Chapter 2

Malaysia

September 2019

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Chapter 2

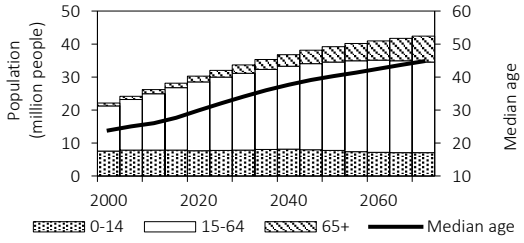
Malaysia

1. Social and Economic Conditions

Population and Per Capita GDP

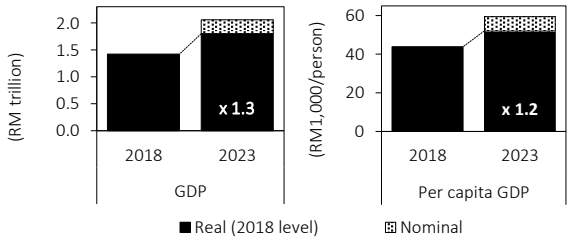
The population of Malaysia, 32 million people in 2018, accounts for 5% of the total population of the ASEAN region, placing it sixth amongst the ASEAN countries. It is expected to reach 42 million by 2050 (Figure 2.1). The working-age people, those between 15 and 65, are the majority of the country's population, and their numbers are expected to increase steadily until 2060. This trend may imply long-term economic growth. Although Malaysia's population is middling in size compared with the populations of the other ASEAN states, the country's strong prospect of population and economic growth suggests a high potential as a consumption market for agri-food products.

Figure 2.1. Population by Age Group, GDP, 2000–2060



Source: United Nations Department of Economic and Social Affairs (UN DESA, 2017).

Figure 2.2. Changes in GDP and Per Capita, 2018 and 2023

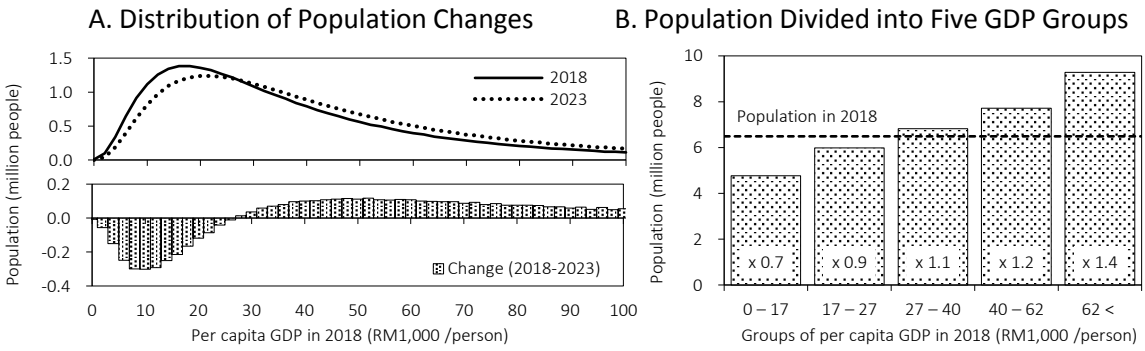


RM = ringgit (Malaysian currency).
GDP = gross domestic product.
Source: Estimates based on data from the International Monetary Fund (IMF, 2018).

Real GDP and per capita real GDP are expected to increase steadily by 1.3 times and 1.2 times, respectively, from 2018 to 2023 (Figure 2.2). According to a projection of Malaysia's population based on the level of per capita GDP (Figure 2.3, Appendix 3.1), as per capita GDP approaches RM28,000, a boundary is crossed whereby the number of people whose annual contributions to GDP are below that value will decrease. By contrast, the number of people with per capita GDP above RM28,000 will increase across a wide range of the distribution.

In particular, the population with per capita GDP above RM62,000 (i.e. the 80th percentile) will expand by 1.4 times by 2023. This projection implies a rapid increase in the number of high-income people. It will thus be necessary to establish a system for supplying agri-food products to match the demand from this rapidly growing upper-income bracket.

Figure 2.3. Estimated Population of Malaysia by Per Capita GDP, 2018 and 2023



RM = ringgit (Malaysian currency).
GDP = gross domestic product.
Note: The per capita GDP was calculated based on constant 2018 prices. The bars in Figure B show the estimated populations of the GDP groups in 2023. The numbers in the bars show the changes in these populations from 2018 to 2023.
Source: Appendix 3.1.

The VA of FVC-related Industries

The VA of the agricultural and wholesale/retail trade sectors has been a notable component of Malaysia's GDP; for instance, the VA of each accounted for about 8% of GDP in 2015 (Figure 2.4). Meanwhile, the VA of the other FVC-related industries was comparatively small.

The annual growth rates of real VA in FVC-related industries averaged around 6% during 2000–2015 (Figure 2.5). The average growth rates of the food-and-beverage and agricultural sectors were higher than the average GDP growth rate during this period, but the rates for other sectors were lower. While the proportion of GDP due to the VA of most FVC-related industries shrank, the proportion due to the VA of the agriculture and food-and-beverage industries gradually expanded.

Figure 2.4. The Proportion of VA in GDP, 2015

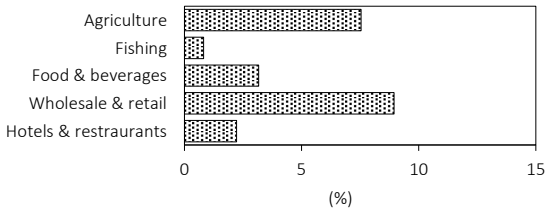
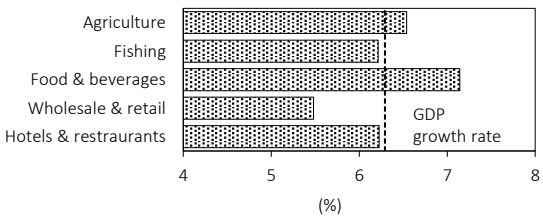


Figure 2.5. Average Annual Change in Real VA, 2000–2015

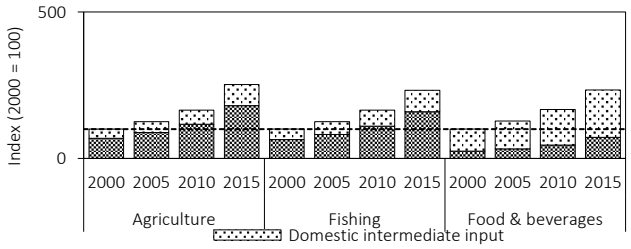


GDP = gross domestic product, VA = value added
Sources: Estimates based on data from Eora (2018) and the Internatioanl Monetary Fund (IMF, 2018).

The production values of the agriculture, fishing, and food-and-beverage industries increased consistently, more than doubling from 2000 to 2015 (Figure 2.6). The part of production value due to the VA (i.e. the VA rate) was large in the agriculture and fishing industries during that period, at around 70%, but smaller in the food and beverage sector, at around 30% (Figure 2.7). The food and beverage sector depended on intermediate inputs from within this sector, as well as from other, related sectors; and production in the food and beverage sector would generally induce more production within that sector, and in related sectors, than it would in agriculture and fishing.

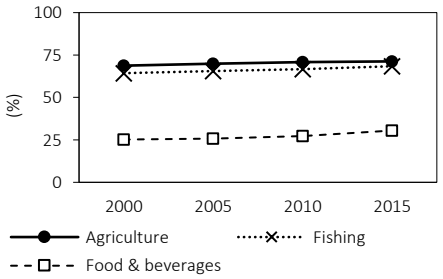
The growth trends in the VA rates of the agriculture, fishing, and food-and-beverage industries suggest a decrease in their use of intermediate inputs. Such a change may have been caused by an increase in the number of products with lower cost of sales to revenue ratios, an improvement in the efficiency of the product mix, and/or technical progress that resulted in savings on inputs.

Figure 2.6. Values of Domestic Production, 2000–2015



Note: The results in the figure are based on real values.
Sources: Estimates using data from Eora (2018) and the International Monetary Fund (IMF, 2018).

Figure 2.7. VA Rates, 2000–2015



VA = value added.
Sources: Estimates using data from Eora (2018).

Intermediate Inputs in Agri-food Industries

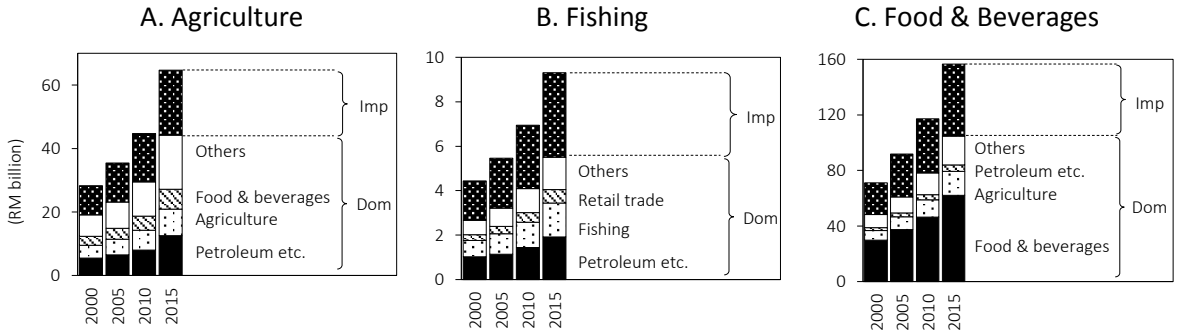
Figure 2.8 shows which industries contributed to the growth of the agriculture, fishing, and food-and-beverage industries from 2000 to 2015. Intermediate inputs into all three agri-food production sectors came largely from domestic sources, and steadily increased during that period. Simultaneously, a certain value of intermediate inputs was imported.

Intermediate inputs from the petroleum, chemical, and non-metallic mineral product ('petroleum etc.') industries accounted for the largest portion of inputs in agriculture, followed by inputs from agriculture itself and the food and beverage industries.[1] The largest domestic source of inputs in the fishing industry was petroleum etc., and the largest domestic source of inputs for the food and beverage industries were the food and beverage industries themselves.

[1] One major input from the petroleum etc. industry was fuel oil, which was needed for agriculture and for the production of chemical fertilizers.

It is notable that intermediate inputs into Malaysia's food and beverage industries came mostly from within those industries, whereas in most of the other ASEAN countries agriculture was the largest source. This suggests that the development of Malaysia's food and beverage industries was largely driven by the production of processed foods, rather than by the production of raw agricultural goods. However, the growth of the food and beverage industries in Malaysia induced a certain degree of agricultural development through the industries' demand for intermediate inputs.

Figure 2.8. Sources of Intermediate Inputs, 2000–2015

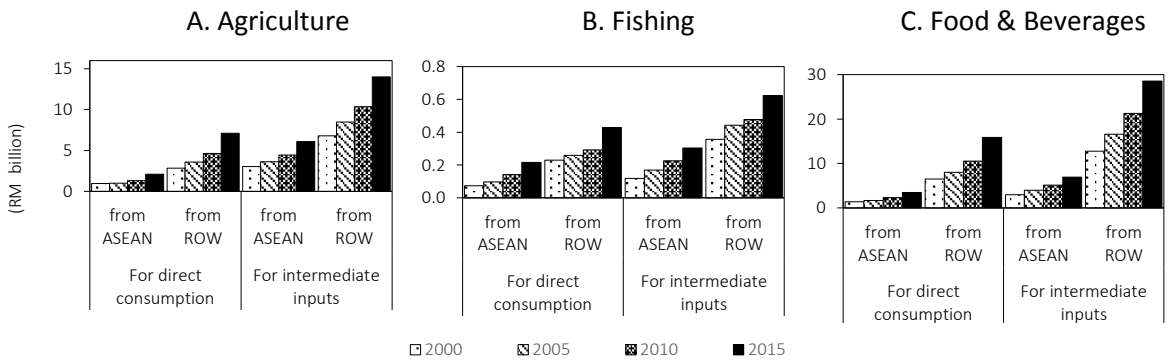


RM = ringgit (Malaysian currency).
Dom = domestic supply, Imp = imports.
Notes: The values in these graphs are based on constant 2015 prices. 'Petroleum etc.' refers to the petroleum, chemical, and non-metallic mineral product industries.
Sources: Estimates using data from Eora (2018) and the International Monetary Fund (IMF, 2018).

The value of imports from foreign agricultural, fishing, and food-and-beverage sectors steadily increased between 2000 and 2015, reaching levels comparable with the value of domestic production (Figure 2.9). The volume of imported agricultural, fishery, and food-and-beverage products for use as intermediate inputs was larger than that destined for direct consumption. In other words, Malaysia was more of an importer of raw materials than final goods.

Although the imports from ASEAN countries were smaller than those from the ROW, this is actually an indication of significant levels of value and growth. We can see from Figure 2.9 that, during 2000–2015, Malaysia gradually strengthened its linkages with both the other ASEAN countries and with the ROW as an importer.

Figure 2.9. Values of Imports, by Purpose, 2000–2015

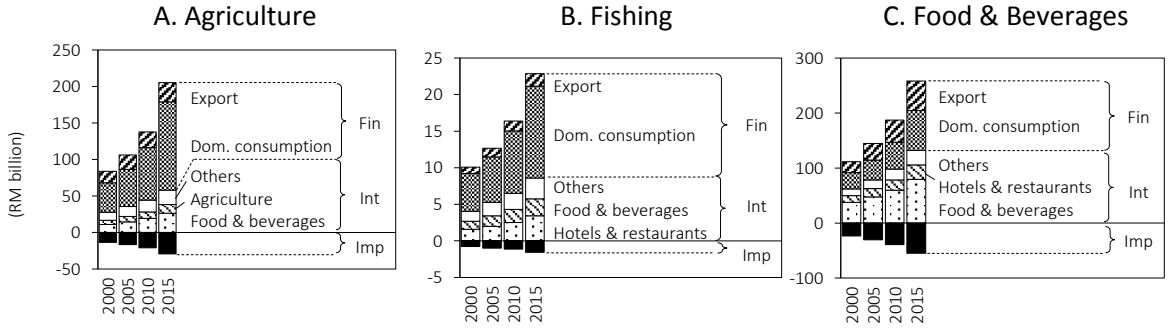


RM = ringgit (Malaysian currency).
ASEAN = Association of Southeast Asian Nations, ROW = rest of the world.
Notes: The values of imports shown in these graphs are based on constant 2015 prices. They include imports from foreign agricultural, fishing, and food-and-beverage sectors destined for domestic final consumption and for use as intermediate inputs in all domestic industries.
Sources: Estimates using data from Eora (2018) and the International Fund (IMF, 2018).

Destinations of Products of Agri-food Industries

Interindustry transactions involving flows of products from agriculture and fishing to the food-and-beverage industries increased during 2000–2015 (Figure 2.10). The flows from fishing to the hotel-and-restaurant industries, and from the food-and-beverage to the hotel-and-restaurant industries, gradually increased. The expansion of intra-industry transactions within agriculture and within the food and beverage industries is observable, as well. The FVC grew steadily in Malaysia with regard to both interindustry and intra-industry transactions.

Figure 2.10. Destinations of Domestically Produced and Imported Goods, 2000–2015

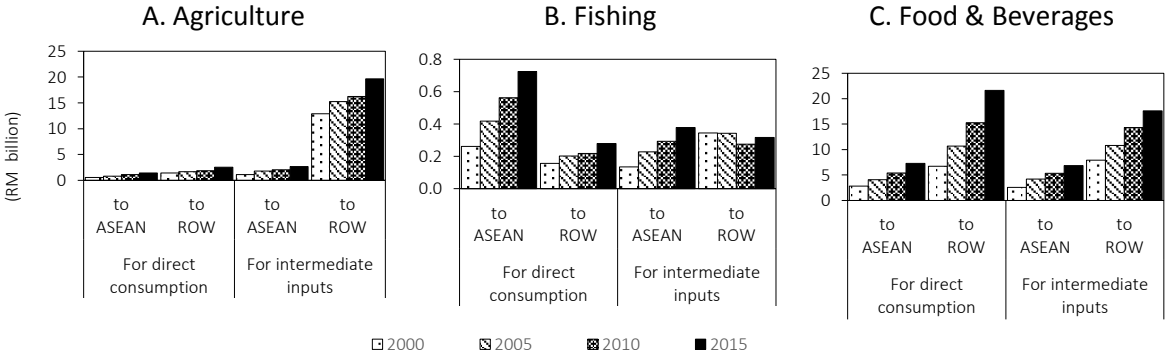


RM = ringgit (Malaysian currency).
Dom. = domestic.
Notes: The values in these graphs are based on constant 2015 prices. 'Fin' = final demand for domestic and imported goods, 'Int' = intermediate demand for domestic and imported goods, and 'Imp' = the imports of intermediate and final goods. Total demand = Fin + Int. Domestic production = Fin + Int - Imp.
Sources: Estimates using data from Eora (2018) and the International Monetary Fund (IMF, 2018).

Both final and intermediate demand grew in the agricultural, fishing, and food-and-beverage industries during 2000–2015. Exports gradually increased, accounting for a prominent share of final demand, especially in 2015. Figure 2.11 shows that, during this period, most of the agricultural products exported from Malaysia were consumed as intermediate goods. By contrast, a relatively large value of exported fishery products were directly consumed. The exports from the food and beverage industries were just about evenly divided between direct consumption and intermediate inputs.

The primary destination of exports from the agricultural and food-and-beverage sectors was the ROW. Regarding these two sectors, Malaysia deepened its linkages more with the ROW (as an exporter) than with the rest of the ASEAN region. There was a notable exception, however: Malaysia's exports from its fishing industry to the other ASEAN countries increased rapidly, especially goods intended for direct consumption, which greatly exceeded the industry's exports destined for direct consumption in the ROW.

Figure 2.11. Values of Exports, by Purpose, 2000–2015



RM = ringgit (Malaysian currency).
ASEAN = Association of Southeast Asian Nations, ROW = rest of the world.
Note: The values in these graphs are based on constant 2015 prices.
Sources: Estimates using data from Eora (2018) and the International Monetary Fund (IMF, 2018).

2. Linkages amongst FVC-related Industries

Final Demand in FVC-related Industries

First, let us see how final demand for domestic FVC-related industries induces the use of intermediate inputs and affects production and VA in each industry.

Table 2.1 shows the composition of final demand during 2000–2015. Final demand was strongest in agriculture, followed by the food-and-beverage and hotel-and-restaurant industries. The average value of annual growth of final demand in agriculture, RM6 billion, outstripped the average values for the other FVC-related industries. The next biggest annual growth was seen in the food and beverage industries. In agriculture, capital formation took the largest share of final demand, having grown rapidly. Household consumption accounted for a comparatively large part of the value of all FVC-related industries, growing steadily, by RM2 billion annually, in the food-and-beverage and hotel-and-restaurant industries. Food and

beverage exports to the rest of the ASEAN region and to the ROW exceeded domestic consumption, having grown by about RM3 billion annually.

Table 2.1. Final Demand for Products/Services of FVC-related Industries, 2000–2015
(RM billion)

Final demand as	Domestic production of: Agriculture Value	Agriculture Change	Fishing Value	Fishing Change	Food & beverages Value	Food & beverages Change	Wholesale trade Value	Wholesale trade Change	Retail trade Value	Retail trade Change	Hotels & restraurants Value	Hotels & restraurants Change
Domestic consupmtion												
Household consumption	19	1	12	0	48	2	3	0	6	0	59	2
Other consumption	0	0	0	0	0	0	0	0	0	0	0	0
Capital formation	92	4	0	0	5	0	2	0	4	0	0	0
Export												
Export to ASEAN	4	0	1	0	14	1	1	0	2	0	2	0
Export to ROW	22	0	1	0	39	2	5	0	10	0	11	0
Total	138	6	14	1	107	4	10	0	23	1	71	3
Annual change rate (%)		6.6		5.9		6.4		4.7		4.7		5.6

RM = ringgit (Malaysian currency).
ASEAN = Association of Southeast Asian Nations, FVC = food value chain, ROW = rest of the world.
Notes: The values in this table are based on constant 2015 prices. 'Change' refers to the average annual changes that were estimated using data for 2000–2015.
Source: Appendix 3.2.

Production and VA Induced by Final Demand

Table 2.2 shows sources of intermediate inputs during 2000–2015 that came from domestic and foreign industries and were destined for use in production by major FVC-related industries in Malaysia. The table indicates that 15% of intermediate inputs into the hotel and restaurant sector came from the domestic food and beverage sector, and that 8% of inputs into the food and beverage sector came from domestic agriculture. This suggests that the hotel-and-restaurant and food-and-beverage sectors can sequentially induce some agricultural production. The table also shows that the hotel-and-restaurant and food-and-beverage industries in Malaysia used a large value of inputs from foreign countries, unlike the same industries in most of the other ASEAN countries covered in this report.

The small increments of annual change in the shares of inputs shown in Table 2.2 indicate a stable input–output structure in Malaysia during 2000–2015. Even if the changing trends shown in the table continue for another 10 years, the structure will not radically change. However, there was a noticeable decrease in the share of inputs from the food and beverage industries back into that sector. This trend suggests a gradual weakening of intra-sector linkages in these industries.

Table 2.2. Sources of Intermediate Inputs in Major FVC-related Industries, 2000–2015

Input from		Domestic production of: Agriculture Share (%)	Agriculture Change	Fishing Share (%)	Fishing Change	Food & beverages Share (%)	Food & beverages Change	Wholesale trade Share (%)	Wholesale trade Change	Retail trade Share (%)	Retail trade Change	Hotels & restraurants Share (%)	Hotels & restraurants Change
Agriculture	Domestic	5	-0.06	0	0.00	8	0.05	0	0.00	0	0.00	4	0.01
	ASEAN	1	-0.01	0	0.00	1	-0.02	0	0.00	0	0.00	1	-0.01
	ROW	1	-0.02	0	0.00	4	0.00	0	0.00	0	0.00	3	0.00
Fishing	Domestic	0	0.00	7	-0.05	1	0.00	0	0.00	0	0.00	3	-0.01
	ASEAN	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	ROW	0	0.00	1	-0.01	0	0.00	0	0.00	0	0.00	0	-0.01
Food & beverages	Domestic	4	-0.03	1	0.00	31	-0.24	0	0.00	0	0.00	15	-0.09
	ASEAN	0	0.00	0	0.00	2	0.01	0	0.00	0	0.00	3	-0.01
	ROW	0	0.01	0	0.00	7	-0.01	0	0.00	0	0.00	11	-0.05
Wholesale trade	Domestic	1	0.00	1	0.00	1	0.00	0	0.00	0	0.00	1	0.00
	ASEAN	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	ROW	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Retail trade	Domestic	3	0.00	3	-0.01	1	0.00	0	0.00	0	0.00	2	0.00
	ASEAN	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	ROW	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Hotels & restraurants	Domestic	0	0.00	0	0.00	0	0.00	3	-0.04	3	-0.04	1	-0.01
	ASEAN	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	ROW	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00

ASEAN = Association of Southeast Asian Nations, FVC = food value chain, ROW = rest of the world.
Notes: 'Share' refers to the intermediate inputs as a percentage of total inputs in 2015. 'Change' refers to the average annual changes in the shares as estimated using data for 2000–2015.
Source: Appendix 3.2.

Table 2.3 shows the VA directly and indirectly boosted by a 1% increase over the 2015 value of final demand for domestic products and services through an increase in domestic production and intermediate inputs. For example, a 1% increase in final demand in the food and beverage sector generated a RM0.09 billion increase in the VA of agriculture, as well as a RM0.35 billion increase in the VA of the food-and-beverage sector itself.

The impacts of final demand in downstream sectors of the FVC, such as the hotel-and-restaurant and food-and-beverage industries, on upstream sectors were limited in Malaysia. This result suggests that direct interventions to increase final demand in agriculture might be more effective than expecting a ripple effect from the hotel-and-restaurant and food-and-beverage sectors.

Final demand in downstream industries had a notable effect on the VA of fishing, as the size of the fishing market is limited. For instance, the amount of VA in the fishing sector induced by a 1% increase in final demand in the hotel and restaurant industries (RM0.02 billion) was large compared with that driven by the final demand in the fishing sector itself (RM0.08 billion). Similarly, final demand in the food and beverage industry can have a measurable effect on fishing. Increasing final demand in these downstream sectors can thus be an effective way to promote the development of the fishing sector.

Table 2.3 shows no inducement effects of final demand in the wholesale and retail trade sectors on any of the other four sectors discussed above. Meanwhile, Table 2.2 indicates that FVC-related industries, especially agriculture and fishing, did depend on inputs from the retail trade industry during 2000–2015. It is suggested that the services provided by the wholesale/retail trade sectors are necessary, but alone not sufficient, to automatically drive the development of the FVC-related industries.

Table 2.3. VA Induced by a 1% Increase in Final Demand, 2015

(RM billion)

Induced value added in	1% increase in final demand for					
	Agriculture	Fishing	Food & beverages	Wholesale trade	Retail trade	Hotels & restraurants
Agriculture	0.91	0.00	0.09	0.00	0.00	0.03
Fishing	0.00	0.08	0.01	0.00	0.00	0.02
Food & beverages	0.02	0.00	0.35	0.00	0.00	0.04
Wholesale trade	0.02	0.00	0.01	0.08	0.00	0.01
Retail trade	0.04	0.00	0.03	0.00	0.18	0.02
Hotels & restraurants	0.00	0.00	0.00	0.00	0.00	0.26

RM = ringgit (Malaysian currency).
VA = value added.
Source: Appendix 3.2.

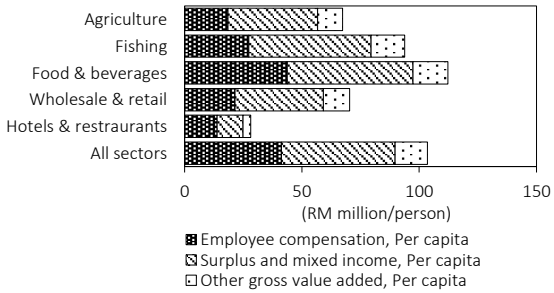
The Relationship amongst the Number of Employees, Per Capita Compensation, and Production

Now let us consider how an increase in production relates to changes in the number of employees and per capita employee compensation in an industry. According to figures 2.12 and 2.13, the agricultural sector in 2015 was characterized by a relatively large number of employees, a medium level of labour productivity, and slightly low per capita compensation compared with other FVC-related industries. By contrast, the food and beverage industries had a limited number of employees and slightly higher labour productivity and per capita compensation than the average values in Malaysia.

Figure 2.12. Number of Employees, by Sector, 2015

RM = ringgit (Malaysian currency).
Sources: International Labour Organization (ILO, 2019); Appendix 3.3.

Figure 2.13. Gross VA per Capita, by Sector, 2015



VA = value added.
Sources: Estimates based on data from Eora (2018) and the International Labour Organization (ILO, 2019); Appendix 3.3.

Figure 2.14 illustrates the relationship amongst the number of employees, per capita compensation, and production in each agri-food sector during 2000–2015. Figure 2.14A depicts the proportion of the average annual rate of change in production in each sector that was attributable to total employee compensation. In all the sectors, production growth averaged around 6%, including a contribution of 1% from the increase in the total value of the compensation.

The average annual rates of change in the total value of employee compensation were within the range of 5%–7% in all FVC-related sectors (Figure 2.14 B). Both the number of employees and per capita compensation, which together determine the growth of total compensation, steadily increased in all industries in Malaysia, while most of the other ASEAN member states covered in this report showed a decrease in the number of employees working in agriculture. In Malaysia's agricultural and fishing sectors, the increase in total compensation was mainly due to an increase in per capita compensation, whereas in the other industries it was mainly due to a rapid rise in the number of employees.

These results suggest that production growth can accompany a rise in per capita compensation and in the number of employees in all FVC-related industries, particularly in the agricultural and fishing sectors. The proportion of employees in the agricultural sector was smaller in Malaysia than in the other ASEAN countries analysed this report. Furthermore, labour productivity and per capita compensation were comparatively high in Malaysia. The increase in agricultural productivity, which can be confirmed by Figure 2.13, did not accompany a decrease in the size of the workforce, as has occurred in the other ASEAN countries. This would imply an absence of surplus labour in Malaysia's agricultural sector, contrary to the case in the other ASEAN countries analysed in this report (Ranis 2004).

Figure 2.14. Changes in Production and Employee Compensation, 2000–2015

A. Breakdown of the Average Annual Rates of Change in Production

B. Breakdown of the Average Annual Rates of Change in Employee Compensation

Notes: Other factors include changes in the value added (VA), other than from employee compensation, and changes in intermediate inputs. The data is from selected years during 2000–2015.
Source: Appendix 3.3.

3. Supply–Demand Balance of Agri-food Products

Supply–Demand Structure

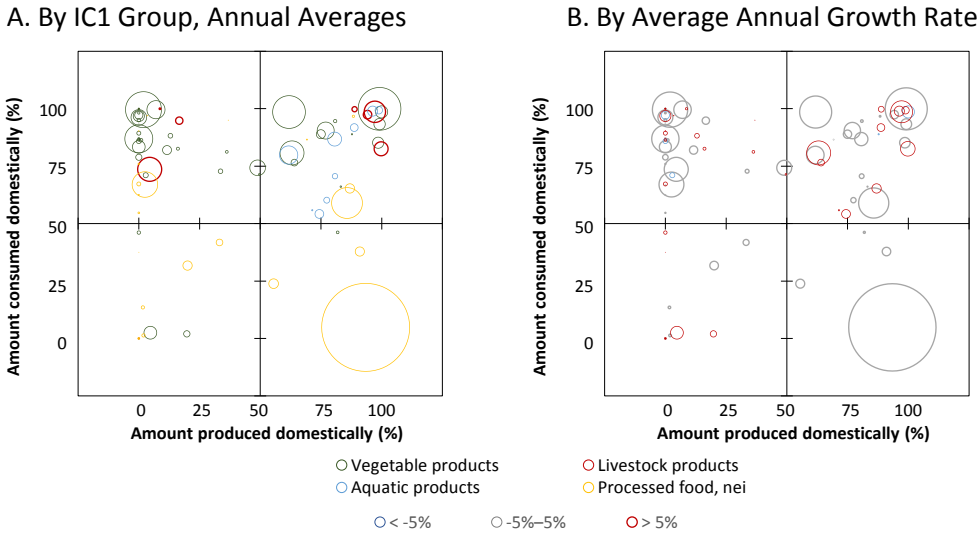
Figure 2.15 shows the structure of domestic commerce and foreign trade in 2004–2013. There are two graphs, each of which is divided into four quadrants defined by two criteria: whether agri-food goods were *produced* domestically or in foreign markets and whether they were *consumed* domestically or in foreign markets. In 2.15 A and 2.15 B, the circles are scattered across all four quadrants. The circles vary in size according to the volumes produced of the goods

they represent. The pattern of circles is the same in both graphs, but the circles in Figure 2.15 A are colour-coded to indicate the agri-food sector, whilst those in Figure 2.15 B are colour-coded to reflect growth rates.

The top side of each graph represents goods that were mostly or completely consumed domestically, and the right side represents goods that were mostly or completely produced domestically. Many medium-sized circles are found in the first and second quadrants, on the upper right and upper left, respectively. The first quadrant represents products made and consumed in the domestic market (i.e. domestic-oriented goods) and the second quadrant represents products imported from foreign markets and consumed domestically (i.e. import-oriented goods). There are some smaller circles in the third quadrant, on the lower left, which represents goods that were imported and then re-exported (i.e. trade-oriented goods). One large circle representing palm oil stands out in the fourth quadrant, on the lower right, which represents goods produced domestically and consumed in foreign markets (i.e. export-oriented goods).

This graph reveals three characteristics of Malaysia as an exporter and importer of agri-food products during 2004–2013. The first is that that Malaysia was highly dependent on agri-food imports, suggested by the presence of many items in the second quadrant. The next characteristic was that Malaysia imported a limited quantity of certain products for re-exportation (i.e. trade-oriented goods), indicated by the small circles found in the third (lower-left) quadrant. The last characteristic is that no products were completely produced and/or consumed domestically, as most of the medium-sized circles are nowhere near the levels at 100% domestic production or 100% domestic consumption. All three characteristics suggest that Malaysia was active in international trade of various agri-food products. A comparison with the corresponding figures in other chapters of this report will show that, during 2004–2013, Malaysia was indeed more active in this trade than the other ASEAN countries covered in this report.

Figure 2.15. Classification of Agri-food Products by Supply–Demand Balance, 2004–2013



IC1 = item category level 1, nei = not elsewhere included.
Notes: Each circle represents a Food Balance Sheet (FBS) product as designated by FAOSTAT. The sizes of the circles express the quantity of total supply, with the proportions estimated based on quantitative data. 'IC1' comprises the author's classifications of broad agri-food product categories (see Appendix 2.2). In these graphs, the percentage of goods not produced/consumed domestically are produced/consumed in foreign markets. Data classification: FBS items.
Sources: FAO (2019); Appendix 3.4.

Table 2.4 shows that, during 2004–2013, most agri-food products were actively produced and consumed in the domestic market, as well as imported. A large number of vegetable products, particularly cereals (11) and vegetables (13), were imported into Malaysia, [2] which is a peculiar feature that is not observed with the other IC2 (item category level 2) product categories for the other ASEAN countries covered in this report. [3] It is notable that they outstripped the production and exportation of fat and oils (42). Stimulants and spices (15) were mostly imported for re-export, which is also a special feature of Malaysia.

Annual change data indicates rapid growth in the production of fat and oils and a corresponding expansion of exports. The surging export demand for fat and oils seems to have induced a sharp increase in production. Vegetables were also conspicuous for their steep increase in domestic supply accompanied by growing production and imports. The production of cereals and oil and sugar crops (12) caused an increase, rather than a decrease, in the importation of these

[2] In this report, the names of products will sometimes be followed by numbers in parentheses. These are the numerical designations assigned to agri-food products by FAOSTAT, the statistical database of the Food and Agriculture Organization of the United Nations (FAO).
[3] In Table 2.4 and other tables in this report, the products and their FAOSTAT numbers are often listed in columns labelled 'IC2', while broader product categories are listed in columns labelled 'IC1' (item level category 1). These are designations established for this study to enable a consistent interpretation of agri-food data obtained from different sources. See Appendix 2.2.

products. By contrast, the growing imports of fruits and nuts (15) seem to have displaced domestic production of these goods.

Table 2.4. Supply–Demand Balance of Agri-food Products, 2004–2013

(1,000 metric tons)

IC1	IC2	2004–2013 average				Average annual change, 2004–2013			
		Production	Domestic supply	Import	Export	Production	Domestic supply	Import	Export
1 Vegetable products	11 Cereals	1,678	7,589	6,152	336	31	107	-71	12
	12 Oil and sugar crops	5,432	6,265	938	132	79	67	-24	2
	13 Vegetables	1,069	2,870	2,200	399	96	206	99	-11
	14 Fruits and nuts	1,033	1,451	743	326	-39	-3	35	-2
	15 Stimulants and spices	87	164	656	613	-4	4	27	40
2 Livestock products	21 Meat	1,500	1,692	223	33	65	70	10	5
	22 Milk	67	1,099	1,426	394	4	-28	-3	29
	23 Eggs	545	451	1	95	30	21	0	9
3 Aquatic products	31 Freshwater fishes	146	151	19	14	14	15	1	0
	32 Marine fishes	1,173	1,365	425	237	16	30	14	-2
	33 Crustaceans	155	113	53	95	11	14	1	-1
	34 Molluscs	149	123	40	66	-1	4	3	-3
	35 Aquatic animals, nei	6	5	2	4	1	0	0	1
	36 Aquatic plants	152	153	2	1	33	33	0	0
4 Processed food, nei	41 Sugar	84	1,123	1,726	600	-2	54	60	-7
	42 Fat and oils	19,401	2,516	1,941	18,943	609	86	170	625
	43 Food, nei	0	35	52	17	0	3	5	2
	44 Alcoholic beverages	203	161	58	101	19	21	7	5

IC1 = item category level 1, IC2 = item category level 2, nei = not elsewhere included.
Note: 'IC1' and 'IC2' comprise the author's classifications of broader product categories and more specific product groups, respectively (Appendix 2.2). This table is based on an aggregation of all the data available from FAOSTAT's Food Balance Sheet (FBS). Data classification: FBS items.
Sources: FAO (2019); Appendix 3.4.

Table 2.5 shows Food Balance Sheet (FBS) items (as designated by FAOSTAT) listed in descending order of total supply quantity within each category in 2004–2013, corresponding to the quadrants in Figure 2.15. Palm oil, represented by the large circle in Figure 2.15, is in the column for export-oriented products in Table 2.5. Most products are in the cells representing stable or expanding markets for domestic-, import-, or trade-oriented products.

'Other vegetables' (mainly onions, pulses, starchy roots, and leaf fruit vegetables aside from tomatoes) and poultry meat are identifiable as domestic-oriented products by their large quantities of supply undergoing rapid growth. Eggs, demersal fish, and beer are also notable for their accelerated growth. Potatoes and potato products show a stable increase in supply as import-oriented products. The cell representing the expanding market of trade-oriented products includes cocoa beans, coffee, and their products, which account for a large part of supply quantity in this category; in other words, the importation and re-exportation of these products have grown.

Table 2.5. Total Quantities of Supply for Product Categories, in Descending Order, 2004–2013

(1,000 metric tons)

Category			Domestic-oriented		Export-oriented		Import-oriented		Trade-oriented	
Provided by			Domestic market				Foreign market			
Consumed in			Domestic market		Foreign market		Domestic market		Foreign market	
Change		Rank	IC2 FBS items	Quantity	IC2 FBS items	Quantity	IC2 FBS items	Quantity	IC2 FBS items	Quantity
Annual change rate, 2004–2013 (%)	Expanding r > 5	1	13 Vegetables, other	1,416			13 Potatoes and products	326	15 Cocoa beans and products	424
		2	21 Poultry meat	1,203			15 Spices, other	68	15 Coffee and products	115
		3	23 Eggs	547			14 Grapes and products (excl wine)	52	11 Oats	40
		4	32 Demersal fish	269			43 Infant food	52	44 Beverages, alcoholic	17
		5	44 Beer	234			13 Roots, other	32	42 Cottonseed oil	4
	Stable -5 < r < 5	1	12 Palm kernels	4,387	42 Palm oil	18,304	11 Maize and products	3,122	42 Coconut oil	231
		2	11 Rice (milled equivalent)	2,595	42 Soyabean oil	247	11 Wheat and products	1,909	41 Sweeteners, other	126
		3	42 Palmkernel oil	2,308	42 Oilcrops oil, other	227	41 Sugar (raw equivalent)	1,597	42 Sunflowerseed oil	38
		4	32 Pelagic fish	836	15 Pepper	28	22 Milk - excluding butter	1,493	42 Rape and mustard oil	37
		5	12 Coconuts - incl copra	730			13 Cassava and products	825	21 Meat, other	0.6
	Shrinking r < -5	1	12 Sugar cane	384			11 Cereals, other	182		
		2	14 Citrus, other	9			15 Pimento	77		
		3					11 Barley and products	72		
		4					15 Cloves	1		
		5								

FBS = Food Balance Sheet (FAOSTAT), IC2 = item category level 2, r = average annual change rate .
Notes: The values in this table represent the averages for 2004–2013. Data classification: FBS items.
Sources: FAO (2019); Appendix 3.4.

Trade Prices and Volumes

The export prices of several categories of goods, such as aquatic products (particularly raw crustaceans [33] and processed molluscs [34]), stimulants and spices (15), and alcoholic beverages (44), were remarkably high during 2014–2016 (Table 2.6). Export values, as well as export prices, were relatively high for processed stimulants and spices. We can conclude that the processed stimulants and spices exported in large amounts had high enough values during this period to induce active trade.

The import prices of aquatic products, including raw freshwater fishes (31), raw aquatic plants (36), processed molluscs, and raw crustaceans, exceeded those of many other products. And the prices of raw eggs (23) and alcoholic beverages were also conspicuously high. The import values of most of these high-priced products were quite small, with the exception of alcoholic beverages. High-priced items that were largely imported, such as alcoholic beverages and processed food, nei (43), seem to have had high values for the Malaysian market. Overall, the export and import prices of processed products tended to be higher than those of primary products, except for some items such as eggs, sugar, and several aquatic products.

Table 2.6. Prices and Values of Exported/Imported Agri-food Products, 2014–2016

IC1	IC2	Price ($/kg)				Value ($ million)			
		Export		Import		Export		Import	
		Primary products	Processed products	Primary products	Processed products	Primary products	Processed products	Primary products	Processed products
1 Vegetable products	11 Cereals	0.5	1.9	0.3	0.7	2	1,190	363	1,130
	12 Oil and sugar crops	0.3	1.3	0.5	1.4	35	63	434	68
	13 Vegetables	0.7	1.6	0.6	1.1	182	91	824	222
	14 Fruits and nuts	0.6	2.0	1.0	1.7	131	106	568	187
	15 Stimulants and spices	3.8	3.5	2.5	3.7	385	1,017	1,246	454
2 Livestock products	21 Meat	—	3.1	—	3.1	0.0	141	0.0	865
	22 Milk	2.1	2.1	1.9	3.0	16	307	62	839
	23 Eggs	0.3	1.9	4.7	2.3	127	0.7	5	1
3 Aquatic products	31 Freshwater fishes	1.1	2.4	10.1	3.0	2	10	29	45
	32 Marine fishes	1.9	2.1	2.6	2.1	6	44	17	197
	33 Crustaceans	6.9	3.4	5.4	3.3	302	26	204	13
	34 Molluscs	2.3	5.4	3.0	7.7	78	18	97	22
	35 Aquatic animals, nei	3.5	2.4	5.0	2.0	10	129	6	96
	36 Aquatic plants	1.0	—	9.2	—	1	0.0	7	0.0
	38 Fishes, nei	2.0	2.1	1.2	2.2	45	159	161	171
4 Processed food, nei	41 Sugar	2.3	0.7	3.8	0.5	3	582	14	1,090
	42 Fat and oils	—	0.8	—	0.9	0.0	14,643	0.0	1,503
	43 Food, nei	—	2.8	—	3.5	0.0	880	0.0	965
	44 Alcoholic beverages	—	3.5	—	4.2	0.0	463	0.0	617

IC1 = item category level 1, IC2 = item category level 2, kg = kilogram, nei = not elsewhere included.
Notes: This table shows the averages for 2014–2016. The values indicated for exports are based on 'free on board' (FOB) prices, and those for imports are based on 'cost, insurance, and freight' (CIF) prices.
Data category: IC2 groups based on the Broad Economic Categories (BEC) classifications of primary products (11) and processed products (12).
Sources: UNSD (2017); Appendix 3.6.

4. The Competitiveness of Each Product in the ASEAN Region

Commodities Imported by ASEAN Countries

Tables 2.7 and 2.8 provide information about the agri-food products imported by ASEAN countries from Malaysia in 2014–2016. ASEAN countries imported many of these products from Malaysia more cheaply than they did from other ASEAN+6 countries (Table 2.7). [4] Roughly 70%–90% of items in the IC2 groups were imported as low-priced products. Malaysia exported notably more to Singapore than to the other ASEAN states; its next-largest exports went to countries with similar values, other than the CLM states: Cambodia, Lao PDR, and Myanmar (Table 2.8).

As shown in Table 2.7, many Malaysian products that were imported by other ASEAN countries in significantly larger quantities than estimated (based on approximate lines) were the low-price range. Examples of such products included stimulants and spices (15), freshwater fishes (31), and fishes, nei (not elsewhere included) (38). Similarly, aquatic animals, nei (35), and food, nei (43), were conspicuous in the mid-price range. Major products in the low-price range that were imported in smaller quantities than expected (based on their prices) included oil and sugar crops (12), vegetables (13), and fishes, nei.

[4] In addition to the ASEAN member states, the ASEAN+6 group includes: Australia, China, India, Japan, Republic of Korea, and New Zealand.

Table 2.7. Prices and Values of Products Imported by ASEAN Countries, by IC2 Group, 2014–2016

IC1	IC2	Price ($/kg)	Value ($ million)	Number of imported products by price ranges (%)			Number of products deviated from approx. lines (%)						Obs.
							Imported larger			Imported smaller			
				Price ranges			Price ranges			Price ranges			
				Low	Mid	High	Low	Mid	High	Low	Mid	High	
1 Vegetable products	11 Cereals	2.1	457	80	10	10	3	0	0	2	0	0	89
	12 Oil and sugar crops	1.5	184	73	13	14	2	2	0	6	0	0	63
	13 Vegetables	1.4	233	73	15	12	2	1	0	4	0	0	172
	14 Fruits and nuts	1.7	127	76	12	12	0	1	0	2	0	0	206
	15 Stimulants and spices	4.2	473	72	13	14	5	0	0	0	1	0	104
2 Livestock products	21 Meat	3.7	63	83	9	9	0	3	0	0	0	0	35
	22 Milk	2.2	126	79	11	9	0	0	0	0	0	0	53
	23 Eggs	2.6	117	75	0	25	0	0	0	0	0	0	4
3 Aquatic products	31 Freshwater fishes	3.7	5	73	12	15	4	0	0	0	0	0	26
	32 Marine fishes	2.7	36	78	7	15	2	0	0	2	0	0	55
	33 Crustaceans	5.3	62	91	3	6	0	0	0	0	0	0	33
	34 Molluscs	3.2	21	93	4	4	0	0	0	0	0	0	27
	35 Aquatic animals, nei	3.0	119	69	23	8	0	8	0	0	0	0	13
	36 Aquatic plants	10.3	0.0	0	67	33	0	0	0	0	0	0	3
	38 Fishes, nei	3.0	98	92	4	4	4	0	0	4	0	0	26
4 Processed food, nei	41 Sugar	1.3	325	78	10	12	2	0	0	2	0	0	60
	42 Fat and oils	1.4	1,204	79	13	8	1	1	0	0	0	0	98
	43 Food, nei	3.5	353	80	5	15	0	5	0	0	0	0	20
	44 Alcoholic beverages	1.9	45	56	25	19	0	0	0	0	0	0	16

ASEAN = Association of Southeast Asian Nations, IC1 = item category level 1, IC2 = item category level 2, kg = kilogram, nei = not elsewhere included.

Notes: The prices and values represent the averages for 2014–2016. 'Price' refers to the import price, including the cost, insurance, and freight (CIF), added to the tariff established by the ASEAN *Trade* in Goods Agreement (ATIGA). 'Value' refers to the imported value (CIF) without the tariff. See Appendix 3.6 for price ranges and approximate lines. The products for which the externally studentized residual was significantly large or small at the 10% level were counted. 'Obs.' refers to the number of detailed commodities classified according to the Broad Economic Categories (BEC) three-digit category numbers and used for applying approximation lines. Data category: FAOSTAT Commodity List (FCL) and adjusted groups of the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) classified under BEC 111, 112, 121, and 122.

Sources: UNSD (2017); Appendix 3.6.

Table 2.8. Prices and Values of Products Imported into the ASEAN Region, by Country, 2014–2016

Importer	Price ($/kg)	Value ($ million)	Number of imported products by price ranges (%)			Number of products deviated from approx. lines (%)						Obs.
						Imported larger			Imported smaller			
			Price ranges			Price ranges			Price ranges			
			Low	Mid	High	Low	Mid	High	Low	Mid	High	
Singapore	2.2	1,688	87	9	3	4	1	0	0	0	0	260
Brunei	2.5	207	81	8	11	4	1	0	0	0	0	186
Malaysia	2.1	2	48	26	26	0	0	0	0	12	0	42
Thailand	2.6	395	81	10	9	0	0	0	0	5	0	172
Indonesia	1.6	479	86	8	6	1	0	0	0	2	0	116
Philippines	1.8	338	60	16	24	0	0	0	0	1	0	82
Viet Nam	2.6	618	65	18	18	0	2	0	0	6	0	51
Lao PDR	2.0	2	60	20	20	0	20	0	0	0	0	5
Camboodia	1.9	45	78	12	10	0	0	0	0	0	1	99
Myanmar	1.9	0.0	54	21	24	0	3	0	0	0	0	90

ASEAN = Association of Southeast Asian Nations, kg = kilogram, nei = not elsewhere included.

Notes: The prices and values represent the averages for 2014–2016. 'Price' refers to the import price, including cost, insurance, and freight (CIF), added to the tariff established by the ASEAN *Trade* in Goods Agreement (ATIGA). 'Value' refers to the imported value (CIF) without the tariff. See Appendix 3.6 for price ranges and approximate lines. The products for which the externally studentized residual was significantly large or small at the 10% level were counted. 'Obs.' refers to the number of detailed commodities classified according to the United Nations Broad Economic Categories (BEC) three-digit category numbers and used for applying approximation lines. Data category: FAOSTAT Commodity List (FCL) and adjusted groups of the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) classified under BEC 111, 112, 121, and 122.

Sources: UNSD (2017); Appendix 3.6.

Goods Imported in Smaller/Larger Quantities than Estimated Based on Prices: Non-price Competitiveness in the ASEAN Region

Malaysian vegetable products in the low- and mid-price ranges—such as stimulants and spices (15), including coffee extracts and pepper; and cereals (11), including processed cereals for breakfast foods and pastries—tended to be imported in great quantities by other ASEAN countries in 2014–2016, considering their prices (Table 2.9). Regarding the aquatic category, products in various IC2 groups were imported in substantial amounts, including: miscellaneous aquatic products; fish and fish products, nei; tilapias and other cichlids; and herrings/sardines/anchovies. Similarly, products categorized as processed food, nei—such as prepared fat, nes (not elsewhere specified); molasses; infant food; and coconut oil—were imported in significantly larger quantities than had been estimated based on their import prices. It might be beneficial to seek opportunities to develop further export markets for these products. Moreover, research on the causes of such active import demand, including production and sales methods, would help identify pathways toward increasing the sales of other items.

Research on the characteristics of the goods actively exported by other countries to Malaysia might also trigger a reconsideration of production and marketing strategies for domestic products that could compete with goods produced by other states in the ASEAN region, for instance: fonio flour, salmons/trouts/smelts, and refined sugar from Thailand; crab, nei, sharks, rays, chimaeras, and oils from Indonesia; bananas and breakfast cereals from the Philippines, chilies, green peppers, and miscellaneous freshwater fishes from Viet Nam; and chocolate products, nes, beer, and distilled alcoholic beverages from Singapore.[5]

There were many products for which the import quantities were very small during 2014–2016, considering their prices, such as vegetable products in the low- and mid-price ranges; and aquatic products and processed food, nei, in the low- and high-price ranges. Although these products were certainly exported to other ASEAN countries, they might not have been as competitive as the same products from other ASEAN and +6 countries. If these items are to be promoted as export goods destined for other ASEAN countries, active and intensive product differentiation will be necessary.

[5] For reference, see tables 2.9 to 9.9. See also Table A4.2 on major exports from the +6 countries.

Table 2.9. Goods Imported by ASEAN Countries in Smaller/Larger Quantities than Estimated Based on Prices, in Ascending Order of P-values, 2014–2016

A. Larger Quantities of Exports than Estimated Based on Prices

IC1	Rank	Price ranges																					
		Low							Mid							High							
		Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value	Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value	Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value
1 Vegetable products	1	BRN	11	122	Cereals, breakfast	6.0	3	0.03	BRN	13	121	Flour, roots and tubers nes	2.1	0.2	0.04	PHL	13	122	Vegetables, preserved nes	4.1	1	0.12
	2	BRN	15	122	Coffee, extracts	5.6	5	0.03	MMR	12	122	Soya paste	3.4	36	0.04	IDN	14	112	Nuts, prepared (exc. groundnuts)	12.7	0.1	0.17
	3	BRN	11	122	Pastry	3.3	3	0.04	SGP	14	122	Juice, pineapple	0.9	1.0	0.06	IDN	15	111	Cocoa, beans	3.0	19	0.19
	4	SGP	12	111	Soybeans	0.7	1	0.05	SGP	14	122	Juice, lemon, concentrated	2.9	1	0.09							
	5	BRN	13	122	Vegetables, preserved, frozen	2.1	0.3	0.05	BRN	15	112	Pepper (piper spp.)	13.8	0.1	0.12							
2 Livestock products	1	BRN	22	122	Ice cream and edible ice	2.5	2	0.16	LAO	21	122	Meat, cattle, boneless (beef and veal)	8.2	2	0.06							
	2	BRN	22	112	Milk, skimmed cow	1.4	0.5	0.18	BRN	22	122	Milk, whole condensed	4.1	2	0.19							
	3	SGP	22	122	Ice cream and edible ice	1.8	12	0.18														
	4																					
	5																					
3 Aquatic products	1	BRN	38	112	Fish and fish products, nei	3.0	8	0.05	MMR	35	122	Miscellaneous aquatic products, food	3.4	36	0.04							
	2	SGP	31	112	Tilapias and other cichlids	1.9	0.9	0.08	IDN	32	122	Miscellaneous pelagic fishes	3.7	1	0.17							
	3	SGP	32	122	Herrings, sardines, anchovies	3.9	5	0.09	PHL	32	122	Herrings, sardines, anchovies	2.4	0.2	0.20							
	4	SGP	34	112	Squids, cuttlefishes, octopuses	1.8	5	0.12														
	5	BRN	32	122	Herrings, sardines, anchovies	4.0	2	0.14														
4 Processed food, nei	1	SGP	42	121	Fat, nes, prepared	1.3	26	0.06	MMR	43	122	Infant food	8.5	4	0.09							
	2	SGP	41	121	Molasses	0.3	0.5	0.06	VNM	42	121	Oil, coconut (copra)	1.6	2	0.10							
	3	THA	42	121	Fat, nes, prepared	1.3	35	0.11	BRN	41	122	Beverages, non alcoholic	0.8	20	0.13							
	4	SGP	43	121	Food preparations, nes	2.0	2	0.11	MMR	42	121	Fat, nes, prepared	1.4	137	0.16							
	5	SGP	42	122	Margarine, liquid	1.4	13	0.12														

B. Smaller Quantities of Exports than Estimated Based on Prices

IC1	Rank	Price ranges																			
		Low							Mid							High					
		Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value	Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value	Importer	IC2	BEC	Detailed commodity name	Price ($/kg)	Value ($ million)	p-value
1 Vegetable products	1	THA	12	111	Sesame seed	0.5	0.000	0.00	KHM	15	112	Chillies and peppers, dry	5.0	0.000	0.09	MYS	13	112	Cabbages and other brassicas	5.3	0.000	0.18
	2	MYS	13	112	Cucumbers and gherkins	0.8	0.000	0.02	MYS	13	122	Vegetables, preserved nes	3.2	0.001	0.10							
	3	MYS	14	122	Fruit, prepared nes	1.3	0.000	0.03	THA	13	112	Peas, green	4.7	0.000	0.13							
	4	THA	13	112	Vegetables, fresh nes	1.3	0.000	0.03	MYS	13	112	Vegetables, fresh nes	1.4	0.000	0.18							
	5	VNM	13	112	Beans, dry	1.2	0.006	0.03	KHM	12	122	Olives preserved	3.5	0.000	0.18							
2 Livestock products	1	PHL	22	122	Ice cream and edible ice	1.2	0.003	0.15														
	2																					
	3																					
	4																					
	5																					
3 Aquatic products	1	THA	32	122	Cods, hakes, haddocks	0.7	0.004	0.06								MYS	35	122	Miscellaneous aquatic products, food	4.0	0.002	0.12
	2	MYS	38	112	Fish and fish products, nei	5.5	0.000	0.08								THA	33	112	Lobsters, spiny-rock lobsters	28.1	0.001	0.18
	3	MYS	38	122	Fish and fish products, nei	2.1	0.007	0.12														
	4	MYS	32	122	Herrings, sardines, anchovies	1.1	0.005	0.12														
	5	VNM	32	122	Miscellaneous pelagic fishes	4.1	0.008	0.15														
4 Processed food, nei	1	MYS	41	122	Sugar confectionery	2.7	0.001	0.02	IDN	41	121	Lactose	4.2	0.001	0.13	MYS	43	121	Food preparations, nes	4.0	0.000	0.12
	2	PHL	44	122	Beer of barley	0.6	0.002	0.11								MMR	41	121	Sugar non-centrifugal	1.3	0.056	0.16
	3	SGP	42	121	Oil, cottonseed	1.5	0.056	0.13														
	4	MYS	42	121	Fat, nes, prepared	0.6	0.082	0.13														
	5	MYS	41	122	Beverages, non alcoholic	0.2	0.002	0.20														

BEC = Broad Economic Categories, United Nations Statistics Division (UNSD), BRN = Brunei, IC1 = item category level 1, IC2 = item category level 2, IDN = Indonesia, kg = kilogram, KHM = Cambodia, LAO = Lao People's Democratic Republic, MMR = Myanmar, MYS = Malaysia, nei = not elsewhere included, nes = not elsewhere specified, PHL = Philippines, SGP = Singapore, THA = Thailand, VNM = Viet Nam.

Notes: The values listed in this table represent the averages for 2014–2016. The top five agri-food products within each IC1 grouping are listed in ascending order of p-value < 0.2, under the BEC as follows: primary products mainly for industry (111), primary products mainly for household consumption (112), processed products mainly for industry (121), and processed products mainly for household consumption (122). 'Price' refers to the CIF (cost, insurance, and freight) import price added to the tariff set by the ASEAN *Trade* in Goods Agreement (ATIGA). 'Value' refers to the imported value (CIF) without the tariff. The expression 'p-value' refers to the p-value of the t-stat against the externally studentized residual. See Appendix 3.6. Data category: FAOSTAT Commodity List and adjusted groups of the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP) classified under BEC 111, 112, 121, and 122.

Sources: UNSD (2017); Appendix 3.6.

Inter-commodity and Inter-country Comparisons of Land/Feed Productivity

The median land productivity of vegetables (13) and of stimulants and spices (15) were the highest in 2011–2015 (Table 2.10). The ratios of the yield, an indicator of comparative advantage in the ASEAN region, were slightly higher for vegetables than for other IC2 groups in the category of vegetable products.

Table 2.10. Median Levels of Productivity and Resource Allocation in Each IC2 Group

IC1	IC2	Land productivity (RM1,000/ha)	Chg (%)	Ratio of the yield Index (Yi/Yi')	Chg (%)	Area harvested (1,000 ha)	Chg (%)	Obs.
1 Vegetable products	11 Cereals	4	7	1.3	1	332	-1	2
	12 Oil and sugar crops	15	10	1.2	1	93	-4	5
	13 Vegetables	30	5	1.7	0	3	7	12
	14 Fruits and nuts	19	5	0.8	0	7	0	13
	15 Stimulants and spices	30	5	1.0	0	2	-1	9
	Total	20	6	1.1	0	3	1	41
IC1	**IC2**	**Feed productivity (RM1,000/100 PU)**	**Chg (%)**	**Ratio of the yield Index (Yi/Yi')**	**Chg (%)**	**Producing animals (million PU)**	**Chg (%)**	**Obs.**
2 Livestock products	21 Meat	23	—	2.1	—	1	3	8
	22 Milk	7	—	0.5	—	2	1	1
	23 Eggs	10	—	1.2	—	25	5	2
	Total	21	—	1.7	—	2	3	11

RM = ringgit (Malaysian currency).

ha = hectare, IC1 = item category level 1, IC2 = item category level 2, PU = unit of pig feed requirements, Yi = yield in Malaysia, Yi' = average yield in other ASEAN countries.

Notes: Land/feed productivity, ratio of the yield, and area harvested/producing animals represent the average values for 2011–2015. 'Chg' refers to the average annual rates of change during 2006–2015 (%). 'Obs.' refers to the number of items in the FAOSTAT Commodity List (FCL). The data on land productivity was deflated to constant 2015 ringgit prices. The figures are estimates based on all the FAOSTAT data under the 'Production' rubric. Data category: FCL.

Sources: FAO (2019); Appendix 3.7.

Land productivity and ratios of the yield were both higher for tomatoes than for all other vegetables during the same period (Table 2.11). Those values for some other vegetables—such as chilies, green peppers, lettuce, chicory, and okra—were also relatively high. The land productivity and ratio of the yield of tomatoes increased sharply during these years. Furthermore, large quantities of tomatoes (considering the price) were imported by Singapore, signifying that they may have had high non-price competitiveness. Amongst the vegetable products, the land productivity and ratios of the yield of several stimulants and spices—such as tea, pepper, nutmeg/mace/cardamoms—outstripped those for other products. Similarly, sheep's meat had high feed productivity and ratio of the yield, compared with those values for other livestock products. Although the harvested areas or number of producing animals for the products mentioned above were small (with the exception of pepper), the potential of these products as exports to other ASEAN countries could be high if they became competitive with the same products from those other countries by means of greater physical productivity.

As shown in the second column from the right in Table 2.11, which lists examples of products imported by other ASEAN countries from Malaysia during 2014–2016 in greater quantities than expected based on their prices, many of these products apparently had non-price competitiveness or were differentiated from the same items produced in other ASEAN countries. Those products mainly included processed foods such as peanut butter; liquid margarine; pineapple, lemon, or orange juice; tea and coffee extracts; and cocoa paste. In Malaysia, the processing of agri-food products seemed to

contribute to product differentiation and the avoidance of competition dependent on physical productivity.

Table 2.11. Levels of Productivity and Resource Allocation for Individual Items

No.	IC2	FCL name	Land or feed productivity (RM1,000/ha or RM1,000/100 PU)	Chg (%)	Ratio of the yield Index (Yi/Yi')	Chg (%)	Area or producing animals (1,000 ha or million PU)	Chg (%)	Intpn. A	Intpn. B	Items imported larger or smaller compared with the price (p<0.2) Imported larger	in	Imported smaller	in
1	11	Maize	4	12	1.7	4	10	-1	iii	i				
2		Rice, paddy	3	2	0.8	-3	655	-1	iv	iv			Bran, rice	PHL
3	12	Sugar cane	40	17	0.6	1	2	-42	ii	ii	Sugar cane	SGP	Sugar non-centrifugal	MMR
4		Groundnuts, with shell	19	9	3.4	8	0	-8	iii	i	Peanut butter	SGP		
5		Oil, palm fruit	11	7	1.1	1	4,971	2	iii	iv	Margarine, liquid	SGP		
6		Coconuts	7	12	1.2	7	93	-4	iii	iii	Oil, coconut (copra)	VNM		
7		Oilseeds nes	—	—	1.7	0	153	1	—	—				
8	13	Tomatoes	152	18	4.6	12	2	7	i	i	Tomatoes	SGP		
9		Chillies and peppers, green	62	6	1.9	-2	3	3	i	i				
10		Vegetables, fresh nes	48	4	1.6	1	26	2	i	ii			Vegetables, fresh nes	THA
11		Lettuce and chicory	46	1	2.3	6	3	25	i	i				
12		Okra	42	7	1.8	3	3	11	i	i				
13		Cabbages and other brassicas	37	-5	1.5	-5	6	23	i	ii			Cabbages and other brassicas	MYS
14		Cucumbers and gherkins	23	2	2.1	3	5	7	i	iii			Cucumbers and gherkins	MYS
15		Sweet potatoes	20	8	1.6	-2	3	9	i	iv				
16		Spinach	19	6	3.8	4	4	1	iii	iii				
17		Cassava	17	5	0.9	-3	3	4	iv	iv	Cassava	SGP		
18		Pumpkins, squash and gourds	15	9	0.6	-2	2	24	iv	iv				
19		Roots and tubers, nes	8	-1	1.0	-3	0	-5	iv	iv	Flour, roots and tubers nes	BRN		
20	14	Areca nuts	51	11	1.6	10	0	-29	i	i				
21		Pineapples	31	2	0.8	-2	13	0	ii	ii	Juice, pineapple	SGP		
22		Fruit, citrus nes	30	—	0.9	—	1	—	ii	i				
23		Papayas	21	10	0.4	-3	2	-3	ii	ii	Papayas	SGP		
24		Lemons and limes	20	6	0.8	4	1	-3	ii	i	Juice, lemon, concentrated	SGP		
25		Mangoes, mangosteens, guavas	19	9	0.7	5	13	13	iv	ii				
26		Watermelons	18	4	0.9	-5	12	2	iv	iii	Watermelons	SGP		
27		Cashew nuts, with shell	17	4	1.3	0	7	1	iii	iii				
28		Grapefruit (inc. pomelos)	17	8	0.9	8	1	-5	iv	iii	Grapefruit (inc. pomelos)	BRN		
29		Bananas	15	4	0.4	-5	29	3	iv	iv				
30		Oranges	10	-14	0.3	-5	3	2	iv	iv	Juice, orange, concentrated	THA	Juice, orange, concentrated	MYS
31		Fruit, fresh nes	—	—	1.1	3	13	1	—	—				
32		Fruit, tropical fresh nes	—	—	0.7	-1	15	-5	—	—				
33	15	Ginger	58	10	0.7	0	1	0	ii	ii				
34		Tea	49	14	3.7	10	2	-3	i	i	Tea, mate extracts	BRN		
35		Pepper (piper spp.)	41	7	2.1	1	13	1	i	i	Pepper (piper spp.)	BRN		
36		Nutmeg, mace and cardamoms	37	15	11.0	18	0	-11	i	i				
37		Coffee, green	23	4	2.6	-1	4	-16	i	iii	Coffee, extracts	BRN		
38		Chillies and peppers, dry	8	1	0.4	-6	3	3	iv	iv			Chillies and peppers, dry	KHM
39		Cloves	3	2	1.0	0	1	0	iv	iii				
40		Cocoa, beans	1	-24	0.5	-19	16	-7	iv	iv	Cocoa, paste	SGP		
41		Spices, nes	—	—	0.9	—	0	—	—	—	Spices, nes	BRN		
42	21	Meat, pig	121	—	2.1	—	2	-1	i	i				
43		Meat, sheep	64	—	5.4	—	0	16	i	i				
44		Meat, cattle	45	—	2.0	—	2	3	i	ii	Meat, cattle, boneless (beef and veal)	LAO		
45		Meat, goat	24	—	1.6	—	0	12	ii	ii				
46		Meat, buffalo	21	—	1.7	—	0	4	i	iv	Meat, cattle, boneless (beef and veal)	LAO		
47		Meat, duck	21	—	5.3	—	6	2	i	iii				
48		Meat, chicken	10	—	3.0	—	99	3	iii	iii				
49		Meat, horse	8	—	0.9	—	0	-5	iv	iv				
50	22	Milk, whole fresh cow	7	—	0.5	—	2	1	iv	i	Ice cream and edible ice	BRN		
51	23	Eggs, other bird, in shell	12	—	1.3	—	1	5	iv	i				
52		Eggs, hen, in shell	8	—	1.1	—	49	6	iv	iv				

RM = ringgit (Malaysian currency).

BRN = Brunei, FCL = FAOSTAT Commodity List, ha = hectare, IC2 = item category level 2, Intpn. = interpretation, LAO = Lao People's Democratic Republic, MMR = Myanmar, MYS = Malaysia, nes = not elsewhere specified, p = p-value, PHL = Philippines, PU = unit of pig feed requirements, SGP = Singapore, THA = Thailand, VNM = Viet Nam, Yi = yield in Malaysia, Yi' = average yield in other ASEAN countries.

Notes: 'Area' refers to the total harvested area, and 'producing animals' refers to the number of producing animals. Land/feed productivity, ratio of the yield, and area harvested/producing animals represent the average values for 2011–2015. 'Chg' refers to the average annual rates of change during 2006–2015 (%). The data on land productivity was deflated to constant 2015 ringgit prices. The figures are estimates based on all the FAOSTAT data provided under the 'Production' rubric. In the 'Intpn' column, the codes are as follows: i = both productivity and ratio of the yield are high; ii = productivity is high, but the ratio of the yield is low; iii = productivity is low, but the ratio of the yield is high; and iv = both productivity and ratio of the yield are low. The codes under 'A' reflect the median of the broader product categories in IC1 (item category level 1), and those under 'B' reflect the median of the specific products in IC2 included here. Regarding the items imported in larger or smaller quantities compared with their prices (p<0.2), the names of the FCL items (corresponding to the United Nations' Broad Economic Categories) listed in the table are those with the smallest p-values < 0.2 estimated based on data from 2014–2016. Data category: FCL.

Source: Appendix 3.7.

Table 2.12 shows a positive correlation between the land productivity and ratios of the yield of vegetables (13) during 2011–2015. In other words, the profitability per unit area of FCL items under the category of vegetables tended to be high when they had a comparative advantage in terms of physical productivity within the ASEAN region. However, this was not true for products belonging to other IC2 groups.

Weak or non-existent correlations are observed between feed productivity or ratios of the yield and the extent of harvested areas or number of producing animals for all IC2 product groups. Such results show that most of the land and producing animals in Malaysia were simply not allocated to products characterized by high productivity or competitiveness.

Table 2.12. Correlation Matrix of Comparative Advantage, Productivity, and Resource Allocation, 2011–2015

	Land or feed productivity						Ratio of the yield					
IC2	11 Cereals	12 Oil and sugar crops	13 Vegetables	14 Fruits and nuts	15 Stimulants and spices	21 Meat	11 Cereals	12 Oil and sugar crops	13 Vegetables	14 Fruits and nuts	15 Stimulants and spices	21 Meat
Ratio of the yield	—	-0.40	0.65	0.44	0.43	0.33	—	—	—	—	—	—
Area or producing animals	—	-0.60	0.27	-0.49	-0.43	-0.07	—	-0.40	0.17	-0.48	-0.38	0.45
Obs.	2	4	12	11	8	8	2	4	12	11	8	8

IC2 = item category level 2.

Notes: This table uses Spearman's rank correlation coefficient of average values during 2011–2015. The values were estimated based on the data for items on the FAOSTAT Commodities List (FCL) relating to land/feed productivity, the ratio of the yield, and the number of producing animals and the land area they used. FCL items with correlation coefficients less than 4 were omitted. 'Obs.' refers to the number of FCL items. Data category: FCL.

Source: Author's calculations, see Appendix 3.7.

5. Summary

Social and Economic Conditions

- Although Malaysia's population is middling in size compared with the populations of the other ASEAN states, the country's strong prospect of population and economic growth suggests a high potential as a consumption market for agri-food products.
- The VA of the agricultural and wholesale/retail trade sectors was a notable component of Malaysia's GDP; for instance, the VA of each accounted for about 8% of GDP in 2015. While the proportion of GDP due to the VA of most of FVC-related industries shrank, that due to the VA of agriculture and the food and beverage industries gradually expanded.
- Interindustry transactions involving product flows from agriculture and fishing to the food and beverage industries increased. Transactions from fishing to the hotel and restaurant industries gradually increased, as did transactions from the food-and-beverage industries to the hotel-and-restaurant industries. The growth of intra-industry transactions within agriculture and within the food and beverage industries was observable, as well.

Linkages amongst FVC-related Industries

- The impacts of final demand in downstream sectors of the FVC, such as the hotel-and-restaurant and food-and-beverage industries, on upstream sectors were limited in Malaysia. This result suggests that direct interventions to increase final demand in agriculture might be more effective than expecting a ripple effect moving upstream from the hotel-and-restaurant and food-and-beverage sectors.
- The effects of downstream industries on the VA of fishing was notable, as the size of the fishing sector is limited. It is also suggested that the services provided by the wholesale/retail trade sectors are necessary, but alone not sufficient, to automatically drive the development of the FVC-related industries.
- Production growth can accompany a rise in per capita compensation and in the number of employees in all FVC-related industries, particularly agriculture and fishing.
- The structural characteristics of agricultural employment and labour productivity in Malaysia, which are the opposite of those in the other ASEAN countries, imply that there was no agricultural labour surplus in Malaysia.

Supply–Demand Balance of Agri-food Products

- Most agri-food products were actively produced and consumed in the domestic market, as well as imported. A large number of vegetable products, particularly cereals and vegetables, were imported, which is a peculiar feature that is not observed for other IC2 product groups in the ASEAN countries covered in this report. It is notable that the production and exportation of fat and oils largely outstripped those of the other products. Stimulants and spices were mostly imported for re-export, which is also a special feature of Malaysia.
- The export prices of several items—such as aquatic products, particularly raw crustaceans and processed molluscs; stimulants and spices; and alcoholic beverages—were remarkably high. We can conclude that processed stimulants and spices exported in large amounts had enough value to induce active trade. By contrast, high-priced items such as alcoholic beverages and processed food, nei, seem to be valuable imports for Malaysia.

The Competitiveness of Each Product in the ASEAN Region

- Malaysian vegetable products in the low- and mid-price ranges—such as stimulants and spices, including coffee extracts and pepper, and processed cereals for breakfast foods and pastries—tended to be imported in great quantities into other ASEAN countries, considering their prices. Aquatic products were largely imported; these included products in various IC2 groups, such as miscellaneous aquatic products; fish and fish products, nei; tilapias and other cichlids; and herrings/sardines/anchovies. Similarly, products categorized as processed food, nei—such as prepared fat, nes; molasses; infant food; and coconut oil—were imported in significantly larger quantities than had been estimated based on their import prices.
- Research on the characteristics of the goods actively exported from other ASEAN countries to Malaysia might trigger a reconsideration of production and marketing strategies for domestic products that could compete with goods produced by other ASEAN states, for instance: fonio

flour, salmons/trouts/smelts, and refined sugar from Thailand; crabs, nei, sharks/rays/chimaeras, and oils from Indonesia; bananas and breakfast cereals from the Philippines; chilies, green peppers, and miscellaneous freshwater fishes from Viet Nam; and chocolate products, nes, beer, and distilled alcoholic beverages from Singapore.

- The land productivity and ratio of the yield were higher for tomatoes than for all other vegetables. Those values for some other vegetables—such as chilies, green peppers, lettuce, chicory, and okra—were also relatively high. Amongst the vegetable products, the land productivity and ratios of the yield of several stimulants and spices—including tea, pepper, nutmeg/mace/cardamoms—outstripped those for other products. Similarly, sheep's meat had high feed productivity and a high ratio of the yield compared with those for other livestock products. The potential of these products as exports to other ASEAN countries could be high if they compete with the same items produced in other countries by physical productivity.