

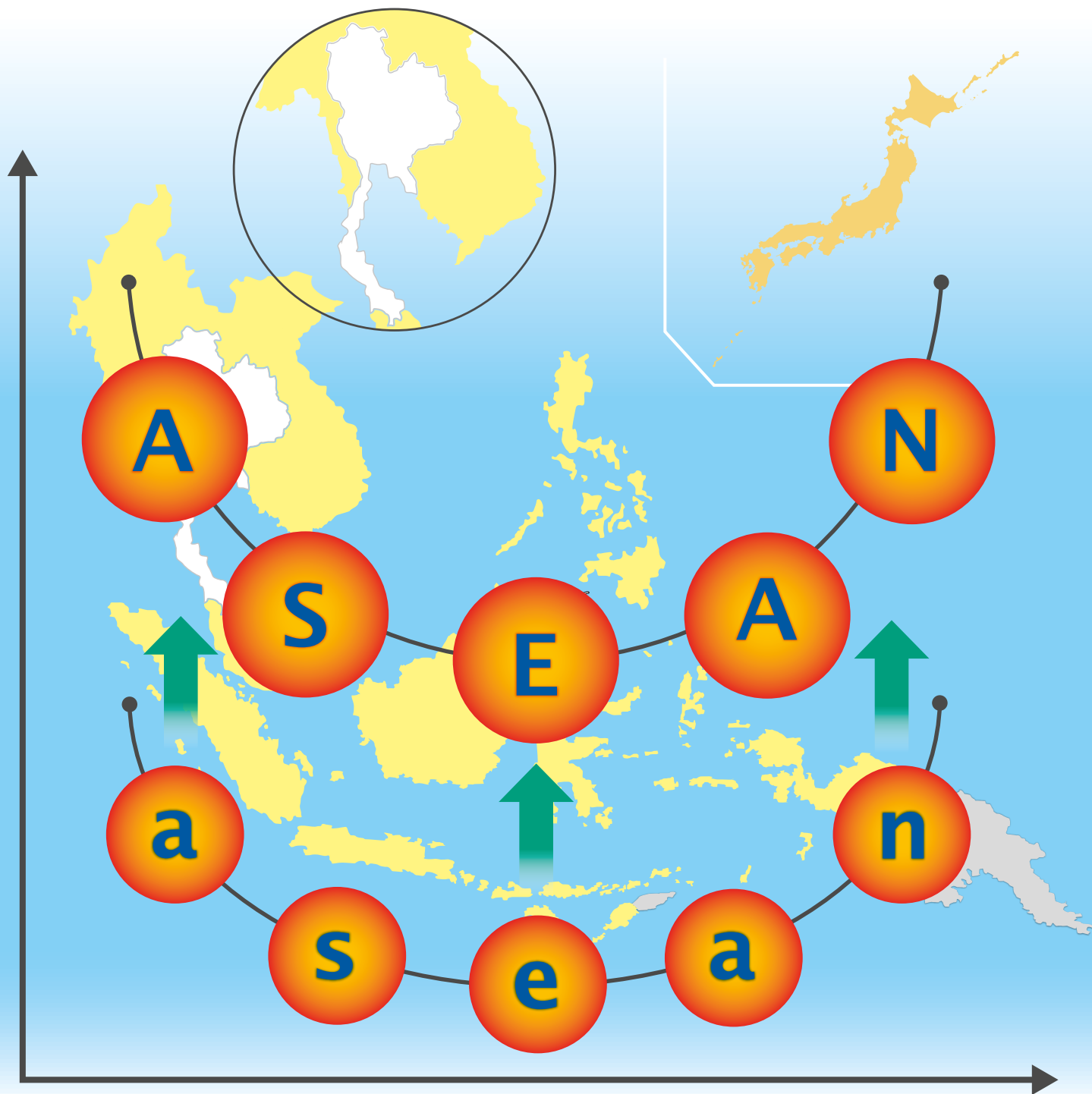
Global Value Chains in ASEAN

Thailand

PAPER 10

MARCH

2019



ASEAN-JAPAN
CENTRE

国際機関 日本アセアンセンター

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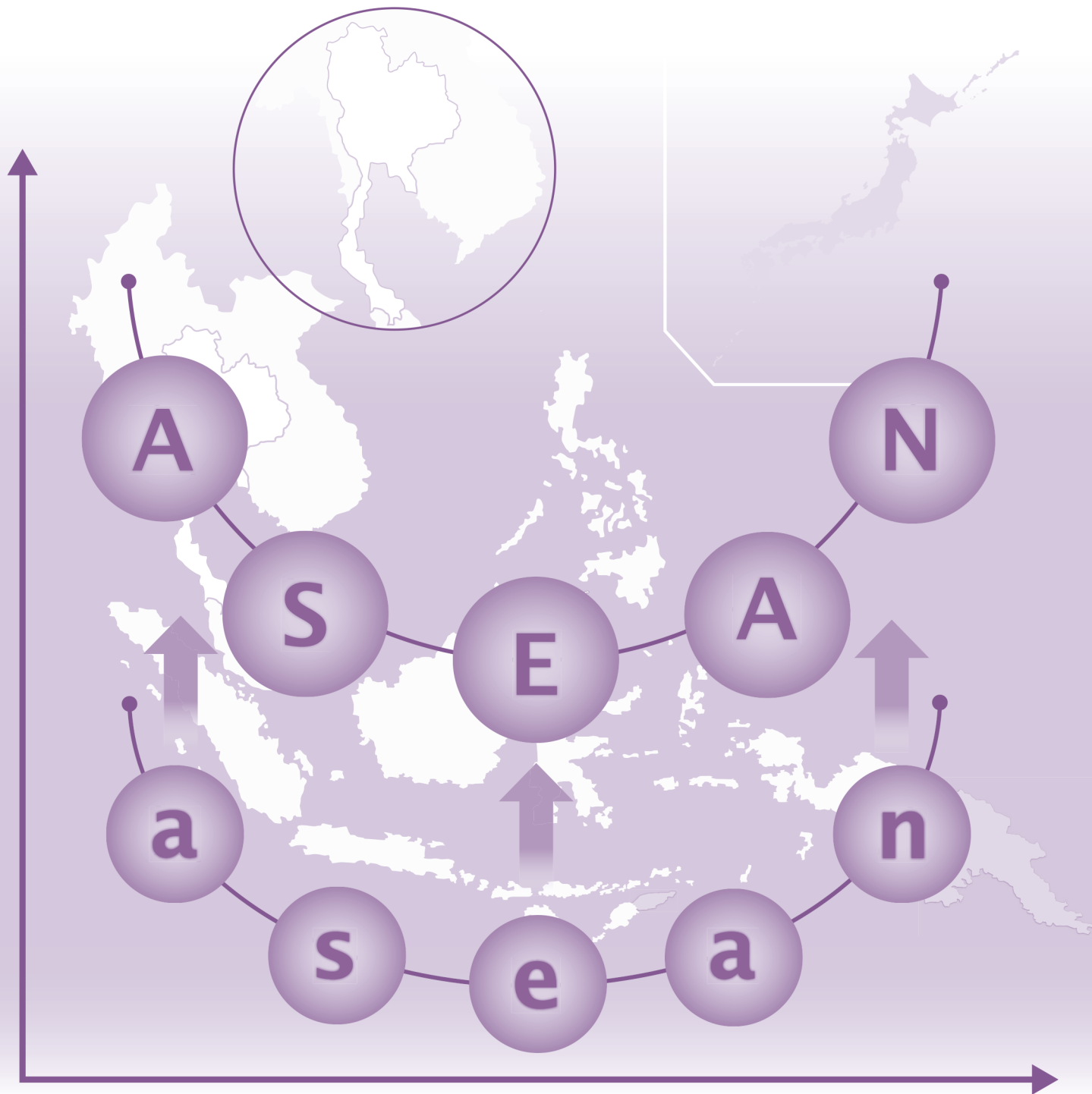
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NOTES

The terms “country” and “economy” as used in this study also refer, as appropriate, to territories or areas. The designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the ASEAN-Japan Centre concerning the legal status of any country, territory, city, or area or of the authorities, or delimitations of frontiers or boundaries.

The following symbols have been used in the tables:

- Two dots (...) indicate that data are not available or are not separately reported.
- A dash (-) indicates that the item is equal to zero or its value is negligible.
- Use of a dash (-) between dates representing years, e.g., 2015–2016, signifies the full period involved, including the beginning and end years.
- Reference to “dollars” (\$) means United States dollars, unless otherwise indicated.

List of papers under the project on global value chains in ASEAN by the ASEAN-Japan Centre

The current paper is the 10th of a series of 16 papers on ASEAN GVCs. The other 15 papers have been published or are forthcoming.

Paper 1. A Regional Perspective (first published in September 2017; revised in January 2019)

Paper 2. Brunei Darussalam (published in February 2018)

Paper 3. Cambodia

Paper 4. Indonesia

Paper 5. Lao People’s Democratic Republic

Paper 6. Malaysia

Paper 7. Myanmar

Paper 8. Philippines (published in July 2017)

Paper 9. Singapore (published in August 2018)

Paper 10. Thailand

Paper 11. Viet Nam

Paper 12. Automobiles

Paper 13. Electronics

Paper 14. Textiles and clothing

Paper 15. Agribusiness

Paper 16. Tourism (published in March 2018)

Prepared by Upalat Korwatanasakul (ASEAN-Japan Centre - AJC) under the direction of Masataka Fujita (AJC). The author wishes to thank the staff members of the AJC for their contribution. The author would also like to express his sincere appreciation to Dr Patarapong Intarakumnerd (GRIPS), Mr Suriyon Thunkijjanukij (NESDC), and Dr Danupon Ariyasajakorn (Chulalongkorn University) for their valuable input and comments. The manuscript was edited by Adam Majoe and typeset by Laurence Duchemin. Errors and omissions are only those of the author and should not be attributed to his organization.

ABBREVIATIONS

AJC	ASEAN-Japan Centre
AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
CLM	Cambodia, the Lao People’s Democratic Republic, and Myanmar
DVA	domestic value added
DVX	value added incorporated in other countries’ exports
FDI	foreign direct investment
FVA	foreign value added
FY	fiscal year
GDP	gross domestic product
GVC	global value chain
JETRO	Japan External Trade Organization
MNC	multinational corporation
NRU	national research university
OECD	Organisation for Economic Co-operation and Development
R&D	research and development
RVC	regional value chain
MSME	micro, small, and medium-sized enterprise
UNCTAD	United Nations Conference on Trade and Development
US	United States

KEY MESSAGES

Although Thailand's structural transformation from being a low-income country to a middle-income country was a success story, it has since been caught in the middle-income trap and has not been able to attain a high-income economy status even after a long period of time.

Thailand has enjoyed a smaller share of the larger global value chain (GVC) pie by promoting trade liberalization and attracting more foreign direct investment. The country has raised the volume of its economic activity, both in terms of the total amount of exports and total output, while depending on more foreign inputs to produce its exports.

Large exporting industries, such as the automotive industry and electronics industry, are not listed among the top industries in terms of multiplier effect generation or the impact on other industries or throughout the economy.

High foreign imports and imbalanced GVC participation (high concentration in the automobile industry) are some of the factors that have led to Thailand's structural stagnation, the slowdown in growth, and the economy's failure to transition properly to productivity and innovation-driven growth.

Thus, it is time for Thailand to move up the value chain (upgrading) and strategically engage in GVCs in other industries and sectors, including agriculture and services.

Together with strengthening its domestic industries and market, Thailand should consider adopting a GVC-upgrading development model as one of its strategic options to help integrate itself into GVCs for goods, services, and technology and encourage strategic GVC participation among industries and sectors.

"Thailand 4.0" will be facilitated and driven more by GVCs, which will be the focus of Thailand's general policy recommendation.

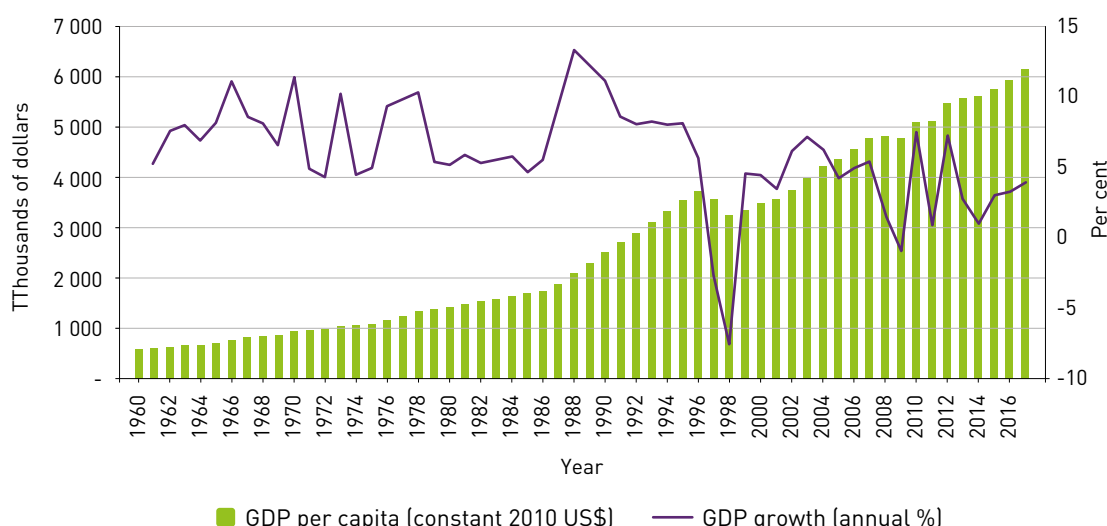
Although Thailand’s structural transformation from being a low-income country to a middle-income country was a success story ...

Thailand used to be one of the fastest growing countries in the world. According to Figure 1, during 1960–2017, the country’s average annual real gross domestic product (GDP) growth rate was 6%. GDP per capita has grown substantially during the past decades. Thailand reached its peak in 1988 with a real GDP growth rate of 13% thanks to its second structural transformation and export-oriented policies. However, only one decade later, in 1998, it hit bottom with a negative growth rate of -7.6% due to the 1997 Asian financial crisis, which originated from Thailand. The standard of living has gradually improved as per capita GDP has increased substantially during the past 50 years, except for during the times of financial crisis.

... it has since been caught in the middle-income trap and has not been able to attain a high-income economy status even after a long period of time.

Although Thailand’s structural transformation from low- to middle-income status has been a success story, the country has been losing its competitiveness due to rising wages, preventing it from competing with more innovative advanced economies. Thailand has been caught in the “middle-income trap”¹ and has not been able to become a high-income economy. With the country’s prolonged political turbulence, the future of the Thai economy is still cast in shadow. Data from 2006 until the present show severe fluctuations in the Thai economy, as shown by GDP growth rates that have generally been lower than during the Asian financial crisis (Figure 1).

Figure 1. Real GDP growth and per capita GDP in Thailand, 1960–2017



Source: AJC’s compilation based on World Bank (2018).

¹ The term “middle-income trap” was coined by Gill and Kharas in 2006 (see Gill and Kharas [2015]). However, there is no consensus on its definition. Engel and Taglioni (2017) point out the common characteristics of the middle-income trap from several studies and define it as a situation in which a country cannot sustain a high growth rate due to its inability to adjust its growth strategy and economic structure.

This paper is the 10th in a series of 16 papers on global value chains (GVCs) in the Association of Southeast Asian Nations (ASEAN) by the ASEAN-Japan Centre (AJC) (Box 1). It illustrates the emergence and growing significance of trade through GVCs and its potential as a solution for the middle-income trap. One obvious advantage that developing countries, such as Thailand, can gain from joining GVCs is that GVCs allow them to internationalize their comparative advantage (Engel and Taglioni, 2017). In other words, GVCs provide the opportunity for private firms to join international production networks rather than having to develop their own value chains (Stamm, 2004; Baldwin, 2013; OECD, 2013; Escaith, 2014; Baldwin and Lopez-Gonzalez, 2015). Through backward linkages and spillover effects, developing countries can sustain their high growth rates and prepare to move to higher value-added production (upgrading) (Hausmann, 2014). GVC participation also seems to aid in exiting the middle-income trap (Kummritz et al., 2017; Boffa et al., 2016). Nevertheless, Thailand, as did other developing countries, initially enjoyed the aforementioned advantages from GVC participation but is still struggling in the middle-income trap. What can Thailand do? Does Thailand need a new strategy? This paper not only maps out GVCs of Thailand but also provides a solution to the middle-income trap through utilizing GVCs for economic upgrading and transformation. The findings show that enhancing economic and industrial complexity, as well as institutional sophistication, is a prerequisite for participation in more sophisticated, higher value-added GVCs (OECD, 2013; Bamber et al., 2014; Kowalski et al., 2015; Engel and Taglioni, 2017).

Box 1. GVC work undertaken by the ASEAN-Japan Centre: First phase

AJC's current work on GVCs is a multiyear and first-phase research effort that produces annual value chain data for individual ASEAN Member States as well as analytical papers based on the results of these data. The first year (FY2016) generated basic datasets for ASEAN as a group and for the individual member states (which are used in the present paper). In the second year (FY2017), four papers were produced: Brunei Darussalam (Paper 2), the Philippines (Paper 8), an industry paper on tourism (Paper 16), and a regional paper (Paper 1). In the current fiscal year (FY2018), AJC has already produced a country paper on Singapore and reviewed Paper 1 to introduce the 2018 data on value-added trade. In the remaining years, AJC will continue to produce evidence-based, policy-oriented technical papers while maintaining and updating the database created in the first year.

This work also reinforces the Centre's technical cooperation programme in trade and investment by identifying which sectors to target for promotional activities from the point of view of value chains. It assesses the size and significance of economic partnerships between ASEAN and Japan through GVCs in different sectors, in part to identify the sectors for which the Centre should carry out greater promotional efforts but also try to derive synergies between its technical cooperation and analytical contribution.

Output 1: Creation of the database on ASEAN GVCs

On the basis of the UNCTAD-Eora GVC database and further data construction for ASEAN countries, a unique database on GVCs was established for 10 ASEAN Member States, with special emphasis on Japan as a partner. Other important partners for ASEAN, such as China and the Republic of Korea, are also included in the database. The database uses value-added trade data derived from the Eora global multiregional input-output table (www.worldmrio.com). The Centre's database is called the AJC-UNCTAD-Eora database on ASEAN GVCs, and it has gradually been made public following the validation of the estimated data.

Box 1. GVC work undertaken by the ASEAN-Japan Centre: First phase (continued)

Value-added trade statistics can lead to important policy insights for trade, investment and development. The Centre, as part of new efforts to conduct research and policy analysis, aims to provide analysis of the relevance, impact, and patterns of value added trade and GVCs across ASEAN, and in member countries. The database is helpful for this purpose.

Variables in the database include foreign value-added trade, domestic value-added trade, value added integrated in other countries' exports and gross exports for 26 industries in Brunei Darussalam and the CLM countries (Cambodia, the Lao People's Democratic Republic and Myanmar), 77 industries in Indonesia and the Philippines, 113 industries in Viet Nam, 154 industries in Singapore, 180 industries in Thailand, 298 industries in Malaysia, and 462 industries in Japan, covering initially the period 1990–2013 and to be updated regularly. As of March 2019, the period covering industry data has extended to 2015. For the bilateral country data alone, the data are projected until 2018 by UNCTAD and Eora. Data are collected and estimated for these variables in a systematic manner. They are also presented in a standardized industry classification in the database for comparability among ASEAN countries for the following five variables:

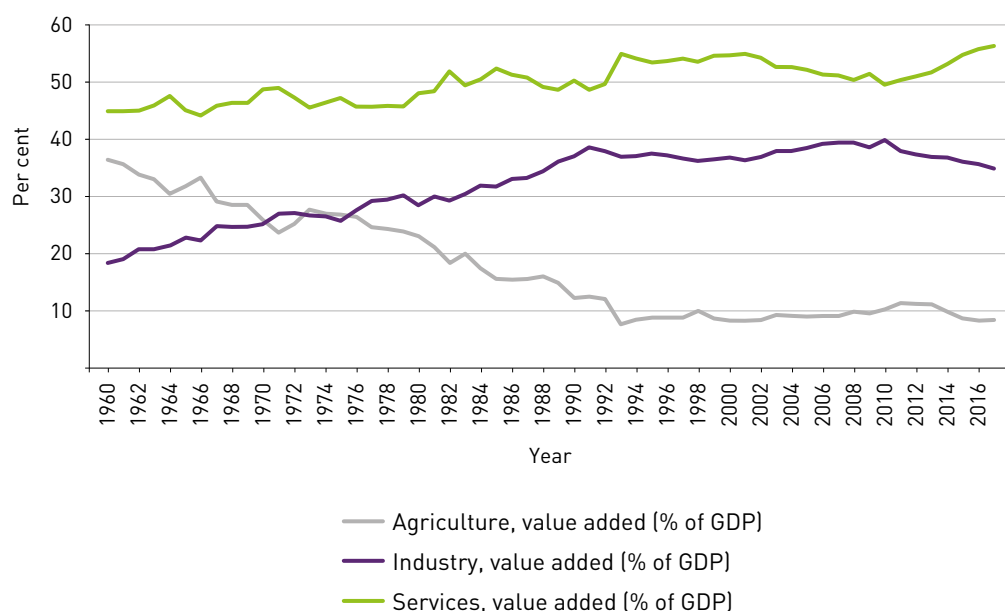
- Foreign value added: FVA
- Domestic value added: DVA
- Value added incorporated in other countries' exports: DVX
- GVC participation: FVA + DVX
- Gross exports (total value-added exports): FVA + DVA

Output 2: Sixteen evidence-based, policy-oriented technical reports

In a collaborative effort with the Eora project and UNCTAD, the new database of the Centre will be used to assess the patterns, development impact, and policy implications of value-added trade and investment. Under this multiyear programme, 16 evidence-based and policy-oriented technical reports will be prepared: in addition to this general paper on ASEAN as a whole (Paper 1); individual reports on 10 ASEAN Member States (Papers 2–11); and five selected industries (Papers 12–16), electronics, automobiles, textiles and clothing, agribusiness, and tourism. These industries are not only central economic – and strategically important – activities for many ASEAN Member States but they also develop significant GVCs as well as regional value chains (RVCs).

Thailand's high GDP growth has been claimed to be the result of the structural transformation during the pre-boom period of 1951–1986 (Korwatanasakul, 2017). Thailand transitioned from a primitive agriculture-based economy to a newly industrialized economy. From 1971, the share of manufacturing outweighed that of agriculture and became even more important from the 1980s onwards (Figure 2).

Thailand also went through another structural transformation in terms of its export and import patterns (Korwatanasakul, 2017). Thailand changed from being an agricultural produce exporter, such as of rice, to being a manufactured goods exporter, starting with garments and parts and components. Siriprachai (2009) divides Thai industrial development into four phases based on the characteristics of its import and export activities (Box 2).

Figure 2. **Structural transformation: net output as % of GDP, 1960–2017**

Source: AJC's compilation based on World Bank (2018).

Box 2. Thai industrial development strategy

According to Siriprachai (2009), the first phase of Thailand's industrial development was the period of import substitution during 1961–1971. From this period, the government started to allocate a larger portion of its budget towards the manufacturing sector, e.g. food processing. The manufacturing sector also expanded due to the allocation of other resources from the agricultural sector; therefore, it is often argued that the expansion of the manufacturing sector was at the expense of the agricultural sector. To promote import substitution, the government protected domestic industries targeting the domestic market. However, the domestic market soon became saturated. Hence, in the second phase, the government shifted its emphasis to export-oriented industries, e.g., textiles. This phase refers to the period of export promotion during 1972–1976. Due to the global recession, this industrial development strategy was not successful. The next phase (phase three) is known as the "Big Push" (1977–1982). The government's main strategy was to focus on the development of necessary infrastructure and the enhancement of domestic industry. The Eastern Seaboard Development Programme was initiated to build an industrial complex in the eastern area of Thailand. Moreover, the discovery of natural gas in the Gulf of Thailand helped contribute to the success of the large-scale industrial development plan. From 1983, the government moved forward with the next phase of industrial development, manufacturing export-led growth, or the export-oriented development strategy.

Thailand has enjoyed a smaller share of the larger GVC pie by promoting trade liberalization and attracting more foreign direct investment (FDI).

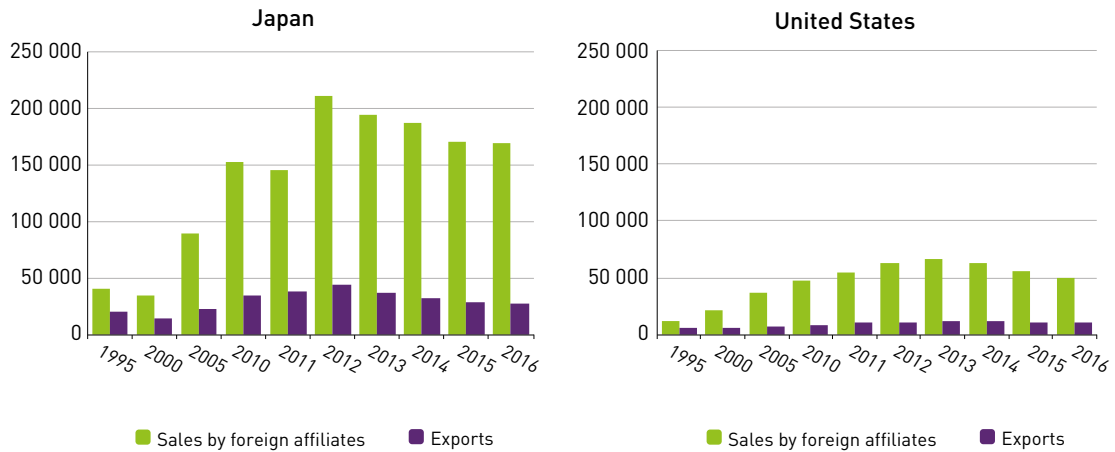
The export-oriented development strategy has promoted participation in GVCs. In fact, during this phase, Thailand has predominantly entered GVCs at the assembly or production stage and subsequently sought to move towards higher value-added activities. Industries such as parts and components, automobiles, and electrical appliances have shown strong growth. This has contributed mainly to the fast growth of the Thai economy, of which FDI has also played an important role.

Owing to Thailand's local content requirement policy in the 1970s and the trade liberalization and FDI attraction policies in the 1990s, both Japanese and United States (US) firms brought capital and technology to establish their production bases in Thailand. This reduced the direct exports of intermediate goods and final products from both countries to Thailand. The exports to Thailand from Japan and the US have remained constant, while sales by Japanese and US affiliates have been increasing since 1995 (Figure 3). Japanese firms have invested more than US firms,² reflected in the statistics that show that sales by Japanese firms are approximately three times larger than those by US firms.

Among the direct suppliers, Japan was once the largest foreign input supplier for Thailand's exports, but its share has declined since 2000 (Figure 4) with the rising volume of international production by Japanese affiliates in Thailand (Figure 3). Thailand began to adopt more inputs from its neighbouring countries, namely China and ASEAN nations as shares of foreign value added (FVA) from China and ASEAN increased significantly (see Box 3 for GVC terminology). In other words, for the past decade, inputs imported directly from Japan have been replaced to some extent by those from China and the neighbouring Southeast Asian countries (Figure 4). This has been due to the fact that many Japanese firms relocated their production bases to Thailand in response to the local content requirement and trade liberalization policies. This substantively reduced the direct imports of inputs from Japan. More than half of Japanese affiliates' procurement of materials and parts in Thailand is locally produced by Japanese affiliates operating in Thailand (Figure 5). Moreover, as Thailand has upgraded to some extent to higher positions in the GVCs of some industries, such as electronics, petrochemicals, and automobiles, and focused on the production of more relatively sophisticated products than before (low-tech industries to mid-tech industries), it has come to depend more on raw materials and intermediate goods from China. The ASEAN Free Trade Area (AFTA), what was started in 1992, has also facilitated trade between Thailand and other ASEAN countries, especially in intermediate goods.

² Japan and the United States; FDI stock in Thailand reached \$83.1 billion and \$15.8 billion, respectively, in 2017 (Bank of Thailand, 2018).

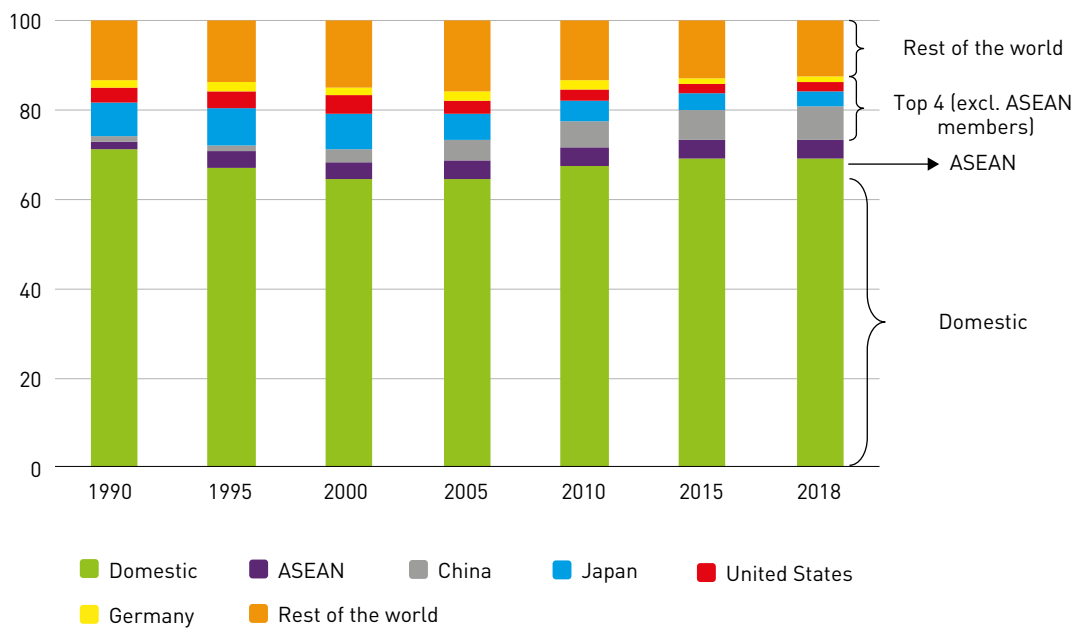
Figure 3. **Exports to Thailand from Japan and the United States and sales by Japanese and United States affiliates in Thailand, 1995–2016** (Millions of dollars)



Source: UNCTAD FDI/TNC database (for sales by foreign affiliates) and UNCTAD GlobStat (for exports).

Note: For sales data, all affiliates for Japan and majority-owned foreign affiliates for the United States.

Figure 4. **Value-added exports from Thailand by domestic, ASEAN, and other top-four foreign country value-added creators, 1990–2018**



Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Box 3. GVC terminology used in the AJC paper series

A country's exports can be divided into domestically produced value added and imported (foreign) value added that is incorporated into exported goods and services. Furthermore, exports can go to a foreign market either for final consumption or as intermediate inputs to be exported again to third countries (or back to the original country). The analysis of GVCs takes into account both foreign value added in exports (the upstream perspective) and exported value added incorporated in third-country exports (the downstream perspective). The indicators used in this paper series are as follows:

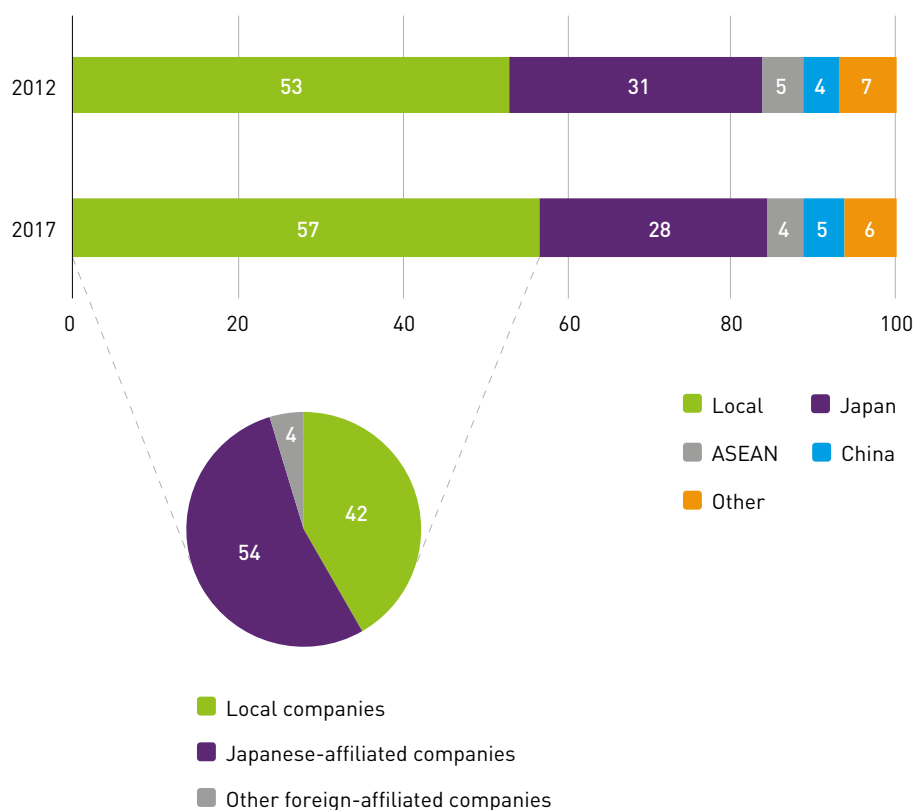
1. **Foreign value added:** Foreign value added indicates the part of a country's gross exports consists of inputs that have been produced in other countries. The foreign value-added share is the share of the country's exports that do not add to its GDP.
2. **Domestic value added:** Domestic value added is the part of a country's exports created within the country, i.e., the part of exports that contributes to GDP. The sum of foreign and domestic value added equates to gross exports. Domestic value added can be considered in relation with other variables:
 - As a share of GDP, it measures the extent to which trade contributes to the GDP of a country.
 - As a share of global value-added trade (the "slice of the value-added trade pie"), it can be compared with a country's share in global gross exports (relative value capture from trade).
3. **Value added incorporated in other countries' exports:** This indicates the extent to which a country's exports are used as inputs to exports from other countries. At the global level, the sum of this value and the sum of foreign value added are the same.
4. **GVC participation** indicates the share of a country's exports that is part of a multistage trade process, by adding to the foreign value added used in a country's own exports the value added supplied to other countries' exports. Although the degree to which exports are used by other countries for further export generation may appear less relevant for policymakers, as it does not change the domestic value added contribution of trade, the participation rate is a useful indicator for the extent to which a country's exports are integrated in international production networks.

GVC participation corrects the limitation of the indicators for both foreign and domestic value added, in which countries at the beginning of the value chain (e.g., exporters of raw materials) by definition have low shares of foreign value-added content in exports. It gives a more complete picture of the involvement of countries in GVCs, both upstream and downstream.

GVC indicators can also be used to assess the extent to which industries rely on internationally integrated production networks. A number of complex methods have been devised in the literature to measure GVC length; however, the degree of double-counting in industries, conceptually, can serve as a rough proxy. Data on value-added trade by industry can provide useful indications of the comparative advantages and competitiveness of countries and, hence, form a basis for development strategies and policies.

Source: Adapted from UNCTAD (2013).

Figure 5. **Japanese affiliates' procurement of raw materials and parts by source in Thailand, 2012 and 2017** (Per cent)

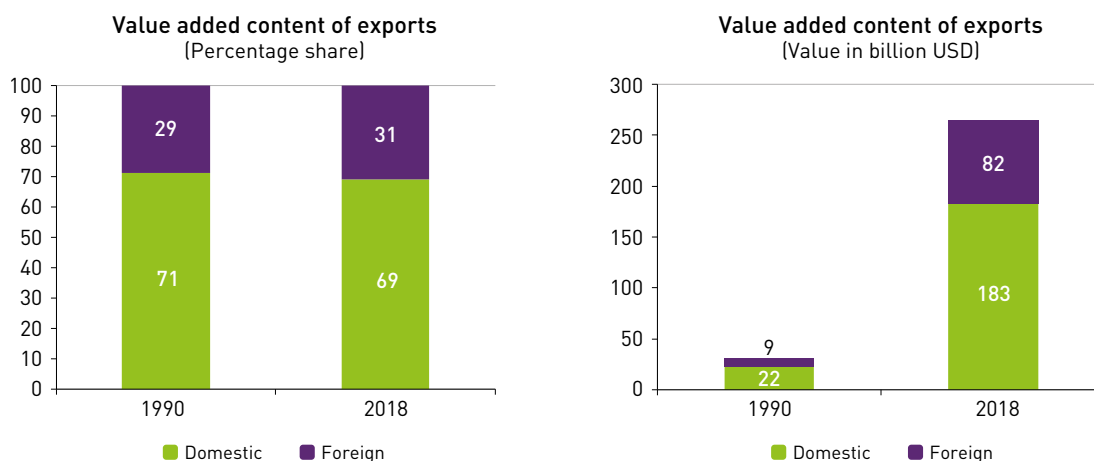


Source: JETRO (2017).

Thailand has raised the volume of its economic activity, both in terms of the total amount of exports and output, while depending on more foreign inputs to produce its exports.

As shown in Figure 6, domestic value added (DVA), or the value added attributable to the domestic economy (see Box 3), fell from 71% in 1990 to 69% in 2018. However, the decreased DVA ratio was followed by increases in gross exports (13% annually during 1990–2018), and the volume of DVA also increased approximately ninefold. In other words, the growth rate of FVA has been higher than that of DVA. Therefore, Thailand enjoyed a smaller share of a larger pie of exports. While promoting trade liberalization and attracting more FDI increased the amount of exports dramatically, the value added contributed by foreign countries also rose at the same time and at an even higher growth rate. Thailand has raised the volume of its economic activity, both in terms of the total amount of exports and output, while depending on more foreign inputs to produce its exports. Hence, what matters is *the amount of value added* that the economic activities generate rather than the *share of value added* (Kowalski et al., 2015; Engel and Taglioni, 2017). Nonetheless, to maintain a satisfactory amount of value-added in the long run, industrial and technology upgrading is needed since less technologically sophisticated activities can be replaced by countries with lower wages.

Figure 6. **Enjoying a smaller share of a bigger pie: Thailand’s exports in 2018**

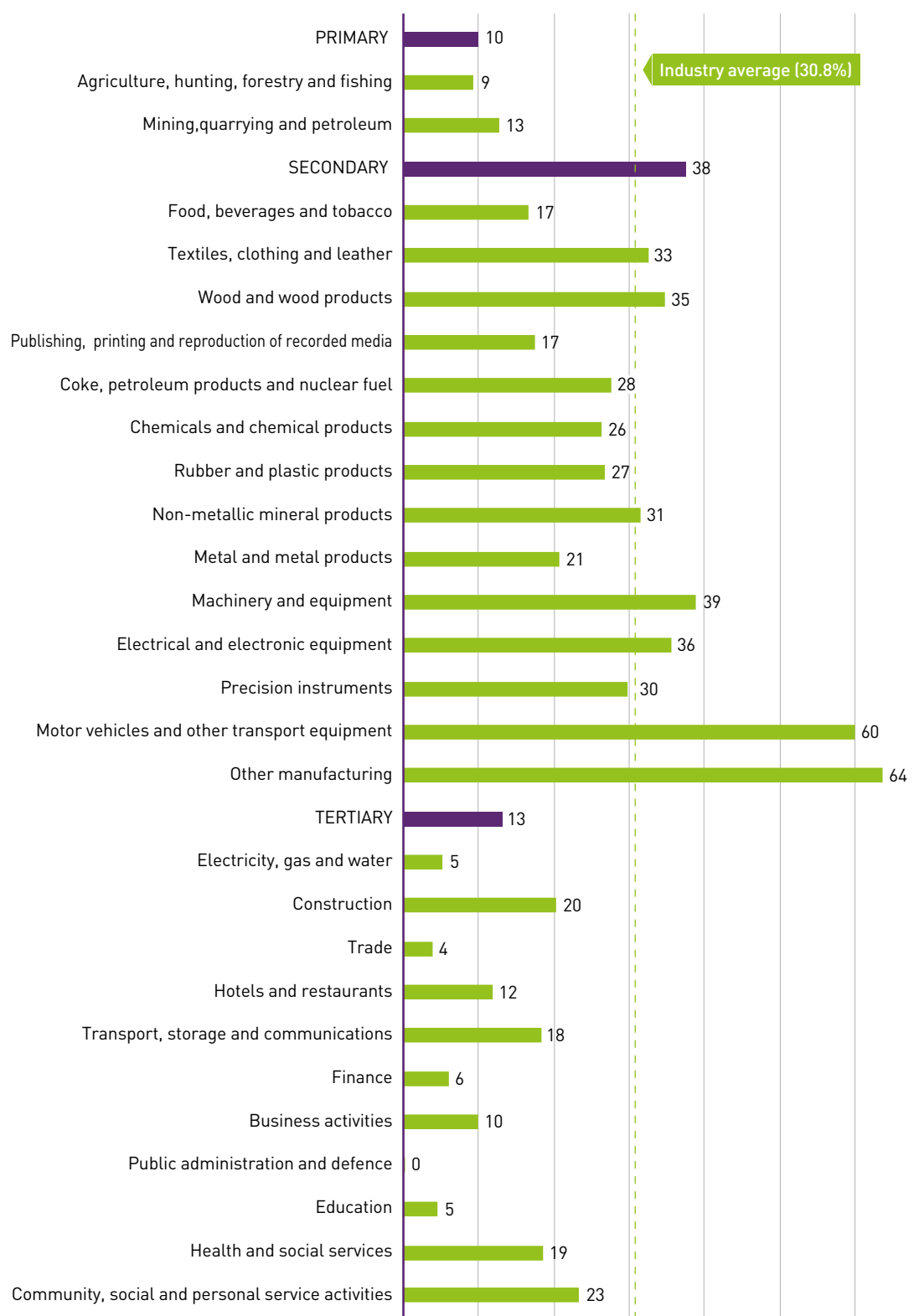


Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Figure 7 emphasizes the fact that Thailand has relied heavily on foreign intermediate products, especially in the motor vehicles and other transport equipment industry and other manufacturing industries. Larger portions of foreign inputs are found in the secondary sector, such as electrical and electronic equipment, machinery and equipment, and motor vehicles and other transport equipment, compared to the primary and tertiary sectors, such as mining, quarrying and petroleum, construction, and trade.

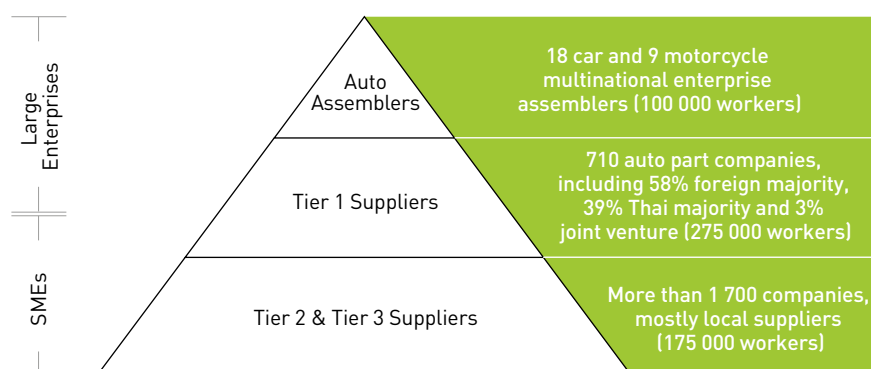
Thailand’s strategy of export-led growth coupled with FDI attraction has allowed Thailand to successfully integrate into global markets and upgrade within GVCs with industry transformation from labour-intensive and low-tech industries (like garments and shoes) to skill-intensive and mid-tech industries (like automobiles). With government support, Thailand has created competitive automotive clusters of multinational assemblers and parts and components suppliers, especially those from Japan and the US (Natsuda and Thoburn, 2011; Intarakumnerd and Techakanont, 2016). As shown in Figure 8, in 2017, there were more than 2,400 firms, 710 of which were Tier 1 suppliers, and 550,000 employers in the Thai automotive industry (Board of Investment, 2015, 2017). Most of the assemblers are subsidiaries of multinational corporations (MNCs), whereas local companies are concentrated in Tier 2 and Tier 3. In 2016, Thailand’s automotive industry manufactured 2 million units, including passenger cars (51%) and one-tonne pick-ups (47%), 60% of which were exported mainly to Australia and ASEAN countries (Yongpisanphob, 2017). Participation in automobile GVCs has helped Thailand improve its competitiveness and expand its production and job creation by gaining better access to global markets. For decades, Thailand has been positioning itself as an automotive regional hub in ASEAN and Asia and moved towards more specific products, such as one-tonne pick-up trucks and eco cars. Specific fiscal incentives have been applied to encourage investment in these products. This illustrates that competing successfully and sustainably in GVCs requires specialization at the firm level, product level, and worker level, rather than country-level specialization, since recent production networks are fragmented along the production stages (Ing and Kimura, 2017).

Figure 7. Thailand's share of foreign value added in exports by industry, 2015 (Per cent)



Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Figure 8. Structure of Thailand's automotive industry, 2017



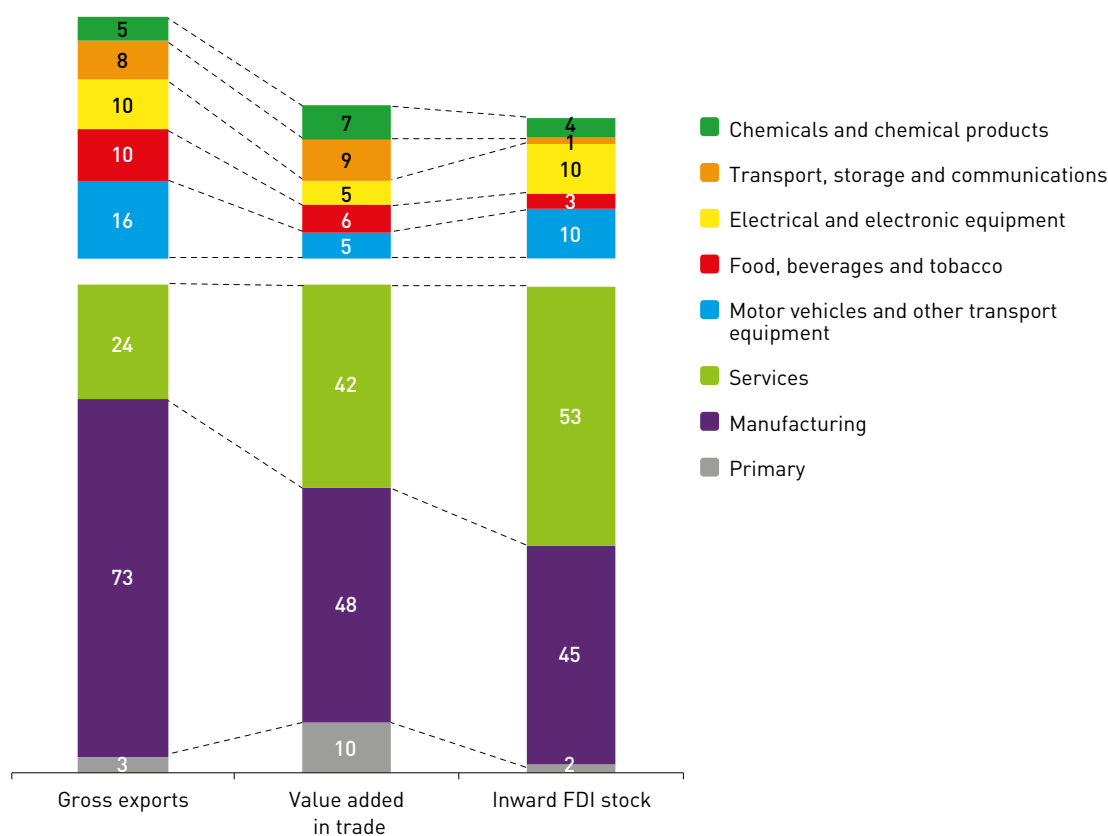
Source: AJC's compilation based on promotional documents from Thailand's Board of Investment (2015, 2017).
 Note: The number of workers is estimated for 2014.

In order to achieve the higher competitiveness of products for growth and development, dependence on FVA was initially unavoidable. Thailand could upgrade in the earlier development stage through the involvement of foreign products. However, in the higher development stage, if Thailand continues to depend mainly on FVA, it will become more difficult to sustain its growth rates and move up to a higher income level. Thailand may start to lose its competitiveness and fall into the middle-income trap. The trade in value added statistics show that the importance of the manufacturing sector was overestimated in the traditional trade industry classification. This was the case especially for the motor vehicles and other transport equipment industry (hereafter referred to as motor vehicles industry), for which the traditional classification accounted for 16% of the total in 2015 as opposed to only 5% of total exports when considering the export value in terms of value added creation (Figure 9). On the other hand, other manufacturing industries seem to become even more important in terms of industry classification by value added creation, such as food and beverages and chemical products at 6% and 7%, respectively, and services industries, such as transport, storage, and communication at 9%.

This seems to be paradoxical as the automobile industry is the largest exporting industry. However, considering the types of products used in the manufacturing and exporting of automobiles, products from the services sector (e.g., computer software) and other industries (e.g., the steel industry and electronics industry) are used substantially in addition to the products from its own industry. The automobile industry is typical of an industry that uses various products from almost all industries. While maintaining the importance of the motor vehicle industry, greater efforts and resources can be also given to developing other industries for increasing the value added of the automotive industry as well as industries that generate more domestic value added in the country.

Figure 9 also indicates that Thailand has been gradually moving towards the services sector as value added in the exports of the services sector (42%) is less than that of the manufacturing sector (48%) by only 6%. Regarding the inward FDI stock, foreign investors have been attracted to the services sector, e.g., the trade industry, transport, storage, and communication industry, financial industry, and telecommunications industry. FDI in this sector accounts for 53% of the total inward FDI stock and the share even exceeds that of the manufacturing sector (45%). Thailand's GDP by sector also indicates a similar share, at 56% for the services sector in 2017. Thus, it is apparent that Thailand is becoming a service-oriented economy.

Figure 9. **Relationship between GVCs and FDI in Thailand by industry, 2015**
(Percentage share in total industry)



Source: AJC-UNCTAD-Eora database on ASEAN GVCs and UNCTAD for inward FDI stock.

Note: Services include amounts not allocated by industry.

Industry classification for gross exports is on a consignment basis, while that for value added in trade is on a value added creating industry basis.

Large exporting industries, such as the automotive industry and electronics industry, are not listed among the top industries in terms of multiplier effect generation, or the impact on other industries and throughout the economy.

Manufacturing-related exporting industries, except primary-based industries, such as foods and textiles, are not listed among the top industries in terms of multiplier effect generation in domestic industries (Figure 10). Such industries include automobiles and electronics, both large exporters from Thailand. They generate multiplier effects below the average (1.66) owing to heavy reliance on FVA. In contrast, the wholesale and retail trade (services) industry gives the largest multiplier of any industry. Every dollar increase in demand for wholesale and retail trade supports \$5.02 in output from other domestic industries. The industries that have multiplier effects greater than 2 include textiles, wearing apparel, leather, and related products; mining and extraction of energy producing products; agriculture, forestry, and fishing; electricity, gas, water supply, and related services; financial and insurance activities; coke and refined petroleum products; and wholesale and retail

trade. An industry with a high multiplier effect (backward linkage) indicates that the industry tends to use inputs produced by other domestic industries. In other words, the industry is highly integrated with other domestic industries. This linkage effect indicator for automobiles and electronics could be higher if the linkages of these industries' firms with local Thai firms were strengthened. Only if this linkage is achieved can the impact of motor vehicles industry activities on the domestic economy be larger and more significant.

Figure 10. Total domestic backward linkage effects by sector, 2015



Source: OECD, Input-Output Table.

Note: The total domestic backward linkage effects are calculated from the Leontief inverse matrix of the input-output table.

From the previous discussion, the common characteristics of industries with high FVA in Thailand are (i) producing relatively lower value added in exports and (ii) generating multiplier effects within the domestic economy below the industry average. For example, the motor vehicles industry provides low value added in Thailand as the Thai automotive industry specializes in low-skill intensive processes of production, i.e., motor vehicle assembly. Over time, Thailand has been losing its competitiveness due to an increase in wages and has not been able to catch up with home economies, such as Japan, which focuses on more sophisticated tasks, e.g., research and development (R&D) and product design, to name a few. Moreover, Figure 8 indicates that the majority of auto part companies that supply their outputs to foreign assemblers are foreign companies, while Thai producers are mainly concentrated in Tier 2 and Tier 3. This supports the fact that industries such as the motor vehicle industry can generate only average multiplier effects since producers in those industries, mainly foreign investors, tend to intensively use imported inputs or inputs produced by their own subsidiaries rather than using inputs from indigenous Thai suppliers. Policies to strengthen the technological and innovative capabilities of local firms are very much needed.

High foreign imports and imbalanced GVC participation (high concentration in the automobile industry) are some of the factors that have led to Thailand's structural stagnation, the slowdown in growth, and the economy's failure to transition properly to productivity and innovation-driven growth.

Ohno (2009) categorized Thailand (and Malaysia) into Stage Two of the stages of catch-up industrialization in which host countries play a supportive role in GVCs under foreign guidance (e.g., Japanese MNCs in the case of Thailand). Heavy reliance on industries with high foreign inputs has led to Thailand's structural stagnation, the slowdown in growth, and failure to make the proper transition to productivity and innovation-driven growth. Thus, to overcome these challenges, it is time for Thailand to move up the value chain (upgrading) as part of the solution to the structural stagnation and strategically promote GVCs in other industries and sectors, including agriculture and services.

Thus, it is time for Thailand to move up the value chain (upgrading) and strategically engage in GVCs in other industries and sectors, including agriculture and services.

The past four decades have seen a gradual upgrading in the secondary sector, especially in the automotive industry. However, the upgrading has still not reached a satisfactory level. Thailand needs to undergo another structural transformation by adopting a new economic and social development strategy and policies. Since the 1970s, Thailand has been making its efforts to upgrade the secondary sector through different channels, including by formalizing public-private partnerships, developing infrastructure and special economic zones, and enhancing human capital (Sturgeon et al., 2016). Thailand has been successful in terms of process upgrading (improving efficiency), but it is still poor in terms of product upgrading (engaging in more sophisticated products), functional upgrading (moving towards sectors that can generate more value added, e.g., services), and chain upgrading (moving into different value chains).³

Although there are several MNC technical centres, and the government has been encouraging university–industry linkages to promote functional upgrading, there have been insufficient linkages

³ According to Humphrey and Schmitz (2002), economic upgrading can be categorized into four types: (i) process upgrading, (ii) product upgrading, (iii) functional upgrading, and (iv) chain upgrading.

with local firms and very limited knowledge transfer. More sophisticated tasks and products have been done by MNCs; therefore, technological development (advanced engineering, product design, and R&D) and human resource development are conducted mainly within each MNC (Brimble and Doner, 2007; Doner, Intarakumnerd, and Ritchie, 2013). As a result, local firms have limited opportunities to learn and develop more advanced technology. Moreover, Thailand has not accumulated enough capacity to develop its own technology. The government has been spending less than 1% of GDP on R&D, while the world average of R&D expenditure is more than 2% of GDP (UNESCO Institute for Statistics, 2018). This implies that Thailand is missing out on opportunities for leveraging the greater impacts of the linkage effects of R&D-related industries (Figure 10). Because of this, Thai universities demonstrate under-average scientific and technological research capacity and produce impractical knowledge; only 9 out of 74 universities were qualified as national research universities (NRUs) in 2009 (Doner et al., 2013).⁴

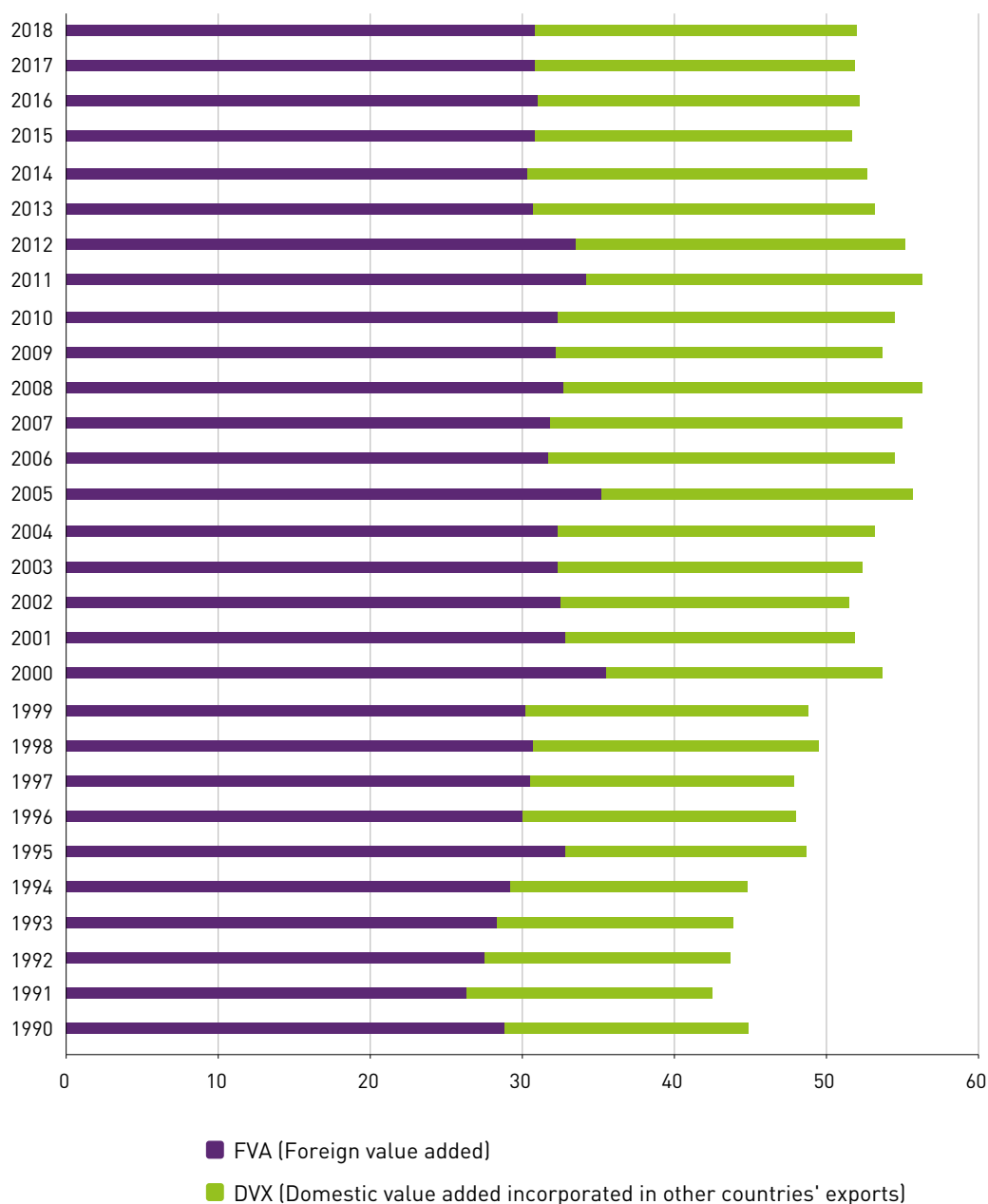
Nevertheless, there are positive signs in Thailand's current trend of GVC participation. The country's level of GVC participation increased substantially during 1990–2018 (Figure 11 and Table 1). This was mainly due to the growing share of the downstream part of GVCs, or DVX (Box 3), as the proportion of FVA reached its peak in 2000 and levelled out thereafter. This is a good sign that Thailand reduced its dependence on FVA while promoting its exports of parts and components incorporated in other countries' exports. Nonetheless, as mentioned earlier, most of the higher-value-added activities in Thailand's manufacturing sector are still done by foreign firms with limited backward linkage to the local economy.

Table 1. GVC and RVC participation in Thailand, 1990–2018 (Per cent of total exports)

Year	FVA: Foreign value added			DVX: Domestic value added incorporated in other countries' exports			Value chain participation	
	Total (A) = (B+C)	Created outside ASEAN (B)	Created within ASEAN (C)	Total (D) = (E+F)	Incorporated outside ASEAN (E)	Incorporated within ASEAN (F)	GVC participation (A + D)	RVC participation (C + F)
1990	28.8	26.8	2.0	15.9	13.5	2.4	44.8	4.4
1995	32.8	29.3	3.6	15.8	12.1	3.7	48.6	7.3
2000	35.4	31.6	3.7	18.2	14.0	4.2	53.6	7.9
2005	35.2	31.2	4.0	20.5	15.9	4.5	55.7	8.5
2010	32.4	28.1	4.3	22.1	17.1	5.0	54.5	9.3
2015	30.8	26.6	4.2	20.8	15.9	4.9	51.6	9.2
2018	30.8	26.5	4.3	21.1	16.1	5.0	51.9	9.3

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

⁴ In 2009, the Thai government initiated the NRU project to enhance the country's research activities and to promote better university–industry linkages. The Ministry of Education approved nine universities as NRUs: Chulalongkorn University, Kasetsart University, Khon Kaen University, Chiang Mai University, King Mongkut's University of Technology Thonburi, Suranaree University of Technology, Thammasat University, Mahidol University, and the Prince of Songkhla University.

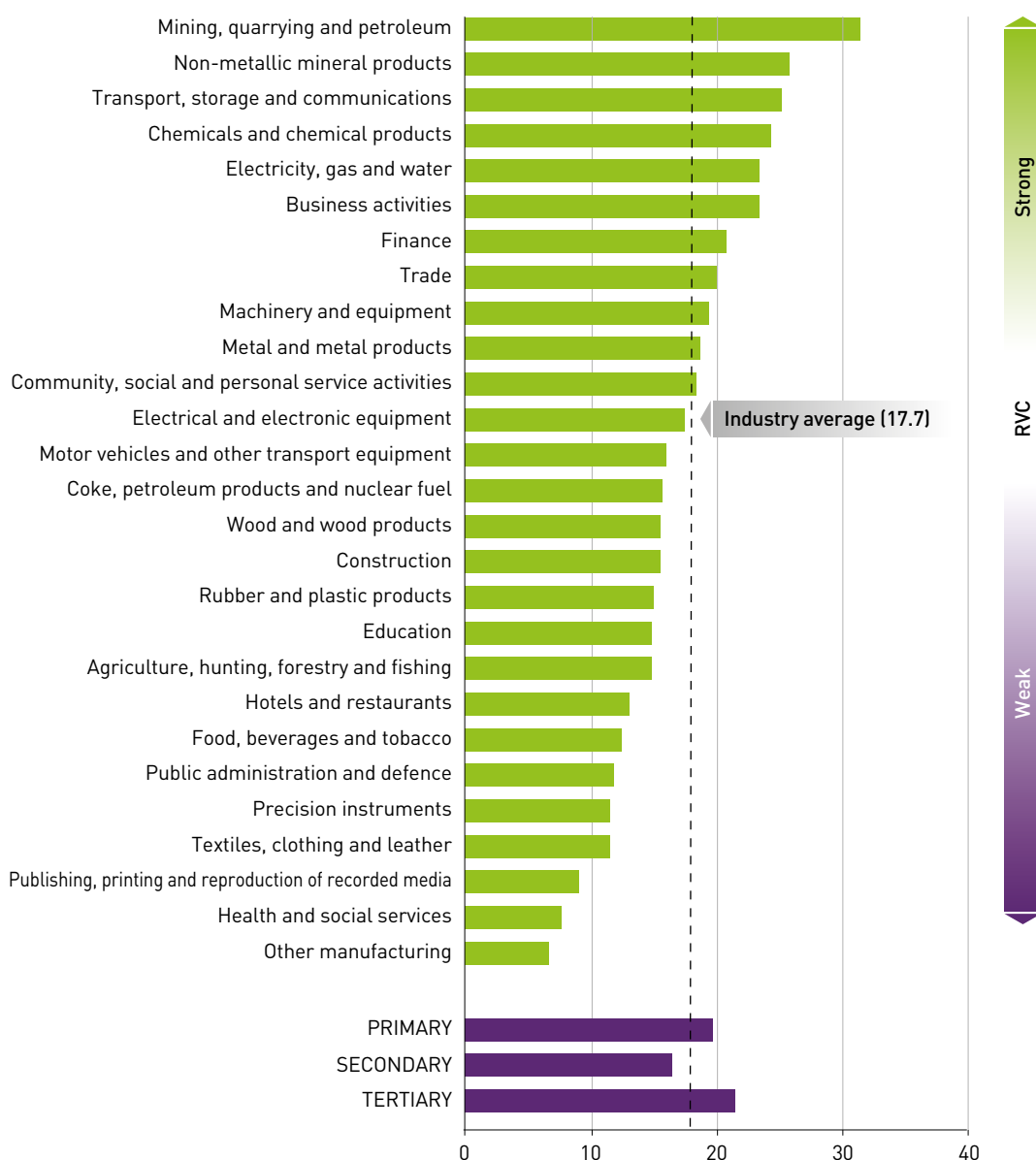
Figure 11. **GVC participation in Thailand, 1990–2018** (Per cent)

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Table 1 illustrates that Thailand's regional value chain (RVC) participation has been increasing over time. This is due to the fact that Thailand's competitiveness relies on well-established regional production networks where intermediate goods, such as chemicals and chemical products and non-metallic mineral products (Figure 12), tend to be traded within the region (Kowalski, et al., 2015). Thailand has deepened its degree of intra-industry trade in terms of electronics and motor vehicles with its regional trading partners, especially Indonesia (Ing and Kimura, 2017), while reducing its engagement in regional markets for textiles and machinery and equipment (Figure 12).

Figure 13 also shows that the services sector, especially transport, storage, and communications, plays an important role in RVCs as it facilitates trade within regional production networks. However, Thailand’s trade is more global (51.9%), rather than regional (9.3%) (Table 1). This tendency arises as the main industries involved in GVCs are manufacturing ones, which tend to be more global than regional compared to the primary and services sectors.

Figure 12. **Importance of RVCs in Thailand compared to GVCs by industry in 2015**
(Percentage share of RVC participation in GVC participation)



Source: AJC-UNCTAD-Eora database on ASEAN GVCs.
 Note: The higher the share of RVC participation in GVC participation is, the more production networks are established in the region. However, for any industry, the degree of participation of countries other than ASEAN members in GVCs is larger than that of ASEAN members. Industry classification is at two-three digit level of ISIC.

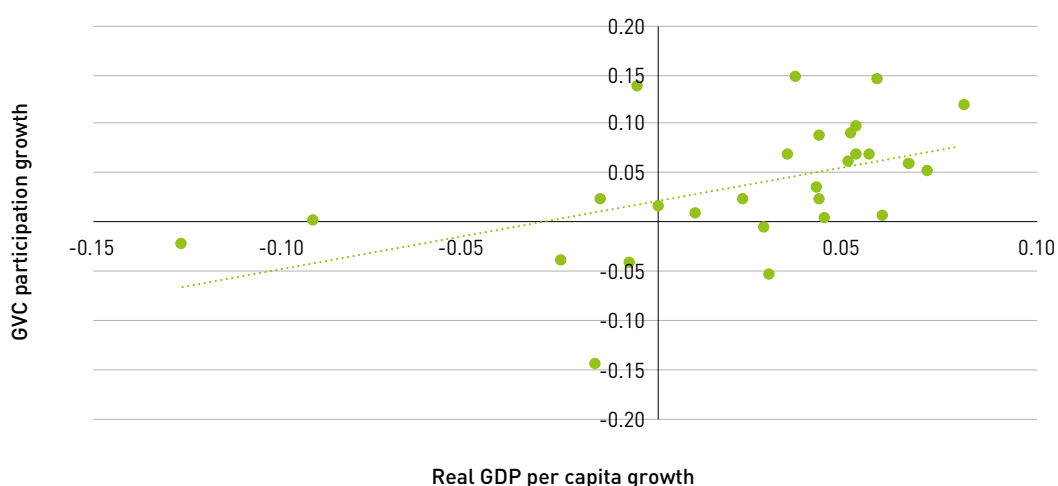
Together with strengthening its domestic industries and market, Thailand should consider adopting a GVC-upgrading development model as one of its strategic options ...

Together with strengthening its local industries and market, Thailand should consider adopting a GVC-upgrading development model as one of its strategic options to help it benefit more from participation in GVCs in various sectors, including services. This will, to a certain degree, assist Thailand in escaping the middle-income trap. Successful upgrading in GVCs requires sophisticated and complex macroeconomic, trade, industrial, and institutional structures that, in turn, encourage economic and social development. In other words, upgrading in GVCs can halt economic stagnation and help a country to graduate to the high-income status.

Figure 13 provides evidence of the positive relationship between GVC participation and economic growth, while Figure 14 shows that Thailand's involvement in GVCs has grown with the increasing level of FDI. These propositions imply that increasing and leveraging more FDI for the structural upgrading of GVCs and structural transformation in all sectors are crucial. What is more important is not encouraging FDI alone but ensuring that FDI can help Thailand upgrade in GVCs. The strategic promotion of FDI is needed to encourage the industrial and technological upgrading of the local economy. In addition, human resource development aimed at enhancing advanced engineering, design, and R&D capabilities is required along with improving productivity and innovation in agriculture and services. These changes necessitate the move towards a more knowledge-intensive and innovation-driven economy.

According to the previous analysis, heavy reliance on industries with imported inputs (high FVA) is considered as one of the factors leading Thailand to structural stagnation; the common

Figure 13. **Relationship between GVC participation and economic growth rates in Thailand, 1990–2017** (Log scale)

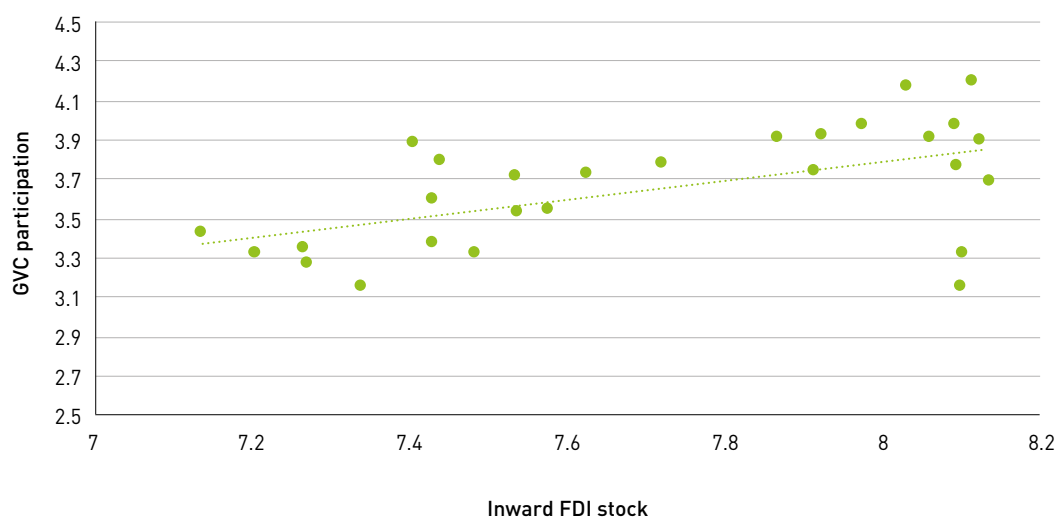


Source: AJC-UNCTAD-Eora database on ASEAN GVCs; GDP data from UNCTAD GlobStat.

Note: 28 observation points.

For GVC participation, the yearly differences in the log value of the sum of foreign value added (FVA) and domestic value added incorporated in other countries (DVX) are used, both of which are in millions of dollars. For GDP per capita, the yearly differences in its log in dollars are used.

Figure 14. **Relationship between GVC participation and FDI presence in Thailand, 1990–2017**
(Log scale)



Source: AJC-UNCTAD-Eora database on ASEAN GVCs and UNCTAD FDI/TNC database (for FDI stock).

Note: 28 observation points. The period of analysis is until 2017 as data for the FDI stock in 2018 are not available.

For GVC participation, the log of the sum of foreign value added (FVA) and domestic value added incorporated in other countries (DVX) is used, both of which are in millions of dollars. For the inward FDI stock, its log in millions of dollars is used.

characteristics of industries with high FVA in the case of Thailand are that they tend to (i) produce relatively lower domestic value added in exports and (ii) generate only average multiplier effects within the domestic economy. Therefore, the Thai government should focus on increasing the value of DVA in exports in industries with high FVA. However, it is difficult to strike the right balance between FVA and DVA. As Thailand's past growth was led mainly by exports, and as industrialization and the country's comparative advantages lie in industries such as motor vehicles, electrical and electronic equipment, and food and beverages, leveraging the existing strong industries through the upgrading of GVCs would be a better policy option. Potential upgrading could be in the following areas: (i) *process upgrading* by incorporating recent technologies, such as robotics and artificial intelligence, in the production process to increase efficiency and productivity; (ii) *product upgrading* by engaging in more technologically sophisticated and/or knowledge-intensive products and components; (iii) *functional upgrading* into advanced engineering, product design, and R&D; and (iv) *chain upgrading* into more advanced industries, such as aerospace, robotics, mechatronics, and digital products, especially those that can add value to existing industries.

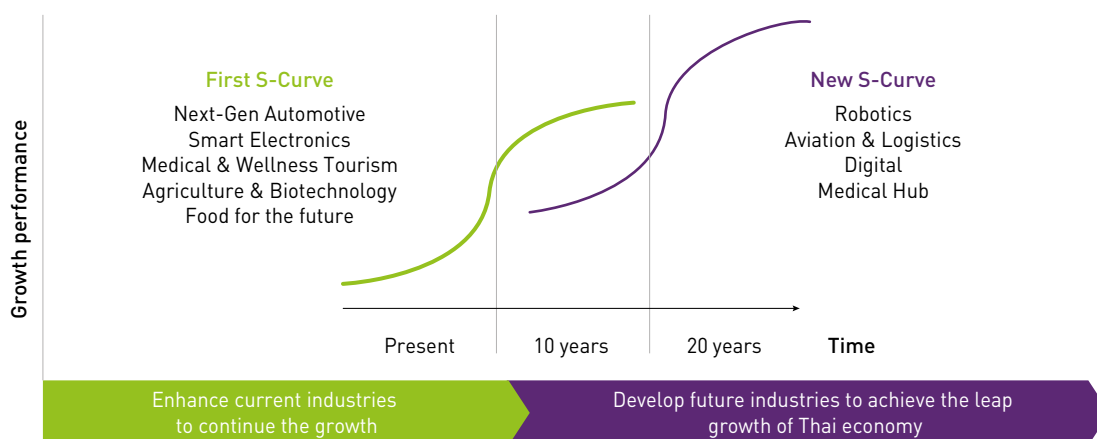
Moreover, to generate higher multiplier effects from industries with high FVA, upgrading indigenous companies to higher tiers is also important. The motor vehicles industry provides a good example. The industry generates multiplier effects below the industry average (Figure 10) since indigenous suppliers are mainly concentrated in Tiers 2 and 3 producing low value-added parts and components. Thus, they can only benefit other industries to a limited extent (Figure 8). On the other hand, promoting industries with high multiplier effects, e.g., textiles, textile products, leather, and footwear; renting of machinery and equipment; and R&D and other business activities can have a larger impact on the economy.

... to help integrate Thailand into GVCs in goods, services, and technology and encourage strategic GVC participation among industries and sectors.

Although the manufacturing sector significantly absorbed labour from the agricultural sector, the majority of Thai labour is still engaged in the agricultural sector. Moreover, the upgrading process, especially in the manufacturing sector, does not necessarily facilitate labour movements from the agricultural sector since upgrading requires high-skilled labour. Hence, human capital development in the agricultural sector is the key to smoothening the process while simultaneously improving productivity in the sector.

Regarding the services sector, its role in economic development and GVC participation has been growing in importance. Recently, there have been large FDI inflows to the services sector, accounting for over half of the total inward FDI, while the value added in exports of the services sector is approximately as high as that of the manufacturing sector (Figure 9). Therefore, preparing to move smoothly towards a balanced and knowledge-intensive economy is important. To do so, policymakers need to identify the key trends for the future economy and provide the right conditions to nurture a competitive domestic services sector and be ready to strategically integrate the sector into GVCs. It is also important to use the services sector to add more value to manufacturing and agriculture. Future innovative industries tend to be clustered in the services sector (Figure 15).

Figure 15. **The future growth of Thailand's innovation-driven industries**



Source: Bhongsatiern (2017).

“Thailand 4.0” will be facilitated and driven more by GVCs, which will be the focus of Thailand’s general policy recommendation.

The policy recommendations for Thailand are to leverage the existing strong industries through facilitating knowledge linkages between MNCs and local firms and upgrading smooth labour movements while improving productivity and innovation in agriculture and services. The country should also prepare to move towards a more balanced and knowledge-intensive economy. In addition, bottom-up strategies are also necessary to tackle the persisting fundamental problems in terms of institutions, education, and infrastructure.

Since 2016, Thailand has been engaging in a new structural transformation known as “Thailand 4.0”. The initiative is inspiring and has gotten off to a good start. This top-down economic model aims to address three main challenges – the middle-income trap, the inequality trap, and the imbalanced trap – and facilitate the smooth transition towards a services economy. The policy focus is on five transformative shifts, namely traditional farming to smart farming; traditional micro, small, and medium-sized enterprises (MSMEs) to smart enterprises and start-ups; buying technologies to making technologies; traditional services to high-value services; and unskilled labour to knowledge workers and high-skilled labour. In terms of industrial transformation, the government is marking efforts to level-up the existing potential industries by upgrading technological content and innovation while creating new technology-led industries (Figure 15). The five existing potential industries, referred to as “First S-Curve” industries, include automotive, electronics, medical tourism, agriculture and biotechnology, and food processing, whereas the new technology-led industries, referred to as “New S-Curve” industries, comprise robotics, aviation and logistics, biofuels and biochemical, digital, and a medical hub.

Despite the efforts by the government for achieving Thailand 4.0, the reality is somewhat challenging. Some structural and fundamental problems have not been explicitly or properly addressed in the current policy. It is worth pointing out that Thailand has not even fully transformed to Thailand 3.0, an advanced industrial economy. Fundamental infrastructure for investment, especially in terms of digital infrastructure, which is also necessary for Industry 4.0, is still insufficient. Apart from the problem of fundamental infrastructure development, attracting high value added and innovative activities by MNCs, leveraging MNCs to upgrade local firms, and resolving the lack of skilled labour due to limited access to quality education as well as an increase in the ageing population are also pressing issues. While with the top-down strategy and guidance Thailand may smoothly make the transition, bottom-up strategies are also required to tackle the persisting fundamental problems in terms of institutions, education, and infrastructure.

Thailand should impose four conditions for its policies to become effective. In order for Thailand to participate more in and upgrade its GVCs, the country has to meet the factors and conditions to facilitate GVCs as follows.

Firstly, there is an urgent need to improve the functions and sophistication of work for macroeconomic and institutional structures as inter- and intra-sectoral coordination and corporation among different actors are increasingly required. As the world is changing rapidly and growing more complex, new business models, such as peer-to-peer ridesharing, short-term lodging services, and financial technology (FinTech), involve more than just one actor from one sector but various actors from various sectors; and these models tend to operate in higher positions in GVCs. For example, for the case of peer-to-peer ridesharing, authorities from the Ministry of Commerce, the Ministry of Transportation, and the Ministry of Digital Economy and Society, to name a few, have to work closely with each other to respond quickly to the demand and supply in this new market. This also requires the authorities to adjust their mindset accordingly. Moreover, the actors are not limited to those in the government sector but also extend to those in the private sector for knowledge creation and diffusion and the financing of innovation and technology upgrading as well.

Secondly, in terms of education, Thailand needs to put more effort into boosting the quality of human capital in its education system and working environment (technology transfer and on-the-job training). Educational programmes to promote the quality of education should be the first priority, and the government must act promptly to deal with this pressing issue. However, carefully planned research and pilot studies must be conducted before implementing any educational programmes to quantify the impacts of those programmes and prevent any possible failures. In parallel with the promotion of quality education, educators must work closely with all sectors to indicate a set of skills necessary in the current and future labour market, such as digital knowledge, technological skills,

and soft skills like creativity and collaborative working, among others. They must also incorporate those skills into school curricula, especially at the vocational and undergraduate levels. Acquiring quality human capital is one of the keys to success in the competitive global economy and GVCs.

Regarding the problem of low technology transfer, increase government expenditure on R&D is one of the common remedies. However, efforts from the government's side alone may not be enough or sustainable. Involving the private sector by providing incentives for firms' technology upgrading and innovation and inducing better collaboration between MNCs and local firms and between firms and universities will help improve the situation. This also provides the opportunity for local MSMEs, e.g., Tier 2 and Tier 3 in Figure 8, to upgrade to higher positions in GVCs and focus on the production of more sophisticated products.

Thirdly, the government should also pay more attention to MSMEs, given their significant contribution to the Thai economy. In 2017, MSMEs accounted for 99.7% of the total number of enterprises in Thailand, 78.5% of total employment, and 29% of total exports. However, MSMEs, especially in the agricultural sector, have found difficulties in keeping pace with the digital era, responding to new markets, and participating in GVCs. Thus, the primary role of the government should be to empower Thai MSMEs through a mix of policy tools, including promoting MSMEs' digital capabilities, easing access to commercial bank credit, giving corporate tax incentives, and providing quality business support services, among others. With these empowerment initiatives, Thai MSMEs will be able to engage in the upgrading of GVCs.

Finally, Thailand has been making substantial efforts in infrastructure development; however, the progress has been slow and has not reached a competitive or sufficient level, especially in terms of digital infrastructure. According to the World Bank (2018), in 2016, the Internet penetration rate in Thailand accounted for only 48% of the total population, while it was over 80% in Singapore. Moreover, in spite of the fact that the total population of Thailand is 11 times greater than that of Singapore, the number of secure Internet servers per 1 million people in Thailand is approximately 100 times lower than that of Singapore: 560 secure Internet servers per 1 million people in Thailand but 58,690 servers per 1 million people in Singapore (World Bank, 2018). To climb up to higher levels in GVCs, technology is a prerequisite. Although under the Thailand 4.0 initiative the country is on the right path, the agenda for digital infrastructure should be moved forward and given top priority.

GVCs can provide a tool for Thailand to escape the middle-income trap and set the country on a growth trajectory as long as GVC participation and economic growth move in parallel. For this, the mainstreaming of GVCs in Thailand's economic and industrial policies is required. The abovementioned three factors and conditions play an important role in catalyzing GVCs for development.

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ANNEX TABLES

Annex table 1. Value added exports of goods and services from Thailand, by value added creator, 1990–2018 (Millions of dollars)

Value added creator	Exports from Thailand						
	1990	1995	2000	2005	2010	2015	2018
World	8 787	20 490	24 795	46 440	63 840	74 039	81 663
Developed countries	6 110	13 829	14 846	25 551	31 128	32 040	34 144
Europe	2 308	5 331	5 286	11 192	14 049	14 736	15 735
European Union	1 994	4 537	4 726	10 130	12 534	13 051	13 960
Belgium	163	354	339	771	789	907	963
Finland	85	169	163	356	455	526	569
France	269	592	569	1 280	1 659	1 719	1 825
Germany	560	1 211	1 232	2 644	3 642	3 258	3 480
Italy	212	438	468	1 032	1 242	1 306	1 377
Netherlands	134	307	299	584	776	824	895
Spain	55	164	150	445	484	542	588
Sweden	104	176	167	366	498	555	602
United Kingdom	248	720	863	1 565	1 571	1 881	1 994
Other developed Europe	313	794	561	1 062	1 515	1 684	1 775
Switzerland	269	685	438	814	1 135	1 325	1 393
North America	1 045	2 614	3 280	4 610	5 768	6 087	6 547
Canada	100	200	357	694	863	954	1 031
United States	945	2 414	2 923	3 916	4 905	5 134	5 516
Other developed countries	2 757	5 885	6 279	9 748	11 311	11 217	11 862
Australia	308	661	672	1 493	1 780	2 095	2 265
Japan	2 404	5 103	5 441	7 965	9 130	8 653	9 084
New Zealand	21	64	83	154	201	236	258
Developing countries	2 566	6 486	9 739	20 245	31 669	40 766	46 202
Africa	93	283	331	734	1 012	1 010	1 092
North Africa	16	33	58	138	213	196	226
Other Africa	77	250	273	595	799	814	865
South Africa	44	188	188	408	488	500	523
Latin America and the Caribbean	109	328	420	807	1 292	1 380	1 426
Asia	2 359	5 864	8 964	18 674	29 324	38 335	43 638
West Asia	330	634	978	2 346	2 895	3 696	3 951
Saudi Arabia	123	184	205	365	486	597	621
United Arab Emirates	117	202	336	870	968	1 388	1 494
South, East and South-east Asia	2 029	5 230	7 987	16 328	26 429	34 638	39 688
East Asia	1 245	2 651	4 815	9 753	15 989	22 058	25 349
China	270	973	2 144	5 905	11 518	16 496	19 272
Hong Kong, China	167	340	441	766	652	974	1 064
Korea, Republic of	207	672	975	1 988	2 772	3 626	3 952
Taiwan Province of China	598	659	1 239	1 057	1 001	911	1 005
South Asia	169	347	547	1 334	2 058	2 442	2 852
India	110	227	379	1 071	1 718	2 046	2 408
ASEAN	614	2 232	2 624	5 241	8 382	10 139	11 487
Brunei Darussalam	23	37	53	142	214	259	265
Cambodia	0	3	9	15	27	26	30
Indonesia	158	997	610	1 248	1 839	2 250	2 559
Lao People's Democratic Republic	8	23	36	81	167	203	238
Malaysia	232	672	994	2 237	3 421	4 085	4 636
Myanmar	30	68	389	385	788	1 015	1 203
Philippines	27	83	118	276	543	671	784
Singapore	126	317	342	738	1 296	1 519	1 642
Viet Nam	10	31	73	119	87	111	129
Oceania	5	11	24	31	40	42	46
Transition economies	111	175	210	644	1 044	1 234	1 317
Russian Federation	92	137	159	493	822	1 001	1 064
Domestic value added (DVA)	21 674	41 922	45 270	85 597	133 358	166 434	183 474
Gross exports	30 461	62 411	70 065	132 037	197 198	240 473	265 137

Source: AJC-UNCTAD-Eora database on ASEAN GVCs. Data for 2016–2018 are projected by UNCTAD and Eora.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

Annex table 2.1. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	96	74	22	7 910	18	255	111
	Developed countries	58	45	13	5 544	13	165	74
	Europe	27	21	5	2 073	7	79	34
	European Union	23	19	5	1 795	6	71	30
	Belgium	1	1	0	152	0	5	2
	Finland	0	0	0	80	0	3	1
	France	3	2	1	241	1	10	5
	Germany	7	5	1	506	2	19	8
	Italy	2	2	0	193	1	7	3
	Netherlands	2	2	0	120	0	5	2
	Spain	1	1	0	48	0	2	1
	Sweden	1	1	0	92	0	6	1
	United Kingdom	3	2	1	218	1	9	4
	Other developed Europe	3	3	1	279	1	8	4
	Switzerland	2	2	1	240	1	6	3
	North America	12	10	2	922	2	38	14
	Canada	2	1	0	88	0	5	2
	United States	11	9	2	834	2	33	12
	Other developed countries	19	13	5	2 549	4	49	26
	Australia	3	2	1	281	0	6	3
	Japan	14	10	4	2 228	3	41	23
	New Zealand	0	0	0	18	0	1	0
	Developing countries	994	872	123	16 512	48	765	499
	Africa	2	1	1	82	0	3	2
	North Africa	0	0	0	14	0	1	0
	Other Africa	2	1	1	68	0	2	1
	South Africa	0	0	0	40	0	1	1
	Latin America and the Caribbean	3	2	1	95	0	4	2
	Asia	989	869	121	16 330	48	758	495
	West Asia	9	8	2	235	1	8	7
	Saudi Arabia	3	3	1	88	0	4	3
	United Arab Emirates	3	3	1	81	0	2	2
South, East and South-east Asia	980	861	119	16 095	47	750	488	
East Asia	11	9	2	1 146	2	27	14	
China	4	3	1	240	1	7	4	
Hong Kong, China	0	0	0	160	0	2	1	
Korea, Republic of	2	2	0	190	0	4	2	
Taiwan Province of China	5	3	1	553	1	13	7	
South Asia	2	2	1	150	0	4	3	
India	1	1	0	104	0	3	1	
ASEAN	966	850	116	14 800	45	720	472	
Brunei Darussalam	1	1	0	15	0	0	1	
Cambodia	0	0	0	0	0	0	0	
Indonesia	2	2	0	142	0	7	4	
Lao People's Democratic Republic	0	0	0	7	0	6	0	
Malaysia	2	2	0	215	0	7	2	
Myanmar	1	1	0	26	0	16	0	
Philippines	0	0	0	25	0	0	0	
Singapore	1	1	0	113	0	4	2	
Viet Nam	0	0	0	9	0	0	0	
Oceania	0	0	0	5	0	0	0	
Transition economies	3	2	1	100	0	2	1	
Russian Federation	2	1	0	85	0	2	1	
Domestic value added (DVA)	959	844	115	14 247	43	678	463	
Gross exports	1 055	918	136	22 156	61	933	574	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

1990 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
465	855	212	2 542	781	37	37	366	17	85
315	644	156	1 881	508	24	24	220	12	57
94	182	64	562	207	10	10	84	5	24
77	157	48	519	176	9	9	65	4	21
6	7	3	26	10	1	1	3	0	1
2	6	1	53	5	0	0	2	0	1
10	18	6	57	25	1	1	9	1	3
21	52	15	160	47	2	2	18	1	5
8	17	8	44	17	1	1	6	0	2
4	9	2	38	12	1	1	4	0	1
3	4	1	14	5	0	0	2	0	1
7	9	2	24	11	1	1	5	0	2
9	22	6	66	27	1	1	10	1	4
17	24	15	42	31	1	1	19	0	2
15	22	15	35	27	1	1	17	0	2
29	147	24	282	111	5	5	52	2	12
4	6	2	14	11	1	1	5	0	1
25	140	22	267	100	4	4	48	2	10
193	316	69	1 038	189	9	9	84	4	22
24	14	4	49	24	1	1	10	1	2
167	298	64	977	162	8	8	72	4	19
1	1	0	2	2	0	0	1	0	0
619	1 672	361	2 269	6 732	1 090	1 090	2 179	356	1 023
9	5	2	14	9	0	0	4	0	1
1	1	0	3	2	0	0	1	0	0
8	4	1	12	7	0	0	3	0	1
7	2	1	8	3	0	0	1	0	0
8	9	2	18	11	0	0	5	0	1
601	1 658	358	2 236	6 712	1 089	1 089	2 170	356	1 021
8	12	4	27	86	3	3	61	1	7
3	5	2	11	32	1	1	23	0	2
2	4	1	8	33	1	1	24	0	3
594	1 646	354	2 208	6 626	1 086	1 086	2 109	355	1 014
62	115	36	368	88	6	6	36	2	10
15	15	7	60	25	1	1	13	1	2
3	11	5	38	6	0	0	2	0	1
13	18	4	63	15	1	1	6	0	2
31	71	19	205	41	3	3	15	1	5
4	9	1	11	17	1	1	10	0	2
2	7	1	6	5	0	0	2	0	0
528	1 523	317	1 829	6 521	1 080	1 080	2 063	352	1 002
0	1	0	1	7	0	0	5	0	1
0	0	0	0	0	0	0	0	0	0
37	8	3	26	14	1	1	6	0	2
0	0	0	0	1	0	0	0	0	0
6	23	3	122	15	1	1	7	0	2
0	1	0	1	3	0	0	1	0	0
2	3	1	6	2	0	0	1	0	0
3	21	3	46	12	1	1	6	0	1
0	0	0	1	1	0	0	0	0	0
0	0	0	1	0	0	0	0	0	0
10	6	2	17	8	0	0	3	0	1
7	4	1	14	6	0	0	2	0	1
479	1 466	307	1 625	6 467	1 078	1 078	2 037	351	996
944	2 322	519	4 167	7 248	1 115	1 115	2 403	368	1 081

Annex table 2.2. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	190	144	46	18 802	70	575	218
	Developed countries	110	83	27	12 744	51	391	145
	Europe	52	40	12	4 881	25	172	66
	European Union	44	35	10	4 151	21	157	58
	Belgium	3	2	1	332	1	10	4
	Finland	1	1	0	159	0	7	1
	France	5	4	1	539	3	23	9
	Germany	13	11	2	1 111	6	41	15
	Italy	4	3	1	403	2	14	6
	Netherlands	4	3	1	278	2	11	4
	Spain	2	1	0	150	1	4	2
	Sweden	2	2	1	158	1	9	2
	United Kingdom	7	5	2	651	3	22	9
	Other developed Europe	7	5	2	730	3	15	8
	Switzerland	5	3	2	634	3	12	6
	North America	25	20	5	2 356	10	100	28
	Canada	3	2	0	178	1	13	3
	United States	22	18	4	2 177	9	86	25
	Other developed countries	34	23	11	5 507	16	119	51
	Australia	6	5	2	614	2	11	5
	Japan	25	16	8	4 783	14	91	45
	New Zealand	1	0	0	59	0	14	0
	Developing countries	1 875	1 649	226	34 363	194	1 518	937
	Africa	4	3	2	260	1	7	3
	North Africa	1	0	0	29	0	1	1
	Other Africa	4	2	1	231	1	6	3
	South Africa	2	1	1	177	0	4	2
	Latin America and the Caribbean	6	4	2	297	1	9	3
	Asia	1 865	1 642	223	33 796	192	1 500	930
	West Asia	15	11	4	477	2	14	13
	Saudi Arabia	4	3	1	139	1	6	4
	United Arab Emirates	4	3	1	152	1	3	4
	South, East and South-east Asia	1 850	1 631	219	33 319	190	1 487	917
East Asia	26	22	4	2 477	8	51	23	
China	17	15	2	896	3	18	9	
Hong Kong, China	1	1	0	326	0	5	2	
Korea, Republic of	4	4	1	633	2	13	5	
Taiwan Province of China	4	3	1	617	3	15	7	
South Asia	5	3	1	305	2	9	6	
India	2	2	0	209	1	6	3	
ASEAN	1 819	1 605	214	30 537	180	1 427	889	
Brunei Darussalam	1	1	0	26	0	1	1	
Cambodia	0	0	0	2	0	0	0	
Indonesia	9	6	3	945	2	25	12	
Lao People's Democratic Republic	0	0	0	22	0	17	0	
Malaysia	4	3	1	623	1	18	4	
Myanmar	1	1	0	55	0	18	1	
Philippines	1	1	0	77	0	1	1	
Singapore	2	1	1	292	2	9	4	
Viet Nam	1	1	0	28	0	1	1	
Oceania	0	0	0	10	0	1	0	
Transition economies	3	2	1	161	0	4	2	
Russian Federation	2	2	0	127	0	3	1	
Domestic value added (DVA)	1 799	1 591	208	28 467	175	1 338	866	
Gross exports	1 989	1 735	254	47 269	245	1 913	1 084	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

1995 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
2 581	2 288	429	6 293	1 496	83	300	707	27	148
1 503	1 677	312	4 513	974	54	209	428	18	98
634	501	131	1 443	397	22	94	164	7	40
443	432	98	1 321	341	20	85	132	6	36
33	23	7	89	20	1	5	7	0	2
9	17	1	99	9	0	1	3	0	2
57	51	13	142	48	3	15	18	1	4
118	131	30	359	88	5	21	34	2	9
42	40	14	100	31	2	9	11	1	3
27	27	5	88	25	1	6	10	0	2
15	21	3	58	12	1	3	4	0	1
19	17	3	42	17	1	3	8	0	2
66	68	13	239	62	3	14	26	1	6
191	69	34	122	57	2	8	31	1	4
181	62	32	104	46	2	5	26	1	3
178	396	51	807	233	13	47	111	4	23
17	17	3	33	20	1	5	9	0	2
161	378	48	774	214	11	42	103	3	21
691	780	129	2 263	343	19	69	154	7	35
176	39	10	112	40	2	12	17	1	3
504	728	118	2 126	295	17	53	135	6	31
6	3	1	7	5	0	2	1	0	0
2 546	3 958	859	5 034	12 167	2 697	2 608	3 543	512	1 797
79	17	4	44	18	1	4	9	0	2
3	2	1	7	3	0	1	2	0	0
76	15	4	38	15	1	3	7	0	2
66	12	3	30	9	0	2	4	0	1
64	36	5	57	24	1	6	11	0	2
2 402	3 905	849	4 931	12 124	2 694	2 598	3 523	511	1 793
37	25	7	52	142	5	15	104	2	10
11	8	3	18	40	2	4	29	0	3
11	7	2	12	46	2	5	34	0	3
2 365	3 879	843	4 879	11 982	2 689	2 583	3 419	509	1 783
274	279	62	884	147	11	33	57	3	16
144	78	22	270	60	4	15	25	1	5
23	32	11	99	13	1	3	4	0	2
44	73	10	286	35	3	7	14	1	4
62	95	19	226	38	4	8	14	1	4
22	27	3	33	38	2	7	22	1	3
14	21	2	22	15	1	3	7	0	1
2 070	3 574	778	3 961	11 797	2 676	2 544	3 340	506	1 764
1	1	0	2	10	0	1	8	0	1
0	0	0	0	0	0	0	0	0	0
461	63	16	185	43	2	7	19	1	7
0	0	0	1	1	0	1	0	0	0
51	82	7	342	45	2	7	24	1	4
5	2	0	3	11	0	2	7	0	1
19	9	2	21	5	0	1	2	0	0
25	57	7	119	23	1	4	10	0	3
6	1	0	4	3	0	1	1	0	0
2	1	0	1	1	0	0	0	0	0
33	12	3	31	10	1	3	4	0	1
23	9	2	23	7	0	2	3	0	1
1 501	3 358	744	3 285	11 655	2 669	2 521	3 268	503	1 748
4 082	5 646	1 173	9 578	13 151	2 751	2 820	3 976	530	1 896

Annex table 2.3. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	260	193	67	22 870	54	1 224	161
	Developed countries	137	105	32	13 795	35	759	98
	Europe	60	47	13	4 878	16	307	40
	European Union	53	42	11	4 363	14	287	37
	Belgium	3	2	1	320	1	21	3
	Finland	1	1	0	153	0	12	1
	France	6	4	1	523	2	44	5
	Germany	15	12	3	1 142	4	65	9
	Italy	4	3	1	437	1	23	3
	Netherlands	4	4	1	273	1	18	3
	Spain	2	2	0	138	1	7	1
	Sweden	2	2	1	153	0	13	1
	United Kingdom	10	7	2	785	3	49	7
	Other developed Europe	7	5	1	516	2	20	3
	Switzerland	3	2	1	407	2	12	3
	North America	33	26	7	3 002	8	204	24
	Canada	4	4	1	326	1	30	2
	United States	29	23	6	2 676	8	174	22
	Other developed countries	43	31	12	5 915	11	248	34
	Australia	9	7	2	625	1	19	2
	Japan	30	20	10	5 136	9	197	31
	New Zealand	1	1	0	77	0	28	0
	Developing countries	2 519	2 007	512	40 193	153	2 938	1 028
	Africa	6	4	2	305	1	15	1
	North Africa	1	1	0	52	0	3	1
	Other Africa	5	3	2	253	1	12	1
	South Africa	2	1	0	178	0	7	0
	Latin America and the Caribbean	10	7	3	380	1	26	3
	Asia	2 503	1 996	507	39 485	151	2 897	1 024
	West Asia	28	19	9	777	2	40	9
	Saudi Arabia	6	4	2	163	1	12	2
	United Arab Emirates	7	5	3	279	0	9	2
	South, East and South-east Asia	2 475	1 977	498	38 709	149	2 857	1 015
	East Asia	32	25	7	4 554	8	175	27
	China	16	13	3	2 024	4	53	8
	Hong Kong, China	1	1	0	425	0	9	2
Korea, Republic of	6	5	1	925	1	55	7	
Taiwan Province of China	9	6	2	1 166	3	58	9	
South Asia	8	5	2	497	2	19	2	
India	4	3	1	354	1	13	1	
ASEAN	2 435	1 946	489	33 657	139	2 663	986	
Brunei Darussalam	2	1	1	40	0	2	1	
Cambodia	0	0	0	8	0	0	0	
Indonesia	6	5	1	567	1	34	6	
Lao People's Democratic Republic	0	0	0	35	0	27	0	
Malaysia	9	6	2	909	1	56	4	
Myanmar	12	8	5	296	1	43	3	
Philippines	1	1	0	111	0	2	0	
Singapore	3	2	1	316	1	14	3	
Viet Nam	2	2	0	63	0	2	2	
Oceania	0	0	0	23	0	1	0	
Transition economies	4	3	1	195	0	11	2	
Russian Federation	3	2	0	148	0	9	1	
Domestic value added (DVA)	2 400	1 922	478	31 313	134	2 484	967	
Gross exports	2 660	2 115	545	54 183	188	3 708	1 127	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

2000 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
1 368	2 731	460	7 313	1 626	91	250	794	34	180
868	1 761	321	4 385	890	53	159	378	20	105
279	490	113	1 337	339	20	65	139	8	40
235	446	94	1 253	302	18	60	118	7	37
15	21	6	77	15	1	3	6	0	2
5	16	1	87	9	0	1	3	0	2
28	49	12	132	40	2	10	15	1	4
58	135	28	332	74	4	14	29	2	9
23	43	13	94	26	2	6	9	1	3
16	26	5	77	21	1	4	9	0	2
9	18	3	47	10	1	2	3	0	1
11	15	2	34	12	1	2	5	0	2
39	79	15	263	66	4	12	29	1	8
45	44	19	84	37	2	5	21	1	3
38	36	18	63	27	1	2	15	0	2
138	479	69	890	240	13	40	113	5	27
21	30	5	69	26	1	4	13	1	3
118	449	64	821	214	12	35	99	4	24
450	791	138	2 158	311	20	54	127	8	39
76	37	7	110	37	2	8	18	1	3
368	729	130	2 018	266	17	43	107	6	34
3	3	1	8	4	0	2	1	0	0
2 125	4 648	980	6 922	12 232	2 545	2 019	3 999	670	1 764
42	22	4	58	19	1	3	10	0	2
2	6	1	16	5	0	1	2	0	0
39	16	4	42	15	1	2	8	0	2
33	11	2	29	8	0	1	4	0	1
35	47	6	72	30	2	5	15	1	3
2 047	4 579	970	6 791	12 182	2 542	2 011	3 974	669	1 759
26	38	9	77	172	7	13	129	2	13
7	10	3	22	37	1	3	28	0	3
7	9	2	17	49	2	4	37	1	4
2 021	4 541	960	6 715	12 010	2 536	1 997	3 845	667	1 746
216	554	80	1 760	221	15	36	84	6	28
83	249	25	868	101	6	18	39	3	11
8	31	11	94	14	1	2	5	0	3
43	106	16	398	43	3	5	17	1	6
81	167	28	396	63	5	10	23	2	9
18	35	4	46	41	2	6	24	1	3
13	27	2	31	20	1	4	10	0	2
1 787	3 953	876	4 909	11 748	2 518	1 956	3 737	661	1 714
1	2	0	3	12	0	1	9	0	1
1	1	0	1	1	0	0	0	0	0
51	55	8	229	36	2	5	16	1	6
1	1	0	1	1	0	0	0	0	0
34	114	9	450	75	4	8	45	1	6
14	12	2	20	81	3	6	61	1	6
14	15	5	32	6	0	1	3	0	1
13	59	7	128	22	1	3	9	1	3
5	3	1	11	7	0	1	4	0	1
1	1	0	2	1	0	0	0	0	0
26	15	3	39	10	1	2	5	0	1
16	10	3	28	7	0	1	3	0	1
1 651	3 692	844	4 033	11 506	2 507	1 929	3 588	656	1 691
3 019	6 423	1 304	11 346	13 132	2 598	2 179	4 382	691	1 871

Annex table 2.4. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	503	370	133	42 469	117	1 974	702
	Developed countries	248	190	58	23 538	72	1 147	391
	Europe	125	97	28	10 259	38	561	192
	European Union	112	86	25	9 290	34	526	176
	Belgium	7	5	1	723	2	39	14
	Finland	2	2	1	333	1	24	3
	France	12	10	3	1 168	5	77	28
	Germany	30	25	5	2 430	9	122	42
	Italy	10	7	2	957	3	46	17
	Netherlands	8	7	1	530	3	31	12
	Spain	5	4	1	409	2	17	7
	Sweden	4	3	1	332	1	27	5
	United Kingdom	17	12	5	1 416	6	80	31
	Other developed Europe	14	11	3	970	4	36	16
	Switzerland	6	5	2	752	3	22	10
	North America	50	40	10	4 181	14	265	79
	Canada	8	7	1	634	2	50	11
	United States	42	33	9	3 547	12	215	68
	Other developed countries	72	53	20	9 097	19	321	119
	Australia	17	13	4	1 385	3	40	15
	Japan	49	34	14	7 448	16	237	102
	New Zealand	2	1	1	140	0	39	2
	Developing countries	4 192	3 368	824	77 037	314	5 307	2 672
	Africa	13	8	6	668	2	31	13
	North Africa	2	2	1	124	0	7	3
	Other Africa	11	6	5	544	1	25	10
	South Africa	4	3	1	382	1	16	6
	Latin America and the Caribbean	18	12	6	729	2	41	13
	Asia	4 160	3 348	812	75 611	310	5 232	2 646
	West Asia	64	41	23	1 821	5	85	61
	Saudi Arabia	10	7	3	288	1	19	11
	United Arab Emirates	19	11	7	701	1	23	18
	South, East and South-east Asia	4 097	3 308	789	73 791	305	5 148	2 585
	East Asia	72	58	14	9 165	20	252	108
	China	47	39	8	5 541	13	142	65
	Hong Kong, China	2	2	1	736	1	14	5
	Korea, Republic of	14	11	3	1 873	3	58	22
Taiwan Province of China	8	6	2	981	3	36	15	
South Asia	16	11	4	1 219	5	42	23	
India	10	8	2	994	4	33	18	
ASEAN	4 009	3 239	770	63 407	280	4 853	2 454	
Brunei Darussalam	4	3	2	101	0	5	4	
Cambodia	0	0	0	13	0	1	0	
Indonesia	13	10	3	1 147	3	71	25	
Lao People's Democratic Republic	1	1	0	77	0	59	1	
Malaysia	18	13	5	2 043	3	124	23	
Myanmar	11	7	4	287	1	47	11	
Philippines	3	2	1	254	1	5	2	
Singapore	6	5	2	676	2	31	13	
Viet Nam	3	3	1	105	0	3	5	
Oceania	1	0	0	28	0	2	0	
Transition economies	12	9	3	596	1	26	10	
Russian Federation	8	7	1	459	1	22	8	
Domestic value added (DVA)	3 949	3 196	753	58 702	269	4 507	2 370	
Gross exports	4 452	3 567	885	101 171	387	6 481	3 073	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

2005 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
2 796	4 648	880	13 577	3 465	196	506	1 686	76	386
1 671	2 701	580	7 080	1 763	107	298	748	42	214
595	1 027	255	2 807	807	49	144	328	19	99
532	944	219	2 647	729	45	134	287	18	92
38	49	16	167	41	3	8	15	1	5
11	34	3	189	21	1	2	6	1	5
66	110	30	303	99	6	21	39	2	11
136	271	63	712	184	11	33	75	5	22
54	94	30	213	66	5	13	24	2	8
27	50	11	148	45	3	8	18	1	5
27	53	8	150	31	2	6	11	1	4
27	33	5	73	29	2	4	14	1	5
75	145	31	430	132	8	23	55	3	16
63	83	35	160	78	4	10	41	2	7
49	68	32	117	56	3	5	30	1	5
238	565	100	1 161	379	21	61	169	8	46
42	55	11	140	52	3	9	23	1	7
196	510	89	1 021	326	18	52	146	7	39
839	1 109	226	3 112	578	37	93	251	14	69
180	86	18	249	91	5	19	41	2	10
648	983	205	2 811	469	30	68	205	11	57
6	6	1	16	11	1	4	3	0	1
4 509	9 631	1 917	14 356	24 611	5 159	3 801	8 139	1 350	3 532
104	52	10	132	52	3	8	27	1	6
7	14	2	36	12	1	2	6	0	1
97	38	8	96	40	2	6	20	1	5
82	28	5	68	22	1	3	11	1	3
73	85	12	146	59	3	10	27	2	7
4 330	9 492	1 894	14 075	24 498	5 153	3 783	8 084	1 347	3 519
79	100	23	194	462	18	36	341	6	35
16	19	6	42	68	3	5	50	1	5
24	29	6	50	150	6	11	112	2	12
4 251	9 392	1 871	13 881	24 036	5 135	3 747	7 743	1 341	3 484
443	1 027	158	3 934	515	33	81	198	13	64
252	597	75	2 521	317	18	54	121	8	36
15	54	18	173	28	2	4	9	1	5
107	225	30	894	101	7	13	42	3	13
67	148	35	335	67	6	10	25	2	9
54	84	11	116	99	6	14	53	2	8
40	70	8	83	67	4	10	32	1	5
3 753	8 281	1 702	9 831	23 421	5 096	3 652	7 492	1 325	3 413
4	6	1	9	36	1	3	27	0	3
4	1	0	2	1	0	0	0	0	0
117	115	19	445	88	5	11	40	2	13
2	1	0	3	3	0	1	1	0	0
79	253	21	1 028	176	9	17	104	3	15
15	14	3	22	87	3	7	64	1	7
17	34	11	77	19	1	2	10	0	2
34	121	17	247	55	3	8	23	1	8
9	5	2	21	11	1	2	6	0	1
3	1	0	3	1	0	0	1	0	0
87	46	11	118	36	2	6	16	1	4
53	33	8	88	26	2	5	11	1	3
3 471	7 729	1 628	7 977	22 944	5 072	3 600	7 216	1 317	3 364
6 267	12 377	2 508	21 553	26 410	5 268	4 105	8 902	1 393	3 750

Annex table 2.5. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	800	593	206	56 700	150	2 740	1 071
	Developed countries	376	291	85	27 774	85	1 429	550
	Europe	191	151	40	12 476	49	723	279
	European Union	166	131	35	11 151	42	663	251
	Belgium	10	8	2	718	2	46	19
	Finland	3	2	1	416	1	32	5
	France	19	15	4	1 469	6	101	41
	Germany	50	41	9	3 257	11	166	64
	Italy	14	11	3	1 118	4	60	24
	Netherlands	13	11	2	685	4	43	18
	Spain	7	6	1	429	2	22	9
	Sweden	7	5	2	443	1	38	7
	United Kingdom	22	16	6	1 359	6	81	38
	Other developed Europe	25	20	5	1 325	7	60	29
	Switzerland	13	9	4	998	5	40	20
	North America	77	60	17	5 015	16	339	116
	Canada	13	10	3	751	2	64	17
	United States	65	50	15	4 264	14	275	99
	Other developed countries	107	79	28	10 283	20	367	155
	Australia	29	23	6	1 584	3	57	23
	Japan	66	46	20	8 343	16	269	127
	New Zealand	3	2	1	177	0	32	3
	Developing countries	7 175	5 709	1 466	115 326	420	8 183	4 205
	Africa	20	12	8	887	2	50	21
	North Africa	5	3	1	182	1	10	5
	Other Africa	15	9	6	705	2	39	16
	South Africa	6	4	2	443	1	24	9
	Latin America and the Caribbean	29	21	8	1 117	3	64	24
	Asia	7 125	5 675	1 450	113 286	414	8 065	4 160
	West Asia	85	54	31	2 118	5	98	78
	Saudi Arabia	13	9	4	363	1	22	14
	United Arab Emirates	25	14	11	709	1	27	24
	South, East and South-east Asia	7 040	5 621	1 419	111 168	409	7 967	4 082
	East Asia	132	104	28	14 734	28	392	184
	China	99	81	18	10 611	22	265	132
	Hong Kong, China	3	2	1	609	1	16	6
	Korea, Republic of	20	14	6	2 566	3	74	29
Taiwan Province of China	10	7	3	907	2	34	16	
South Asia	28	21	8	1 808	9	79	46	
India	22	17	5	1 526	8	67	39	
ASEAN	6 879	5 496	1 383	94 627	372	7 496	3 851	
Brunei Darussalam	6	3	3	146	0	7	6	
Cambodia	0	0	0	25	0	1	0	
Indonesia	24	19	5	1 631	5	124	45	
Lao People's Democratic Republic	2	2	0	156	0	122	2	
Malaysia	29	20	9	3 051	4	173	36	
Myanmar	23	13	10	557	1	80	22	
Philippines	5	4	1	493	1	9	4	
Singapore	12	9	3	1 158	4	58	26	
Viet Nam	2	2	0	74	0	3	5	
Oceania	1	1	0	36	0	4	0	
Transition economies	24	19	5	938	2	46	20	
Russian Federation	17	15	2	744	2	39	15	
Domestic value added (DVA)	6 775	5 425	1 350	87 338	357	6 918	3 704	
Gross exports	7 575	6 018	1 556	144 038	507	9 659	4 775	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

2010 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
3 448	7 583	1 140	19 386	6 337	342	794	3 075	143	720
1 894	3 814	690	8 379	2 976	174	438	1 287	72	359
640	1 597	335	3 649	1 381	80	220	554	34	169
572	1 429	276	3 382	1 216	72	201	469	31	155
39	68	20	171	62	4	11	22	2	8
11	55	3	237	36	2	3	11	1	8
72	171	39	423	171	10	34	65	4	20
161	445	83	1 028	335	19	50	138	8	41
55	145	37	293	110	9	19	41	3	14
30	83	14	207	79	5	13	30	2	10
30	58	10	140	48	3	9	17	1	5
33	53	7	107	48	2	6	22	1	8
67	176	33	404	190	11	34	72	4	23
68	167	59	267	165	8	19	85	3	14
51	141	54	201	124	6	10	67	2	10
302	759	113	1 329	675	36	91	322	15	82
42	76	14	186	99	5	14	49	2	12
260	682	100	1 143	576	31	77	272	13	69
952	1 459	241	3 401	921	58	127	412	23	109
172	149	25	367	167	10	32	75	5	18
769	1 241	212	2 954	720	47	85	327	17	87
7	11	2	26	21	1	8	5	1	2
6 066	16 196	2 814	22 647	42 520	8 505	6 068	14 495	2 185	6 172
114	88	14	196	105	5	13	55	3	12
8	23	4	49	26	1	3	14	1	2
106	65	11	147	79	4	10	40	2	9
87	44	6	94	39	2	5	19	1	5
88	154	18	244	146	8	19	79	3	15
5 860	15 950	2 781	22 201	42 266	8 492	6 035	14 361	2 179	6 145
84	144	26	254	692	26	45	516	9	52
18	27	6	54	109	4	7	81	1	8
22	40	6	60	234	8	15	177	3	18
5 776	15 806	2 755	21 947	41 573	8 466	5 989	13 844	2 170	6 092
758	2 000	242	7 091	1 123	63	146	415	30	150
388	1 409	149	5 479	808	42	111	289	21	103
11	78	19	212	40	3	4	13	1	8
302	343	43	1 068	186	11	20	80	5	27
54	166	31	316	85	7	10	32	2	11
86	195	19	226	222	13	26	118	5	18
71	172	15	176	171	10	21	87	4	13
4 932	13 612	2 495	14 629	40 229	8 390	5 817	13 311	2 136	5 925
4	9	1	13	62	2	4	47	1	5
8	2	0	4	2	0	0	1	0	0
119	218	28	576	184	11	21	85	5	27
4	3	0	5	9	1	3	3	0	1
76	478	29	1 553	341	16	28	195	7	32
18	29	5	39	209	7	14	157	3	16
20	83	19	157	46	3	4	24	1	4
45	264	28	406	126	8	16	50	3	18
4	5	1	17	10	1	2	5	0	1
4	3	0	6	3	0	1	1	0	0
122	94	18	220	81	5	13	35	2	10
82	71	15	173	61	4	10	26	2	7
4 634	12 521	2 382	11 859	39 241	8 342	5 724	12 743	2 117	5 821
8 082	20 104	3 522	31 245	45 577	8 684	6 519	15 818	2 260	6 540

Annex table 2.6. Value added exports of goods and services from Thailand, by value added creator, and by sector and industry,

Value added creator		Exports from Thailand by sector/industry						
		Primary			Manufacturing			
		Total	Agriculture, hunting, forestry and fishing	Mining, quarrying and petroleum	Total	Coke, petroleum products and nuclear fuel	Chemicals and chemical products	Metal and metal products
Foreign value added (FVA)	World	930	697	233	65 651	168	3 023	1 155
	Developed countries	395	308	87	28 506	86	1 443	536
	Europe	200	158	42	13 052	50	737	276
	European Union	172	137	36	11 580	43	674	247
	Belgium	11	9	2	824	3	52	21
	Finland	3	2	1	482	1	34	5
	France	19	15	4	1 518	6	103	40
	Germany	45	37	8	2 909	10	140	53
	Italy	15	11	3	1 173	4	62	24
	Netherlands	14	12	2	724	4	45	18
	Spain	8	6	2	479	2	23	10
	Sweden	8	6	2	493	1	42	7
	United Kingdom	26	20	6	1 620	8	96	43
	Other developed Europe	27	21	6	1 471	8	63	29
	Switzerland	15	10	4	1 164	6	44	21
	North America	83	65	18	5 286	17	348	115
	Canada	14	11	3	831	2	69	17
	United States	69	54	15	4 455	15	279	98
	Other developed countries	112	85	27	10 169	19	358	144
	Australia	35	29	6	1 858	4	66	26
	Japan	63	44	19	7 897	14	246	113
	New Zealand	3	2	1	207	1	35	3
	Developing countries	8 843	7 099	1 743	144 913	519	10 015	5 041
	Africa	19	12	7	883	2	46	19
	North Africa	4	3	1	168	1	9	4
	Other Africa	15	9	6	715	2	37	15
	South Africa	6	4	2	454	1	24	9
	Latin America and the Caribbean	31	23	8	1 194	3	66	23
	Asia	8 792	7 064	1 728	142 799	513	9 898	4 998
	West Asia	108	68	40	2 687	6	119	95
	Saudi Arabia	17	11	5	443	1	26	16
	United Arab Emirates	35	20	15	1 012	2	36	33
	South, East and South-east Asia	8 684	6 995	1 688	140 112	507	9 778	4 903
	East Asia	187	149	37	20 309	39	524	242
	China	148	122	26	15 172	32	380	185
	Hong Kong, China	4	3	2	909	1	23	8
	Korea, Republic of	25	18	7	3 359	4	88	34
Taiwan Province of China	9	6	2	824	2	30	14	
South Asia	34	25	9	2 135	10	93	52	
India	26	20	6	1 808	9	80	44	
ASEAN	8 463	6 821	1 642	117 667	458	9 161	4 609	
Brunei Darussalam	8	4	4	175	0	8	7	
Cambodia	0	0	0	23	0	1	0	
Indonesia	29	23	6	1 992	6	146	50	
Lao People's Democratic Republic	3	2	1	188	0	148	2	
Malaysia	34	24	11	3 643	5	192	40	
Myanmar	29	16	13	711	2	100	27	
Philippines	6	5	2	609	1	11	5	
Singapore	14	10	4	1 353	4	66	28	
Viet Nam	3	2	1	95	0	3	5	
Oceania	1	1	0	38	0	5	0	
Transition economies	28	23	5	1 109	2	52	22	
Russian Federation	22	19	2	904	2	45	18	
Domestic value added (DVA)	8 336	6 734	1 602	108 878	440	8 487	4 443	
Gross exports	9 266	7 431	1 835	174 528	608	11 510	5 599	

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. Regions and countries refer to where the value added is attributed. For GVC terminology, see box 3.

2015 (Millions of dollars)

Exports from Thailand by sector/industry

				Services					
Machinery and equipment	Electrical and electronic equipment	Precision instruments	Motor vehicles and other transport equipment	Total	Trade	Hotels and restaurants	Transport, storage and communications	Finance	Business activities
3 761	8 716	1 281	23 209	7 454	443	951	3 558	160	797
1 875	3 889	711	8 608	3 137	203	480	1 318	73	356
650	1 666	354	3 865	1 483	95	242	577	34	170
577	1 476	284	3 570	1 297	86	222	482	31	156
44	77	22	197	72	6	13	25	2	9
12	62	3	287	41	2	4	12	1	9
74	175	40	443	182	12	37	67	4	20
135	400	73	941	305	20	47	122	7	35
57	151	39	310	118	10	21	42	3	14
31	87	15	220	85	5	15	31	2	10
33	64	11	159	54	4	11	19	1	6
37	60	7	120	54	3	6	25	1	9
77	209	40	485	234	15	42	84	5	27
73	190	70	295	186	10	20	95	3	15
58	165	65	233	146	7	12	77	3	11
305	799	120	1 413	718	43	102	332	16	82
46	83	15	209	108	7	17	52	2	13
260	716	105	1 204	610	36	85	281	13	69
919	1 424	237	3 329	936	66	136	408	23	103
197	176	30	429	202	13	39	90	5	20
709	1 172	202	2 806	693	50	85	308	16	78
7	12	2	29	25	2	10	6	1	2
7 642	20 498	3 559	29 881	53 440	10 884	7 510	17 926	2 590	7 710
114	88	14	197	107	6	14	55	2	11
7	22	3	47	24	1	3	13	0	2
107	67	11	150	83	4	11	43	2	9
88	45	6	96	40	2	6	19	1	5
92	175	19	261	155	9	21	82	3	15
7 433	20 232	3 526	29 418	53 175	10 869	7 475	17 787	2 584	7 684
105	185	33	320	901	38	62	663	12	65
21	34	8	66	137	6	9	101	2	9
31	59	9	87	340	14	22	254	4	25
7 328	20 048	3 494	29 098	52 274	10 831	7 414	17 124	2 572	7 619
988	2 728	328	9 908	1 562	96	209	559	39	197
556	2 008	218	7 802	1 176	69	166	409	29	142
15	116	28	323	61	4	7	19	2	11
365	451	53	1 474	242	15	26	101	6	34
48	149	28	292	78	7	10	28	2	10
100	231	22	264	272	18	32	142	5	20
82	205	17	207	212	14	26	106	4	16
6 240	17 088	3 145	18 926	50 441	10 717	7 172	16 423	2 527	7 402
5	11	2	16	76	3	5	57	1	6
6	2	0	4	2	0	1	1	0	0
139	269	34	721	228	15	27	104	5	32
4	4	0	7	11	1	3	3	0	1
88	563	33	1 886	408	21	35	230	8	37
22	39	6	51	275	11	19	204	3	21
23	103	24	199	56	4	5	29	1	5
50	310	33	485	152	10	20	60	3	19
5	6	2	23	13	1	3	7	0	1
4	3	0	5	3	0	1	1	0	0
141	109	21	256	96	6	16	41	2	11
99	85	18	206	75	5	13	31	2	8
5 896	15 781	3 010	15 535	49 219	10 651	7 055	15 727	2 505	7 280
9 658	24 497	4 292	38 745	56 673	11 094	8 006	19 285	2 665	8 077

Annex table 3. Value added exports of goods and services from Thailand, by value added creating sector and industry, 1990-2015 (Millions of dollars)

Sector/industry	Exports from Thailand					
	1990	1995	2000	2005	2010	2015
Total	26 526	51 776	58 007	112 644	176 992	216 526
Primary	3 489	6 513	6 812	12 540	19 552	23 118
Agriculture, hunting, forestry and fishing	2 978	5 485	5 393	9 216	14 946	17 890
Mining, quarrying and petroleum	511	1 028	1 420	3 324	4 607	5 228
Secondary	11 377	22 566	27 422	48 510	79 618	102 956
Food, beverages and tobacco	1 502	3 048	3 273	5 678	9 895	12 368
Textiles, clothing and leather	2 010	3 647	3 742	6 319	10 300	13 239
Wood and wood products	501	902	969	1 719	2 805	3 564
Publishing, printing and reproduction of recorded media	251	564	330	532	862	1 077
Coke, petroleum products and nuclear fuel	73	189	232	363	631	831
Chemicals and chemical products	1 392	2 575	3 864	6 989	11 402	14 469
Rubber and plastic products	151	282	393	759	1 358	1 786
Non-metallic mineral products	1 585	3 028	4 062	7 177	12 189	15 273
Metal and metal products	333	637	896	1 662	2 736	3 488
Machinery and equipment	743	1 521	2 553	4 676	7 286	9 585
Electrical and electronic equipment	1 001	2 287	2 531	4 442	7 972	10 565
Precision instruments	271	633	779	1 482	2 284	2 909
Motor vehicles and other transport equipment	1 140	2 446	2 677	4 975	8 149	11 403
Other manufacturing	424	805	1 121	1 737	1 748	2 401
Tertiary	11 638	22 661	23 680	51 402	77 479	90 035
Electricity, gas and water	794	1 654	1 998	4 069	6 285	6 762
Construction	56	71	64	143	320	376
Trade	4 296	9 492	10 255	24 571	33 367	37 749
Hotels and restaurants	956	1 702	1 486	2 709	4 547	5 257
Transport, storage and communications	2 356	4 071	4 561	9 116	15 430	18 538
Finance	1 390	2 486	2 022	4 042	6 230	7 275
Business activities	1 251	2 151	2 048	4 141	6 742	8 334
Education	47	65	81	164	291	391
Health and social services	56	168	209	392	631	831
Community, social and personal service activities	420	783	932	2 004	3 549	4 420
Public administration and defence	15	19	24	52	85	102

Source: AJC-UNCTAD-Eora database on ASEAN GVCs.

Note: All values are estimated. The value includes both values created abroad (outside Singapore) (FVA) and within Singapore (DVA). The industry refers to the industry to which the value is attributed, not the industry from which exports originate.

Annex table 4. Thailand's value added exports incorporated in other countries' exports, by region or country, 1990–2018 (Millions of dollars)

Region/country	DVX from Thailand						
	1990	1995	2000	2005	2010	2015	2018
World	4 852	9 854	12 736	27 047	43 634	50 093	56 045
Developed countries	2 850	5 311	6 759	14 310	22 015	24 692	28 215
Europe	1 935	3 611	4 568	9 845	15 918	17 337	19 914
European Union	1 878	3 497	4 440	9 534	15 381	16 755	19 238
Belgium	235	401	452	970	1 529	1 751	2 084
Finland	21	52	58	134	205	227	258
France	193	338	473	902	1 261	1 450	1 632
Germany	429	746	1 014	2 342	3 971	3 918	4 445
Italy	137	263	309	663	1 041	1 181	1 371
Netherlands	345	630	779	1 515	2 560	2 981	3 457
Spain	46	105	156	358	535	629	740
Sweden	53	90	100	211	351	400	445
United Kingdom	190	387	441	931	1 449	1 403	1 544
Other developed Europe	57	114	128	311	537	582	676
Switzerland	34	71	84	229	396	433	518
North America	290	660	991	1 729	2 294	2 586	2 834
Canada	99	235	342	655	871	990	1 086
United States	191	426	649	1 074	1 423	1 596	1 748
Other developed countries	625	1 040	1 201	2 737	3 803	4 770	5 467
Australia	84	214	223	457	787	978	1 170
Japan	500	751	867	2 080	2 658	3 400	3 868
New Zealand	13	29	35	66	114	128	136
Developing countries	1 978	4 509	5 934	12 641	21 436	25 195	27 600
Africa	34	72	79	170	292	330	370
North Africa	7	13	14	34	59	62	70
Other Africa	27	59	65	136	233	269	300
South Africa	10	28	34	74	127	151	165
Latin America and the Caribbean	38	222	404	832	1 272	1 497	1 746
Asia	1 901	4 209	5 446	11 630	19 857	23 351	25 466
West Asia	57	130	140	291	520	634	697
Saudi Arabia	23	47	47	70	119	123	134
United Arab Emirates	13	42	37	97	180	241	267
South, East and South-east Asia	1 843	4 079	5 306	11 339	19 337	22 717	24 769
East Asia	1 080	1 700	2 265	5 011	8 884	10 067	10 581
China	40	250	651	2 206	4 553	4 943	5 127
Hong Kong, China	130	303	331	786	1 382	1 647	1 767
Korea, Republic of	136	265	479	1 154	1 997	2 519	2 728
Taiwan Province of China	770	876	796	851	927	926	929
South Asia	39	84	112	320	576	774	900
India	7	32	59	211	395	531	621
ASEAN	725	2 296	2 929	6 008	9 877	11 877	13 288
Brunei Darussalam	4	6	4	9	17	20	19
Cambodia	0	8	19	41	64	80	106
Indonesia	39	122	264	475	709	875	936
Lao People's Democratic Republic	3	9	9	21	37	45	53
Malaysia	210	929	1 052	2 158	3 449	3 943	4 392
Myanmar	1	0	0	0	0	0	0
Philippines	63	189	274	461	702	790	919
Singapore	371	919	1 142	2 484	4 381	5 567	6 128
Viet Nam	34	115	165	358	517	556	734
Oceania	5	6	5	9	16	17	18
Transition economies	24	34	44	96	182	205	230
Russian Federation	11	16	25	52	94	110	124

Source: AJC-UNCTAD-Eora database on ASEAN GVCs. Data for 2016–2018 are projected by UNCTAD and Eora.

Note: All values are estimated. The value refers to that incorporated in exports from the countries listed. For GVC terminology, see box 3.

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