

The AEC Beyond 2015

Implementation and Challenges for Singapore

Chia Siow Yue and Sanchita Basu Das

This paper discusses Singapore's progress in implementing the ASEAN Economic Community (AEC) and tries to explore whether the city-state has encountered any domestic conflict whilst doing so. It concludes that being a highly trade- and FDI-dependent economy, it is in Singapore's national interest to be a part of the AEC. It is one of the leading ASEAN countries to implement the AEC initiatives. When examining domestic conflicts, Singapore presents a unique case as the city-state has long been exposed to the competitive forces of globalization, well before the development of the AEC. The country adopts non-protectionist measures to manage competitive pressures from the global economy. Almost full employment and a low incidence of poverty also minimize the negative impacts of liberalization. Case studies of the electronics and aviation sectors highlight how these two sectors are adjusting to liberalization and competition from the global economy, including the AEC. With respect to the electronics sector, which is an integral part of regional production networks, Singapore is continually progressing up the value chain. In the case of the aviation sector, the city-state continues to meet global and regional challenges through cooperative arrangements with the aviation industries of other countries and by upgrading and expanding its air services.

Keywords: ASEAN Economic Community, Singapore, electronic industry, aviation industry

1. Introduction

Given its small-size and dearth of natural resources, Singapore's development strategy was to create an open economy, with the world and

the region as its hinterland. This has enabled Singapore to progress from a third world city-state, at the beginning of its political independence in 1965, into a first world economy. Decades of

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growth have transformed a regional entrepot into an export-manufacturing platform, a services hub and a knowledge-based economy. The government played a crucial role in this process, initially to jump-start industrialization and increasingly to facilitate economic restructuring. Policy orientation is towards a free-trade and liberal foreign direct investment (FDI) regime, heavy investments in physical infrastructure, human capital to ease supply constraints and achieve competitiveness, a pro-business environment with an efficient and non-corrupt bureaucracy, a stable macroeconomic and industrial relations environment, efficient regulations and a minimal fiscal burden.

Singapore's participation in ASEAN and the ASEAN Economic Community (AEC) is for both strategic and economic reasons. On strategic grounds, ASEAN helps Singapore to achieve its goals of regional peace and stability, and regional cooperation in handling trans-boundary problems of environmental pollution, pandemic outbreaks, security issues and financial contagion. On the economic front, ASEAN economic integration facilitates Singapore's exports and outward investment flows to neighbouring countries and helps anchor Singapore as a key node in regional production networks and as a regional services hub.

For many economies, opening up to globalization and regionalization — with their attendant winners and losers — have engendered strong domestic political economy responses. In the AEC, this is a key reason for the slow and weak implementation of many initiatives. Fortunately for Singapore, the domestic lobbies and pressures hindering implementation of liberalization commitments have been weak. This is in part due to the small size of the city-state and its long exposure to the competitive forces of globalization and regionalization. In part, it may also be attributed to the high trust of Singaporeans in their political and economic leadership, high employment rates and a low incidence of poverty. Hence, as the case studies on the electronics and aviation sectors illustrate, there is very little domestic pressure in Singapore, particularly against the AEC's liberalization process. Instead, pressure comes mostly from Singapore's general

approach of adopting non-protectionist measures to manage global competition.

The following section (section 2) discusses the determinants of Singapore's economic and trade strategies. Section 3 discusses Singapore's progress and challenges in implementing AEC initiatives. Sections 4 and 5 examine two case studies, the electronic and aviation sectors, to identify how they address global and regional challenges, including the AEC. Section 6 concludes this paper.

2. Singapore's Economic and Trade Strategies

This section underlines the distinctiveness of Singapore's economic and trade strategies, which contributes to its efforts in the AEC.

2.1 Economic Strategy

As the Singapore economy grew rapidly in the 1970s and 1980s, a variety of factors — competition from regional low-cost producers, Singapore's labour shortage and labour costs — led to economic restructuring away from labour-intensive towards capital-intensive, high value-added and knowledge-based activities. In the electronics sector, high value-added segments have replaced low value-added segments. In the chemicals and petrochemicals sector, Jurong Island has been developed into a dedicated and vertically integrated chemicals complex. The government facilitates restructuring through the creation of supporting physical and institutional infrastructures, provision of human capital resources, provision of financial incentives for research and development (R&D), innovation and creativity. There are also parallel efforts to reduce input costs, including increased labour market flexibility (particularly through the adoption of a flexible wage system), and continuing liberalization of the services and utilities sectors.

Since 1991, Singapore's economic strategy has been to develop manufacturing and services as twin pillars of the economy. The *1991 Strategic Economic Plan* (MTI 1991) outlined the promotion and development of Singapore as a total business centre, and the development of high-tech and

high value-added manufacturing and services as twin engines of growth. In manufacturing, the emphasis has been on industry clusters, such as chemicals and petro-chemicals, shipbuilding and ship repair, electronics and biomedical sciences; as well as strengthening innovation, through linkages between industry, R&D and intellectual property protection, and bridging the gap between the research and commercialization of products and processes. Liberalization and facilitation measures ensure Singapore remains a key node in the global value chain. This strategy can clearly be observed in Singapore's electronics industry, described later, as the city-state is positioning itself as a hub for the high value-added activities of capital-intensive manufacturing, assembly, R&D, and headquarter activities.

In services, the focus has been on the development of Singapore as a services hub in: commerce and logistics; maritime and air transport; information and communications technology (ICT); finance; and professional services. For example, to maintain its international maritime and air hub status amidst intensifying regional competition, the government has adopted measures to strengthen the competitiveness of Singapore as a one-stop shop for all port, shipping and maritime activities. In the air transport sector, it has further opened up air services bilaterally and within the ASEAN framework. This is, once again, observed in the case study of the aviation industry described later in this paper.

2.2 Trade Strategy

Singapore has a very high trade/GDP ratio of over 300 per cent, reflecting its position as a major transshipment hub. Entrepot exports (also known as re-exports) comprise half of Singapore's total exports and have shifted from traditional Southeast Asian primary commodities to machinery and equipment, reflecting the growing industrialization of the region and the establishment of regional production networks. They are now mainly in electronics, petroleum and products, and chemicals and products. Domestic exports have been increasingly capital- and technology-intensive.

These, in turn, have pushed Singapore to practice free trade in goods for a long time, save for the six tariff lines imposed on alcoholic beverages.¹

As for services sector liberalization, it has accelerated in recent years, in line with the objective of consolidating and enhancing Singapore as a regional services hub, although government-linked companies (GLCs) continue to dominate essential services.

Singapore pursues a three-tier trade strategy, simultaneously supporting multilateralism via the World Trade Organization (WTO), as well as regionalism and bilateralism via free trade agreements (FTAs). At the WTO, Singapore participates in the Information Technology Agreement (ITA) and Plurilateral Agreement on Government Procurement and is a signatory to the GATS protocols on telecommunications and financial services. Singapore's GATS commitments, and although they cover a wide range of services sub-sectors, could be categorized as limited liberalization, especially when compared to its goods economy. Under its Schedule of Commitments, market access for natural persons are unbound, except for the temporary movement of intra-corporate transferees. Commercial presence restrictions apply to foreigners registering their companies or businesses in Singapore.

In East Asia, Singapore is one of the most active economies in forging regional and bilateral FTAs. Currently, it is a part of twenty FTAs that are at different stages of negotiation and implementation.² The city-state views FTAs as a way to consolidate its political and economic relations with selected countries.

These have implications for a regional agreement like the AEC, as Singapore already has advanced trade liberalization policies for goods. AEC measures such as tariff elimination, trade facilitation through a National Single Window or investment facilitation were carried out by Singapore long before the AEC initiatives. However, it is the limited liberalization of services under GATS that enables Singapore to offer its services markets on a preferential basis to ASEAN countries in exchange for greater market access for Singapore manufactures.

The beneficiaries of the city-state's trade policies are the Singapore-based domestic and foreign companies, goods exporters and service providers and investors. Singapore consumers benefit little since imports already enter Singapore duty-free, except for alcoholic beverages, which enjoy zero preferential tariffs under FTAs. However, the liberalization of trade in services leads to an inflow of foreign service providers, therefore, improving the quality of services available to Singapore consumers. There are also indirect benefits, as the expansion of trade and investment also leads to job creation. In particular, FTAs are expected to draw more FDI into Singapore, creating jobs and spin-offs for domestic industries. Singapore's FTAs give the country a competitive advantage in attracting foreign companies to use Singapore as a headquarters for their regional activities and as a gateway to explore opportunities in FTA partner-countries. They can form partnerships with Singapore companies to enter third countries, or set up operations in Singapore and help stimulate local enterprises. As the city-state increasingly seeks outward direct investments, national and preferential treatment and investment protection measures in FTAs encourages more Singapore enterprises to venture abroad.

3. Singapore in the AEC: Progress and Challenges in Implementation

Chia (2014) notes that there are two ways of interpreting progress in AEC implementation. The first is to measure progress against the actions listed in the 2007 AEC Blueprint, while the second is to assess current AEC commitments against its four main objectives of: (1) a single market and production base; (2) a competitive economic region; (3) equitable economic development; and (4) integration into the global economy. The second interpretation is difficult to achieve as the AEC is still far from achieving its stated objectives. The first interpretation also appears difficult to achieve by the deadline (the end of 2015). The AEC Scorecard indicates that up to March 2013 only 82.1 per cent of the targeted measures in

the Blueprint have been implemented.³ Although the Blueprint did not reveal the implementation performance of individual ASEAN countries, Singapore is one of the countries that has achieved a high level of implementation.⁴

On the free flow of goods, Singapore has had zero tariffs for all products in the Inclusion List for the Common Effective Preferential Tariff (CEPT) under the ASEAN Free Trade Area (AFTA) long before the stipulated deadline of 1 January 2010. However, Singapore has not fully eliminated all non-tariff measures (NTMs) because some of them are not non-tariff barriers (NTBs) to intra-ASEAN trade.⁵ Ando and Obashi (2010) have found that almost half of all tariff lines in ASEAN are linked to at least one NTM, with Singapore below the ASEAN average. In addition, Austria (2013) has found that Singapore's few NTMs do not affect any tariff lines.⁶ Removing NTMs remains one of the biggest challenges to ASEAN's economic integration. Another is the establishment of the ASEAN Single Window (ASW) as a network of National Single Windows. In this respect, Singapore is a pioneer, with its TradeNet having been in operation since 1989.

On services, Singapore has completed nine packages of commitments to liberalize services trade under the ASEAN Framework Agreement on Services (AFAS), and the government is presently consulting relevant domestic agencies for the tenth package. ASEAN-wide, negotiations under AFAS have resulted only in marginal services liberalization, mainly because services is a "sensitive" sector with a very large employment impact and some uncompetitive services demanding national protection (Nikomborirak and Jitdumrong 2013). Among the designated priority integration services sectors, only tourism services have made considerable progress. The ASEAN National Tourism Organizations have developed a vision statement for developing ASEAN as a quality tourism destination by 2025 (ASEAN Secretariat 2015). There is no visa requirement for ASEAN tourists, except for Myanmar. Of Singapore's 15.6 million international travellers in 2013, around 40 per cent were from the ASEAN region.

On investment flows, an enhanced ASEAN Comprehensive Investment Agreement (ACIA) has been in place since April 2012. Table 1 shows Singapore ranks highly in the Logistics Performance Index, Ease of Doing Business Index and Global Competitiveness Index. While FDI inflows into ASEAN have increased from US\$21.8 billion in 2000 to US\$110.3 billion in 2012, the predominant share has gone to Singapore.

Singapore, under the AEC, allows for flows of skilled professionals (mode 4) to facilitate flows of services and investments. It has concluded eight Mutual Recognition Arrangements (MRAs)⁷ with other ASEAN members. But it is only the architectural and engineering services that provide standardized recognitions of the skill level of registered ASEAN architects and engineers. As noted by Chia (2011a), MRAs only provide frameworks to promote the mobility

of professionals between member states and do not guarantee market access, as most countries impose rules and restrictions on the employment of foreigners, including constitutional prohibitions and requirements for employment visas and passes.

Free trade, investments and the movement of people in ASEAN have to be supported by improved physical connectivity. The 2010 Master Plan on ASEAN Connectivity (MPAC) aims to reduce transportation and logistics costs. For Singapore, its regional connectivity remains a work-in-progress. Singapore has ratified all protocols under key transport facilitation agreements such as the ASEAN Framework Agreement on the Facilitation of Inter-State Transport (AFAFIST) and the ASEAN Framework Agreement on Multimodal Transport (AFAMT). However, it has yet to ratify all the protocols of the

TABLE 1
Attractiveness of ASEAN Member Countries and Inward FDI Flows

| | <i>Ranking in Logistics Performance Index, 2014^a</i> | <i>Ranking in Ease of Doing Business, 2012^b</i> | <i>Ranking in Global Competitiveness Index, 2012–13^c</i> | <i>Value of FDI, US\$ billion (Share in ASEAN FDI Flows, %), 2010–12</i> |
|-------------|---|--|---|--|
| Brunei | — | 83 | 28 | 9.1 (1.2) |
| Cambodia | 83 | 138 | 85 | 6.9 (0.9) |
| Indonesia | 53 | 129 | 50 | 81.1 (11.0) |
| Laos | 131 | 165 | — | 2.1 (0.3) |
| Malaysia | 25 | 18 | 25 | 72.5 (9.8) |
| Myanmar | 145 | — | — | 9.9 (1.3) |
| Philippines | 57 | 136 | 65 | 22.3 (3.0) |
| Singapore | 5 | 1 | 2 | 382.5 (51.7) |
| Thailand | 35 | 17 | 38 | 93.9 (12.7) |
| Vietnam | 48 | 98 | 75 | 59.1 (8.0) |
| Total ASEAN | — | — | — | 739.5 (100.0) |

NOTE: a. out of 160 countries; b. out of 183 economies; c. out of 144 countries.

SOURCE: Logistics Performance Index 2014, *Doing Business 2012*, World Bank; World Competitiveness Index, 2012–2013; *The ASEAN Statistical Yearbook, 2013*, The ASEAN Secretariat.

ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT).

On the ASEAN objective of equitable economic development, infrastructure availability helps to narrow the development gap among countries, and between core and peripheral areas. ASEAN also has the Initiative for ASEAN Integration (IAI), in which more developed ASEAN members help those that are less developed. Singapore, as the most developed member of ASEAN, has spent around US\$135 million cumulatively on various initiatives during 2001–15. Most of Singapore's contribution goes into human resource development and related training projects.⁸

ASEAN's open regionalism is seen in its FTAs with various major trading and investment partners, including China, Japan, South Korea, India and Australia-New Zealand, which have become the basis for the Regional Comprehensive Economic Partnership (RCEP) Agreement currently under negotiation. Except for the ASEAN-China FTA, Singapore has played a pathfinder role for ASEAN by having first established bilateral FTAs with Japan, South Korea, India, Australia and New Zealand. Its bilateral FTAs with the United States (US) and with the European Union (EU) could also eventually lead to ASEAN FTAs with these two countries.

In sum, Singapore is one of the lead countries in AEC implementation. A key point to note is that the city-state has been liberalizing its real economy long before it embarked on the journey of establishing an AEC. By having an "open economy" as its key strategy and being a part of several bilateral FTAs, that are both wider and deeper in scope vis-à-vis the AEC, the city-state has already exposed itself to the competitive forces of globalization and regionalization. Hence, the current domestic challenges for Singapore cannot be solely attributed to the AEC.

Nonetheless, there are both proponents and opponents of globalization, including ASEAN economic integration. While the winners are businesses and workers in expanding export-oriented sectors, the losers are businesses and workers in uncompetitive sectors facing increasing import and inward FDI challenges, as well as

Singaporean professionals facing competition from inflows of ASEAN professionals.⁹ However, the Singapore policy response to these competitive challenges is not to slow down implementation. Instead, it is facilitating the necessary restructuring of the economy through measures that help businesses to be more competitive, and retrenched workers more marketable through retraining. The fact that the Singapore labour market remains tight has helped retrenched workers to find alternative employment, particularly as the government has tightened the inflow of foreign workers since 2011.¹⁰

The subsequent sections present case studies from the manufacturing and services sector that showcase Singapore's challenges from increased competition and its policy response.

4. Case Study of Manufacturing Production Network: The Singapore Electronic Sector

With regard to the Singapore manufacturing sector, the AEC aims to increase intra-regional trade, connect it with global supply chains and attract more investment. Merchandise imports to Singapore have always enjoyed free trade. Similarly, exports have close to free trade as tariffs have been reduced to zero for most of the manufacturing products across all ASEAN countries. However, most of the benefits for the manufacturing sector arise from economies of scale, harmonization of technical regulations, customs modernization and MRAs, which allow companies to produce standardized products, thereby avoiding duplicative testing and pool skilled labour, mainly through intra-corporate transfers. The electronics sector is one of the industries that will significantly benefit from ASEAN integration (McKinsey 2014).

4.1 Singapore's Electronics Sector

Singapore is a prominent location in ASEAN for electronics manufacturing. It currently hosts: fourteen silicon wafer fabrication plants, including the world's top three wafer foundries; twenty semiconductor assembly and test operations,

including three of the world's top six outsourced semiconductor assembly and test companies; fifteen fabless semiconductor companies; and forty integrated circuit (IC) design centres. The city-state is a leading manufacturer of hard disk drives and is a major hard disk media manufacturing location, accounting for about 40 per cent of the world's hard disk media volume.¹¹

Singapore's electronics industry comprises: subsidiaries of multinational corporations (MNCs; such as Broadcom Singapore); several large indigenous firms (Chartered Semiconductor, Creative Technology and Venture Corp.); and a range of small-cap firms supplying components to major producers. Singapore GLCs have started a number of joint ventures with foreign MNCs, such as Texas Instruments and Hewlett-Packard of the United States, and Canon of Japan. The number of electronics-related establishments increased from 270 in 1999 to 310 in 2010, accounting for more than 3 per cent of total establishments in the manufacturing sector (Toh 2014).

Table 2 shows selected performance indicators of the electronics sector. The sector appeared to be

on a downward trend since early 2000. From 1991 to 2013, output expanded from S\$42 billion to S\$83 billion, but the share in total manufacturing declined from 45.1 per cent to 28.1 per cent. The electronic sector's share of total manufacturing value-added, employment and direct exports also declined.

One reason for the decline is the rapid growth of other manufacturing activities in Singapore's domestic economy, like pharmaceuticals. Moreover, the electronics sector has been facing rapid changes in technology and intense competition since the late 1990s, leading to cost-cutting measures by leading firms and difficulties in funding R&D. These developments have affected some Singaporean firms too, such as Chartered Semiconductors.¹² In addition, the drop in the absolute number of workers in the sector can be attributed to the sector's shift from labour-intensive to technology-intensive, and higher value-added activities (Toh 2014). Indeed, the labour productivity of the electronic sector was at 205 during 2011–13, higher than the manufacturing sector average of 140.4 over the same period.

TABLE 2
Selected Performance Indicators for Singapore Electronics Sector

| | 1991–95 | 1996–2000 | 2001–05 | 2006–10 | 2011–13 |
|--|--------------|--------------|-------------|-------------|--------------------------|
| Output (S\$ billion) | 41.8 (45.1) | 67.9 (50.1) | 68.1 (40.0) | 78.8 (31.5) | 83.0 ^a (28.1) |
| Value-Added (S\$ billion) | 7.6 (35.0) | 12.5 (40.4) | 13.4 (33.2) | 15.5 (29.6) | 16.2 ^a (27.5) |
| Employment ('000) | 122.2 (33.8) | 114.4 (32.3) | 93.1 (26.1) | 87.6 (21.3) | 79.4 ^a (18.9) |
| Yearly Av. Fixed Asset Investment (S\$ billion) | — | 3.6 (30.6) | 4.5 (52.8) | 4.6 (37.4) | 5.6 (50.5) |
| Domestic Export at the end of the period (S\$ billion) | 59.3 (60.3) | 74.4 (54.7) | 75.4 (36.3) | 65.0 (26.1) | 48.8 (17.8) |
| Productivity | | | | | |
| VA per Worker (\$'000 per worker) | 32.5 | 82.2 | 130.2 | 207.2 | 205.0 |

NOTE: The figures in brackets denote % share of total manufacturing; a- the numbers for the year 2013 are predicted.
SOURCE: Ministry of Trade and Industry Singapore, *Economic Survey of Singapore*, various issues; Department of Statistics, *Yearbook of Statistics* (various issues), Singapore.

4.2 Trade Patterns of the Electronics Sector

Appendix 1 shows that the average annual growth rate of electronics exports slowed down from 9 per cent in the 1998–2005 period to around 1 per cent recently, while growth rates of re-exports also slowed down from 16.2 per cent to 1.7 per cent, respectively, over the same period. The downward trend is also evident for domestic exports. While some of the downward trend can be attributed to upswings and downswings in the global electronics industry, the loss of competitiveness of some segments of the Singapore electronics sector is also another contributing factor. Positive growth during 2005–13 was recorded for integrated circuits (IC), personal computers (PC), parts of IC, while negative growth was recorded for parts of PC, disk drives, telecoms equipment and consumer electronics. In recent years, increased demand for digital technology (such as TV and cameras) helped to maintain the growth of the electronics sector.

A key global trend affecting Singapore's electronics sector since the late 1980s and early 1990s was the development of multi-stage production networks across national boundaries (Athukorala and Kohpaiboon 2015). Singapore embarked on the development of this sector in assembly activities that were labour-intensive. With the rise in wages, these activities were relocated to lower cost production sites such as Malaysia, Thailand and the Philippines.¹³ The entrance of China in these activities further accelerated the relocation of assembly activities to China due to its comparative cost advantage in these activities then. This pushed domestic policymakers to think of strategies to restructure the industry. The government facilitated restructuring activities to move up the value chain by providing supporting incentives, including fiscal incentives, R&D grants, providing physical infrastructure and training human resources. The government also carried out parallel efforts to reduce input costs by introducing labour market flexibility, in terms of adopting flexible wage systems and easing policies for the temporary movement of professionals.

Thus, over the years, Singapore's electronics industry, as part of the regional production network,

moved from low-skill component assembly and testing to component design and fabrication, R&D, capital-intensive production processes and, assembly for original equipment manufacturers (OEM). There is also a shift towards the provision of headquarter services for production facilities located among its neighbours. This restructuring of Singapore's electronics industry and its role in production networks is also reflected in its trade pattern, as trade in parts and components experienced a declining share of total electronics trade (Appendix 1). However, the shift to services is not captured in merchandise trade data (Wong 2007).

As for the geographical distribution of Singapore's electronics trade, shown in Appendix 2, ASEAN is important for both exports and imports, with Malaysia as the biggest trading partner. Intra-industry dominated the trade between ASEAN states and other northeast Asian countries such as China and Taiwan. For Singapore exports, while ASEAN's share fell from 25 to 21 per cent during the 2003–13 period (mainly due to the declining share of Malaysia) and that of the United States from 19.4 per cent to 6.3 per cent, the converse happened with China, Japan and Korea, whose collective share rose from 18 to 30 per cent. For Singapore imports, ASEAN's share dropped from 42 per cent in 2003 to 23 per cent in 2013. Likewise, the shares of Japan and the United States also declined, while the share of China, Korea and other Asia (including Taiwan) rose.

This change in the structure of electronics trade in East Asia is mainly attributed to the rise of China in the regional production network. As China emerged as a final assembly location, it created demand for parts and components (P&C) from ASEAN countries. Singapore moved to high-value tasks while low-value activities were relocated to late industrializers such as Vietnam. Another factor that has contributed to the East Asian electronics trade is the liberalization of the industry, under the WTO's plurilateral Information Technology Agreement (ITA) (Baldwin 2006). This agreement eliminates tariff duties on imports of ICT products and includes six ASEAN countries — Indonesia,

Malaysia, Philippines, Singapore, Thailand and Vietnam — and China, Japan and Korea.

In summary, Singapore's electronics sector is part of the regional production network, although its importance has changed over the years. It faced severe competition from rapid technological change and price competition from new emerging markets, which made it harder for domestic firms (such as Chartered Semiconductor, Venture Corp and Creative Technology) to keep pace with rich foreign MNCs and fund the required R&D.

With China and Korea emerging as important production locations for the electronics industry, intra-regional trade for the city-state is more significant with ASEAN+3 countries, rather than with ASEAN alone. This is where regional economic cooperation initiatives like the AEC and its ASEAN+1 FTAs assume importance. While the tariff rates have already been lowered, it is the other cooperation measures like physical and institutional connectivity, harmonization of technical regulations and MRAs of products that are needed to reduce the transaction costs arising from transnational economic activities (Kimura and Obashi 2011). An arrangement like AEC and its initiatives on intellectual property rights (IPR) and competition law also prepare the export-oriented domestic industries to become competitive in the world market, eventually facilitating their participation at a multilateral level.

4.3 Singapore Electronics Sector and the Labour Force

The alignment of Singapore's electronics sector to the changing production structure in the region coincided with changing employment patterns. Much of the public anxiety about this trend is related to job losses in the electronic sector due to closures, relocations and technological change.¹⁴ Some critics of globalization and trade agreements argue that Singapore's PMET (professionals, managers, engineers and technicians) jobs have been taken away from local citizens. This is because as Singapore is continuously upgrading, it adopts a flexible foreign manpower policy to meet the new skill sets demanded by emerging industries and activities. While this helps to address the domestic skill-gap in the short-run, it also generates a fear of the crowding out of local professionals, even though policy-makers have argued that these measures will eventually lead to high-paying job opportunities for locals in the future.¹⁵ As shown in Table 3, employment in the electronics sector fell from 106,000 in December 2008 to 90,000 in December 2013,¹⁶ with the largest percentage of redundancy found in the professional category in the manufacturing sector.

Thus, the relationship between globalization and job anxiety is complicated. There could be many factors contributing to job loss, but trade gets most of the blame due to its visibility. In

TABLE 3
Selected Employment Indicators of Singapore Electronics Sector

| | 2008 | | 2009 | | 2010 | | 2011 | | 2012 | | 2013 | |
|--|-------|--------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| | E | M | E | M | E | M | E | M | E | M | E | M |
| Employment ('000) | 106 | 565 | 95 | 521 | 100 | 520 | 96 | 524 | 92 | 535 | 90 | 540 |
| Redundancy (number) | 5,440 | 10,430 | 6,610 | 13,640 | 1,750 | 4,490 | 2,060 | 4,460 | 1,820 | 4,050 | 2,490 | 5,000 |
| Incidence of Redundancy (per '000 workers) | 51.9 | 24.7 | 76.7 | 35.1 | 19.1 | 11.5 | 22.6 | 11.4 | 20.4 | 10.2 | 28.9 | 12.5 |

NOTE: E — Electronics; M — Manufacturing.

SOURCE: Singapore Yearbook of Manpower Statistics, 2014.

particular, contemporary trade agreements, which include the movement of natural persons as is the case with the AEC, is perceived to contribute to the loss of professional jobs in Singapore.¹⁷

The Singapore government has adopted various measures to meet the problem. For the workforce, these include adjustment assistance (conducting job fairs and job counselling) and education (which includes training to upgrade workforce skills). The question of whether these measures are adequate to allay the anxieties of workers regarding retrenchment and job security is moot. For the corporate sector, the government offers cost reduction or tax packages (such as a variable wage component or lowering employer CPF contribution rates). A slew of measures have also been introduced to help business start-ups and small and medium-sized enterprises (SMEs) become competitive and export-oriented. Above all, the government tries to create new jobs by keeping its economy open, with strict corporate governance, increased R&D support, as well as other investment friendly measures in order to attract higher value-added FDI.

4.4 AEC's Relevance to Singapore's Electronics Sector

From the above discussion, it is clear that in the case of Singapore's electronics sector, the regional arrangements created by the AEC and ASEAN+1 formula are key to supporting its participation in the regional production network. The benefits are derived from the trade and investment facilitation measures, rather than from the tariff preferences offered under the AEC ATIGA provisions.¹⁸

Tariff elimination under the AEC may not be useful for the electronics industry in Singapore, given that the WTO Information Technology Agreement (ITA) has eliminated tariffs on ICT goods among its signatory members. Moreover, much of the electronics trade happens in ASEAN's export processing zones that are also duty free for electronics and the industry's relevant inputs. Hence, it is not a surprise that Singapore firms' utilization of ATIGA preferential tariffs is low. In a survey of seventy-five firms in Singapore by

Chia (2011b), the overall FTA preferential tariff utilization (including AFTA) is low at 17.3 per cent, with the highest utilization rates reported for pharmaceuticals and chemicals (22.2 per cent), followed by electronics (18 per cent), and textiles and garments (12.5 per cent).

However, the importance of the AEC is derived from its facilitation measures. First, the various AFTA/ATIGA and ASEAN FTAs with China, Japan and South Korea promote and consolidate regional production networks and help anchor Singapore's position in regional production and trade (including the location of regional headquarter activities). Second, AFTA/ATIGA facilitate Singapore's electronics exports to other ASEAN countries through the removal of tariffs and NTBs in partner countries. The latter include: MRAs for goods that obviate the need for multiple product testing when they cross borders; trade facilitation measures such as more transparent, simplified and speedier customs procedures (including advance rulings); the operation of national single windows towards an ASW; improved physical and IT connectivity; and services and investment liberalization (although limited to date). The electronics trade is highly time sensitive and heavily dependent on "just-in-time" manufacturing. Hence, measures that minimize the need for duplicative testing, simplify and reduce cost of customs, and ensure that speedy delivery will benefit all Singapore manufacturers and traders, but particularly the electronics sector. According to a McKinsey report (2014), the biggest impact on electronics manufacturing is likely to come from economies of scale and inventory cost savings (derived from trade facilitation measures), with the total impact accounting for between 11 and 21 per cent of the cost base.

5. Case Study of the ASEAN Open Skies Policy and its Impact on Singapore's Aviation Hub and Airlines

5.1 ASEAN Open Skies Policy: Developments, Opportunities and Challenges

With the AEC deadline fast approaching, air services are one of the remaining key ASEAN

services to be liberalized. ASEAN officials are pushing for the full implementation of the ASEAN Open Sky or Single Aviation Market (OS/SAM) agreement, which addresses connectivity issues in a geographically fragmented region.

Common provisions of Open Skies agreements include the following:

Free market competition with no restriction on international route rights, number of designated airlines, the capacity, frequency and types of aircraft; pricing is determined by market forces.

Fair and equal opportunity to compete — all carriers may establish sales offices in the partner country, and convert earnings and remit them in hard currency promptly and without restrictions; designated carriers are free to provide their own ground handling services or choose among competing providers; airlines and cargo consolidators may arrange ground transport of air cargo and are guaranteed access to customer services; user charges are non-discriminatory and based on costs; computer reservations system displays are transparent and non-discriminatory.

Cooperative marketing arrangements — designated airlines may enter into code-sharing or leasing arrangements with airlines of partner country, subject to usual regulations; an optional provision authorizes code sharing between airlines and surface transportation companies.

Provision for dispute settlement and consultation.

Rationale and Developments in ASEAN OS/SAM.

OS/SAM is ASEAN's major aviation policy to liberalize the region's air transport industry and transform it into a single aviation market by the end of 2015. It entails a phased and progressive approach to liberalizing scheduled passenger services, non-scheduled passenger services and air freight services. OS/SAM is intended to increase regional and domestic connectivity, integrate production networks and enhance regional trade by allowing airlines from ASEAN countries to fly freely throughout the region. It encourages the growth of air traffic and tourism. It will also push down fares and increase pressure on airlines to be more cost competitive, which will benefit consumers. However, less competitive airlines

will lose their market share, hence the resistance to aviation liberalization in some ASEAN countries.

The November 2004 Action Plan for ASEAN Air Transport Integration and Liberalization 2005–2015 established certain strategic actions to further liberalize air services towards a single aviation market. Together with the Roadmap for Integration of Air Travel Sector (RIATS), it laid down the target date of 2015 for achieving an effective ASEAN Open Skies policy. RIATS identified the following specific goals and target dates:

For scheduled passenger services: unlimited third and fourth freedom flights for all designated points within ASEAN subregions by 2005, and for at least two designated points in each country between the ASEAN subregions by 2006; unlimited fifth freedom traffic between designated points within the ASEAN subregions by 2006 and at least two designated points in each country between the ASEAN subregions by 2008; unlimited third and fourth freedom flights between capital cities by 2008; and unlimited fifth freedom flights for capital cities by 2010.¹⁹

For airfreight services: significant liberalization by 2006 and full liberalization by 2008.

RIATS for passenger services are incorporated in two agreements, namely the 2009 ASEAN Multilateral Agreement on Air Services (MAAS), which allows ASEAN airlines to exercise unlimited third, fourth and fifth freedoms between member state capitals, and the 2010 Multilateral Agreement for the Full Liberalization of Passenger Air Services (MAFLPAS) that allows airlines to exercise the same rights between ASEAN's non-capital cities. The removal of restrictions on the third and fourth freedoms between ASEAN capital cities for air passenger services took effect from December 2008, and full liberalization on the fifth freedom between ASEAN capital cities took effect from January 2011. All ASEAN member states need to ratify MAAS and MAFLPAS²⁰ before proceeding to the seventh, eighth and ninth freedoms. Air freight is covered by the 2009 ASEAN Multilateral Agreement on Full Liberalization of Air Freight Services (MAFLAFS).

In the meantime, some ASEAN states had gone ahead to adopt limited agreements among themselves to liberalize market access. For example, in December 2004, Brunei-Singapore-Thailand concluded an agreement in line with the ASEAN 2+X principle that facilitated early liberalization among like-minded countries, with other ASEAN countries following suit when they are ready; in 2003, Cambodia, Laos, Myanmar and Vietnam adopted a multilateral agreement; and in December 2008, Malaysia and Singapore fully liberalized third and fourth freedom access between their respective points.

ASEAN SAM/OS Implementation. There are several hurdles to overcome before OS/SAM achieves full implementation by the end of 2015.²¹ The first issue is whether existing airport infrastructures can handle the expected surge in air traffic, as major regional hubs in Singapore, Bangkok and Kuala Lumpur are already operating at near full capacity, while secondary non-capital airports have not been designed to cope with large air traffic volumes. The second issue is whether some domestic carriers will be able to survive in a more competitive regional environment, as cheaper fares, predatory pricing or collusion may weed out weaker carriers. Third, safety and security issues need urgent attention with the expected boom in air traffic.²² There are concerns over the shortage of trained pilots and personnel to fly and maintain the planes, and the adequacy of air traffic control and airport infrastructure. There is also a need for better information sharing on airport security practices, and developing and coordinating a timely and efficient regional response to aviation disasters.

Unlike the legal requirements of Europe's Open Skies agreement, ASEAN's market access liberalization is pursued through voluntary agreements among its member states. The most important aspect of aviation market liberalization is the guarantee of third, fourth, fifth and seventh freedoms of the air. While the third and fourth freedoms are already commonly practised in ASEAN, OS/SAM would grant fifth freedom rights, which involves an airline flying to an

airport in country A and, from there, to country B before heading back, without the need for inter-governmental approval. The Multilateral Agreement on Air Services (MAAS) frees up third, fourth and fifth freedom operations between ASEAN capital cities only. Both Indonesia and the Philippines initially opposed MAAS to protect domestic aviation sectors, and because Jakarta's and Manila's airports are already operating far over capacity, Indonesia finally accepted MAAS, giving carriers from other ASEAN countries unlimited rights to fly into Jakarta from their own capitals, subject to the availability of airport landing slots, but the Philippines has yet to do so. The Multilateral Agreement for the Full Liberalization of Passenger Air Services (MAFLPAS) provides for complete third, fourth and fifth freedom relaxations for all ASEAN non-capital cities and, in this instance, the Filipino and Indonesian positions are reversed—while the Philippines has accepted MAFLPAS, Indonesia has not.

To be effective, market access liberalization under OS/SAM must be accompanied by adequate aviation infrastructure: airlines need to secure landing slots; air traffic controllers need to be able to cope with growing air traffic; and passenger terminals need to be able to accommodate increased arrivals and departures. With the projected high growth in air travel demand, there will be massive delays and congestion for consumers, and flights will be endangered if air traffic systems are not upgraded. Preparations are underway in several ASEAN countries to accommodate the anticipated growth in air traffic. A number of airlines, especially budget carriers, have stepped up expansion plans and there is a battle over acquiring dominance over ASEAN skies. In Singapore, Changi Airport's Terminal 4 will be ready by 2017, and Terminal 5 will be ready by 2025 to handle up to 50 million passengers a year. This will increase the airport's total capacity to 135 million passengers a year. In addition, a third runway will be operational by end of this decade.

Alan Tan (2013) argues that the challenge for ASEAN states is to fully implement their AEC commitments by the end of 2015, and for ASEAN to devise a post-2015 plan for greater liberalization

and harmonization. The latter includes seventh freedom rights, domestic cabotage rights, ownership and control rules, competition law regimes, consumer protection policies, and safety and technical requirements. However, reaching such an agreement (as with the other ASEAN services agreements) is difficult in view of the diverse levels of development among ASEAN states, as well as concerns over sovereignty issue. Tan argues that the most significant pending issue is the seventh freedom right, that is, the ability of an ASEAN carrier to connect to other international points within ASEAN without commencing or ending in its home point. The lack of seventh freedom rights accorded by ASEAN states to each other will seriously disadvantage ASEAN when implementing its ASEAN+1 FTAs. For example, the ASEAN-China agreement provides unlimited third and fourth freedom operations for ASEAN and China. This allows ASEAN carriers to operate to all points in China but their flights must begin and end in their respective home states. In contrast, because China is a unified aviation market, a China carrier can use similar rights and operate to all points in ASEAN from all points in China, so that its network penetration will be larger than any individual ASEAN country. To neutralize this advantage, a carrier from ASEAN must be able to connect to any other ASEAN point with any point in China, but this cannot be done without each of the ASEAN states according each other seventh freedom rights. ASEAN budget airlines such as AirAsia, Tigerair and Lion Air have managed to skirt this problem by forming minority-owned subsidiaries in other ASEAN states.

5.2 OS/SAM and Opportunities and Challenges for the Singapore Aviation Sector

Singapore has built up its aviation sector to be a key driver of its economy. Superior air connectivity is vital to its competitiveness as a global manufacturing base, information business centre, and travel and tourism destination. Through its liberal air services policy and superior airport infrastructure, Singapore has become a leading air hub. It adopts a liberal aviation policy

and has concluded air services agreements with more than 100 countries, including about forty open sky agreements. In addition to RIATS (see above) Singapore is a signatory to the Multilateral Agreement for the Liberalization of Air Transport (MALIAT).

Changi Airport Connecting the World. Singapore welcomes foreign airlines to operate in Singapore, promoting its airport as a hub for the world and the region. Changi Airport serves over ninety airlines that operate more than 4,500 weekly flights that serve 200 cities in sixty countries regionally and globally. The airport is also a leading air cargo hub, with transshipment cargo accounting for half of its total throughput.

However, Changi is currently facing multiple challenges. Its position as a hub is being increasingly challenged by the rise of new air hubs such as Dubai, which has recently overtaken even Heathrow as the world's leading international hub, and in the region by Bangkok's Suvarnabhumi Airport. Both Changi and Suvarnabhumi are strategically located to capture European and Northeast Asian air traffic and interregional connections, and both have invested heavily in airport infrastructure to enhance competitiveness as regional air hubs. Changi completed a S\$240 million upgrade of its Terminal 2 just before Suvarnabhumi opened in 2006. Additionally, Changi opened its S\$1.75 billion Terminal 3 in January 2008, increasing its capacity to 64 million. Terminal 4 will be ready by 2017 and Terminal 5 by 2025. By then, Singapore will be able to handle over 136 million passengers a year. To boost air traffic, Changi also has an incentive package to encourage airlines to use it as a transfer hub. Scoot and Tigerair, Singapore budget carriers, could also play a special role in boosting Changi's attractiveness as a transfer hub.

Singapore Airlines and Its Affiliates. Singapore Airlines (SIA) is a publicly listed national carrier with government majority ownership. There are no competing privately owned airlines based in Singapore. SIA has been noted for its excellent service and spends more than rival airlines in key

areas: buying new aircrafts; replacing its fleet more frequently than competitors do; depreciating aircrafts over fifteen years versus the industry standard of twenty-five years; and investing heavily in inducting and retraining employees.

However, SIA's core business has been facing headwinds in recent years from three directions. First, is the competition from the new Middle East airlines — Emirates, Etihad Airways and Qatar Airways — which have established modern fleets with luxurious facilities and services, successfully attracting premium-class passengers on the Asia-Europe routes that were SIA's traditional strengths. Second, closer to home, established carriers in the region — Japanese, Korean, Hong Kong and Thai — are improving their air services, such that the high quality of SIA's services are no longer unique. Third, the proliferation of budget carriers has challenged SIA's economy class segment. Hence, SIA's load factors and profit levels are falling.

SIA's corporate responses to the various challenges have taken many directions, without resorting to government protection and special privileges. First, it is planning to launch in early 2015 a premium economy class service for medium- and long-haul routes to further differentiate itself from budget carriers by catering to passengers willing to pay more for better than economy-class service. For business class and first class, it is upgrading aircraft cabins and services. Second, it is expanding its partnerships with other airlines. These include: a new standard carrier, Vistara based in New Delhi (in 2015), together with the Indian Tata Group to penetrate the Indian market; increased investment in Virgin Australia Holdings with code-sharing flights and marketing to compete with Australian flag carrier Qantas (in November 2014); a non-equity alliance with Air New Zealand with code-sharing flights (in September 2014); in the last couple of years at least sixteen alliances or tie-ups with other airlines; trying to entice more budget airlines to operate from and through Singapore. With lower oil prices in 2015 pushing down fuel costs, SIA's competitiveness vis-à-vis Middle Eastern airlines should improve.

Singapore's Transport Minister, Lui Tuck Yew,²³ has argued that SIA should work more closely with its affiliate airlines (SilkAir, Scoot, and Tigerair) to improve convenience and service offerings and, therefore, competitiveness. SilkAir is a regional carrier of SIA, while Scoot is a fully owned budget carrier by SIA, and Tigerair is an SIA majority-owned budget carrier. However, SIA's budget carriers face fierce competition from AirAsia, Indonesian budget carriers and Qantas-subsubsidiary, Jetstar Asia.

Among ASEAN countries, Singapore appears the most prepared to fully implement ASEAN OS/SAM as it has been a pioneer in advocating liberal skies, and has the competitive and highly reputable Changi Airport and Singapore Airlines. OS/SAM will enhance the importance of hub airports such as Changi, which will benefit from feeder traffic connecting with other flights to a wider region. Also, OS/SAM is beneficial for airlines that can quickly move their resources where they are needed and those with extensive networks. SIA and its affiliates will benefit from the growing importance of the Changi air hub. However, Singapore's competitive advantages may have contributed to some ASEAN countries' reluctance to participate in the ASEAN OS/SAM. For example, for some years, Singapore carriers had reached their limits and could not launch new flights into Indonesia until recently.

SIA's concern with OS/SAM relates mainly to sixth freedom rights, which is critical for the Changi air hub. This is because it enables SIA to carry passengers, for example, from Jakarta to Singapore and then onwards, on connecting flights, to elsewhere and everywhere. By avoiding ASEAN agreements, Indonesia can limit the third and fourth freedom rights that form the backbone of other carriers' sixth freedom operations. Also, OS/SAM does not encompass seventh freedom rights and domestic flights. In the absence of seventh freedom rights, SIA cannot take advantage of the China market by operating from Singapore and other ASEAN countries. In the ASEAN Open Skies policy/agreement, domestic operations are still reserved exclusively for domestic players;

Singapore is handicapped in this aspect as a city-state.

At the political economy level, there are no domestic conflicts obstructing the country's stance of advocating full implementation of the ASEAN Open Skies policy. As was noted at the outset, businesses and workers in Singapore have been accustomed to competing in a free market environment. An established and competitive Changi air hub benefits not only Singapore carriers but all other ASEAN and foreign carriers that use the air hub. Competition between Changi, Suvarnabhumi and other ASEAN air hub aspirants, and between ASEAN national carriers will have to be determined by market forces unleashed by the ASEAN Open Skies agreement. Both Changi and SIA and its affiliates expect Singapore policy-makers to implement aviation agreements as it will not disadvantage them. Any conflicts between promoting the Changi air hub and SIA and its affiliates are resolved at the intra-governmental level, since both are government-owned.

6. Conclusion

Singapore is a highly trade- and FDI-dependent economy. Thus, it is in its national economic interest to promote global free trade and FDI flows. As such it remains a strong supporter of the multilateral trading system under the WTO. Singapore has also taken regional and bilateral FTA routes to achieve its trade and investment

objectives. Of its various FTAs, the AEC is the most important — politically, strategically and economically.

Singapore is constantly restructuring itself to meet the challenges of globalization and economic integration, whether via market-driven production networks, or policy-driven FTAs. As a small city-state with long and established policy regimes of free trade and FDI, it is not surprising that Singapore is one of the leading implementers of the AEC commitments.

Having said that, there are nevertheless concerns with implementing the AEC, as with any liberalization process. There are both benefits and costs and, hence, winners and losers. However, Singapore is characterized by its non-protectionist approach to resolving concerns and problems. The electronics sector has undergone dramatic restructuring in response to changing cost advantages and the emergence of competitive facilities in other ASEAN countries and in China. The Singapore policy response has been to fully support trade in goods liberalization in the AEC, and to help affected businesses and workers to upgrade and move resources into more competitive sectors and activities. Likewise, the aviation sector is undergoing tremendous pressure, with challenges to Changi's air hub status and SIA's premier airline status. The government's policy response is to develop and upgrade Changi into a more competitive air hub, and SIA and its affiliates into more competitive airlines.

Appendix

APPENDIX 1

Exports of Electronics Products and Components, 1998–2013

| | Value in S\$ billion | | | % Share of Electronics Sector | | | Av Annual Growth Rate (%) | |
|---|----------------------|-------|-------|-------------------------------|-------|-------|---------------------------|---------|
| | 1998 | 2005 | 2013 | 1998 | 2005 | 2013 | 1998–05 | 2005–13 |
| Electronics | | | | | | | | |
| Total Exports | 96.0 | 174.1 | 161.6 | 100.0 | 100.0 | 100.0 | 8.9 | -0.93 |
| Re-exports | 34.6 | 98.7 | 112.7 | 100.0 | 100.0 | 100.0 | 16.2 | 1.67 |
| Domestic Exports | 63.6 | 75.3 | 48.9 | 100.0 | 100.0 | 100.0 | 2.4 | -5.25 |
| Imports | 62.0 | 128.7 | 119.5 | 100.0 | 100.0 | 100.0 | 11.0 | -0.92 |
| Integrated Circuits | | | | | | | | |
| Total Exports | 25.0 | 75.0 | 96.3 | 26.0 | 43.1 | 59.6 | 17.0 | 3.17 |
| Re-exports | 13.2 | 53.1 | 73.8 | 38.2 | 53.8 | 65.5 | 22.0 | 4.20 |
| Domestic Exports | 11.8 | 21.9 | 22.5 | 18.6 | 29.1 | 46.0 | 9.2 | 0.34 |
| Imports | 23.9 | 59.1 | 69.9 | 38.5 | 45.9 | 58.5 | 13.8 | 2.12 |
| Parts of PC | | | | | | | | |
| Total Exports | 15.9 | 26.5 | 15.9 | 16.6 | 15.2 | 9.8 | 7.6 | -6.19 |
| Re-exports | 3.6 | 10.4 | 8.8 | 10.4 | 10.5 | 7.8 | 16.4 | -2.07 |
| Domestic Exports | 12.3 | 16.1 | 7.1 | 19.3 | 21.4 | 14.5 | 3.9 | -9.73 |
| Imports | 12.5 | 22.3 | 9.8 | 20.2 | 17.3 | 8.2 | 8.6 | -9.77 |
| Disk Drives | | | | | | | | |
| Total Exports | 22.2 | 16.4 | 4.5 | 23.1 | 9.4 | 2.8 | -4.2 | -14.9 |
| Re-exports | 3.6 | 3.0 | 2.1 | 10.4 | 3.0 | 1.9 | -2.6 | -4.4 |
| Domestic Exports | 18.7 | 13.5 | 2.4 | 29.4 | 17.9 | 4.9 | -4.5 | -19.4 |
| Imports | 5.9 | 3.6 | 2.4 | 9.5 | 2.8 | 2.0 | -6.8 | -4.9 |
| Telecom Equipment^a | | | | | | | | |
| Total Exports | 2.9 | 14.9 | 10.0 | 3.0 | 8.6 | 6.2 | 26.3 | -4.9 |
| Re-exports | 1.2 | 9.7 | 8.5 | 3.5 | 9.8 | 7.5 | 34.8 | -1.6 |
| Domestic Exports | 1.8 | 5.2 | 1.5 | 2.8 | 6.9 | 3.1 | 16.4 | -14.4 |
| Imports | 2.6 | 10.8 | 11.9 | 4.2 | 8.4 | 10.0 | 22.6 | 1.2 |
| Consumer Electronics^b | | | | | | | | |
| Total Exports | 9.3 | 11 | 4.3 | 9.7 | 6.3 | 2.7 | 2.4 | -11.1 |
| Re-exports | 5.6 | 6.4 | 3.1 | 16.2 | 6.5 | 2.8 | 1.9 | -8.7 |
| Domestic Exports | 3.8 | 4.6 | 1.2 | 6.0 | 6.1 | 2.5 | 2.8 | -15.5 |
| Imports | 6.3 | 10.9 | 4.2 | 10.2 | 8.5 | 3.5 | 8.1 | -11.2 |
| Personal Computers (PC) | | | | | | | | |
| Total Exports | 5.4 | 2.5 | 6.6 | 5.6 | 1.4 | 4.1 | -10.4 | 12.9 |
| Re-Exports | 1.4 | 1.2 | 2.9 | 4.0 | 1.2 | 2.6 | -2.2 | 11.7 |
| Domestic Exports | 4.0 | 1.3 | 3.7 | 6.3 | 1.7 | 7.6 | -14.8 | 14.0 |
| Imports | 1.1 | 2.7 | 4.7 | 1.8 | 2.1 | 3.9 | 13.7 | 7.2 |

Parts of IC

| | | | | | | | | |
|------------------|---|-----|-----|---|-----|-----|---|-----|
| Total Exports | — | 5.8 | 7.6 | — | 3.3 | 4.7 | — | 3.4 |
| Re-Exports | — | 2.0 | 3.4 | — | 2.0 | 3.0 | — | 6.9 |
| Domestic Exports | — | 3.9 | 4.3 | — | 5.2 | 8.8 | — | 1.2 |
| Imports | — | 2.5 | 4.4 | — | 1.9 | 3.7 | — | 7.3 |

Diodes and Transistors

| | | | | | | | | |
|------------------|---|-----|-----|---|-----|-----|---|------|
| Total Exports | — | 8.2 | 8.5 | — | 4.7 | 5.3 | — | 0.5 |
| Re-Exports | — | 6.1 | 5.3 | — | 6.2 | 4.7 | — | -1.7 |
| Domestic Exports | — | 2.1 | 3.3 | — | 2.8 | 6.7 | — | 5.8 |
| Imports | — | 7.6 | 5.8 | — | 5.9 | 4.9 | — | -3.3 |

NOTES:

a. Includes pagers, cellular phones, TV & video cameras and recorders, radar & navigational equipment, radio remote controls, satellite discs and parts of these products.

b. Includes TV receivers, radio broadcast receivers, video & sound recorders, microphones, loudspeakers, headphones, earphones, TV camera, still image video cameras and parts of these products.

SOURCE: Singapore Yearbook of Statistics (various issues); authors' calculations.

APPENDIX 2
Singapore's Electronics Trade, 2003 and 2013 (US\$ billion)

| Country | Exports | | | | | | Imports | | | | | |
|---|--------------------|--------------------|----------------------|-------------------|--------------------|--------------------|--------------------|--------------------|----------------------|-------------------|--------------------|--------------------|
| | Finished Products | | Parts and Components | | Total | | Finished Products | | Parts and Components | | Total | |
| | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 |
| ASEAN | 11.7 (22.2) | 17.1 (18.1) | 8.4 (31.0) | 8.1 (32.5) | 20.1 (25.2) | 25.2 (21.0) | 13.7 (41.3) | 15.9 (22.7) | 10.3 (42.0) | 4.7 (26.6) | 23.9 (41.6) | 20.6 (23.5) |
| Malaysia | 7.4 (14.0) | 8.2 (8.6) | 3.5 (12.1) | 2.8 (11.3) | 10.9 (13.7) | 11.0 (9.2) | 9.5 (28.7) | 9.6 (13.7) | 5.2 (21.3) | 2.7 (15.4) | 14.7 (25.6) | 12.3 (14.1) |
| Thailand | 1.4 (2.6) | 3.2 (3.4) | 1.2 (4.6) | 2.2 (9.0) | 2.6 (3.3) | 5.4 (4.5) | 1.1 (3.3) | 1.6 (2.3) | 2.4 (9.8) | 0.7 (4.0) | 3.5 (6.0) | 2.3 (2.6) |
| Philippines | 0.7 (1.4) | 1.2 (1.2) | 0.7 (2.7) | 0.7 (2.8) | 1.4 (1.8) | 1.9 (1.6) | 1.9 (5.7) | 3.8 (5.5) | 0.4 (1.7) | 0.3 (1.7) | 2.3 (4.0) | 4.1 (4.7) |
| Rest of ASEAN | 2.2 (4.2) | 4.6 (4.8) | 2.8 (10.5) | 2.3 (9.4) | 5.0 (6.3) | 6.9 (5.8) | 1.2 (3.7) | 0.9 (1.3) | 2.2 (9.2) | 1.0 (5.5) | 3.5 (6.0) | 1.9 (2.2) |
| Plus 3 Countries | 10.1 (19.2) | 31.8 (33.5) | 4.0 (14.8) | 4.5 (18.1) | 14.1 (17.7) | 36.3 (30.3) | 8.4 (25.3) | 25.8 (36.9) | 7.1 (29.1) | 7.3 (41.4) | 15.5 (26.9) | 33.2 (37.8) |
| China | 3.2 (6.0) | 17.9 (18.9) | 1.6 (5.8) | 2.4 (9.9) | 4.7 (5.9) | 20.4 (17.0) | 2.6 (7.8) | 11.3 (16.2) | 4.0 (16.4) | 5.7 (32.1) | 6.6 (11.4) | 17.0 (19.4) |
| Japan | 3.5 (6.7) | 6.4 (6.8) | 1.6 (5.8) | 1.2 (5.1) | 5.1 (6.4) | 7.7 (6.4) | 3.7 (11.1) | 2.8 (4.0) | 2.8 (11.6) | 0.9 (5.3) | 6.5 (11.3) | 3.7 (4.3) |
| South Korea | 3.4 (6.5) | 7.5 (7.9) | 0.8 (3.1) | 0.8 (3.1) | 4.3 (5.3) | 8.3 (6.9) | 2.1 (6.3) | 11.7 (16.7) | 0.3 (1.1) | 0.7 (4.0) | 2.4 (4.1) | 12.4 (14.1) |
| Hong Kong | 6.0 (11.4) | 20.7 (21.7) | 1.5 (5.7) | 4.8 (19.4) | 7.5 (9.4) | 25.5 (21.3) | 0.8 (2.3) | 0.2 (0.3) | 0.8 (3.3) | 0.3 (1.8) | 1.6 (2.7) | 0.5 (0.6) |
| Other Asia, not elsewhere specified (nes) | 3.5 (6.7) | 7.6 (8.0) | 0.9 (3.5) | 0.7 (3.0) | 4.5 (5.6) | 8.3 (7.0) | 3.7 (10.9) | 19.3 (27.5) | 1.1 (4.4) | 1.9 (10.5) | 4.7 (8.2) | 21.1 (24.0) |
| USA | 9.5 (18.0) | 5.4 (5.7) | 5.9 (22.1) | 2.1 (8.7) | 15.5 (19.4) | 7.6 (6.3) | 2.3 (6.8) | 3.4 (5.0) | 3.3 (13.4) | 1.8 (10.4) | 5.5 (9.6) | 5.3 (6.1) |
| Rest of the World | 11.8 (22.5) | 12.4 (13.0) | 6.2 (22.9) | 4.5 (18.2) | 18.0 (22.6) | 16.8 (14.1) | 4.4 (13.4) | 5.4 (7.7) | 1.9 (7.8) | 1.6 (9.3) | 6.3 (11.0) | 7.0 (8.0) |
| World | 52.7 (100) | 95.0 (100) | 27.0 (100) | 24.8 (100) | 79.7 (100) | 119.8 (100) | 33.2 (100) | 70.1 (100) | 24.4 (100) | 17.8 (100) | 57.6 (100) | 87.9 (100) |

NOTE: The numbers in brackets are the shares of Singapore's total exports to the world.

Plus 3 countries refer to China, Japan and South Korea; "Other Asia, not elsewhere specified" includes Taiwan.

Electronics sector is composed of office machines; automated data processing machines; TV, Broadcast and telecom equipment and semiconductors

SOURCE: UN Comtrade Database; authors' calculations.

NOTES

1. For further reading, refer to *Trade Policy Review of Singapore* (2012).
2. For a full list of regional and bilateral FTAs that Singapore has signed on to and enforced as well as those still under negotiation, consult this website: <<http://www.fta.gov.sg/>>.
3. *9th ASEAN Economic Community Council Meeting*, 15 April 2013.
4. Ong Keng Yong quoted a 93 per cent implementation rate for the period 2008–09 (Ong 2012).
5. Non-tariff measures (NTMs) should not be confused with non-tariff barriers (NTBs). Not all NTMs are NTBs, as some of them may have been introduced to meet various regulatory requirements related to health, social, safety and environmental reasons; moreover, some of them have no trade impact and are, therefore, not NTBs.
6. Although there are seven measures discriminating against foreign commercial interests, they do not affect any tariff lines. This is because the NTMs fall mostly under migration measures.
7. Engineering and architecture, nursing, accountancy services, surveying services, medical and dental professionals and tourism professionals.
8. Refer to the Singapore Cooperation Programme (SCP) website at <www.scp.gov.sg>. The currency conversion rate used is SG\$1 = US\$0.80.
9. See Iswaran (2014).
10. Uncharacteristically, Singaporeans in recent years have reacted negatively to the surge in foreign worker inflow, blaming them and their families for the overcrowding of transport, housing, education and recreational facilities, and crowding out in the job market. The government has taken heed of their concerns and improved the supply of public facilities as well as imposed restrictions on the growth of the foreign workforce.
11. For more information, refer to the Singapore Economic Development Board webpage on the electronics industry at <<https://www.edb.gov.sg/content/edb/en/industries/industries/electronics.html>>.
12. According to experts, although Singapore is trying hard to develop high-level capabilities in product innovation and design, the local industries have yet to catch up with the speed of innovation achieved by industry leaders. See Embassy of the United States Singapore (2004).
13. While Singapore's electronics sector's real wage went up from US\$19,151 to US\$31,700 during 2000–01 to 2007–08, the same for Malaysia went up from US\$5,753 to US\$6,033, and for the Philippines, it went up from US\$2,590 to US\$2,638 (Athukorala and Kohpaiboon 2015).
14. For example, Hitachi Chemical Singapore is introducing robots to make Singapore the most automated printed wire board plant in the world. And Texas Instruments has implemented a fully automated warehousing system, improving productivity by 40 per cent and space utilization fourfold. (See Lim, 6 September 2014).
15. See MTI (n.d.).
16. This is the period when the industries were classified based on the SSIC 2010, and when electronics and computer industries were combined with optical products.
17. For example, in the AEC, under MRAs of professionals, Singapore is committed to allowing intra-corporate transfers of PMETs. This implies that overseas companies can send foreign professionals to fill up managerial positions in their companies based in Singapore. However, Singapore has limited it by stating that transferees must come on a two-year contract with the option to extend their stay for three years afterwards up to a total of eight years. According to the policy-makers, as Singapore has a low unemployment rate, this movement of labour is beneficial and is not likely to hurt local professionals (Iswaran 2014).
18. Under the ATIGA preferences, tariff has been eliminated for ASEAN-6 countries and Laos, while the deadline for Cambodia, Myanmar and Vietnam is 2018.
19. Under the 1944 Convention on International Aviation, nine freedoms of the air have been enshrined. These are: (First freedom) fly over a foreign country without landing; (Second freedom) land in a foreign country for refuelling or maintenance, without loading/unloading cargo or passenger; (Third freedom): fly from home country to a foreign country; (Fourth freedom) fly from a foreign country to home country; (Fifth freedom) fly to a foreign country, allowing loading/unloading of cargo and passengers in a second foreign country, on a flight originating or ending in home country; (Sixth freedom) fly from a foreign country to another, with an intermediary stop in home country for reasons other than maintenance or refuelling; (Seventh freedom) fly from a foreign country to another, without a stop in the home country; (Eighth freedom) fly between two or more points in the same foreign country, beginning from or continuing into home country; and (Ninth freedom) fly between two or more points in a foreign country, without home country point, also known as "stand alone cabotage".
20. The EU Open Skies agreement allows any EU airline to fly any route within the boundaries of EU member countries, with unlimited seventh, eighth, and ninth freedoms, however, the ASEAN OS/SAM Agreement in its current form is far more limited.

21. *Asia Weekly*, 25 July 2014.
22. The issue of air safety is gaining prominence, particularly with the hundreds of lives lost in three accidents in 2014 involving Malaysian Airlines and AirAsia Indonesia.
23. See Saifulbahri Ismail, 20 December 2014.

REFERENCES

- 9th ASEAN Economic Community Council Meeting. Hanoi: Ministry of Industry and Trade of the Socialist Republic of Vietnam, 15 April 2013. Available at <<http://www.moit.gov.vn/en/News/252/9th-asean-economic-community-council-meeting.aspx>> (accessed 6 February 2015).
- Ando, Mitsuyo and Ayako Obashi. "The Pervasiveness of Non-Tariff Measures in ASEAN – Evidences from the Inventory Approach". In *Rising Non-Tariff Protectionism and Crisis Recovery*, edited by Mia Mikic and Martin Wermelinger. A Study by the Asia-Pacific Research and Training Network on Trade (ARTNeT). Bangkok: United Nations, 2010.
- ASEAN Secretariat. "ASEAN Develops Tourism Strategic Vision 2016–2025", 13 January 2015. Available at <<http://www.asean.org/news/asean-secretariat-news/item/asean-develops-tourism-strategic-vision-2016-2025>> (accessed 8 May 2015).
- ASEAN Secretariat. *Declaration of ASEAN Concord II (Bali Concord II)*. Bali: ASEAN Secretariat, 7 October 2003. Available at <<http://www.asean.org/news/item/declaration-of-asean-concord-ii-bali-concord-ii>> (accessed 8 May 2015).
- ASEAN Secretariat. *The ASEAN Statistical Yearbook*. Jakarta: ASEAN Secretariat, 2013.
- Athukorala, Prema-Chandra and Archanun Kohpaiboon. "Global Production Sharing, Trade Patterns and Industrialization in Southeast Asia". In *The Routledge Handbook of Southeast Asian Economics*, edited by Ian Coxhead. U.K.: Routledge, 2015.
- Austria, Myrna. "Non-tariff Barriers: A Challenge to Achieving the ASEAN Economic Community". In *The ASEAN Economic Community: A Work in Progress*, edited by Sanchita Basu Das, Jayant Menon, Omkar L. Shrestha and Rodolfo Severino. Singapore: Institute of Southeast Asian Studies, 2013.
- Chia, Siow Yue. "Free Flow of Skilled Labour in the AEC". In *Toward a Competitive ASEAN Single Market; Sectoral Analysis*, edited by Shujiro Urata and Misa Okabe. ERIA Research Project Report 2010-01. Jakarta: ERIA, 2011a.
- . "Singapore". In *Asia's Free Trade Agreements: How is Business Responding?*, edited by Masahiro Kawai and Ganeshan Wignaraja. Cheltenham, U.K.: Edward Elgar, 2011b.
- . "Modalities for ASEAN Economic Integration: Retrospect and Going Forward". Paper prepared for the conference on "ASEAN's Long Term Economic Potential and Vision", RSIS-NTU (Economic Growth Centre), Singapore, 20–21 November 2014 (*forthcoming*).
- Department of Statistics. *Yearbook of Statistics*. Singapore: Department of Statistics, various issues.
- Embassy of the United States Singapore. "Singapore's Electronics Industry — Facing Challenges, but First Mover Advantages". 20 February 2004. <http://singapore.usembassy.gov/uploads/images/kt16tWH8gc2pmf1PPV7g/ElectronicsInd_04.pdf> (accessed 1 February 2015).
- Initiative for ASEAN Integration*. Singapore Cooperation Programme (SCP) website. <http://www.scp.gov.sg/content/scp/iai_programmes/about.html> (accessed 8 May 2015).
- Iswaran, S. "Second Minister S Iswaran's Reply to Parliament Question on ASEAN Economic Community Goal of Movement of Natural Persons". Singapore: Ministry of Trade and Industry, 14 April 2014. Available at <<http://www.mti.gov.sg/NewsRoom/Pages/Second-Minister-S-Iswaran%27s-reply-to-Parliament-Questions-on-ASEAN-Economic-Community-goal-of-movement-of-natural-persons.aspx>> (accessed 8 May 2015).
- Lim, Kok Kiang. "Electronics Industry Remains Competitive". *Straits Times Forum*, 7 September 2014. Available at <<http://www.straitstimes.com/premium/forum-letters/story/electronics-industry-remains-competitive-20140906>> (accessed 8 May 2015).
- McKinsey Global Institute. *Southeast Asia at the Crossroads: Three Paths to Prosperity*. McKinsey and Company, 2014.
- MTI. *Economic Survey of Singapore*. Singapore: Ministry of Trade and Industry, various issues.
- . *The Strategic Economic Plan: Towards a Developed Nation*. Singapore: Ministry of Trade and Industry, 1991.
- . *MTI Occasional Paper on Population and Economy*. <<http://www.mti.gov.sg/MTIinsights/Documents/MTI%20Occasional%20Paper%20on%20Population%20and%20Economy.pdf>> (accessed 6 February 2015).
- Singapore: Ministry of Trade and Industry, undated.

- Nikomborirak, Deunden and Supunnavadee Jitdumrong. "ASEAN Trade in Services". In *The ASEAN Economic Community: A Work in Progress*, edited by Sanchita Basu Das, Jayant Menon, Omkar L. Shrestha and Rodolfo Severino. Singapore: Institute of Southeast Asian Studies, 2013.
- Ong, Keng Yong. "ASEAN Economic Integration: Perspective from Singapore". In *Achieving the ASEAN Economic Community 2015: Challenges for Member Countries and Businesses*, edited by Sanchita Basu Das. Singapore: Institute of Southeast Asian Studies, 2012.
- Saifulbahri Ismail. "Closer Integration Between SIA, Scoot, Tigerair is a Natural Evolution". *Today*, 20 December 2014.
- Singapore Economic Development Board [SEDB]. *Electronics Industry in Singapore*. Available at <<https://www.edb.gov.sg/content/edb/en/industries/industries/electronics.html>> (accessed 1 February 2015).
- Singapore Yearbook of Manpower Statistics*. Singapore: Ministry of Manpower, 2014.
- Tan, Alan Khee-Jin. *Toward a Single Aviation Market in ASEAN: Regulatory Reform and Industry Challenges*. Discussion Paper 2013-22. Jakarta: ERIA, October 2013.
- Toh, Mun Heng. "The Development of Singapore's Electronic Sector". In *Architects of Growth? Subnational Governments and Industrialization in Asia*, edited by Francis E. Hutchinson. Singapore: Institute of Southeast Asian Studies, 2014.
- Wilson, Karl. "Cracks show in ASEAN's Aviation Sector". *China Daily Asia* [online], 25 July 2014 <http://www.chinadailyasia.com/asiaweekly/2014-07/25/content_15152109.html> (accessed 8 May 2015).
- Wong, H. K. "The Remaking of Singapore's High-Tech Enterprise System". In *Making IT: The Rise of Asian in High Tech*, edited by Henry S. Rowen, Marguerite G. Hancock and Lilliam F. Miller. Stanford: Stanford University Press, 2007.
- World Bank. *Logistics Performance Index 2014*. Washington, D.C.: World Bank, 2014.
- . *Doing Business 2012*. Washington, D.C.: World Bank, 2012.
- World Economic Forum. *World Competitiveness Index, 2012–2013*. Geneva: World Economic Forum, 2012.
- WTO. *Trade Policy Review of Singapore*. Geneva: World Trade Organization, 2012.

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