provided for under the law are incentives to multinational companies (MNCs) establishing regional or area headquarters, regional operating headquarters and regional warehouses in the country.

There is a number of investment regimes in the country, foremost of which is the BOI. Others are the Philippine Export Zone Authority (PEZA), Subic Bay Metropolitan Authority (SBMA) and Clark Development Corporation (CDC), which will be discussed in more detail in the coming sections.

The performance of the different investment agencies based on data on total approved FDIs by agency, from the late 1990s to 2006, and by nationality is insightful. From 1998 to 2003, total approved investments by these promotion agencies had decreased from 375.1 billion pesos to about 63.8 billion pesos. However, investment inflows started to pick up in 2004 and have steadily increased until 2006. The BOI had approved the most amounts of investments in the aggregate particularly in the years 1998, 2001, 2004 to 2006. The agency mainly approved investments from Filipinos. On the other hand, PEZA had overtaken BOI in terms of value of approved investments in the periods 1999 to 2000, and 2002 to 2003. In contrast to the BOI but not surprising, PEZA had approved the most foreign investments. Meanwhile, the distinction for having approved the most foreign investments in 2006 went to the SBMA at a value of 68.9 billion pesos.[vi]

1.5. Export Promotion Strategy

Export orientation as a national strategy for sustainable agro-industrial development received a boost with the enactment of Republic Act (RA) 7844, otherwise known as Export Development Act of 1994. In its policy declaration, this law situates the private sector as lead in the effort to promote exports and as partner of the government in the concerted effort to increase the country's share in the export market by promoting leading industries or the so-called export champions. The law likewise calls upon the Department of Trade and Industry (DTI) to prepare a three-year Philippine Export Development Plan (PEDP), the implementation of which shall be overseen by the Export Development Council (EDC). Said Council is comprised of representatives of relevant government agencies and 9 representatives of the private

sector indicating that the pursuit of export development is essentially a public-private partnership. The granting of incentives were likewise provided for in the law taking various forms such as tax and duty exemptions, tax credits and availability of credit facilities from government financial institutions for purposes of plant and equipment expansion, among others.

1.6. Industrial Clustering in the Philippines

To be sure, the Philippines has been attracting investments from foreign sources based on its comparative and competitive advantages. The policy reforms and programs implemented that opened up the economy to investors did increase the level of investments and attracted a more diverse country composition of investors. The main question here is on whether the prevailing policy environment was able to sustain this level of investments. Recent FDI figures do not support an affirmative response to this question, particularly when compared with the performance of other ASEAN countries. As a response, deliberate efforts to increase the attraction of the country to domestic and foreign investments alike continue to be implemented. Two such policies and programs being pursued by the government and in parallel to each other is the formation of industrial zones across the country and industry clustering. In the Philippine configuration, both relate to the export promotion program as the industrial zones include special economic zones dedicated to exporting firms, while industry clusters are tied to the so called export revenue streams or industry champions of the country and are being pursued actively by the National Cluster Management Team (NCMT) of the Export Development Council. The formation and promotion of these industrial zones is also a mechanism to disperse industrialization to other parts of the country to stimulate economic growth, while clustering is hoped to spur the growth of small and medium enterprises across the country in partnership with other government agencies, the private sector and local governments.

1.6.1. Industrial Zones in the Philippines

In 1995, the Special Economic Zone Act was passed under RA 7916, which reiterated the objective of accelerating a sound and balanced industrial, economic and social development of the country through the establishment of special economic zones

(ecozones) in strategic locations and through mechanisms that would attract foreign investments. Moreover, under this legislation, firms are no longer required to be either wholly export-oriented or engaged only in industries being promoted. All firms can then choose to locate in these industrial parks regardless of market orientation, while a distinct group of export processing zones (EPZs) will continue to be predominantly oriented to export production while being considered virtually located outside customs territory.

Governance of the special ecozones rests with the Philippine Economic Zone Authority (PEZA). It is notable that the Special Economic Zone Act called for greater private sector participation in zone development and management through incentive offerings to private zone developers and operators. Meanwhile, the local government units are being encouraged to participate more actively in the development and sustenance of specially designated economic zones.

In terms of performance, the PEZA declared that as of July 2007, there are: four public economic zones with 423 operating firms combined; forty-five private economic zones located all over the country but many of them found in Laguna and Cavite, with 528 operating firms; seventy IT parks/centers/buildings mostly situated in Metro Manila, catering to 265 operating firms; and, five tourism economic zones with equal number of operating firms.

There are two other major special economic zones culled out from former U.S. military bases in the country, namely the Subic Bay Freeport Zone and the Clark Freeport Zone. To manage and implement these special ecozones, primarily transforming them from military bases to investment havens, the Subic Bay Metropolitan Authority was created in 1992 and the Clark Development Corporation in 1993.

1.6.2. Industry Clustering Strategy

The National Science and Technology Plan for 2001-2020 has elucidated the clustering approach together with the concept of product niching as a way of linking science and technology (S&T) policy to industrial policy. Soon after, clustering became one of the key elements of the Philippine Export Development Plan since 2002. In fact, the NCMT under the EDC was created specifically to sustain this program (Export

Development Council, 2007).

The 2002-2004 PEDP defined the roles of relevant government agencies in bringing the clustering strategy into fruition and called for closer coordination among them, highlighting the fact that this initiative is not the sole responsibility of the DTI. It espoused for the involvement of the private sector, particularly as champions for forming and sustaining the clusters.

Meanwhile, the latest PEDP spanning the years 2005-2007 called for sustaining the clustering approach to industry development with special emphasis on regions and provinces with export-oriented cities/municipalities covered by the One-Town, One-Product (OTOP) initiative.

As stated in this latest incarnation of the Plan, national clusters shall be created and promoted to serve as models of this strategy. Since the criteria for their selection included impact on the economy in terms of revenue and employment generation, the industries considered as national clusters come from the so-called export revenue streams of the PEDP. The NCMT under the EDC currently monitors the performance of the national priority clusters. The Team's role is to harmonize and complement all interventions needed by the clusters and to influence relevant agencies to align their programs with the clusters. Currently, the national clusters are electronics; information and technology services; automotive; minerals; food and marine products; organics; design driven products and services (home furnishings, giftware, holiday décor, and wearables); construction services and materials; logistics services; health and wellness; and tourism.

Supplementing these national clusters are regional and provincial clusters, which were identified as a result of a participatory approach led by the NCMT in collaboration with DTI-EDC. Composite teams went around the country to conduct seminars of industry clustering and consultations with various stakeholders, such as those that represent business and industry, academic and research institutions, relevant government agencies, local government units, and non-government organizations.

As a result of these activities undertaken between 2001 to 2002, the following priority sectors where clustering will be promoted were identified: at the regional level – palm oil, rubber, coffee, fiber-based industries, fruit production and processing, high-value vegetables, seaweeds and carrageenan, meat processing, marine, furniture, and

bamboo-based industries. At the provincial level, the following came out as priority industries: lime, muscovado sugar, cassava, horticulture, corn-feed livestock, cattle, fine jewelry, fashion accessories, handmade paper, and metalworking and engineering.

The clustering strategy is also being linked to the government's One-Town, One-Product program but only in terms of industries or products that can be considered as export ready as far as the EDC is concerned. The OTOP-Philippines is a flagship program of President Arroyo as the development strategy that would promote entrepreneurship and jobs creation in the countryside.

2. INDUSTRIAL AGGLOMERATION AND INNOVATION IN GREATER MANILA AREA

2.1. Industrial Concentration in Greater Manila Area

The primacy of Metro Manila can be traced back in history and despite the rising of other metropolises in the country; its importance to the economic and social fabric of the Philippines remains. Over the years, with the unchecked population explosion and other host of problems attendant to urban areas, regions in the immediate periphery of what is also known as the National Capital Region became the choice location for expansion of residential, social and economic activities. Industrial areas in Laguna, Cavite and Batangas in the south and Bulacan and Pampanga in the north and Rizal in the east sprouted and have become extensions of the prime metropolis.

Not a few urban experts have opined that practically, the legal basis defining the geographical jurisdiction of Metro Manila is no longer applicable as the demarcation line defining the metropolis has blurred and indeed, already covers the immediate industrial areas of Cavite, Laguna and Bulacan. In order to capture this reality, this paper expanded the legally defined geographical coverage as case study for determining industrial agglomeration in Metro Manila to encompass the industrial areas of at least, Cavite and Laguna to form what is dubbed as Greater Manila Area (GMA).

Industry-wise, the 2000 Census of Establishments provided details on the composition of industrial concentration in Metro Manila. In terms of manufacturing establishments, we find that the top five activities dominating the Metro Manila

economic landscape (in terms of number of establishments) are the production of ready-made garments; plastic products; printing and service activities related to printing; manufacture of other chemical products; and, production of basic iron and steel. Those engaged in metal products and metal working; manufacture of pulp, paper and paperboard; manufacture of structural metal products, tanks, reservoirs, and steam generators; food products; and bakery products round up the top ten industries concentrating in the metropolis (National Statistics Office, 2004).

There are 70 industrial zones scattered over Metro Manila. These industrial zones fall under the purview of the PEZA but are mainly private sector led industrial agglomerations. These are mostly technology parks as 57 out of 70 have explicitly indicated preference for IT-enabled industries. A few are intended for the electronics industry, aviation, solar panel fabrication, or mixed use. This implies that as manufacturing production are moved by companies in areas in the periphery of Metro Manila, higher forms of industrial activities – knowledge based, technology based industries – are getting concentrated in the metropolis. These IT-enabled industries mainly take the form of business process outsourcing such as call centers, data centers, medical transcriptions, and software development. Among the local government units (LGUs) in Metro Manila, Makati City hosts many of the technology parks/centers/buildings. Meanwhile, a university-based technology park has recently been established with funding support coming from a private company. There are actually two locations of the University of the Philippines Science and Technology Park, one in the North and the other, in the South. Figure 1 presents a mapping of the concentrations of these industrial zones, not only in Metro Manila but including Laguna and Cavite as well.

Figure 1: Mapping of Industrial Concentration in Greater Manila Area

Source: Philippine Economic Zone Authority 2007, Mapping by PIDS.

As one of the provinces contiguous to Metro Manila, Laguna province has benefited from the spread of industrialization outside of the metropolis. It serves as hosts to 17 special economic zones under the purview of PEZA but all are being developed and managed by private zone operators. There are different types of ecozones in Laguna indicating the specific industrial concentration preferred or being promoted, if not already in existence. The Allegis IT Park, Carmelray International Business Park and Sta. Rosa Commercial IT Park were formed specifically to accommodate IT-enabled industries. The Carmelray Industrial Park (I and II) are for mixed manufacturing activities but mainly for electronics and semi-conductors. Also host to mixed industries and mainly for manufacturing activities are the Laguna International Industrial Park, the four Laguna Technopark, and the two Light Industry and Science Parks. The Filinvest Technology Park and the Calamba Premiere International Park is for light to medium scale, non-polluting industries. Meanwhile, there are industry specific zones like the Greenfield Automotive Park for firms engaged in automotive manufacturing; Toyota Sta. Rosa Special Economic Zone for automotive parts and YTMI Realty Special Economic Zone for automotive wiring harness. In the Laguna area,

Figure 1 indicates that the ecozones are concentrating in Biñan, Sta. Rosa and Calamba cities.

Meanwhile, industrial agglomeration in Cavite province can be found in its 13 economic zones. The Cavite Economic Zone, which is host to manufacturing industries engaged in the production of a diverse mix of products, is the only publicly owned industrial estate in the province. The same type of activities could be found in Fil-Estate Industrial Park, First Cavite Industrial Estate and People's Technology Complex. Meanwhile, those that prefer light to medium scale, non-pollutant industries are the Cavite Eco-Industrial Estate, EMI Special Economic Zone and Golden Mile Business Park. Those that are engaged in the production of electronics, semiconductors and similar products are the Cavite Productivity and Economic Zone and Gateway Business Park. Daiichi Industrial Park is host to mixed production but mainly related to plastic products, design of equipment for automation and energy conservation. Cavite is also host of one tourism zone, the Island Cove Tourism Economic Zone that features the resort facilities in the area. SM City Bacoor, a mall, is also considered as an ecozone, while Filoil Special Economic Zone did not specify preferred or existing industries. Referring back to Figure 1, it can be noted that the ecozones are more scattered unlike in Laguna but still concentrated in the areas nearest to Metro Manila cities such as Bacoor, Imus, Rosario, and General Trias.

2.2. Stylized Facts from the Industrial Clustering Survey of Philippine Business and Industry in Greater Manila Area

The results presented in this section are derived from the 2007 Industrial Clustering Survey of Philippine Business and Industry undertaken in the last quarter of 2007 focusing on Greater Manila Area as survey domain. The National Statistics Office (NSO) was commissioned to conduct this survey on behalf of the Philippine Institute for Development Studies. In particular, the survey would help determine the current structure and conditions of industrial agglomerations in the case study area; identify the nature and characteristics of the existing production networks of industrial agglomerations; pinpoint the factors that influence the location decision of firms; and, determine types and sources of technological innovation undertaken by firms, among others.

The formulation of the sampling frame and the distribution of the survey instrument were likewise undertaken by the NSO. This decision was made in consideration of the NSO's established and long standing relationship with the firms in various industries in the country by virtue of their regular conduct of census of establishments and industry surveys. .

The total number of firms surveyed including replacements was 516, out of which, 505 were considered valid responses. Over three out of five (61%) are located in the National Capital Region. One-fifth is situated in Cavite while roughly another fifth (19.6%) is in Laguna.

Table 1: Surveyed Firms by Location

Location	Number	Percent
Cavite	97	19.2%
Laguna	99	19.6%
NCR	308	61.0%
No response	1	0.2%
Total	505	100.0%

2.2.1. Year of Business Establishment

Table 2 shows the number and proportion of firms established at various periods. The largest proportion of firms (39%) was established in the 1990s, when the economic liberalization efforts were in full swing. The current decade hosts the second largest number of firms established (14%), and this is likely to rise further until the decade's end. The 1970s and the 1980s have roughly the same proportion of firms established; over a quarter of the firms were established during both periods. One out of eleven firms was established in the 1960s. Only one out of twenty was established in the 1950s while the same number was established during the first half of the last century, prior to 1950. Interestingly, a few were established as early as the 19th century.

The results of the survey in terms of the period when firms started to converge in GMA seem to bear out the finding that the economic reforms instituted in the 1980s towards the 1990s and onto the 2000s led to positive gains in terms of increasing investments.

Table 2: Year of Establishment

Period	Number	Percent
1850-1899	2	0.4%
1900-1949	25	5.0%
1950-1959	25	5.0%
1960-1969	44	8.7%
1970-1979	67	13.3%
1980-1989	72	14.3%
1990-1999	199	39.5%
2000-2006	70	13.9%
Total	504	100.0%

2.2.2. Capital Structure

The majority of the firms surveyed (54%) are wholly Filipino-owned. Over a quarter (26%) is wholly Foreign-owned while one fifth (20%) are Joint Ventures.

Among the foreign investors, Japan is the largest, having shares in 40 percent of firms not owned completely by Filipinos. The second largest foreign investor is the United States, having shares in 15 percent of the firms, followed by Europe with shares in 13 percent of the firms. Together, the ASEAN countries have shares in 9 percent of firms. China has interest in 7 percent of the firms while South Korea has in 6 percent. Other Asian countries have stake in 3 percent of the companies and similarly, other countries have stake in 3 percent.

Table 3: Capital Structure, by Area

Location	Capital Structure		
	100% Filipino	100% Foreign	Joint Venture
Cavite	31	52	14
Laguna	40	37	22
NCR	199	44	64

With mainly Japanese and U.S. investors in its industrial structure, the Philippines gets adversely affected whenever these economies experience economic difficulties. This presents the need to further aggressively pursue investments from other developed and developing countries to reduce this seeming dependency to a few markets. Given increasing intra-ASEAN trade, the Philippines should be able to latch on to this opportunity. Said to be the main driver of the increasing pace of intra-ASEAN trade, intra-industry growth accrues for 75 percent of total trade growth in East Asia between the years 1996 and 2000. This implies that the regional production networks in the

region are strong and opportunities for more linkages are available.

2.2.3. Company Size

Employment

Table 4 provides indication of the size of firms by the number of full-time employees during the start-up period and as of December 2006 (to represent current period). We find a general trend of expansion in terms of the number of employees. Whereas during the start-up, the largest number of firms had less than 50 employees, as of 2006, the largest proportion of firms had over a hundred employees. Overall, there was a reduction in the proportion of firms employing less than a hundred personnel and an increase in the shares of various categories above 100 employees. The largest increases were those above 200 and above 500 employees. The results imply that the survey captured enterprises in the medium and large-scale categories.

Table 4: Share of Firms by Number of Full-time Employees, during Start-up and As of December 2006

Number of Employees	Initial	As of December 2006
1-49	45%	13%
50-99	20%	13%
100-199	12%	18%
200-299	4%	13%
300-399	3%	9%
400-499	1%	6%
500-999	4%	13%
1000-1499	2%	6%
1500-1999	0.40%	2%
2000 and above	1%	7%

Assets

Table 5 shows the proportion of firms by the amount of assets during the start-up period and as of December 2006. The largest proportion of firms had less than one million pesos in total assets during their start-up. This was followed by those with assets of between 1 million pesos and then by firms with assets worth between 100 million and 500 million. As of 2006, the largest proportion of firms had total assets over a billion pesos, followed by those with assets between 100 million and 500 million. The number of firms that started with this range of assets certainly jumped significantly after some

periods had passed, same with those in the billion range.

Table 5: Share of Firms by Total Assets, during Start-up and As of December 2006

Total Assets	Initial		As of December 2006	
Philippine currency	Number	Percent	Number	Percent
Less than 1M	108	21%	15	3%
1M - less than 5M	69	14%	35	7%
5M - less than 10M	45	9%	27	5%
10M - less than 15M	29	6%	12	2%
15M - less than 20M	20	4%	17	3%
20M - less than 50M	42	8%	39	8%
50M - less than 100M	35	7%	53	10%
100M- less than 500M	55	11%	111	22%
500M - less than 1B	19	4%	56	11%
1B and above	28	6%	132	26%
NR/Missing	55	11%	7	1%
Total	505	100%	505	100%

Paid-Up Capital

The largest proportion of firms (27%) had a paid-up capital of less than 1 million pesos during their start-up. In 2006, however, the largest proportion of firms (19%) had paid-up capital of over 100 million. Most firms (53%) had less than 10 million in paid-up capital during their start-up. In 2006, most firms (59%) have over 20 million in paid-up capital. Table 6 shows the complete breakdown of firms by paid-up capital during start-up and as of December 2006.

Table 6: Number and Proportion of Firms by Paid-Up Capital, during Start-up and as of December

Paid-Up Capital	Initial		As of December 2006	
Philippine currency	Number	Percent	Number	Percent
Less than 1M	134	27%	33	7%
1M - less than 5M	90	18%	68	13%
5M - less than 10M	46	9%	35	7%
10M - less than 15M	28	6%	32	6%
15M - less than 20M	16	3%	26	5%
20M - less than 50M	48	10%	49	10%
50M - less than 100M	22	4%	57	11%
100M- less than 500M	37	7%	97	19%
500M - less than 1B	10	2%	37	7%
1B and above	14	3%	55	11%
NR/Missing	60	12%	16	3%
Total	505	100%	505	100%

2.2.4. Main Business Activity

Majority (51%) of the surveyed firms are engaged in manufacturing. Each of the other industries has less than 10 percent representation. For instance, 9 percent of the firms undertake wholesale trade while 8 percent engage in retail trade. There are 7 percent of surveyed firms in transportation while 5 percent are into hotels and restaurants and another 5 percent are into banking and finance. Construction is being undertaken by 4 percent of firms, while 3 percent are involved in telecommunications. Meanwhile, 2 percent of the firms are engaged in insurance and 1 percent maintains utilities. Another 2 percent are classified elsewhere.

Table 7: Main Business Activity

Main Business Activity	Number	Percent
Manufacturing	256	50.7%
Utilities	5	1.0%
Construction	18	3.6%
Wholesale trade	45	8.9%
Retail trade	38	7.5%
Hotels and Restaurants	26	5.1%
Transportation	33	6.5%
Telecommunications	17	3.4%
Banking and Finance	23	4.6%
Insurance	9	1.8%
Others	12	2.4%
No Response	23	4.6%
Total	505	100.0%

2.2.5. Products

Five (5) products dominate the production of the 265 manufacturing firms, each one engaging over 10 percent of firms, and together 60 percent of the firms. These are electronics and electronics equipment (produced by 14% of total manufacturing firms), textiles, wearing apparel and leather (13%) and chemicals, chemical and plastic products, and rubber (12%), automobiles and automobile parts (11%) and food, beverages and tobacco (11%). The Census of Philippine Business and Industry in 2000 actually indicates that the agglomeration of firms in terms of products manufactured in Metro Manila alone was dominated by ready-made garments and plastic products, among others. The findings in the survey meanwhile highlighting electronics as the

slightly more dominant one may have something to do with the inclusion of the provinces of Laguna and Cavite in the domain of the survey wherein the electronics industry are actually clustering. The inclusion of automobiles and automobile parts may have something to do with this as well.

Table 8: Major Products of Surveyed Firms

	Number	Percent
Food, beverages and tobacco	29	11.0%
Textiles, wearing apparel and leather	34	13.0%
Wood and wood products	7	3.0%
Paper, paper products, printing and publishing	11	4.0%
Coke and refined petroleum	4	2.0%
Chemicals, chemical and plastic products, and rubber	31	12.0%
Other non-metallic mineral products	11	4.0%
Iron and steel	11	4.0%
Non-ferrous metals	3	1.0%
Fabricated metal products	22	8.0%
Machinery, equipment and tools	13	5.0%
Computer and computer parts	13	5.0%
Other electronics and electronics equipment	36	14.0%
Precision instruments	6	2.0%
Automobile and autoparts	29	11.0%
Other transportation equipment and parts	5	2.0%
Total	265	100%

Incidentally, the five products that dominate the manufacturing sector in GMA represent the export champions of the Philippines and the ones being promoted in its Investment Priorities Plans (IPP). Most of them are also promoted as national clusters under the country's clustering strategy. While the IPP is being reexamined every three years, there may be case for doing an annual evaluation of priorities in light of rapid developments in the country and the region. Should these products continue to define the industrial strength of the country, and then strategies for their further development should be implemented such as the continued promotion of SME participation via the industry cluster approach and the OTOP, and increasing their linkages with research and development (R&D) institutions for the pursuit of efficiency enhancing technologies and higher value added in production. Meanwhile, nascent industries like those in information and communications technology (ICT), i.e. business process outsourcing and animation processes, are growing in the country driving the growth of the services

sector. Opportunities in this area should be further explored. More frequent evaluation of priority industries may augur well for stimulating these industries to perform better lest the support of government and the private sector gets reduced, if not withdrawn, particularly as these incentives and other types of support would be contingent on performance.

2.2.6. Target Markets

The main market of most (44%) of the firms is the domestic market. The two other larger main markets are Japan (to which 11% of the products are mainly sold) and the United States (11%). Europe hosts the main market for 8 percent of the firms while the Chinese market is catered to by 6 percent. The other international markets targeted by firms in GMA are South Korea (4%), Singapore (4%), and Malaysia (3%).

Table 9: Target Markets

	Philippines	Malaysia	Singapore	Other ASEAN countries	China	Japan	South Korea	Other Asian countries	Europe	United States	Total
Manufacturing	170	16	20	26	35	85	21	20	44	69	506
Utilities	5	0	0	1	0	0	0	0	0	0	6
Construction	18	0	0	0	0	0	0	0	0	0	18
Wholesale trade	41	0	2	0	1	3	0	1	2	2	52
Retail trade	38	1	1	1	1	1	1	2	1	1	48
Hotels and Restaurants	25	6	6	5	8	7	5	4	7	8	81
Transportation	32	2	3	3	4	4	2	2	2	3	57
Telecommunications	15	3	3	3	2	4	2	3	2	2	39
Banking and Finance	22	0	0	0	1	0	0	1	1	1	26
Insurance	9	0	1	1	1	0	0	0	0	0	12
Others	11	0	0	0	0	0	0	2	0	1	14
NR	21	1	2	1	2	2	1	2	1	2	35
Total	407	29	38	41	55	106	32	37	60	89	894
Percent	46%	3%	4%	5%	6%	12%	4%	4%	7%	10%	100%

2.2.7. Sources of Raw Materials

Across industries, most firms (38%) source their raw materials locally. Japan is the largest external source of raw materials, providing for 14 percent of firms, followed by China (11%). The United States is the main source of raw materials for 8 percent of firms, Europe for 7 percent and Singapore for another 7 percent. Malaysia, South Korea, other ASEAN countries, and other Asian countries each mainly provide for 4 percent of firms.

Table 10: Source of Raw Materials

	Philippines	Malaysia	Singapore	Other ASEAN countries	China	Japan	South Korea	Other Asian countries	Europe	United States	Total
Manufacturing	156	31	41	30	66	101	30	26	37	48	566
Utilities	5	0	0	0	0	0	0	0	0	0	5
Construction	17	0	2	0	2	1	0	0	0	0	22
Wholesale trade	34	2	5	2	7	9	3	4	7	5	78
Retail trade	32	1	2	2	3	5	1	1	3	5	55
Hotels and Restaurants	25	1	1	0	4	2	2	2	2	4	43
Transportation	24	0	3	0	2	5	0	0	6	3	43
Telecommunications	6	1	0	0	4	2	0	1	3	4	21
Banking and Finance	15	0	0	0	0	0	0	0	0	0	15
Insurance	6	0	0	0	0	0	0	0	0	0	6
Others	10	1	1	0	1	0	0	1	1	0	15
Total	330	37	55	34	89	125	36	35	59	69	869
Percent	38%	4%	6%	4%	10%	14%	4%	4%	7%	8%	100%

Though survey results indicate that the domestic supply chain remains the main source of raw materials for firms in the country, there are assertions that many establishments particularly export oriented ones, have tendency to be dependent on foreign sources for intermediate inputs. Developing and strengthening domestic backward linkages may be an important strategy to lessen this reliance. This again, has implications on developing the countries' SMEs to assume this role.

2.2.8. Important Factors for Locating in Greater Manila Area

The firms were first asked to identify the level of importance of at least 20 factors that had influenced the decision of the firms to locate their operations in the region. Afterwards, they were requested to indicate the three most important factors out of the 20. Survey results show that respondent firms found the following as the topmost important factors, size of local markets, investment incentives (including tax incentives), and physical infrastructure (roads, highways, ports, airports, etc.). The market size and physical infrastructure has traditionally been an important determinant of foreign investments. On the other hand, based on some empirical studies in the past, investment incentives were not found to be significantly affecting the location decision of firms. However, the results of this survey disprove this contention to some extent.

These factors primarily regarded by investors as the main stimulants in the firms' decision to locate their operations in GMA are consistent with the earlier discussion that

given the critical role of GMA as center for economic, social, political, and administrative activities, Metro Manila and its contiguous areas have a market size relatively large when compared to other regions of the country. Their combined gross regional domestic product would account for a big chunk of the national total gross domestic product, representing another indicator of market size. In addition, more modern and advanced physical infrastructure could also be found in the core region comprising GMA.

Investment incentives were found to be influential in the decision making of firms and may be construed as generally having positive effects to investment inflows. It should be noted however, that the incentives being offered by the Philippines are similar to those offered by the other countries and so this advantage may not be sustained in the long term if other aspects, such as fiscal structure is not addressed. For instance, the corporate tax rate of the country is still at a high 35%. Meanwhile, there have been issues within the incentive structure that had been highlighted pertaining to loss of revenues, costly and cumbersome procedures of availment, and confusion arising from the numerous investment regimes. All these would have to be sorted out and the proposal currently pending in Congress to rationalize the investment structures, particularly the fiscal kind, is logical and necessary in order to come up with a uniform system that would reduce complexities.

Meanwhile, those factors that are regarded as second most important include availability of skilled labor and professionals, other infrastructure (electricity, water supply, other utilities), and ICT infrastructure (telecommunications, IT).

Among the factors identified as the third most important is , availability of low cost labor.

In sum, it can be regarded that the most important factors influencing firms to locate in GMA are market size; investment incentives; infrastructures whether physical, utility support or ICT; and availability of low cost as well as skilled labor and professionals. The status of the banking system and financial structure has also been well regarded. Interestingly, government institutional infrastructure did not enter the list of more important factors.

Table 11: Number and Share of Firms by Most Important Factors for Locating in GMA

Factors	First		Second		Third	
	Number	Percent	Number	Percent	Number	Percent
Investment incentives including tax incentives	105	21%	31	6%	31	6%
Liberal trade policy	17	3%	25	5%	23	5%
Customs procedure	5	1%	14	3%	11	2%
Local content requirements, rules of origin	7	1%	6	1%	6	1%
Physical infrastructure (roads, highways, ports, airports, etc.)	53	11%	57	11%	54	11%
Infrastructure (telecommunications, IT)	19	4%	46	9%	36	7%
Infrastructure (electricity, water supply, other utilities)	28	6%	51	10%	53	11%
Government institutional infrastructure	8	2%	7	1%	12	2%
Financial structure/Banking system	31	6%	28	6%	26	5%
Legal system	0	0%	6	1%	0	0%
Protection of intellectual property rights	4	1%		0%	9	2%
Size of local markets	111	22%	40	8%	32	6%
Access to export markets	11	2%	20	4%	16	3%
Proximity to suppliers/subcontractor	16	3%	32	6%	23	5%
Request by large/related company	7	1%	8	2%	14	3%
Availability of low cost labor	24	5%	35	7%	42	8%
Availability of skilled labor and professionals	20	4%	56	11%	64	13%
Presence of other companies from the same country as this company (synergy)	5	1%	9	2%	10	2%
Access to high value technology and information	5	1%	16	3%	20	4%
Living conditions	0	0%	0	0%	0	0%
Others	15	3%	2	0%	1	0%
No response	11	2%	13	3%	17	3%
Total	502	100%	502	100%	500	100%

2.2.9. Innovations

Among the top three innovations undertaken by the firms during the last 3 years were the introduction of new products and services (18%), upgrading of machineries and equipment (17%), and opening of a new market (15%). These innovations are also among those that were claimed to being planned to be undertaken in the next three years: upgrading of machineries and equipment (17%) followed by introduction of new products and services (16%) and opening of a new market (15%).

A slightly different pattern however, can be observed among the types of innovation undertaken by major business activity. Those firms which have undergone the most innovations are those engaged in manufacturing, wholesale trade, retail trade, hotels and restaurant, and transportation. While firms engaged in manufacturing have mostly introduced new products and services, upgrading of machineries and equipment, adoption of new method of production, and acquisition of a new source of supply of raw materials and supplies, those into wholesale trade introduced new products and services, opened up new markets, upgraded machineries and equipment, and marketed products

and services or purchased materials and supplies thru Internet. Firms engaged in retail trading followed the same pattern as the former. This information manifests that technological upgrading efforts are driven by the function or industrial orientation of the firm and/or as a means to take advantage of accessible technology such as marketing through the Internet.

Table 12: Share of Firms by Innovation in the last 3 Years and the Next 3 Years

Innovations	Last 3 Years		Next 3 Years	
	Number	Percent	Number	Percent
1 Introduction of new products and services	389	18%	387	16%
2 Adoption of new method of production	277	13%	294	12%
3 Opening of a new market	314	15%	355	15%
4 Acquisition of a new source of supply of raw materials and supplies	283	13%	302	13%
5 Outsourcing a major production activity that was previously conducted in-house	141	7%	175	7%
6 In-house major production activity that was previously or currently outsourced	121	6%	146	6%
7 Upgrading of machineries and equipment	363	17%	398	17%
8 Marketing of products and services/ purchase of materials and supplies thru internet	224	11%	297	13%
Total	2,112	100%	2,354	100%

2.2.10. Source of Technology

Survey results show that the main source of technology is the firms themselves (22%). This is followed by the technology transferred from MNCs (14%) presumably arising from their linkages with them. Apart from these, technical cooperation and assistance from local companies such as business organizations, other local companies and from foreign agencies are also important sources of information and technology. It will be noted though that there are relatively lesser degrees of technological linkages with other local institutions, namely, local government, academic institutions and R&D agencies.

The weak linkages of industry with R&D generating institutions (higher education institutions, government agencies and private institutions) are evident in the survey results, indicating that the firms are mainly relying on their in-house capabilities. Though some firms may find it prudent to safeguard their new discoveries and thus, limit the sharing of information, their dependence on internal know-how poses limitations as well as they tend to assume the costs and attendant risks involved alone rather than spread them around to minimize exposure. Though larger firms could afford

to internalize the costs and risks involved, the smaller and medium scale enterprises would have to rely more on the linkages with R&D producing institutions. Thus, S&T plans must be translated into action, while R&D institutions should have a more active interaction with industry players to elucidate their actual technological needs. Higher education institutions may choose to devote resources in developing their S&T curriculum in order to produce more scientists in the country.

Table 13: Share of Technology Source as Percentage of Total

Source of Technology	Number	Percent
1 Developed by own company	359	22.5%
2 Technology transfer from multinational companies	231	14.5%
3 Technical cooperation with (or assistance from) local business organization	209	13.1%
4 Technology transfer from or cooperation with local companies	201	12.6%
5 Technical assistance from foreign agencies	194	12.1%
6 Technical cooperation with (or assistance from) local government	131	8.2%
7 Joint Venture	108	6.8%
8 Technical cooperation with (or assistance from) local university or R&D institutes	86	5.4%
9 Technical cooperation with (or assistance from) foreign university or R&D institutes	78	4.9%
Total	1,597	100.0%

2.2.11. Expansion Plan in GMA

About a quarter of the firms revealed their plans to expand their operations in GMA in the next 3 years (24%). Meanwhile, over a fifth expressed the likelihood of expansion. However, 9 percent of the firms are not likely to expand in the near future, while 37 percent are still uncertain when it comes to their expansion plans.

Table14: Share of Firms by Probability of Expansion

	Number	Percent
Yes	122	24.2%
Probably Yes	108	21.4%
Not Sure	186	36.8%
Probably Not	45	8.9%
Not at all	37	7.3%
No Response	7	1.4%
Total	505	100.0%

2.2.12. Important Factors for continued operation / expansion in GMA

The firms were asked to identify the three most important factors that would serve as determinants of their future decision to continue their operations in GMA or to expand. Among those identified as the primary factors, size of local markets is considered by the greatest number (31% of firms) to be most important. Investment incentives (including tax incentives) are considered by 19 percent to be most important while 13 percent of firms identified physical infrastructure (roads, highways, ports, airports, etc.) in the same weight. It will be noted that these factors generally follows the pattern from the factors considered most important by the surveyed firms that have influenced their decision to locate their operations in GMA.

Table 15: Share of Firms by Most Important Factors for Continuation of Operation/ Expansion

Factors	First		Second		Third	
	Number	Percent	Number	Percent	Number	Percent
Investment incentives including tax incentives	55	19%	13	5%	16	6%
Liberal trade policy	4	1%	10	3%	4	1%
Customs procedures	4	1%	6	2%	9	3%
Local content requirements, rules of origin	5	2%	4	1%	2	1%
Physical infrastructure (roads, highways	36	13%	31	11%	36	13%
Infrastructure (telecommunications, IT)	7	2%	24	8%	24	9%
Infrastructure (electricity, water supply)	15	5%	36	13%	21	8%
Government institutional infrastructure	6	2%	4	1%	5	2%
Financial structure/banking system	15	5%	24	8%	20	7%
Legal system	4	1%	6	2%	5	2%
Protection of intellectual property rights	2	1%	3	1%	2	1%
Size of local markets	90	31%	19	7%	18	6%
Access to export markets	6	2%	12	4%	3	1%
Proximity to suppliers/subcontractors	2	1%	11	4%	14	5%
Request by large/related company	4	1%	3	1%	9	3%
Availability of low cost labor	12	4%	22	8%	19	7%
Availability of skilled labor and professionals	8	3%	33	12%	46	17%
Presence of other companies from the same country as this company (synergy)	2	1%	9	3%	4	1%
Access to high value technology and information	2	1%	5	2%	6	2%
Standard of living	3	1%	9	3%	14	5%
Others	6	2%	2	1%	1	0%
Total	288	100%	286	100%	278	100%

Among the second most important factors identified, infrastructure (electricity, water supply and other utilities) was considered by 13 percent of the firms. Among those that provided responses, 12 percent pointed to the availability of skilled labor and professionals as an important consideration, while 11 percent of the firms identified

physical infrastructure (roads, highways, ports, airports, etc.) as part of the group regarded as second most important.

As for the third most important factor, availability of skilled labor and professionals was identified by 17 percent of the firms while physical infrastructure (roads, highways, ports, airports, etc.) was identified 13 percent. Also, ICT infrastructure was also given this weight of importance by 9 percent of the firms.

To summarize, the surveyed firms consider the size of the local markets as the top most factor that would influence their continuation and expansion plans, followed by infrastructure in terms of utilities, categorized as second most important, and finally, availability of skilled labor and professionals as third most crucial factor.

2.2.13. Level of Satisfaction with Factors for Continuation/Expansion of Operations

The respondents were also asked to indicate their level of satisfaction with the same set of factors considered to affect location decisions of firms. The results are fairly spread out among the twenty factors particularly found to be very satisfactory by the firms. Nevertheless, the top four factors where the firms are very satisfied with are the financial sector/banking system prevailing, the availability of skilled labor and professionals, size of local markets, and existence of infrastructure for utilities. The top factors where the firms are only somewhat satisfied include proximity to suppliers/subcontractors, the financial structure/banking system and those that pertain to infrastructures such as physical infrastructure, telecommunications, and utilities. Living conditions was also adjudged as somewhat satisfactory. Meanwhile, firms are unsure whether they are satisfied or not with factors namely local content requirements, request by large/related company and presence of other companies from the same country. This could be due to lack of familiarity of the concepts behind the factors or non-applicability of the particular factor to their context. Firms also could not make up their mind if they are satisfied or not with liberal trade policy and customs procedure. Interestingly, there are more firms that are only somewhat satisfied with investment incentives prompting the question of whether this is due to inadequacy of the incentives or difficulty in availing them.

Table16: Satisfaction Level

	Very Satisfied		Somewhat Satisfied		Not Sure	
	Number	Percent	Number	Percent	Number	Percent
Investment incentives including tax incentives	48	4.5%	110	4.5%	57	5.2%
Liberal trade policy	30	2.8%	97	4.0%	80	7.3%
Customs procedure	29	2.7%	90	3.7%	73	6.6%
Local content requirements, rules of origin	32	3.0%	100	4.1%	89	8.1%
Physical infrastructure (roads, highways, ports, airports, etc.)	60	5.6%	141	5.8%	25	2.3%
Infrastructure (telecommunications, IT)	70	6.5%	143	5.8%	33	3.0%
Infrastructure (electricity, water supply, other utilities)	80	7.5%	141	5.8%	26	2.4%
Government institutional infrastructure	45	4.2%	124	5.1%	61	5.6%
Financial structure/Banking system	84	7.9%	143	5.8%	30	2.7%
Legal system	38	3.6%	125	5.1%	66	6.0%
Protection of intellectual property rights	51	4.8%	111	4.5%	68	6.2%
Size of local markets	80	7.5%	124	5.1%	42	3.8%
Access to export markets	50	4.7%	114	4.6%	60	5.5%
Proximity to suppliers/subcontractor	58	5.4%	155	6.3%	36	3.3%
Request by large/related company	38	3.6%	100	4.1%	88	8.0%
Availability of low cost labor	52	4.9%	133	5.4%	46	4.2%
Availability of skilled labor and professionals	81	7.6%	136	5.5%	33	3.0%
Presence of other companies from the same country as this company (synergy)	39	3.6%	97	4.0%	86	7.8%
Access to high value technology and information	53	5.0%	131	5.3%	54	4.9%
Living conditions	51	4.8%	137	5.6%	46	4.2%
Total	1,069	100.0%	2,452	100.0%	1,099	100.0%

The most important factors that influenced firms, among those surveyed, to locate in GMA represent the need to have strong and stable economic fundamentals (size of market and physical infrastructure) and conducive policies (investment incentives) to entice and develop industrial agglomerations in the country. Though much has been done especially since the 1980s, and there were indeed gains arising from these reforms and policies, the country's performance in terms of total foreign trade, FDI inflows, and exports performance, as well as overall competitiveness, viz-a-viz its ASEAN neighbours indicate that there are still major barriers and bottlenecks that have to be addressed. Not least of these are low investments in infrastructure, low productivity, political instability, unstable regulatory and contract enforcement, high cost of doing business, and corruption.

These stylized facts derived from the survey provided useful inputs in determining the characteristics of firms that have agglomerated in Greater Manila Area: the types of

business activities they undertake and the products they manufacture; the most important factors that influenced or attracted them to locate their business in the region; the types of innovations they have conducted and their sources indicating their desire to continue or expand operations; and their satisfaction to the conditions that drew them to establish their business in the region. However, to derive richer information as to the nature and characteristics of industrial agglomeration and industrial upgrading or innovation processes in the country, a more rigorous method utilizing the data set collected from the survey will have to be done. It will place particular focus on the policy measures and the economic environment that has so far influenced these firms to agglomerate and those that may be required for future agglomeration and upgrading. The next section provides insights on the results of the econometrics analysis undertaken by the Japanese team of experts who are also part of this study's mother project.

3. INDUSTRIAL AGGLOMERATION AND INNOVATION IN THE PHILIPPINES: ECONOMETRICS ANALYSIS

The econometrics component of this analysis on the Philippines focuses on two major aspects: industrial agglomeration and innovation. In particular, the objectives of this rigorous statistical method are: to determine the nature of industrial agglomeration in the country; distinguish between first movers and latecomers in the agglomeration context; and identify the characteristics of each category in terms of size of the firms involved, the functions for which they established presence in the region, and the factors that attracted them in the first place to locate in the area.

On the innovation aspect, the purpose of the study is to find out the factors that promote innovation and determine the differences between firms that have propensity to innovate and those firms that may be considered non-innovative.

Simply put, the econometric analysis will be based on the framework that the establishment of new business is a function of three major factors, (1) market conditions, (2) policy demand, based on the importance and satisfaction being attributed to it, and (3) firm characteristics. The same rough framework can be used for explaining the

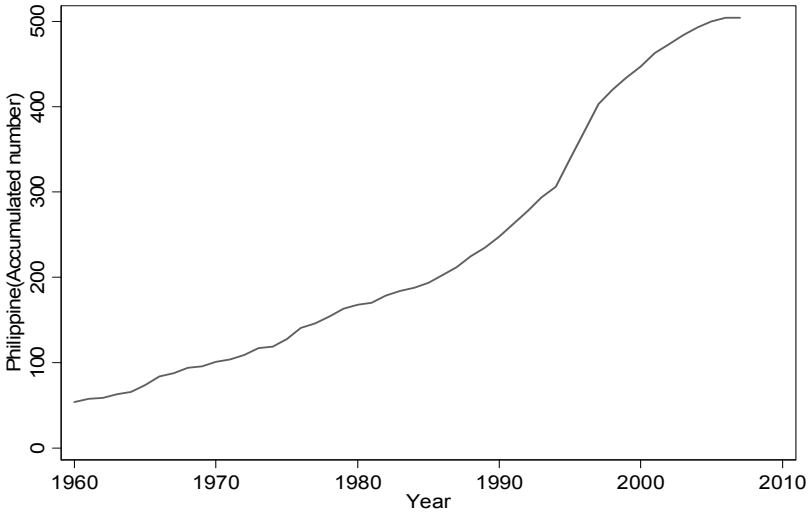
process of innovation (Tsuji, et al, 2008).

The data used for econometrics analysis are from the 2007 Industrial Clustering Survey of Philippine Business and Industry conducted from October to December 2007 using the Greater Manila Area as domain of said survey. The total valid responses considered in the estimations was 504.

3.1. Nature of Industrial Agglomeration in the Philippines

The nature of industrial agglomeration refers to the periods in the country's history when firms have established their presence. For analytical simplicity, the focus was on the accumulated number of firms established in the Philippines, dividing the entire period into three according to the trend in accumulation starting from the year the earliest firm was established to the year the latest firm came about. These three key periods are: (1) before 1986; (2) 1987-1994; and (3) after 1995. The year of establishment of firm or business activities in the Philippines is taken as a dependent variable in the econometric analysis. The firms established in the earlier period are referred to as "first movers," and those that came in the later period as "latecomers". This pattern of accumulation is presented in Figure 2.

Figure 2: Accumulation of Firms' Establishment in the Philippines



Independent variables, on the other hand, which will explain why firms were attracted by this region, are selected from among the items in the questionnaire, namely: (1) firm size; (2) attracting factors; and (3) functions of the firms when they were established.

The relationship between the year of establishment and the size of firm is examined along the lines of whether the agglomeration is triggered by the entry of large firms such as MNCs or by the smaller firms, which could either be local or foreign. This is aligned with the Flowchart Approach model developed by Kuchiki (2007), Kuchiki and Tsuji (2006, 2008), and Tsuji *et al* (2006). Firm size in the questionnaire is measured by the (i) number of full-time employees; (ii) total assets; and (iii) paid-up capital.

On the other hand, attracting factors or the factors that influenced the firms to establish their presence in the area were enumerated in the questionnaire consisting of 20 pre-determined items. Respondents were asked to consider if each of these factors affected their decision to locate in the country at the time the operation was begun, assessing them according to importance.

The other variable, functions of the firms when they first established, was asked in the questionnaire as Question no. 6. The summary statistics are presented in Table 17.

Table 17: Summary Statistics, Philippines

	Variable	Obs	Mean	Std. Dev.	Min	Max
	Dependent Variable					
Q1)	Agglomeration	504	0.615	0.633	0	2
Q9)	Innovation : Goods	504	0.198	0.399	0	1
	Methods	503	0.189	0.392	0	1
	Markets	504	0.292	0.455	0	1
	Suppliers	503	0.376	0.485	0	1
	Independent Variable					
Q1)	Establishment Year	504	1983.808	19.400	1854	2006
Q3) 1)	Full-time Employees: 50 - 99	504	0.198	0.399	0	1
	100 - 199	504	0.115	0.319	0	1
	200 - 299	504	0.044	0.205	0	1
	300 - 399	504	0.028	0.164	0	1
	400 - 499	504	0.016	0.125	0	1
	500 - 999	504	0.036	0.186	0	1
	1,000 - 1,499	504	0.018	0.133	0	1
	1,500 - 1,999	504	0.004	0.063	0	1
	2,000 & above	504	0.004	0.063	0	1
Q3) 1)	Total Assets(Peso) : 1M less than 5M	504	0.137	0.344	0	1
	5M less than 10M	504	0.089	0.285	0	1
	10M less than 15M	504	0.058	0.233	0	1
	15M less than 20M	504	0.040	0.195	0	1
	20M less than 50M	504	0.083	0.277	0	1
	50M less than 100M	504	0.069	0.254	0	1
	100M less than 500M	504	0.109	0.312	0	1
	500M less than 1B	504	0.038	0.191	0	1
	1B & above	504	0.054	0.225	0	1
Q3) 1)	Paid-UP Capital(Peso) : 1M less than 5M	504	0.179	0.383	0	1
	5M less than 10M	504	0.091	0.288	0	1
	10M less than 15M	504	0.056	0.229	0	1
	15M less than 20M	504	0.032	0.175	0	1
	20M less than 50M	504	0.095	0.294	0	1
	50M less than 100M	504	0.044	0.205	0	1
	100M less than 500M	504	0.073	0.261	0	1
	500M less than 1B	504	0.020	0.140	0	1
	1B & above	504	0.026	0.159	0	1
Q6) 7.8	Retail/ Wholesale trade	504	0.242	0.429	0	1
1	Production (raw-material processing)	504	0.125	0.331	0	1
2	Production (components and parts)	504	0.151	0.358	0	1
3	Production (final products)	504	0.317	0.466	0	1
5	Purchasing/ Procurement/ Logistics	504	0.113	0.317	0	1
14	R&D/ Consulting	504	0.026	0.159	0	1
15	Human resources development	504	0.083	0.277	0	1

Table 17: Summary Statistics, Philippines (continuation)

	Variable	Obs	Mean	Std. Div.	Min	Max
Q7)	1) Investment incentives including tax incentives	487	3.719	1.456	1	5
	2) Liberal trade policy	480	3.310	1.400	1	5
	3) Customs procedures	484	3.384	1.426	1	5
	4) Local content requirements, rule of origin	480	3.363	1.388	1	5
	5) Physical infrastructure (roads, highways, ports, airports, etc.)	492	4.309	0.998	1	5
	6) Infrastructure (telecommunications, IT)	490	4.300	1.042	1	5
	7) Infrastructure (electricity, water supply, other utilities)	493	4.465	0.927	1	5
	8) Government institutional infrastructure	487	3.879	1.142	1	5
	9) Financial system	487	4.246	1.017	1	5
	10) Legal system	489	3.890	1.210	1	5
	11) Protection of intellectual property rights	488	3.684	1.316	1	5
	12) Size of local markets	489	4.098	1.315	1	5
	13) Access to export markets	486	3.438	1.437	1	5
	14) Proximity to suppliers/subcontractors	489	3.961	1.225	1	5
	15) Request by large/related company	485	3.344	1.405	1	5
	16) Availability of low-cost labor	489	3.896	1.258	1	5
	17) Availability of skilled labor and professionals	492	4.313	1.049	1	5
	18) Other companies from the same country are located here (synergy)	485	3.348	1.397	1	5
	19) Access to cutting-edge technology and information	490	3.931	1.216	1	5
	20) Living conditions	487	3.860	1.192	1	5
Q8)	1) Investment incentives including tax incentives	276	3.417	1.214	1	5
	2) Liberal trade policy	267	3.251	1.147	1	5
	3) Customs procedures	267	3.165	1.165	1	5
	4) Local content requirements, rule of origin	261	3.379	1.084	1	5
	5) Physical infrastructure (roads, highways, ports, airports, etc.)	276	3.717	1.092	1	5
	6) Infrastructure (telecommunications, IT)	487	2.199	2.065	0	5
	7) Infrastructure (electricity, water supply, other utilities)	487	2.242	2.094	0	5
	8) Government institutional infrastructure	266	3.632	0.998	1	5
	9) Financial system	274	4.055	0.869	1	5
	10) Legal system	270	3.537	1.030	1	5
	11) Protection of intellectual property rights	272	3.559	1.102	1	5
	12) Size of local markets	277	3.874	1.037	1	5
	13) Access to export markets	264	3.576	1.124	1	5
	14) Proximity to suppliers/subcontractors	274	3.850	0.962	1	5
	15) Request by large/related company	268	3.407	1.103	1	5
	16) Availability of low-cost labor	275	3.625	1.115	1	5
	17) Availability of skilled labor and professionals	280	3.911	1.031	1	5
	18) Other companies from the same country are located here (synergy)	267	3.397	1.110	1	5
	19) Access to cutting-edge technology and information	269	3.714	1.020	1	5
	20) Living conditions	270	3.715	1.000	1	5

3.2. Results of Estimation on Industrial Agglomeration in the Philippines

With the dependent and independent variables already identified, three models were estimated according to the definition of firm size. We find here what is called, full time employees model, the assets model and the paid-up capital model. Estimations were conducted under each model and adopting the Ordered Logit Estimation, utilized the Full model, which takes all variables into account, and the Selected Model, which made use of selected variables only that are considered to significantly influence the dependent variables. A summary of estimations is provided in Table 18, which to facilitate understanding shows signs of estimated coefficients and their significance levels only. Detailed estimation results are in the Appendix section of this paper.

Table 18 Results of Estimations: Agglomeration

		Employees		Assets		Capital	
		Full model	Selected model	Full model	Selected model	Full model	Selected model
Q3)	2 50 - 99persons/5M less than 10M (Peso)/5M less than 10M (Peso)	*	**	**	**	**	**
	3 100-199/10M-less than 15M/10M-less than 15M	+	**	**	**	**	**
	4 200-299/15M-less than 20M/15M-less than 20M			+		*	*
	5 300-399/20M-less than 50M/20M-less than 50M			**	**	**	**
	6 400-499/50M-less than 100M/50M-less than 100M			**	**	**	**
	7 500-999/50M-less than 100M/50M-less than 100M	[+]	[+]	**	**	**	**
	8 1,000-1,499/100M-less than 500M/100M-less than 500M			**	**	**	**
	9 1,500-1,999/500M-less than 1B/500M-less than 1B			**	**		
	10 2,000 & above/1B & above/1B & above			**	**	**	**
Q8)	1 Investment incentives including tax incentives	*	*	+	+	+	+
	2 Liberal trade policy		[+]				
	3 Customs procedures			[+]	[*]		[*]
	4 Local content requirements, rule of origin		[+]	[*]	[+]		
	5 Physical infrastructure (roads, highways, ports, airports, etc.)						
	6 Infrastructure (telecommunications, IT)		*				
	7 Infrastructure (electricity, water supply, other utilities)						
	8 Government institutional infrastructure		[+]	[*]		[+]	
	9 Financial system						
	10 Legal system						
	11 Protection of intellectual property rights	+	*		*	+	*
	12 Size of local markets	[**]	[**]	[+]	[*]	[*]	[*]
	13 Access to export markets	*	+	*	+		
	14 Proximity to suppliers/subcontractors	[**]	[**]	[+]		[+]	
	15 Request by large/related company		+				
	16 Availability of low-cost labor	+	*				
	17 Availability of skilled labor and professionals						
	18 Other companies from the same country are located here (synergy)						
	19 Access to cutting-edge technology and information						
	20 Living conditions						
Q6)	78 Retail/ Wholesale trade						
	1 Production (raw-material processing)		[+]				
	2 Production (components and parts)	**	**	**	**	**	**
	3 Production (final products)	[**]	[**]	[**]	[**]	[**]	[**]
	5 Purchasing/ Procurement/ Logistics						
	14 R&D/ Consulting						
	15 Human resources development						
Nob		461	469	461	473	461	480
Log likelihood		-456.875	-468.075	-434.818	-454.737	-444.054	-471.158
Pseudo R2		0.075	0.069	0.12	0.103	0.101	0.084

Note 1: [ ] indicates that the coefficient is negative, and items without [] imply the coefficient is positive.
Note 2: **, * and + indicates that coefficient is at the 5, 10 and 20% significance level, respectively.

In these Ordered Logit models, latecomers are taken to be standard by the normalization, and accordingly, a positive sign of estimated coefficients indicates that they influence only latecomers. Needless to say, a negative sign of the coefficients refer to the first movers.

3.2.1. Estimation Results under the Full time Employees Model

Full Model

(a) Firm size

The results show that only firms with employees of less than 100 is significant (at 10%). With the sign being positive, the implication is that these small companies are latecomers but in general, no significant relationship between firm size and the year of business establishment is found.

(b) Attracting factors

In terms of the factors that influenced firms to locate in the Philippines, it was found that "Size of local markets" and "Proximity to suppliers/subcontractors" have negative signs and significant at the 5 percent level, indicating that these are the factors that influenced the first movers. On the other hand, "Investment incentives including tax incentives" and "Access to export markets" are positive and significant at the 10 percent level while "Protection of intellectual property rights" and "Availability of low-cost labor" were also found to be positive at the 20 percent significance level. These results imply that these four factors were the ones out of the 20 that had influenced latecomers to agglomerate in the Philippines.

(c) Functions of firms

When it comes to the estimates with functions of firms when they first established as independent variable, we find that "Production (final products)" has a negative sign and significant at the 5 percent level. This indicates that the first movers' activities were along the lines of producing final products. Meanwhile, "Production (components and parts)" was found to be positive and equally significant at the 5 percent level implying that the late comers were into production of components and parts.

Selected Model

In the Selected Model, the number of independent variables is reduced by eliminating those factors that are considered irrelevant in order to increase the accuracy of the estimation in terms of log likelihood, for instance. This model was found to have raised the significance levels of many of the variables in the estimation. For instance, we now find that when it comes to firm size, the significant categories are those firms with employees less than 100 and those with 100 to 199 employees (5% level of significance). Since both signs are positive, the results imply that these smaller firms represent the late comers.

As to the attracting factors, this model raised the significance of "Protection of intellectual property rights," "Availability of low-cost labor" and "Infrastructure (telecommunications, IT)" but reduced that of the "Access to export markets." With the first three factors having positive signs, they confirm that they are the factors that influenced late comers to come to the Philippines while adding telecommunications and IT infrastructure to the equation.

Though significant only at the 20 percent level, factors such as "Liberal trade policy," "Local content requirements, rule of origin," and "Government institutional infrastructure" showed up with negative signs. This somewhat indicate that the first movers were also influenced with these factors when they decided to come to the Philippines, in addition to their primary reasons as size of local markets and proximity to related industries.

3.2.2. Estimation Results under the Total Assets and Paid-up Capital Model

Upon running the estimates, it was found that the total assets and paid-up capital models showed almost the same results. Thus, they will just be treated as one in this analysis.

Full Model

(a) Firm size

With almost all categories showing positive significance at the 5 percent level as indicated in Table 18, it can be deduced that most of these firms agglomerated in the

Philippines in the later period. This validates the data implied by Figure 2 wherein the number of accumulated firms showed a sharp increase in the middle of the 1990s. This is also consistent with the findings of the survey that indicates that there were more firms showing up between 1990 and 1999, which was the period when the policy reforms instituted in the late 1980s through the 1990s were claimed to have taken effect.

However, the result of this estimation does not indicate the situation in the earlier period. What is found in the results lead one to infer that the Flow Chart approach does not explain the nature of agglomeration in the Philippine case. Apparently, based on the estimation, the firms have agglomerated in the Philippines during this latter period regardless of size and therefore, may not have been significantly influenced by the presence of first movers. In this case and based on the inference on above, agglomeration in the Philippines may be considered as policy driven rather than as a result of a possible synergy between, for instance, MNCs locating first and supporting industries following them as the Flow Chart approach suggests.

(b) Attracting factors

Common to both the assets and capital models are such factors as "Government institutional infrastructure," "Size of local markets," and "Proximity to suppliers/subcontractors," this showed up with negative signs indicating therefore that they were the factors that influenced the first movers. Another common factor but with a positive sign is "Investment incentives including tax incentives" significant at the 20 percent level. This implies that this factor exerted some influence to late comers.

Meanwhile, factors such as "Customs procedure," "local content requirements, rule of origin," and "Access to export markets" were found to be significant only at the assets model. The first two factors showed up negative indicating that they influenced the first movers, while the latter had presented attraction to the late comers.

(c) Functions of firms

In both models, "Production (final products)" and "Production (component and parts) were the only significant categories (at 5% level of significance). Showing up with all positive signs, it can be inferred that the latecomers' business activities when they came in to the Philippines were focused on the production of components and parts,

while the first movers concentrated on the production of final products since the signs of the coefficients were all negative. From Table 18 it can be noted that the results for this category are the same with those coming out from the full time employees model.

Selected Model

When it comes to firm size, the selected model showed the same results for both the assets and the capital models in almost all categories except for two categories. Moreover, almost all conformed to the results of the full model.

As to attracting factors found significant, common to both models are "Customs procedures" and "Size of local markets;" and because of their negative signs indicate that they were influential to the decision of first movers. On the other hand, coming out with positive signs that are common to both models are "Protection of intellectual property rights" and "Investment incentives including tax incentives." These are the factors that affected the late comers. Meanwhile, "Access to export markets" only came out in the assets model and was positive. These results conform to the findings in the full time employees' model.

Summary of the Results

At the early stage of agglomeration, firms entered the Philippine industrial structure to produce final products in collaboration with supporting industries found to be present such as suppliers and subcontractors, and in compliance with local content requirements, for the local market. Their entry to the Philippines was further influenced by the liberal trade policy, the institutional infrastructure of the government and customs procedures prevailing.

At the later stage of agglomeration, firms in all sizes mainly in the production of parts and components clustered in the country due to the investment incentives offered, access to export markets, availability of low-wage labors, presence of telecommunications and IT infrastructure, and the legal framework and programs protecting intellectual property rights.

3.3. Results of Estimation on Industrial Upgrading and Innovation

It is claimed that as a result of agglomeration, the closer interaction between and

among firms lead to transfer of technology and know-how from more advanced firms such as MNCs. A flow of denser information among them as well as the nurturing of human resources has created endogenous forces of industry upgrading and the innovation process for all firms in the region.

In order to examine this industry upgrading or innovation, four categories of upgrading or innovation are defined according to Schumpeter's concepts, namely, (1) introduction of new goods/services; (2) adoption of a new technology; (3) opening a new market and (4) acquisition of a new source of a supply of raw materials.

In the survey, the questions in regard upgrading of business operations asked on whether the respondent has undergone the specified types of upgrades in the last 3 years and which ones do said firm intends to achieve in the next 3 years. The respondent need only to indicate "yes" or "no" in this portion of the questionnaire for each type of innovations. In the econometrics analysis of upgrading and innovation, these four types became the four models of innovation. The two types of replies, "yes" or "no," were the dependent variables, while independent variables consisted of the following: (1) satisfaction with the Philippine's economic circumstances such as policy measures and economic conditions, which occupied a separate item in the questionnaire; (2) function(s) carried out at the time of establishment of the first office; and (3) year of establishment of the firm. Two types of estimation were again made in terms of the full and selected models. The summary results of the estimation are presented in Table 19.

Table 19: Results of Estimation on Innovation

			New goods		New method		New market		New supply	
			Full model	Selected model	Full model	Selected model	Full model	Selected model	Full model	Selected model
Q10)	1	Investment incentivesincluding tax incentives	+							
	2	Liberal trade policy								
	3	Customs procedures								
	4	Local content requirements, rule of origin	+		*					
	5	Physical infrastructure(roads, highways, ports,airports, etc.)								
	6	Infrastructure(telecommunications, IT)	[**]	*	[+]	*			**	**
	7	Infrastructure (electricity,water supply, other utilities)					+			[+]
	8	Government institutional infrastructure	[*]	[*]		[*]				
	9	Financial system		[**]		[**]				
	10	Legal system			+		[+]			
	11	Protection of intellectual property rights								
	12	Size of local markets			+				**	**
	13	Access to export markets							[*]	[**]
	14	Proximity to suppliers/subcontractors					[+]			
	15	Request by large/related company					[**]	[**]	[**]	[**]
	16	Availability of low-cost labor								*
	17	Availability of skilled labor and professionals								
	18	Other companies from the same country are located here (synergy)			[+]		+			
	19	Access to cutting-edge technology and information								
	20	Living conditions					[+]		[+]	[**]
Q6)	78	Retail/ Wholesale trade		[**]	+	[**]	[**]	[**]		
	1	Production (raw-material processing)	[+]							
	2	Production (components and parts)		[+]		[+]				
	3	Production (final products)	[+]				*		[**]	[**]
	5	Purchasing/ Procurement/ Logistics								
	14	R&D/ Consulting							+	**
	15	Human resources development								
Q1)		When did your company establish its first office?								
		_cons								
Obs			229	263	229	257	229	268	229	250
Log likelihood			-77.603	-98.076	-74.46	-95.512	-91.148	-125.35	-120.539	-134.927
Pseudo R2			0.162	0.097	0.196	0.098	0.197	0.088	0.145	0.135

Note 1: [ ] indicates that the coefficient is negative, and items without [] imply the coefficient is positive.
Note 2: **, * and + indicates that coefficient is at the 5, 10 and 20% significance level, respectively.

3.3.1. Estimation of New Goods Model

Full Model

From Table 19, it would be noted that only significant variables were indicated, with stars and a cross indicating significance levels, while each has either a bracket or without. Those enclosed in brackets denote the negative sign, which means that the particular variable discourages innovation. In contrast, those without brackets are positive signs denoting that the variable is an encouraging factor for innovation.

Under the new goods/full model combination, we find that only "Investment incentives including tax incentives" and "Local content requirement, rule of origin" are significant at the 20 percent level. Since they indicate positive signs, these two variables are said to encourage upgrading and innovation. On the other hand, "Infrastructures (telecommunications, IT)" was found to be significant at 5 percent level as well as "Government institutional infrastructures" significant at 10 percent level but the negative signs of both variables indicate that they discourage innovation.

In terms of functions of firms, only two variables were found to be significant namely, "Production (raw-material processing)" and "Production (final products)." Both are denoted as negative and are now said to be factors discouraging the conduct of innovation.

Selected Model

Under the selected model estimation, only three policy factors were found to be significant finding the same result as in the previous model in terms of "Government institutional infrastructure" (significant at 5% level and negative); reversing the result for "Infrastructure (telecommunications, IT)" into positive at 10 percent level of significance; and finding the "Financial system" significant (at 5% level) with a negative sign. Meanwhile, this model has an entirely different result than the other model as it finds the functions "Retail/wholesale trade" and "Production (components and parts) as the significant variables, both with negative signs.

Summary of Results

Estimation results tell us that the availability of investment incentives in the country does encourage innovation as there is a corresponding reward or benefit from

doing so. It may be recalled that the Omnibus Investment Code of the Philippines distinguishes between pioneer and non-pioneer, wherein the former pertains to activities not yet produced in the country in large volumes (new goods) and those that involves new design, formula or system applied. The requirement for local content via rules of origin was also found to be a significantly encouraging factor for upgrading since it stimulates firms to find ways and means to incorporate this requisite into their operations possibly leading to the production of new goods. Under the selected model, telecommunications and IT infrastructure became positive denoting that indeed, the presence of knowledge-based technology enables the introduction of new goods or services to the market.

On the other hand, discouraging the discovery of new goods to be introduced to the market are such factors as the institutional infrastructure of government and the prevailing financial system. Again, this validates the earlier finding that the weak support or linkages with R&D producing institutions including in the public sector do not stimulate innovation among firms. This also has implications on the requirements and procedures attendant to discovery or innovation such as the patent system and appropriate recognition of innovators that may have to be examined further. Meanwhile, the financial system may not be too encouraging of innovation in the sense that it may not be offering the appropriate support and facilities for innovative activities.

In terms of functions, the result show that limiting the firms' value added to producing final products or raw materials would not encourage innovation as there is no need to do so. Introduction of new goods in the market requires design, R&D and incubation of ideas before it can be successfully done so. The functions of retail/wholesale trade, which only involves buying and selling of ready-made goods and production of components and parts alone, would not encourage much innovation as well.

3.3.2. Estimation of New Technology Model

Full Model

Under this model referring to the adoption of new method or technology in production, Table 19 shows that under the full model, three significant and positive variables were found in the policy environment category. "Local content requirements,

rule of origin" is significant at 10 percent level, while the "Legal system" and "Size of local markets" are significant at the 20 percent level. Given their positive signs, these variables denote the encouraging factors for innovation in this area. On the other hand, "Infrastructure (telecommunications, IT) and the variable "Other companies from the same country are located here (synergy)" are found to be significant at the 20 percent level. Indicating negative signs, these represent the factors that do not drive innovation for new method or technology. When it comes to functions of firms, only the variable "Retail/wholesale trade" is found to be significant (at 20% level) and positive denoting its possible contribution to innovation.

Selected Model

In contrast, the selected model was able to identify only one significant variable with a positive sign and that is "Infrastructure (telecommunications, IT)" which was found to have a negative sign in the previous model. Meanwhile, the two variables that are estimated to be significant under this model are "Government institutional infrastructure" and "Financial system." Since they indicate negative signs, they can be regarded as factors that discourage the adoption of new method or technology in the firms' business operations. In terms of functions, those variables that are significant with negative signs are "Retail/wholesale trade" and "Production (components and parts)." The results under this model are the same as those provided under the new goods model.

Summary of Results

Since the full model and selected model only have two variables in common coming out with opposite signs, it may be regarded that the estimation of this particular model of innovation, that is adoption of new method/technology, does not show good results.

3.3.3. Estimation of New Market Model

When it came to the innovation model of opening up a new market, estimation results indicate the following as encouraging factors (significant at 20% level and positive): "Infrastructure (electricity, water supply, other utilities)" and "Other

companies from the same country are located here (synergy)." Meanwhile, those variables that are found to be significant at various levels and indicating negative signs are: "Legal system," "Proximity to suppliers/subcontractors," "Request by large/related company," and "Living conditions." These are the factors discouraging the opening of new market.

In terms of functions, "Retail/wholesale trade" is significant at 5 percent level and indicates negative sign, while "Production (final products)" comes in with positive sign.

The estimation under the selected model comes out with only two significant variables, "Requested by large/related company" (5% significance level) and "Retail/wholesale trade" (5% level of significance), both having negative signs and coinciding with those from the full model.

Summary of Results

Upgrading business operations by opening up a new market is encouraged by the availability of basic infrastructure and the presence of other companies from the same country of origin. The former denotes a basic requirement or factor for establishing presence in a market, while the latter refer to the supporting institution that the firms would find in a new market that would somehow reduce the transaction costs in terms of getting market information and the possibility for collaboration in some aspects of operations. On the other hand, the factors that hinder firms from adopting this model of innovation are the legal system and living conditions that are found in a market's business environment; and presence of related institutions such as suppliers/subcontractors and larger company. Firms engaged in retail/wholesale trade do not see the need to open a new market, while those that produce final products are driven to upgrading in terms of going to another market.

3.3.4. Estimation of New Input Model

Under this model of innovation, firms undertake the acquisition of a new source of supply of inputs. The full model identifies variables that are encouraging for this kind of upgrading. These are "Infrastructure (telecommunications, IT)" and "Size of local markets." On the other hand, those variables found to be hindering firms from undertaking this innovation are: "Access to export markets," "Request by large/related

company," and "Living conditions." As to the functions, "R&D/consulting" is positive, while "Production (final products)" is negative. Except for finding "Infrastructure (electricity, water supply, other utilities)" and "Availability of low-wage labor" significant but the former variable with negative sign and the latter with positive sign, the estimation under the selected model has closely similar results while raising the significant levels of variables such as "Living conditions" (negative sign) and "R&D/ consulting" (positive sign).

Summary of Results

We find that telecommunications and IT infrastructure and size of local markets are conducive for the acquisition of new sources of inputs. Perhaps, the former facilitates the sourcing out of information for the availability of these inputs, while the latter drives the demand for the product requiring firms to get supplies from other sources in order to produce more. On the other hand, quality and standard considerations may hinder firms which have access to export markets from sourcing out new sources of inputs, while affiliation with a large/related company may not be driving the need to find new suppliers. In addition, satisfaction with the living conditions in their present location may be another consideration for not expanding sources of inputs.

In terms of functions, it seems fitting that those firms performing R&D/consulting functions encourage the acquisition of new inputs, either as a result of their research or to provide inputs to their activities.

4. POLICY ISSUES AND RECOMMENDATIONS

4.1. Issues on Industrial Policy

The policy reforms that were instituted starting in the 1980s and the 1990s involving trade liberalization episodes, shift to outward-looking export oriented strategy, investment liberalization, privatization and deregulation have had positive effects on the economy to some extent, particularly coming from the difficulties of the 1970s and the early 1990s. These reforms and their positive impact to the economy in general and industrial development in particular may have been some of the factors that encouraged

agglomeration of firms in the country. However, although it is encouraging that almost half of the firms surveyed have expressed the probability of expanding their operations in their present locations, the country remains to be a laggard when it comes to attracting FDIs compared with its neighbors, while its export performance has still not reached the higher levels of the other countries.

Indeed, there are requisite aspects in the economic fundamentals of the country that have to be addressed. For one, availability and modernization of infrastructures is a pressing need. Apart from increasing its investments in infrastructure, rates of utilities would have to come down particularly when they are not even commensurate to the quality of the services. Macroeconomic fundamentals will have to be kept stable particularly in light of developments in the world market and the current problems in the United States. The rapid appreciation of the pesos is hurting the exporters as well as the families of overseas Filipino workers. It is likewise imperative that there is stability at the political front so that there is consistency in policies while commitments, contracts and agreements are adhered to.

The unilateral trade reforms that have been implemented, despite not having further developments lately, are being sustained by the bilateral and regional free trade agreements and economic partnerships that the country has entered into. It is however, imperative that to continue addressing the negative social impacts of such adjustment policies especially among players in local industries, those engaged in micro, small and medium enterprises and those that are regarded to be at the bottom of the pyramid.

Meanwhile, the investment incentives that the Philippines have been offering had actually enticed firms to locate their business in the country particularly in Metro Manila and the industrial areas in its periphery. The increasing rate of approved investments and firms actually operating in both the public and private economic zones and industrial estates is an indication that these incentives are certainly attractive to them. However, issues that pertain to the hidden costs associated with incentives in terms of foregone revenues and the recent findings of the high redundancy rate of this incentives, i.e. investments would have been carried out even without the incentives, would have to be continuously examined so further rationalization can be effected.

The linkages between institutions producing knowledge via R&D and the industrial sector will have to be strengthened. The survey results manifest the weak linkages as

firms tend to depend on their own efforts. Research and knowledge creation in local universities should reach the appropriate users for their application.

The local governments have an increasing role to play in the country's industrial development, particularly since they have been granted increased autonomy to manage the economic and social affairs of their areas of jurisdiction. Some LGUs have enacted their own investment codes in an effort to develop indigenous industries. The OTOP program and industry clustering initiatives are promising developments in the area of local economic development that should be aggressively pursued.

On the other hand, barriers or disincentives to investments still exist in the Philippines. Land ownership among foreigners is prohibited in the Constitution. Its labor force is beset with problems of low productivity, high wages, militancy of labor unions, and declining quality of education. Exporters are still beset with weak backward linkages as competitive support industries are still lacking and thus, forcing them to continue importing their intermediate inputs. These gaps would have to be addressed in order to minimize the barriers to industrial development.

4.2. Issues from the Survey

The results of the survey conducted in Greater Manila Area revealed the most important factors that influenced firms to locate in the country. They represent the vital importance of having strong and stable economic fundamentals (size of market and physical infrastructure) and conducive policies (investment incentives) to entice and develop industrial agglomerations in the country. These are the areas where continued public investments should be allocated to ensure that this competitive advantage is sustained. Meanwhile, it is also quite telling that government institutional infrastructure did not figure prominently on the list of important encouraging factors from the point of view of the firms surveyed. Combined with the findings from the case study that its competitiveness is adversely being affected by the huge transaction costs of doing business in the country, the current state of some of the aspects of the government's institutional infrastructure actually seem to pose a deterrent to further agglomeration. The country's performance in terms of exports and FDI compared to those of its neighbors show that economic fundamentals and attractive investments (which incidentally is similar to those offered by other ASEAN countries) and programs are not

enough to build up the country's competitive advantage. Factor in a more stable, progressive minded, professional, and efficient government infrastructure in the equation and it is quite possible that an influx of investments could come in the county.

Another important issue that relates directly to productivity and therefore, competitiveness of the country's business environment is the capacity to innovate and upgrade. Although the survey did determine that firms in the Philippines do innovate in terms of introduction of new products and services, upgrading of machineries and equipment, and opening of a new market, they tended to rely on their own in-house capabilities for their source of technology as revealed by the survey. Since there appears to be a much less degree of collaboration with other local institutions in terms of financial support and actual R&D outputs, this is an area that should be looked at more by the policy makers and these respective institutions themselves including industry representatives. On the other hand, the fact that there is actual technology transfer occurring between firms and MNCs is a good indication of the level of linkages existing that goes beyond simple principal-sub-contactor or buyer-supplier relationships. More of this sort is needed to increase the sophistication of industrial activities being undertaken by local firms. The survey shows that the main activities of firms – even some clusters – relate to assembly of goods and products or manufacturing of components and parts. With the emergence of low-cost locations like Vietnam, China, and soon perhaps, Cambodia, the country would eventually lose its advantage in this regard. Thus, it is vital that the activities of its industries should move up the value chain. The clustering strategy, particularly if all stakeholders optimize their potential and their collaboration, may prove to be a step in this direction with the knowledge exchange and spillovers that are supposed to happen.

4.3. Issues from the Econometrics Analysis

In terms of the estimation results on agglomeration in the Philippines, the analysis shows that when it comes to the relationship between year of establishment and firm size, the Philippine case does not appear to be consistent with the Flowchart Approach. Using number of full time employees as indicator of firm size provided the general finding that the latecomers in the Philippines are smaller firms. However, no significant relationship was found. When asset size and capital were used as indicators (they have

the same results), the significance level increased and in almost all categories of firm size. With the sign coming out as positive, the result implies that all firms agglomerated in the latter period (1990s). Since it appears that it is not the larger (or smaller) firms that triggered their influx, it can be deduced that the agglomeration was policy driven or came about as a result of the opening up of the economy and the availability of incentives for investments and physical infrastructure present. These are even borne out by the survey results as the latter two factors were identified as those that influenced the decision of firms to locate in the area.

In terms of the particular factors that attracted firms to locate in the Philippines, those that were found to be significant in all three models (employees, assets, capital) are investment incentives, protection of intellectual property rights, size of local markets, and proximity to suppliers/subcontractors. Meanwhile, those that were found to have influenced first movers who were more into production of final products, were the supporting industries found to be present such as suppliers and subcontractors, local content requirements, and size of the local market. Their entry to the Philippines was further influenced by the liberal trade policy, the institutional infrastructure of the government and customs procedures prevailing. The latecomers are firms in all sizes mainly into production of parts and components that clustered in the country due to the investment incentives offered, access to export markets, availability of low-wage labors, presence of telecommunications and IT infrastructure, and the legal framework and programs protecting intellectual property rights.

Some key variables such as legal systems, skilled labor, cutting-edge technology and information were not found to be significant in the Philippines, although these are claimed to have influenced the agglomeration in other countries.

Given these findings, particularly the policy driven agglomeration of firms in the country, it becomes more imperative that those policies that yield good results in terms of the investment potential of the country should be continued and pursued. Key factors that are equally important but were not identified as significant should be reviewed and when policy gaps are determined, addressed in order to add into the competitive advantage of the Philippines.

In terms of the estimates in upgrading and innovation, the results were found to be not robust to the different models. In particular, some variables are significantly positive

in one model, but they become significantly negative in other models. However, it can still be deduced that the positive factors for upgrading are local content requirement and the size of the market as those firms that have undergone innovation were satisfied with these variables. On the other hand, firms were not satisfied with government institutional infrastructures, financial systems, and living conditions that can be regarded as discouraging factors for innovation. These hurdles to upgrading should be addressed in order to improve the productivity and competitiveness of industries in the Philippines.

NOTES

[*] This paper draws heavily from the final report submitted by the Philippine Institute for Development Studies to the Bangkok Research Center, IDE-JETRO and the econometrics report of the Japanese study team, which are both part of the ERIA Cluster Study project. She is thankful for the comments and support of Dr. Josef Yap and Dr. Rafaelita Aldaba, the assistance provided by Mr. Michael Cabalfin in the survey results and the excellent research assistance of Ms. Fatima del Prado and Ms. Christine Ruth Salazar.

[i] Fan, Cindy C. and Allen Scott (2003) cited such scholars as Krugman (1991) and Porter (2001) in their article appearing in the journal*, Economic Geography*.

[ii] ASEAN is acronym for Association of South East Asian Nations.

[iii] Figures based on data collected from the ASEAN Secretariat's FDI Database; Global Development Finance, 2005; UNCTAD FDI Interactive Database; and, IMF Direction of Trade Statistics, 2005.

[iv] Data from the National Statistics Office and National Statistical Coordination Board.

[v] Aldaba, R.M. (2006) "FDI Investment Incentive System and FDI Inflows: The Philippine Experience." PIDS Discussion Paper; Bangko Sentral ng Pilipinas; International Monetary Fund.

[vi] Board of Investments and National Statistical Coordination Board.

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APPENDIX

Table A1: Estimation of Agglomeration (Philippines): Full Model

			Full-time Employees			Total Assets			Paid-UP Capital		
			Coefficient	t-value		Coefficient	t-value		Coefficient	t-value	
Q3)	2	50 - 99persons/1M - less than 5M (Philippine Peso)/1M - less than 5M (Philippine Peso)	0.451	1.81	*	0.861	2.84	**	0.887	3.17	**
	3	100 - 199/5M - less than 10M/5M - less than 10M	0.47	1.54	+	1.448	4.08	**	1.101	3.29	**
	4	200 - 299/10M - less than 15M/10M - less than 15M	-0.025	-0.06		0.653	1.5	+	0.72	1.69	*
	5	300 - 399/15M - less than 20M/15M - less than 20M	-0.571	-0.94		1.423	2.66	**	1.058	2.03	**
	6	400 - 499/20M - less than 50M/20M - less than 50M	-0.465	-0.56		1.841	4.7	**	1.257	3.61	**
	7	500 - 999/50M - less than 100M/50M - less than 100M	-0.721	-1.32	+	1.47	3.7	**	1.928	3.91	**
	8	1,000 - 1,499/100M- less than 500M/100M- less than 500M	-0.504	-0.73		1.953	5.59	**	1.503	3.74	**
	9	1,500 - 1,999/500M - less than 1B/500M - less than 1B	34.761	0		1.21	2.21	**	0.606	0.88	
	10	2,000 and above/1B and above /1B and above	35.512	0		1.969	4.21	**	1.591	2.56	**
Q7)	1)	Investment incentives including tax incentives	0.164	1.73	*	0.134	1.38	+	0.144	1.51	+
	2)	Liberal trade policy	-0.124	-1.1		-0.063	-0.55		-0.086	-0.76	
	3)	Customs procedures	-0.073	-0.65		-0.167	-1.44	+	-0.136	-1.19	
	4)	Local content requirements, rule of origin	-0.121	-1.2		-0.178	-1.69	*	-0.108	-1.05	
	5)	Physical infrastructure (roads, highways, ports, airports, etc.)	-0.05	-0.41		0.001	0.01		-0.072	-0.59	
	6)	Infrastructure (telecommunications, IT)	0.206	1.28		0.12	0.75		0.136	0.87	
	7)	Infrastructure (electricity, water supply, other utilities)	0.023	0.15		0.05	0.31		0.074	0.47	
	8)	Government institutional infrastructure	-0.147	-1.2		-0.242	-1.89	*	-0.197	-1.57	+
	9)	Financial system	-0.015	-0.11		0.01	0.07		0.017	0.12	
	10)	Legal system	-0.035	-0.25		0.079	0.56		0.012	0.09	
	11)	Protection of intellectual property rights	0.159	1.4	+	0.132	1.14		0.174	1.51	+
	12)	Size of local markets	-0.186	-2.03	**	-0.142	-1.53	+	-0.154	-1.68	*
	13)	Access to export markets	0.172	1.93	*	0.157	1.72	*	0.112	1.24	
	14)	Proximity to suppliers/subcontractors	-0.188	-2.05	**	-0.134	-1.4	+	-0.133	-1.42	+
	15)	Request by large/related company	-0.011	-0.24		-0.007	-0.15		-0.011	-0.23	
	16)	Availability of low-cost labor	0.137	1.46	+	0.098	1.02		0.096	1	
	17)	Availability of skilled labor and professionals	0.022	0.18		-0.029	-0.23		0.003	0.02	
	18)	Other companies from the same country are located here (synergy)	0.057	0.65		0.088	0.96		0.054	0.6	
	19)	Access to cutting-edge technology and information	0.003	0.02		-0.013	-0.11		-0.007	-0.06	
	20)	Living conditions	0.07	0.64		0.091	0.81		0.072	0.65	
Q6)	7.8)	Retail/ Wholesale trade	0.035	0.15		0.235	0.99		0.226	0.96	
	1)	Production (raw-material processing)	-0.352	-1.21		-0.296	-0.98		-0.299	-1.02	
	2)	Production (components and parts)	1.083	3.57	**	1.159	3.71	**	1.136	3.65	**
	3)	Production (final products)	-0.482	-2.18	**	-0.49	-2.21	**	-0.489	-2.23	**
	5)	Purchasing/ Procurement/ Logistics	0.11	0.3		0	0		0.01	0.03	
	14)	R&D/ Consulting	-0.38	-0.58		-0.297	-0.44		-0.117	-0.18	
	15)	Human resources development	0.251	0.57		0.204	0.45		0.204	0.45	
		/cut1	-0.224			0.41			0.167		
		/cut2	0.831			1.56			1.275		
	Number of observations		461			461			461		
	Log likelihood		-456.875			-434.818			-444.054		
	Pseudo R2		0.075			0.12			0.101		

Note: **, * and + indicates that coefficient is at the 5, 10 and 20% significant level, respectively.

Table A2: Estimation of Agglomeration (Philippines): Selected Model

		Full-time Employees		Total Assets		Paid-UP Capital	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Q3)	2 50 - 99persons/1M - less than 5M (Philippine Peso)/1M - less than 5M (Philippine Peso)	0.519	2.21 **	0.733	2.59 **	0.904	3.54 **
	3 100 - 199/5M - less than 10M/5M - less than 10M	0.631	2.15 **	1.371	4.13 **	1.062	3.25 **
	4 200 - 299/10M - less than 15M/10M - less than 15M					0.734	1.92 *
	5 300 - 399/15M - less than 20M/15M - less than 20M			1.327	2.56 **	1.165	2.37 **
	6 400 - 499/20M - less than 50M/20M - less than 50M			1.479	4.25 **	1.094	3.45 **
	7 500 - 999/50M - less than 100M/50M - less than 100M	-0.767	-1.47 +	1.41	3.84 **	1.957	4.08 **
	8 1,000 - 1,499/100M- less than 500M/100M- less than 500M			1.771	5.42 **	1.41	3.74 **
	9 1,500 - 1,999/500M - less than 1B/500M - less than 1B			1.133	2.18 **		
	10 2,000 and above/1B and above /1B and above			1.826	4.08 **	1.573	2.58 **
Q7)	1) Investment incentives including tax incentives	0.163	1.86 *	0.142	1.64 +	0.112	1.33 +
	2) Liberal trade policy	-0.171	-1.64 +				
	3) Customs procedures			-0.191	-1.83 *	-0.165	-1.86 *
	4) Local content requirements, rule of origin	-0.142	-1.5 +	-0.153	-1.63 +		
	5) Physical infrastructure (roads, highways, ports, airports, etc.)						
	6) Infrastructure (telecommunications, IT)	0.197	1.71 *				
	7) Infrastructure (electricity, water supply, other utilities)						
	8) Government institutional infrastructure	-0.156	-1.46 +				
	9) Financial system						
	10) Legal system						
	11) Protection of intellectual property rights	0.166	1.7 *	0.172	1.8 *	0.17	1.95 *
	12) Size of local markets	-0.208	-2.5 **	-0.138	-1.74 *	-0.145	-1.89 *
	13) Access to export markets	0.118	1.48 +	0.133	1.64 +		
	14) Proximity to suppliers/subcontractors	-0.198	-2.23 **				
	15) Request by large/related company	0.122	1.45 +				
	16) Availability of low-cost labor	0.149	1.75 *				
	17) Availability of skilled labor and professionals						
	18) Other companies from the same country are located here (synergy)						
	19) Access to cutting-edge technology and information						
	20) Living conditions						
Q6)	7.8) Retail/ Wholesale trade						
	1) Production (raw-material processing)	-0.43	-1.55 +				
	2) Production (components and parts)	1.158	3.93 **	1.042	3.6 **	1.05	3.72 **
	3) Production (final products)	-0.468	-2.37 **	-0.492	-2.46 **	-0.437	-2.27 **
	5) Purchasing/ Procurement/ Logistics						
	14) R&D/ Consulting						
	15) Human resources development						
	/cut1	-0.307		0.112		-0.022	
	/cut2	0.741		1.232		1.051	
	Number of observations	469		473		480	
	Log likelihood	-468.075		-454.737		-471.158	
	Pseudo R2	0.069		0.103		0.084	

Note: **, * and + indicates that coefficient is at the 5, 10 and 20% significant level, respectively.

Table A3: Results of Industrial Upgrading and Innovation (Philippines): Full Model

		Goods		Methods		Markets		Suppliers	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Q8)	1) Investment incentives including tax incentives	-0.008	-0.03	0.006	0.02	0.185	0.82	0.054	0.3
	2) Liberal trade policy	0.43	1.32 +	-0.096	-0.31	0.338	1.28	-0.074	-0.33
	3) Customs procedures	-0.021	-0.06	-0.382	-1.17	0.054	0.19	-0.157	-0.68
	4) Local content requirements, rule of origin	0.093	0.26	0.621	1.82 *	-0.343	-1.09	0.018	0.07
	5) Physical infrastructure (roads, highways, ports, airports, etc.)	0.49	1.48 +	0.405	1.24	-0.144	-0.53	0.228	0.94
	6) Infrastructure (telecommunications, IT)	0.38	0.96	-0.648	-1.63 +	-0.09	-0.25	0.688	2.23 **
	7) Infrastructure (electricity, water supply, other utilities)	-0.964	-2.45 **	-0.393	-1.02	0.499	1.39 +	-0.364	-1.22
	8) Government institutional infrastructure	-0.176	-0.53	0.104	0.34	0.292	1.1	-0.131	-0.53
	9) Financial system	-0.666	-1.83 *	0.229	0.56	-0.07	-0.22	0.163	0.59
	10) Legal system	0.055	0.16	0.484	1.44 +	-0.417	-1.4 +	-0.123	-0.49
	11) Protection of intellectual property rights	-0.228	-0.73	-0.117	-0.38	0.269	0.97	0.091	0.4
	12) Size of local markets	0.382	1.17	0.446	1.42 +	0.256	0.97	0.449	2.01 **
	13) Access to export markets	-0.009	-0.04	-0.195	-0.75	-0.146	-0.6	-0.327	-1.69 *
	14) Proximity to suppliers/subcontractors	-0.111	-0.33	-0.224	-0.74	-0.437	-1.44 +	-0.08	-0.32
	15) Request by large/related company	-0.235	-0.83	-0.237	-0.9	-0.525	-2.15 **	-0.425	-2.06 **
	16) Availability of low-cost labor	0.1	0.34	0.07	0.24	-0.251	-1.02	0.277	1.26
	17) Availability of skilled labor and professionals	-0.263	-0.94	-0.312	-1.16	0.21	0.81	0.134	0.6
	18) Other companies from the same country are located here (synergy)	-0.166	-0.6	-0.435	-1.59 +	0.34	1.38 +	0.071	0.33
	19) Access to cutting-edge technology and information	0.368	0.93	0.006	0.02	0.159	0.48	-0.315	-1.15
	20) Living conditions	0.014	0.04	0.117	0.33	-0.441	-1.37 +	-0.386	-1.38 +
Q6)	7.8 Retail/ Wholesale trade	-0.547	-0.87	0.762	1.44 +	-1.775	-2.53 **	0.041	0.1
	1 Production (raw-material processing)	0.774	1.22	-0.325	-0.38	-0.198	-0.29	0.107	0.2
	2 Production (components and parts)	-0.971	-1.29 +	-0.78	-0.9	-0.156	-0.27	-0.128	-0.25
	3 Production (final products)	0.249	0.52	-0.178	-0.32	0.751	1.73 *	-0.898	-2.18 **
	5 Purchasing/ Procurement/ Logistics	-1.356	-1.38 +	0.47	0.56	0.31	0.44	0.084	0.13
	14 R&D/ Consulting	1.59	0.57	2.226	1.24	0.966	0.62	2.047	1.49 +
	15 Human resources development	0.183	0.15	-1.411	-1.11	0.155	0.18	0.332	0.45
Q1)	When did your company establish its first office?	0.008	0.56	-0.001	-0.11	-0.003	-0.28	0.002	0.16
	constant	-16.053	-0.56	2.591	0.1	5.325	0.25	-3.598	-0.18
	Number of observations	229		229		229		229	
	Log likelihood	-77.603		-74.46		-91.148		-120.539	
	Pseudo R2	0.162		0.196		0.197		0.145	

Note: **, * and + indicates that coefficient is at the 5, 10 and 20% significant level, respectively.

Table A4: Results of Industrial Upgrading and Innovation (Philippines): Selected Model

		Goods		Methods		Markets		Suppliers	
		Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Q8)	1)	Investment incentives including tax incentives							
	2)	Liberal trade policy							
	3)	Customs procedures		-0.405	-2.16 **				
	4)	Local content requirements, rule of origin							
	5)	Physical infrastructure (roads, highways, ports, airports, etc.)		0.38	1.61 +				
	6)	Infrastructure (telecommunications, IT)	0.41	1.66 *	-0.427	-1.87 **			0.75	3.03 **
	7)	Infrastructure (electricity, water supply, other utilities)							-0.33	-1.49 +
	8)	Government institutional infrastructure	-0.371	-1.71 *						
	9)	Financial system	-0.608	-2.47 **						
	10)	Legal system			0.437	1.91 *				
	11)	Protection of intellectual property rights								
	12)	Size of local markets							0.38	2.08 **
	13)	Access to export markets							-0.36	-2.24 **
	14)	Proximity to suppliers/subcontractors								
	15)	Request by large/related company					-0.518	-3.71 **	-0.47	-2.7 **
	16)	Availability of low-cost labor							0.32	1.77 *
	17)	Availability of skilled labor and professionals								
	18)	Other companies from the same country are located here (synergy)			-0.488	-2.8 **				
	19)	Access to cutting-edge technology and information								
	20)	Living conditions							-0.55	-2.51 **
Q6)	7.8	Retail/ Wholesale trade	-1.124	-1.98 **			-1.344	-2.67 **		
	1	Production (raw-material processing)								
	2	Production (components and parts)	-0.779	-1.36 +						
	3	Production (final products)							-1.09	-2.94 **
	5	Purchasing/ Procurement/ Logistics								
	14	R&D/ Consulting							2.31	1.99 **
	15	Human resources development								
Q1)		When did your company establish its first office?								
	constant		0.621	0.77	-0.369	-0.44	0.565	1.22	0.07	0.09
	Number of observations		263		257		268		250	
	Log likelihood		-98.076		-95.512		-125.35		-134.927	
	Pseudo R2		0.097		0.098		0.088		0.135	

Note: **, * and + indicates that coefficient is at the 5, 10 and 20% significant level, respectively.