

Chapter 2

SMEs and Regional Production Networks

CHARLES HARVIE

Centre for Small Business and Regional Research,
School of Economics, Faculty of Commerce
University of Wollongong
Australia

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CHAPTER II

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CHARLES HARVIE

Centre for Small Business and Regional Research,
School of Economics, Faculty of Commerce
University of Wollongong, Australia

The onset of globalization and increased regional economic integration has presented new challenges as well as opportunities for SMEs in East Asia. Despite the many barriers and capacity constraints they face arising from their relatively small size, they remain a vibrant and essential ingredient for the economic growth and employment generation of the regional economy. To survive in an increasingly competitive environment requires a new growth paradigm and business strategy for SMEs that focuses upon knowledge and skill acquisition, technology upgrading, innovation and wealth creation. These are likely to be necessary attributes for SME participation in regional and global production networks, and in particular for the high value adding parts of such networks. The former have become very important in explaining the rapid growth of trade and investment flows in East Asia, where intra regional and intra industry trade now predominate.

In this context the chapter: conducts an overview of the role and significance of the SME sector in the economic development of East Asia; provides context for this and subsequent chapters relating to the development of production/distribution networks in East Asia; briefly discusses the potential opportunities and challenges facing SMEs from participation in production networks; and highlights key areas for capacity building if SMEs are to achieve their full potential from this participation.

1. Introduction – Background and Context

Small-medium sized Enterprises (SMEs) play a pivotal role in both developed and developing economies in terms of employment generation, output growth, export growth, poverty alleviation, economic empowerment and the wider distribution of wealth¹ (Harvie, 2002, 2008; Harvie and Lee, 2002, 2005; and Asasen et al., 2003). However, for many SMEs their full potential is often not realized due to a number of factors relating to the scale of their businesses: **lack of resources** (finance, technology, skilled labour, market access, and market information); **lack of economies of scale and scope**; **higher transaction costs** relative to large enterprises; **lack of networks** that can contribute to a lack of information, knowledge and experience of domestic and international markets; **increased market concentration** with globalization; an inability to compete against larger firms in terms of **R&D expenditure and innovation** (product, process and organization); they are subject to considerable **‘churning’ and instability**; and they lack entrepreneurial zeal and know-how. In addition, many small businesses find that their geographical isolation puts them at a competitive advantage. Despite these substantial obstacles the East Asian region remains heavily dependent upon SMEs, particularly for employment generation.

The onset of globalization and expanded regional economic integration in the context of East Asia has further intensified the competitive pressures on SMEs in both domestic and international markets. Despite their perceived weaknesses the region retains a dynamic, entrepreneurial and increasingly internationalized SME sector. SMEs have not been swept away with the process of globalization and regional integration, but, rather, their role and contribution has evolved enabling many to retain a competitive position in the global marketplace. The process of globalization has presented new challenges but it has also presented new opportunities for those enterprises most able to respond flexibly and adaptively to rapidly changing regional and global markets. A critical issue is how best to ensure that they fully participate in the business opportunities that will present themselves including that in the form of participating in global and regional value chains or production networks..

¹ See Davis, Haltiwanger and Schuh (1993) and Hallberg (2000) for a useful critique on the contribution of SMEs in these areas.

Globalization and regional economic integration have also exerted positive aspects on SME development. Factors encouraging the growth of SMEs include: the rise of **niche markets** and the importance of **customization**; technological advances that have resulted in **discontinuities in production** and product fragmentation; reduced **product life cycles** that have made production flexibility more important than the volume of production; **subcontracting** opportunities arising from the growth of the **global production system** (or production networks that are particularly strong in the context of East Asia); opportunities arising from **global retail sourcing** (the so-called ‘putting out’ system); the increased importance of the **services sector** (dominated by SMEs) due to rising affluence in developing and post industrial societies, as well as in low income developing economies; the importance of **knowledge, skills and innovation** as core sources of competitiveness and value adding in the **new economy** and not just volume of production; their **reduced bureaucracy** and greater **flexibility** and ability to respond to rapidly changing customer demands; their greater **innovation** capacity and ability to **commercialize innovation**, particularly in knowledge and skill intensive sectors where **entry costs are lower**; advances in **information and communications technology** and their ability to utilize **e-commerce** to expand market reach and gain access to information; participation in **clustering** (horizontal and vertical) and **networking**² that can facilitate access to spillovers in the form of knowledge and skilled labour, as well as achieve economies of scale and scope which would be impossible in isolation; **flexibility** in technology development, adaptation and application; and finally, recognition by **policy makers** of the important role that they play in economic development, particularly employment generation, by policy makers both at the national level and international regional levels (APEC, ASEAN, ADB etc.)

The focus of this study is upon regional production/distribution networks and the ability of SMEs to penetrate these. The remainder of this chapter proceeds as follows. Section 2 conducts an overview of the role and significance of the SME sector in the economic development of East Asia. Section 3 provides context for the development of

² A network, as defined here, is a group of firms that cooperate on joint project development complementing each other and specializing in order to overcome common problems, achieve collective efficiency and penetrate markets beyond their individual reach. Whether horizontal or vertical, networks can be developed within, or independently of, clusters.

production/distribution networks in East Asia. Section 4 briefly discusses the opportunities and challenges facing SMEs from production networks. Finally, section 5 provides a summary of the major conclusions from this chapter.

2. The Role and Significance of the SME Sector in East Asian Economic Development³ - An Overview

SMEs have been recognized as a priority area for the East Asian economies, and more generally within the context of the Asia Pacific Economic Cooperation Forum (APEC), since the 1993 APEC Leaders' meeting in Seattle. Despite being seen as a priority, and the centre of considerable discussion, a clearly enunciated APEC agenda and program of action for SMEs in the region, before the onset of the financial and economic crisis of 1997-98, remained elusive. However, the crisis resulted in many of the countries of East Asia: re-evaluating their industrial policies; placing greater emphasis on improving corporate governance; improving the efficiency and competitiveness of their enterprises; and developing business sectors more able to overcome the vicissitudes of domestic, but more importantly global, market developments (Hall, 1999; Harvie, 2002). The latter is of particular importance in the context of increased economic interdependence and open regionalism. The need to develop more adaptable and flexible economies, and business sectors, has resulted in increased emphasis on the development of the SME sector.

Although SMEs are important across the region there are considerable differences in their role in the various economies⁴. For example, SMEs play a larger structural role in Taiwan, China, Japan, Thailand and Vietnam where they contribute over 70 percent of employment, than they do in Indonesia or Malaysia where they contribute only around 40 percent. In addition, the contribution of the SME sector to exports, and hence the extent of their global integration, also varies widely. They are relatively more export oriented in China, Korea and Taiwan than they are in Japan, Indonesia, Thailand,

³ This section draws extensively upon Hall (1995) and Harvie and Lee (2002).

⁴ It is important to emphasise that SMEs are highly heterogeneous and, therefore, it should not be surprising that this role and contribution can vary from one economy to another.

Malaysia and Singapore. Similarly, the dynamic role that SMEs play varies widely. For example, in Singapore, even though SMEs are not as significant in terms of numbers and employment, they are important in providing a flexible skilled production base that attracts larger multi-national corporations (MNCs). The dynamic role that SMEs have played has varied between the various countries. More recently in the case of China, and somewhat reluctantly in the case of Vietnam, entrepreneurial private SMEs and rural enterprises⁵, during the early part of the reform process, have been pivotal in the transition process from a planned to market oriented economy. They have facilitated more efficient resource allocation and marketization of these economies and are increasingly important in creating new jobs and in expanding exports. In the case of Taiwan, SMEs have played a pivotal role in the country's economic development from the beginning. More recently, however, they have been facing increased competition from SMEs in China and Vietnam, because their traditional low cost base is rapidly being eroded. As a consequence they have had to move up the high technology ladder in order to remain globally competitive. Recognizing this requirement the Taiwanese government has been actively assisting in this process. In addition, labour intensive SMEs have also moved offshore to lower labour cost economies in order to retain their competitiveness and market share.

Numbers and contribution to employment

Table 1 indicates the contribution of SMEs to total enterprises in a number of countries across the region as well as the distribution of enterprise numbers by firm size across a number of APEC regional economies, indicating that most SMEs are micro enterprises⁶ and that overall firms are predominantly SMEs (99% plus). Consequently, on sheer numbers alone, they are important. Table 1 also indicates that many developing economies in the region have a large number of micro⁷ and small SMEs, many of which are in the informal sector, as well as a dominant (although small in number) large enterprise sector, but they do not have many medium sized enterprises. Hence there is a "missing middle". This contrasts with more developed economies where medium sized

⁵ The so-called township and village enterprises (TVEs).

⁶ As defined here, enterprises with less than 5 employees.

⁷ Predominantly household enterprises in the informal sector.

enterprise numbers are larger and their contribution to overall employment is significant, as well as being a major source of high growth firms that contribute importantly to employment growth. Consequently, a general economic development pattern is that at lower levels of economic development average firm size, as measured by employment, is low, increasing with economic development and movement to a factory system with industrialization that contributes to an increase in average firm size.

Table 1. Number of Private Non-Agricultural SMEs as a Percentage of Total Firms, Selected APEC Countries, 1999 (%)

	<i>Micro</i> (<i><5 employees</i>)	<i>Small</i> (<i>5-19 employees</i>)	<i>Medium</i> (<i>20-99 employees</i>)	<i>All SMEs</i>
Australia	69.9	24.3	4.9	99.1
Chile	82.1	15.0	2.1	99.2
Hong Kong, China	86.8	7.6	4.9	99.3
Japan	56.5	34.7	7.4	98.6
Korea	72.7	17.8	8.6	99.1
Mexico	91.7	6.3	1.6	99.6
New Zealand	84.2	7.1	8.0	99.3
Peru	96.5	3.1	0.3	99.9
Philippines	91.1	8.2	0.4	99.7
Singapore	67.4	24.3	6.1	97.8
Thailand	79.0	18.4	2.0	99.4
USA	60.5	28.9	8.9	98.3

Source: Hall (2002a)

Table 2 indicates that SMEs generally contribute around 60-70 percent of private sector employment, and that this contribution tends to be proportionally more from medium sized businesses, defined as those employing between 20 and 99 people. Medium sized enterprises typically make up only about 4 percent of all enterprises (or about 20 percent of manufacturing enterprises) but they employ about 20 percent of the workforce (or about 30 percent of the manufacturing workforce). While there are a considerable number of micro businesses across the region, between 70-80 percent of all enterprises in the private sector, they do not contribute proportionally as much too overall employment. Typically only about 10 to 25 percent.

Table 2. Contribution of Micro, Small and Medium Sized Enterprises to Private Non-Agricultural Employment, Selected APEC Countries (%)

	<i>Micro</i> (<i><5 employees</i>)	<i>Small</i> (<i>5-19 employees</i>)	<i>Medium</i> (<i>20-99 employees</i>)	<i>All SMEs</i>
Australia	25.9	20.9	19.2	66.0
Hong Kong, China	31.1	13.0	24.8	59.4
Japan	13.1	29.9	26.9	69.9
Korea	31.2	11.3	36.2	78.7
Mexico	36.2	13.9	15.2	65.2
New Zealand	23.0	18.0	19.0	60.0
Peru	62.5	16.6	8.8	87.9
Philippines	36.7	25.8	7.1	69.5
Singapore	7.1	16.8	19.2	43.1
USA	5.2	13.6	17.9	36.7

Source: Hall (2002a)

Contribution to Sales, Output, Value Added

Estimates of SME contribution to economic value added, sales, or output are difficult to obtain for the East Asian region, and more difficult to interpret in comparable terms. The contribution to GDP is particularly difficult to obtain, but SMEs have been typically estimated to contribute somewhere between 30 percent and 60 percent of GDP (Hall, 1995). Hall (2002a) shows that SMEs contribute about 50 percent of value added or sales on average, but that this ranges from about 30 percent to about 70 percent. Small and micro firms make a significant contribution in developing economies (about 50 percent of output in China and the Philippines for example), but less in the more developed economies.

SME wage payments typically make up over half of GDP in regional economies, and hence are important for domestic demand expansion, and for the generation of savings funds (Hall, 2000, p.2).

Contribution to Exports

There is very little information on regional SMEs that export and import goods and services. Hence reliable estimates of the proportion of exports generated by SMEs are traditionally difficult to obtain. Hall (1995, 2000) suggests that for the East Asian

countries SMEs generally contribute between 30-35 percent of direct exports⁸. However, this does vary widely across countries. Export growth rates are generally higher than GDP growth rates, and, where figures are available, the rate of growth of SME exports is higher than the growth of overall exports. This suggests that SMEs in Asia have already become significantly internationalized and becoming more so. It is difficult to gauge the importance of SMEs by size of firm because few countries keep such export statistics. In addition, many SME exports are made indirectly via a larger firm (arising from participation in a production network) or an agent and are difficult to attribute to SMEs even when statistics are kept. However, if we were to add direct and indirect exports by SMEs the figure could rise to close to 50 percent for the East Asian countries. In addition, SME foreign direct investment (FDI) is usually export oriented, thereby adding further to the potential for regional exports and technology transfer (Hall, 2000, p.2).

Contribution of SMEs to Growth

SMEs make a major contribution to economic and, particularly, employment growth. Most of the available evidence suggests that SMEs contribute about 60 to 70 percent of net employment growth, so they are an important “Entrepreneurial Engine”. This contribution has two main aspects. First, the net addition of new firms, net start-ups, generates economic growth. About 80 to 90 percent of SMEs are micro enterprises, and they “churn”; that is a significant proportion (between about 5 to 20 percent) “die” each year, while a similar proportion are “born” each year. If there is a net gain of births over deaths then this tends to add to overall economic growth, even though the average micro firm itself does not grow much in size. Second, it is the sustained growth of a relatively small group of successful (or high growth) firms that contributes significantly to economic growth. These firms typically survive for more than eight years, and often experience growth rates exceeding 30 percent per annum. It is only a relatively small percentage of SMEs (perhaps 5 percent or less) that contribute significantly to overall growth in this way, but their contribution can be quite large (see Hall, 2002a).

⁸ The equivalent figure for selected OECD countries, where estimates and statistics were available, was 26 percent.

Some Key Observations

A number of observations can be made about the contribution of SMEs as the Entrepreneurial Engine of East Asia (see Hall, 2002a). First it is clear that SMEs do provide the lion's share of **employment growth**. Typically, in the economies for which there are reliable data, about 70 percent of employment growth comes from SMEs. Anecdotally, even in economies for which there is no data, SMEs play a major role; for example almost all net employment creation in China, Vietnam and Indonesia in the last five to ten years has been in SMEs. In China and Indonesia, for example, large firms have been net job destroyers as they downsize - a phenomenon also common in Europe and the USA.

Second, the **Entrepreneurial Engine is underpowered** in much of East Asia, especially in the less developed economies of China, Indonesia, Philippines, Thailand and Vietnam (see Harvie and Lee, 2002). In these economies there are simply fewer SMEs than might be expected. This means that there are fewer start-ups, and the pool of SMEs from which high growth SMEs can emerge is much smaller. Consequently, there is less growth than there would otherwise be. In a *very* rough order of magnitude calculation, for these economies to achieve a benchmark level of 20 people per SME, there would have to be about 70 million new SMEs created. This needs to be compared with the 20 million or so SMEs in *all* of East Asia at present. This means 70 million or more people will need managerial skills and training. Most of these are in China. There is also considerable room for advancement in the development of SMEs in countries such as Indonesia and Thailand, two of the three most adversely afflicted economies during the period of the financial and economic crisis of 1997-98. Not surprisingly, these countries have given increased emphasis to SME sector development, with the objective of providing a firm base for sustainable economic recovery, an expansion in employment opportunities, and as a means of alleviating poverty particularly in some of the more adversely affected regions in these countries. This situation is also similar to that in China and Vietnam, where, for historical, political, and cultural reasons, the development of the SME sector has also been retarded. Hence the sheer potential for SME start-ups in countries such as China, Indonesia and Vietnam could be a major source of job creation and growth for these economies in the future. In economies like

Vietnam and Philippines, there need to be about 3 million or more additional entrepreneurs/managers. In the past this would be seen as a government responsibility, but the task is just too enormous to even contemplate for most governments. Changing technology (notably the www, and especially WAP access to the www) are changing this, and making it more feasible for the private sector to train large numbers of entrepreneurs/managers in a relatively short period of time, but it will still need public-private cooperation to achieve the sort of growth that is needed (see Hall, 2002a).

Third, in developing East Asia the bulk of the SME contribution to growth will probably come from **net start ups** while in developed East Asia the growth contribution will tend to come more from **high growth firms**. Start-up rates tend to be relatively low, especially in Japan, which is the largest economy in East Asia (just). Japan's net start up rate (domestically at least) has been negative for some time. Part of this is due to the country's prolonged economic downturn, and part of it is cultural and institutional inhibitions to risk taking and starting a business. These cultural and institutional factors need to be actively addressed if East Asia is to really make use of the potential of its Entrepreneurial Engine.

Fourth, the **Entrepreneurial Engine is becoming increasingly internationalized**. For example, a small but significant proportion of SMEs in Japan, Korea and Chinese Taipei have already expanded operations abroad; about 13 percent of Japan's manufacturing output is now sourced abroad. It is becoming easier for SMEs to operate across borders. This is partly as a result of efforts to reduce trade and non-trade impediments by the WTO, APEC and ASEAN. It is also part of the general globalization of business occurring as a result of improved communications (particularly e-commerce and the web), other technological and social changes, and product fragmentation and the development of production networks. This SME internationalization is not limited to specific regions, such as East Asia, but is more global.

Table 3 elaborates upon and provides a summary of key common features, differences and policy issues, in the profile of SMEs in East Asia/APEC discussed in this section.

Table 3. A Summary Profile of SMEs in East Asia/APEC

	Key Features	Regional Differences and Policy Issues
Numbers of Enterprises	<p>1. There are about 20 to 30 million SMEs in East Asia.</p> <p>2. They account for 98% of all enterprises.</p> <p>3. Micro-enterprises account for about 73% of all private sector enterprises.</p> <p>4. On average there are about 85 people for every SME.</p>	<p>1. Most of the SMEs are in China (8 million) and Japan (5 million) and Korea (2.6 million) which together have 70% of the SMEs in East Asia.</p> <p>2. In developed economies there are only about 20 people per SME, but the ratio is above 100 in the developing economies, especially in China, Vietnam, Philippines and Indonesia.</p>
Employment	<p>5. SMEs employ about 60% of the private sector workforce, and 30% of the total workforce.</p> <p>6. Micro-enterprises employ about 21% of total APEC wide employment.</p> <p>7. Over 95% of enterprises employ less than 100 people, and over 80% employ less than 5 people.</p> <p>8. SMEs contribute about 70% of net employment growth.</p> <p>9. SMEs provide about 80% of employment in the services sector, and about 15% in the manufacturing sector.</p> <p>10. Women make up about 30% of employers/self employed in APEC – mainly in micro-enterprises</p>	<p>3. In developing economies (below about \$15,000 USD per head income) SMEs employ about 75% of people, above \$15,000 the level is closer to 50%. Japan is a major exception - Japan's SMEs employ around 80% of the workforce.</p> <p>4. More developed economies seem to have more medium sized SMEs and they play a greater role. Developing economies seem more likely to have a “missing middle”.</p> <p>5. In developed economies most of this growth probably comes from fast growth firms, in developing economies a higher proportion probably comes from net start ups.</p>
Output measures (sales, value added etc)	<p>11. SMEs contribute about 50% of sales, value added or output.</p>	<p>6. The contribution varies from lows of 15% (Singapore) and 30% (Australia) to about 60% for most other economies.</p>
Exports	<p>12. SMEs generate about 30% of direct exports (US\$930 billion in 2000), much less than the SME contribution to employment (about 60% to 70%) or output (about 50%).</p>	<p>7. SME exports figures are difficult to verify, but they range from about 5% or less (Indonesia) to around 40% (Korea) of total exports.</p> <p>8. Tariff cuts have increased total APEC</p>

	13. SMEs contribute indirectly to trade through supply chain relationships with other firms. SME contribution to total trade could rise to 50%.	member trade, but the SME contribution to direct exports has remained static or declined. Reductions in tariffs have not benefited SMEs, more emphasis needs to be put on tackling non tariff barriers if SMEs are to benefit from trade expansion.
FDI	14. SMEs generate about 50% of cases of FDI, but only less than 10% of value of FDI.	9. Korean, Japanese and Chinese Taipei SMEs contribute most FDI originating in the East Asian region.
Entrepreneurial Engine, international potential, and the new economy.	15. SMEs already contribute the bulk of growth, and SMEs could make a much bigger contribution to the Asian regional economy if efforts were made to address impediments to SME internationalization. This could add as much as \$1.18 trillion in trade over a 5 year period. 16. SMEs moving towards services and away from agriculture and manufacturing.	10. The developing economies need to create about 50 to 70 million more SMEs if they are to achieve “benchmark” levels of SME activity. 11. To achieve maximum gain from trade it is essential to improve governance, building capacity, reducing transaction costs, promoting further liberalization, addressing non tariff barriers, increasing internet access and facilitating trade and investment to improve the capacity of SMEs to export. 12. Capacity building includes: access to finance; improved professional skills (IT, management, accounting and entrepreneurship); improved business infrastructure; removal of trade barriers that particularly adversely affect SMEs. 13. E-commerce use of SMEs lags larger enterprises. Important for cost saving and growth potential. Usage of technology a problem due to: set up and usage costs; lack of adequate infrastructure and IT skills.

Source: Hall (2002a, 2002b), supplemented by information from APEC (2002) and by the authors.

A Caveat

While the region has a significant and sizeable SME sector, this contribution varies by country and depends upon a number of factors, which should be borne in mind when conducting cross country comparisons, such as: resource endowments; transaction costs; economic structure and the extent of market concentration; economies of scale; stage of

economic development (at an early stage of development the economy is dominated by a large number of informal micro-enterprises and a small number of large enterprises. There is a ‘missing middle’ consisting of medium sized enterprises. This generally only happens at a later stage of economic development); institutions (government and market); culture, including the **nature and extent of domestic entrepreneurialism and innovation**; history; heterogeneity of the SME sector itself; the extent of **market liberalization and competition**; and **market friendly and supportive** government policies.

3. International Production/ Distribution Networks in East Asia - the Context

Since the early 1990s international production/distribution networks have developed rapidly in East Asia, driven by market forces and facilitated by regional, sub-regional and bilateral free trade agreements (FTAs). These have resulted in a production-process wise regional division of labour and production location across countries with different income levels and development stages, and a significant shift away from a traditional north-south pattern of trade to one in which there has been a rapid increase in vertical intra-industry trade, particularly in parts and components in the machinery industries⁹, which is gradually dominating trade within the region. Associated with this development FDI flows have moved from import substituting industries and export oriented confined to export processing zones from which the domestic economy was insulated, to export oriented network forming type FDI (see Ando, 2006; Ando, Arndt and Kimura, 2006). In Southeast Asia the Philippines, Singapore, Malaysia and

⁹ Machinery industries, as defined here, include general machinery, electric machinery, transport equipment and precision machinery (HS Codes (Harmonized System Codes) 84-92). These industries require the production of many parts, components and related technologies, highly suitable for the establishment of production networks. While the development of production networks can also be observed in other industries such as that of chemicals, textiles and garments, software and services, the machinery industry is by far and away the most important in magnitude, quantitatively and qualitatively, at this point in time. The proportion of machinery exports in total exports, particularly machinery parts and components exports is a good indicator for judging the degree of participation in international production/distribution networks.

Thailand actively import and export machinery parts and components, as is the case for Northeast Asia (China, Japan and Korea). While less developed, there are also clear indications that Indonesia, Vietnam, Myanmar, Cambodia and Laos are increasingly participating in regional production networks, but more is required in this context. A greater understanding is required of the nature of these international production/distribution networks in East Asia, their implications for trade and FDI and policy implications for less developed countries in Southeast Asia. In the context of this study, it is of particular interest to identify the challenges and opportunities they provide for the SME sector across these various economies.

The formation of international production/distribution networks has fundamentally changed the pattern of production location and international trade in East Asia. International trade statistics show that economic integration within the region has developed rapidly. The share of intra-East Asian trade, where East Asia is defined as ASEAN, China, Japan, Hong Kong, South Korea and Taiwan, increased from around 33.6 per cent in 1980 to 53.3 per cent in 2003. This figure is higher than that for NAFTA (44.5 per cent) and less than that for the EU (60.3 per cent) (see Figure 1). While the Asian financial crisis of 1997-98 did not interrupt this process of integration, the current global economic crisis seriously impacted the exports of East Asian export oriented economies because final demand in the US and Europe sharply declined. The regional production network should resume once there is sustained global economic recovery, albeit at a lower level compared to the pre-crisis period. An interesting development is that countries at a relatively lower income level are increasingly playing a significant role in the expansion of intra-regional trade in East Asia.

The trade pattern inside East Asia has changed from the traditional pattern where final products such as consumer goods, intermediate goods and capital good were predominant in trade to one where predominance is now given to parts and components (Lim and Kimura, 2008; Athukorala and Kohpaiboo, 2009) (see Figure 2). Intermediate goods in the same industry are now traded amongst Asian countries expanding intra-industry and intra regional trade. For instance, import shares of parts and components within East Asia increased from 7.2 per cent in 1980 to 32.2 per cent in 2003, while those of processed goods decreased from 37.3 per cent to 28 per cent during the same years. The shares of parts and components have become the largest traded commodity

groups (see Figure 2). This explosion of trade in intermediate goods, particularly in the machinery industries, is based on a production and process wide international division of labour among countries at different income levels and development stages. Trade patterns have now become quite different from the traditional pattern based on static comparative advantage. Production processes now involve sequential production blocks that locate across countries. Different stages of production are located in different countries and undertaken by different firms, consequently products traded between different firms in different countries are components instead of final products. While networks can be formed in various industries the most important in East Asia, both quantitatively and qualitatively, are those in the machinery industries, including general machinery, electric machinery, transport equipment and precision machinery (HS 84-92) (Kimura, 2009). The machinery industries deal with a large number of multi-layered vertical production/ distribution processes and technology, ideal for the development of cross border production/ distribution networks.

This phenomenon is known as cross border production sharing or **fragmentation of production**. Production processes are finely sliced into many stages and located in different countries in East Asia. With such vertical specialization, a slight decline in trade costs induces large trade in intermediate goods since goods may move across national borders multiple times. For example, an intermediate good is exported from country A to country B and is imported back to country A again after processing in country B. In this case, the good crosses a national border four times. When trade costs go down, the competitiveness of the whole of East Asia considerably increases.

Literature on the **fragmentation theory** and its empirical verification expanded rapidly after the seminal contribution of Jones and Kierzkowski (1990)¹⁰, proving its applicability in analysing cross border production sharing at the production process level (Ando and Kimura, 2005a). From an East Asian perspective, however, production/ distribution networks have become quite distinctive and the most developed in the world (Ando and Kimura, 2005b) as measured by: their significance for each economy in the region; their extensiveness in terms of country coverage; and their sophistication which can involve subtle combinations of intra-firm and arm's length (inter-firm)

¹⁰ See also Arndt and Kierzkowski (2001), Deardorff (2001) and Cheng and Kierzkowski (2001) for further elaboration of the fragmentation theory.

transactions. Consequently, these networks have developed beyond the original idea of fragmentation, requiring a re-appraisal and expansion of the original analytical framework in order to capture more subtle and sophisticated intra-firm and arm's length (inter-firm) transactions. In this context Kimura and Ando (2005) propose the concept of two dimensional fragmentations to analyse the mechanics of production/ distribution networks in East Asia¹¹. We return to this below in the context of SME participation in the regional production/ distribution networks.

¹¹ An extensive discussion of this two dimensional fragmentation can also be found in Kimura and Ando (2005), especially pages 7-13.

Figure 1 Intra regional trade in East Asia

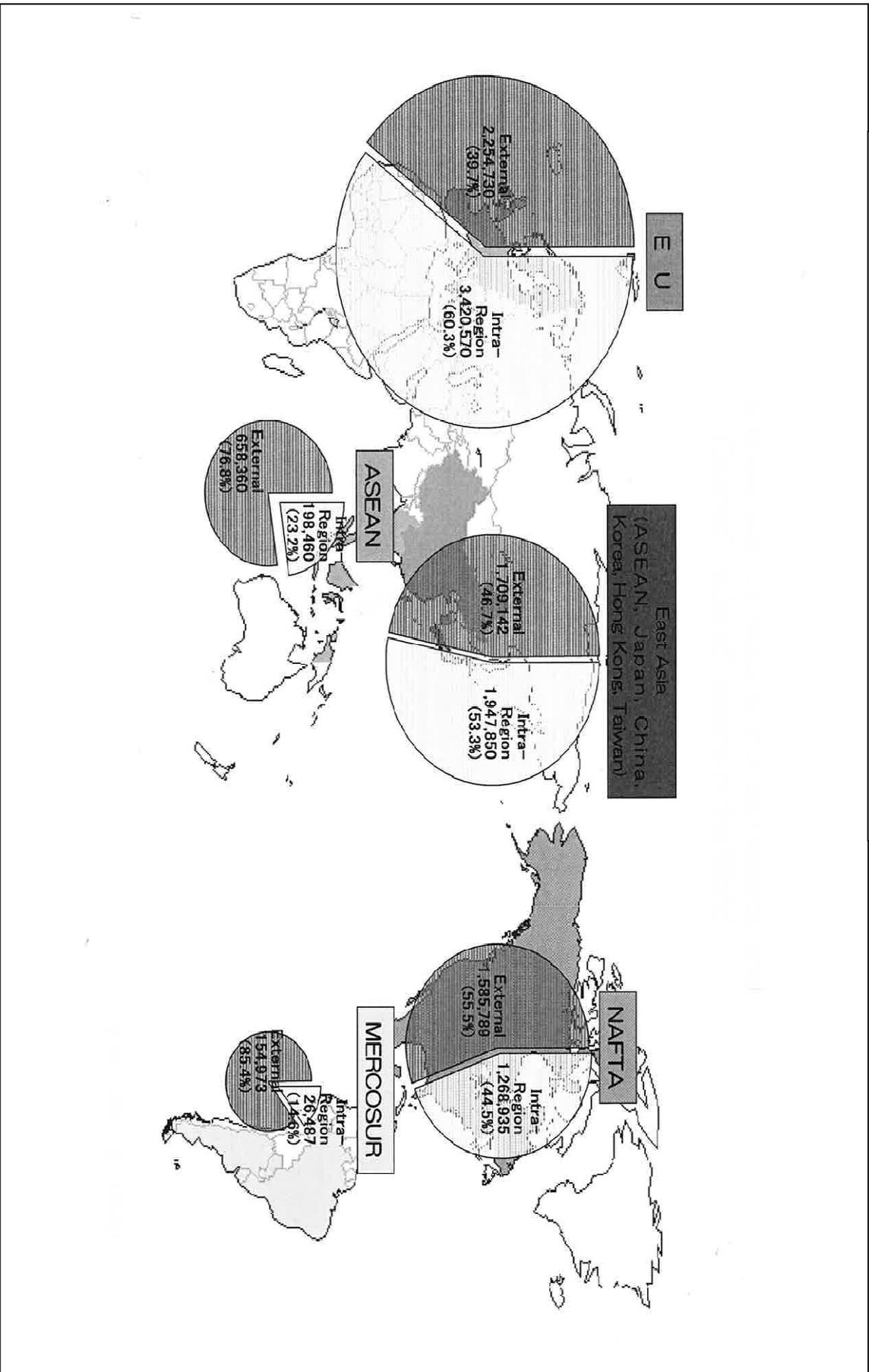
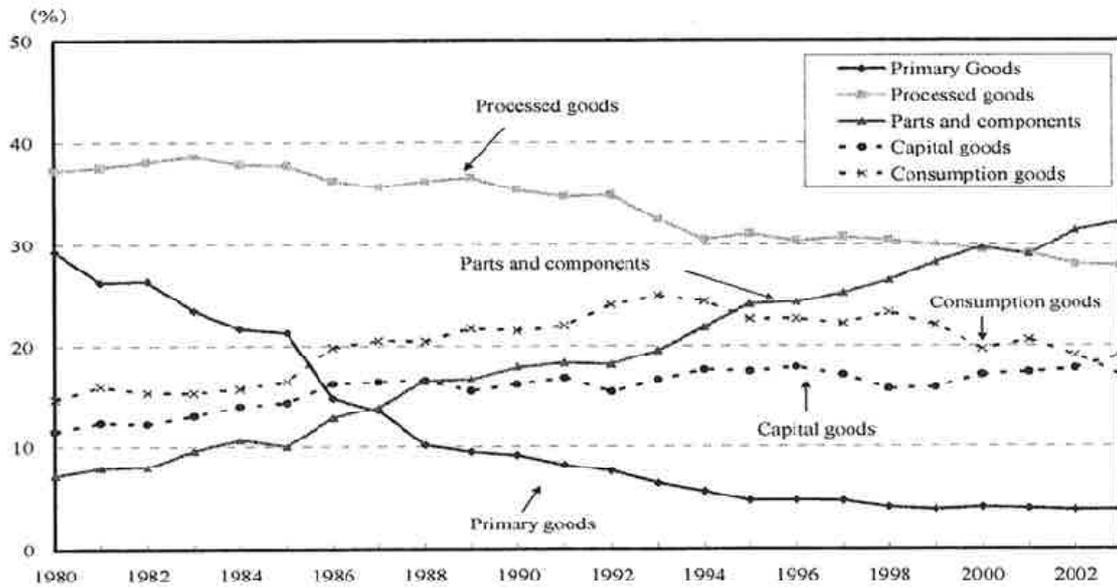


Figure 2. Trade Patterns within East Asia 1980-2003



Source: UN Comtrade

Fragmentation theory focuses on the location of production processes. Production processes are fragmented or separated into multiple slices and located, say, in different countries in East Asia, and makes sense when (i) there is **production cost saving in fragmented production blocks**; whereby the firm can take advantage of **differences in location advantages** between the original position and a new position. Second, incurred **service link costs** involved in connecting remotely located production blocks i.e. costs of transportation, telecommunications and various other types of coordination are low. Third, the cost of **network set-ups is small**. The feasibility of fragmented production/distribution (location and by firm) in an industry is heavily influenced by: the number of parts and components required in the production of the final product; the greater the variety of technologies utilized in the production of these parts and components (labour intensive, capital intensive); and the economic environment within individual countries and for the region as a whole. International production/distribution networks in ASEAN and surrounding East Asia have become the most advanced and sophisticated in the world in large part due to the existence of a favourable policy environment for globalizing corporate activities. By incorporating the idea of intimacy

between geographical proximity and arm's length transactions, the framework of product fragmentation can explain the simultaneous development of firm level fragmentation of production processes and the industry level formation of agglomeration. A reduction in production costs in fragmented production blocks, reduced service links costs and lower network set-up costs will all contribute to the further fragmentation of production/distribution networks.

Kimura and Ando's (2005) two dimensional fragmentation framework is particularly illuminating in explaining the growth of East Asian production/distribution networks. Product fragmentation here has two dimensions: fragmentation based on distance; fragmentation based on firm disintegration. There are advantages and disadvantages arising from both these forms of fragmentation. Table 4 summarizes these trade-offs.

What can be learned from Table 4 is that **fragmentation by distance**, involving intra and/or inter firm fragmentation (both domestic and cross border) will likely **increase service link costs** (greater transportation, telecommunications, logistics, distribution, coordination and cross border) but have the potential to **reduce production costs** from location advantage (wages, access to resources, lower utility costs, access to technological capability). **Fragmentation by firm disintegration** involving intra and/or inter firm fragmentation (both domestic and cross border) is likely to increase service link costs (related to loss of control and lack of trust) and include: additional information costs in seeking a suitable partner, monitoring cost, contract costs, dispute settlement costs, legal costs, legal and institutional system deficiencies. However this is potentially offset by reduced production costs due to the increased availability of business partners both domestic and foreign, the development of supportive industry, institutional capacity for various types of contracts and the degree of complete information. It is, therefore, apparent that reductions in service link and production costs can trigger a further rapid expansion in product fragmentation.

As the development and sophistication of production/distribution networks expand, SMEs have the opportunity to play a crucial role both as indigenous and foreign based firms in the network on an arm's length basis in various forms, including subcontracting arrangements and OEM contracts. SMEs are also essential components of industrial agglomeration. In this context, not only multi-national SMEs but also local SMEs can

be important participants in a vertical arm's length division of labour. This important role is discussed in the following sub-section.

Table 4. Trade-offs in two dimensional fragmentations

	Service link cost connecting production blocks	Production cost in production blocks
Fragmentation by distance (intra and inter firm, domestic and foreign)	Cost will increase with geographical distance: <ul style="list-style-type: none"> • Transportation, telecommunications, logistics and distribution (inefficiency) • Trade impediments • Coordination cost 	Cost reduction from location advantage: <ul style="list-style-type: none"> • Wage costs • Access to resources • Infrastructure service inputs (utilities, industrial estates) • Technology capability
Fragmentation by firm disintegration	Increased transaction costs from loss of control/trust: <ul style="list-style-type: none"> • Information cost from seeking suitable business partner. • Monitoring cost • Contract costs • Dispute settlement cost • Legal system and institutional system deficiencies 	Cost reductions from disintegration: <ul style="list-style-type: none"> • Availability of various types of potential business partners including foreign and indigenous firms • Development of supporting industry • Institutional capacity for various types of contracts • Degree of complete information

Source: Kimura and Ando (2005)

4. International Production Networks and SMEs – Opportunities and Challenges

Given the ongoing trend of increased globalization and regional economic integration in East Asia, significant potential exists for regional SMEs to expand their participation in regional production/distribution networks or global value chains. As discussed previously, however, they possess certain characteristics that may limit their

ability to do so¹². First, they face a **lack of access to finance** due to market failures in financial markets, particularly in the banking sector, and limited primary and secondary markets such as those for SME equity and bond financing. The formal banking system remains the dominant source of credit for local businesses in the region. Worsening the problem, the current economic crisis has increased risk aversion and decreased liquidity. In response, governments have made substantial efforts to allocate formal-sector resources to support SMEs through measures such as subsidies and safeguarding banks. However, SMEs still struggle to secure long term bank loans, working capital and bridge financing. Expanding access to and options available to SMEs is important. Second, the SME sector's development is constrained by a **lack of skill and expertise in organisation and management**, which are important for enterprises' efficiency, flexibility and competitiveness (Asasen et al., 2003). The need for competent, contemporary management is compounded by the fact that drastic economic and technological developments have created new and modern ways of production and service delivery. Related to this is the issue of ICT capability in which SMEs clearly lag. Third, there is a shortage of **sustainable entrepreneurial drive** in the sector. This can be attributed to a **weak innovation culture and to an over-reliance on technologies brought in by MNCs**. Entrepreneurship capabilities are crucial for SMEs to maximise their inherent comparative advantages gained from operating on a small scale, such as the flexibility to adapt to changing markets, helping them sustain high levels of export competitiveness. Finally, there is a lack of **networking**. Many SMEs are inward looking. Networks and linkages require fundamental shifts in business strategies that SMEs may not be able to achieve because of a **lack of resources and knowledge**¹³.

¹² It is important to emphasise here, however, that SMEs are highly heterogeneous. Some are extremely innovative and at the cutting edge of their industry/technology, while the vast majority of SMEs possess little likelihood of growth and lack innovation and entrepreneurial drive. Consequently, only some SMEs of the total cohort have the potential to participate in such production/distribution networks.

¹³ These issues are explored in more detail in Chapter IV.

The Process of SME Integration into Production/ Distribution Networks or Value Chains

In our previous discussion of production/distribution networks in East Asia emphasis was placed on the importance of product fragmentation, in terms of distance and firm disintegration, and the implied costs and benefits arising from this. Such costs and benefits arise from inter-firm (arm's length) rather than intra firm dealings and the role and importance of location (distance). However, the establishment of such production/distribution networks is, more usefully, seen as being multi-tiered in nature. Consequently, we can argue that production/distribution networks are part of a global production value chain. Global value chains can be interpreted as a broader concept than production/distribution networks. Global value chains are evolving tiered structures. The main role is traditionally played by a lead firm (multi-national enterprise) that manufactures the final product (Original Product or Equipment Manufacturer). This firm is supported by a small number of preferred first tier suppliers, which are supplied by other suppliers and so on, forming a tiered structure consisting of large and small enterprises. It is generally easier to enter a network as a lower tier supplier. But this position tends to be unstable as it can be easily replaced by other suppliers that offer better comparative advantages such as lower costs (Abonyi, 2005). The challenge facing SMEs is two dimensional. First, to try and **enter a global value chain**, and, second, to also **move up the tiers** by upgrading the added value content of their activities.

Emerging Business Opportunities for SMEs in the Region

Multi-national corporations have expanded their production, material and resources sourcing and markets beyond their domestic economies. Because of pressures from **economic integration, competition** and the **Just in Time (JIT) production system**, the region has now become fully connected into a Global Value Chain system which produces output for the global market place. As a result, globalization provides new opportunities for developing countries to enter international trade through production sharing and outsourcing. The international production networks developed from the early 1990s in East Asia are gradually spreading to India, Australia and New Zealand, driven by market forces and facilitated by regional, sub-regional and bilateral FTAs.

The fragmentation phenomenon suggests that differences in location advantages such as factor prices motivate fragmentation of the production process. Therefore, regional economic integration has set off dynamic growth impulses through global and regional production networking. This process has been facilitated by industrial agglomeration and fragmentation in sequential order.

Globalization and regional integration are developing rapidly. Countries most able to take advantage of these two underlying fundamental forces have been growing faster and more sustainably. At the same time, economic openness and domestic trade and investment liberalisation have dramatically increased competition in domestic, regional and global marketplaces. Larger and efficient companies are normally more able to leverage these new opportunities and challenges in domestic markets as well as across borderless external markets. This challenging new economic environment tends to put SMEs at a disadvantage compared to large-medium sized enterprises. However, the fact is that large and small-medium enterprises are the two important engines and wheels of development in East Asia. While MNCs and domestic large enterprises have been playing an important role in accelerating the industrialization process, SMEs provide the crucial industrial linkages to set off a chain reaction of broad based and sustainable development. Without SMEs as subcontractors and suppliers of intermediate inputs to MNCs and domestic large enterprises, industrial growth in developing countries and a sustained increase in domestic value added, employment, productivity and industrial linkages cannot be achieved. SMEs provide a key source of domestic employment creation, resilience against more volatile external economic fluctuations and mechanisms for local capacity building.

SMEs play a pivotal role in the functioning of international and regional production networks. Local SMEs can be fostered by utilizing globalizing market forces and regional economic integration. The issue is how to provide a critical linkage between SMEs and large local and MNCs. Governments will likely have to play a vital role in ensuring competitive market structures, in providing relevant and effective technical upgrading, marketing information and management, consortium financing and clustering (economies of scale) to SMEs.

Evidence exists to suggest that local firms and SMEs are participating in production and distribution networks, particularly in the electronics, machinery, ICT, automobile

and service industries. Local SMEs are participating in producing not only parts and components but also industrial equipment. Economic integration has provided business opportunities in not only participating in production and distribution networks but also in capturing expanded domestic and external markets. Local firms and SMEs have succeeded in establishing linkages with MNCs (either directly or indirectly) and expanding their business in integrated markets. The attainment of more dynamic, rapid and sustainable regional economic development requires the development of SMEs. To achieve this there is a need to improve the international competitiveness of SMEs through R&D, improved quality control and skills. Governments should promote the development of local parts and supplier industries. This is likely to be an effective strategy to expand the domestic content of MNCs operating in the country. The development of domestic suppliers, together with access to and availability of finance, along with increased linkages between SMEs and large enterprises are also important.

As regional production networking becomes a more important source of economic growth, outsourcing and subcontracting offer increasing opportunities for SMEs to leverage increased regional economic integration. Another important emerging business opportunity for SMEs is the advent of internet business and the widespread use of electronic and computer business design. SMEs are also expanding very rapidly in the service sectors of tourism, specialized marketing to newly emerging markets beyond the domestic market as the process of regional economic integration accelerates. Without an improvement in the efficiency of local firms and SMEs, regional integration cannot be sustained as there will be more domestic opposition and economic and social instability in countries that experience increasing unemployment. This is the crux of regional economic integration and sustainability. It must not only increase efficiency but also provide positive and acceptable benefits to every constituent member of the free trade area or economic community.

Regional economic integration will generate higher economic growth, but employment may not expand as rapidly. In addition, regional integration may tend to increase income disparity among members of the preferential trading area, if some countervailing measures are not properly instituted. In this respect the development of viable and sustainable SMEs provides an effective measure to counter the negative effects of globalization and regional economic integration. Therefore, improving the

competitiveness and capability of SMEs is vital for the sustainability of regional economic integration. Countries at different stages of economic development require different focus and core policy instruments aimed at improving the capability of their SMEs. Technology and industry upgrading are the core measures that must be continually implemented in order to be competitive, in addition to clustering and improved marketing capability. Development of the technological capability of SMEs is an integral policy for liberalizing the trade and investment regime. Regional economic integration opens up opportunities and challenges for policy makers to provide industrial and technological upgrading for SMEs. SME capacity building is discussed in more detail in Chapter IV.

5. Summary and Conclusions

SMEs represent an integral part of the economies of East Asia. They make significant contributions to the economy from many perspectives – output, growth, employment, exports, poverty alleviation and economic empowerment. Globalization and regional economic integration present them with many challenges as well as opportunities. Of particular interest are the opportunities for regional SMEs to participate in regional production networks. Not all SMEs will be suitable for such participation, but it is clearly of considerable interest for governments, and for protagonists of further regional integration, to identify those SMEs most conducive for production network participation. As previously indicated the future success of regional economic integration is likely to depend upon mutual benefits for participation nations. One way of ensuring that economic growth from such integration is translated into employment growth is through developing SME sector capacities to enable them to participate effectively in regional production networks.

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