

# Chapter 5

## Philippines

September 2019

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# Chapter 5

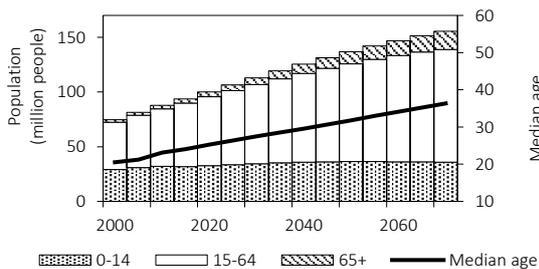
## Philippines

### 1. Social and Economic Conditions

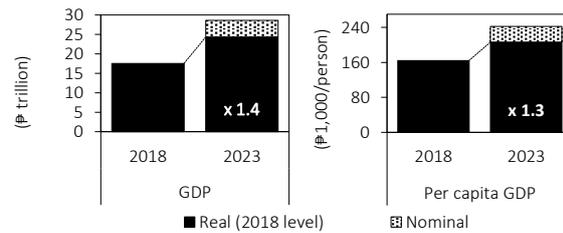
#### Population and Per Capita GDP

The population of the Philippines, 107 million people in 2018, accounts for 16% of the total population of the ASEAN region, placing it second amongst the ASEAN countries. It is expected to reach 151 million by 2050 (Figure 5.1). The working-age people, those between 15 and 65, are the majority of the country’s population, and their numbers are projected to continue increasing at least until 2070. This trend may imply long-term economic growth. The Philippines’ large population and strong population and economic growth suggest that the country has a high potential as a consumption market for agri-food products.

**Figure 5.1. Population by Age Group, 2000–2060**



**Figure 5.2. Changes in GDP and Per Capita GDP, 2018 and 2023**

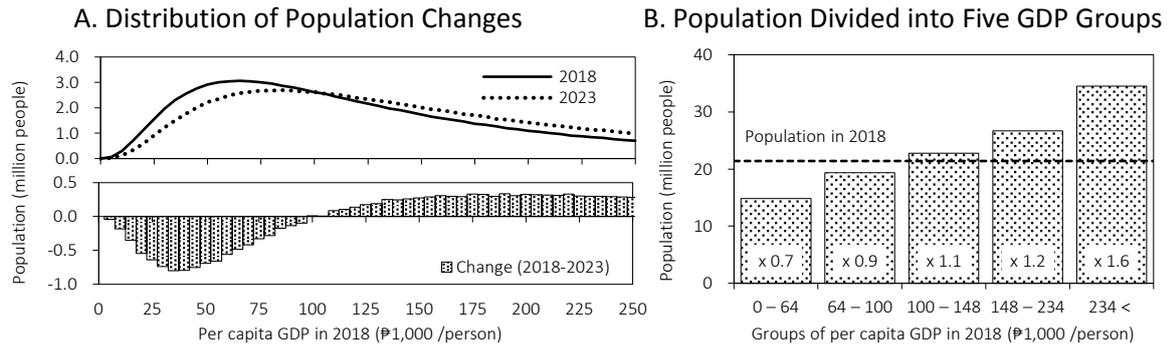


Source: United Nations Department of Economic and Social Affairs (UN DESA, 2017).

₱ = pesos (Philippine 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 by 1.4 times and 1.3 times, respectively, from 2018 to 2023 (Figure 5.2). According to a projection of the population of the Philippines based on the level of per capita GDP (Figure 5.3; Appendix 3.1), as per capita GDP approaches ₱100,000/person, 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 ₱100,000 will increase across a wide range of the distribution. In particular, the population with per capita GDP above ₱234,000 (i.e. the 80th percentile) will expand by 1.5 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 5.3. Estimated Population of the Philippines by Per Capita GDP, 2018 and 2023**



₱ = pesos (Philippine currency).

GDP = gross domestic product.

Note: The per capita GDP is based on a constant 2018 prices. The bars in Figure B show the estimated populations of the GDP groups in 2023. The numbers in bars show the changes of these populations from 2018 to 2023.

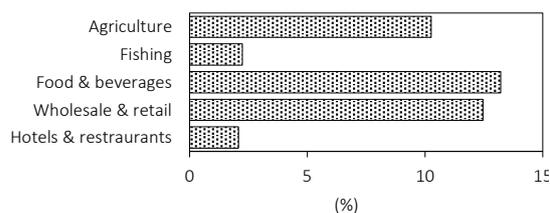
Source: Appendix 3.1.

### The VA of FVC-related Industries

The VA of agriculture, food and beverages, and wholesale and retail trade has been a major component of the Philippines' GDP; for instance, the VA of each accounted for about 10% of GDP in 2015 (Figure 5.4). Meanwhile, the VA of the fishing and hotel-and-restaurant industries was very limited.

The annual growth rates of real VA in FVC-related industries averaged around 5% during 2000–2015, lower than the average GDP growth rate, except for the hotel-and-restaurant and food-and-beverage industries, whose rates were higher (Figure 5.5). While the proportion of GDP due to the VA of most FVC-related industries shrank, the proportions due to the VA of the hotel-and-restaurant and food-and-beverage industries gradually expanded.

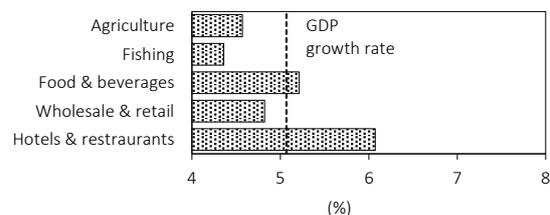
**Figure 5.4. The Proportion of VA in GDP, 2015**



GDP = gross domestic product, VA = value added.

Sources: Estimates based on data from Eora (2018).

**Figure 5.5. Average Annual Change in Real VA, 2000–2015**



GDP = gross domestic product, VA = value added.

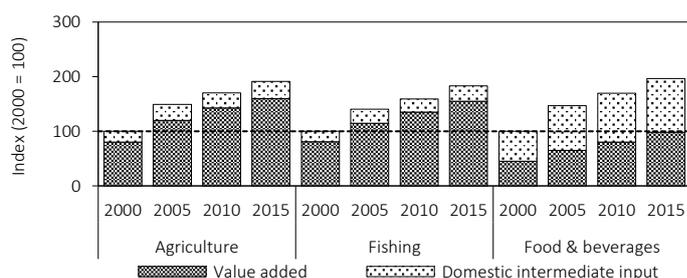
Sources: Estimates based on data from Eora (2018) and the International Monetary Fund (IMF, 2018).

The production values of the agriculture, fishing, and food-and-beverage industries increased gradually, nearly doubling from 2000 to 2015 (Figure 5.6). The part of production value due to the VA (i.e. the VA rate) was large in the agriculture and fishing industries, at around 85%, and smaller in the food and beverage sector, at around 50% (Figure 5.7). The food and beverage sector depended on

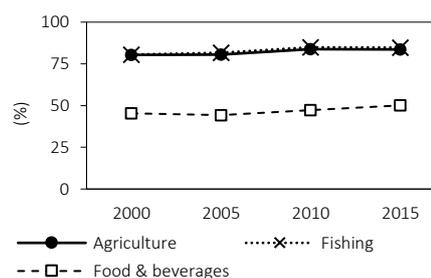
intermediate inputs from within this sector and from other, related sectors; and production in the food and beverage sector would generally induce more production within that sector, and in related sectors, than it would in agriculture and fishing.

The slight growth of the VA rates in 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 5.6. Values of Domestic Production, 2000–2015**



**Figure 5.7. VA Rates, 2000–2015**



Note: The results in the figure are based on real values.

Sources: Estimates based on Eora (2018) and the International Monetary Fund (IMF, 2018).

VA = value added.

Sources: Estimates based on data from Eora (2018).

### Intermediate inputs in Agri-food Industries

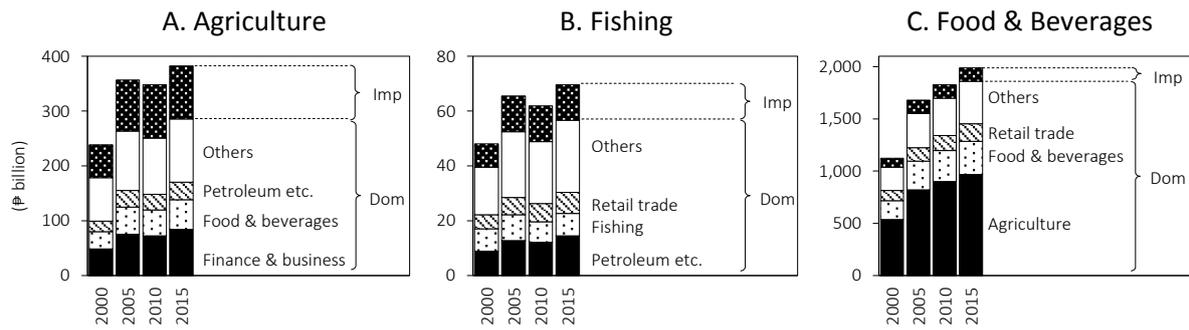
Figure 5.8 shows which industries contributed to the growth of the agriculture, fishing, and food-and-beverage industries from 2000 to 2015. Intermediate inputs into all three agri-food production sectors came mainly from domestic sources, whilst a certain value of intermediate inputs into agriculture and fishing was imported. Inputs in agriculture and fishing stagnated after 2005, while those in the food and beverage industries gradually increased.

Intermediate inputs from the finance and business industries accounted for the largest portion of inputs into agriculture, followed by inputs from the food-and-beverage and petroleum, chemical, and non-metallic mineral product ('petroleum etc.') industries.<sup>1</sup> The largest source of inputs in the fishing industry was petroleum etc., and the largest source of inputs in the food and beverage industries was agriculture.

In fact, agriculture was a very substantial source of intermediate inputs into the food the beverage industries. This implies that growth in the food and beverage industries was mainly driven by the supply of raw agricultural products, rather than processed foods. The growth of the food and beverage industries in the Philippines induced the development of agriculture through the industries' demand for intermediate inputs.

<sup>1</sup> Table A2.1, in Appendix 2, shows the industry classifications mentioned in this section, including 'petroleum etc.' One major input from the petroleum etc. industry was fuel oil, which was needed for agriculture and for the production of chemical fertilizers.

**Figure 5.8. Sources of Intermediate Inputs, 2000–2015**



₱ = pesos (Philippine currency).

Dom = domestic supply, Imp = imports.

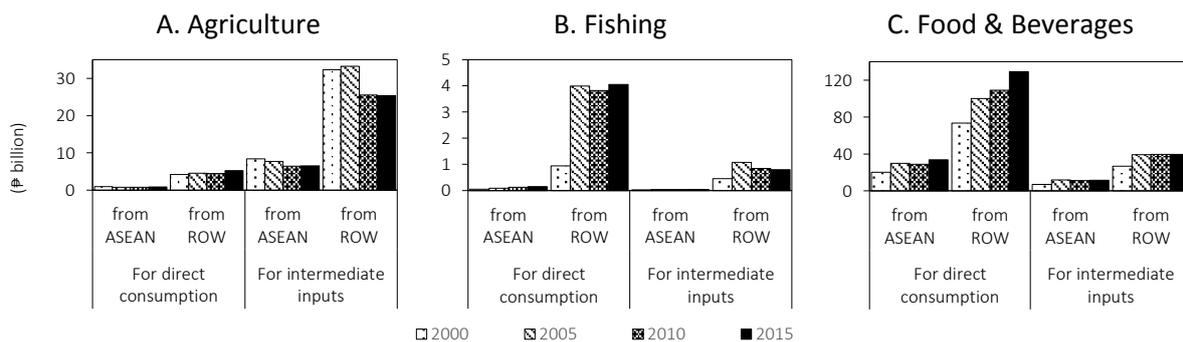
Notes: The values in these graphs are based on constant 2015 prices. ‘Petroleum etc.’ refers to the petroleum, chemical, and non-metallic mineral product industries.

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 was limited compared with that of domestic production between 2000 and 2015 (Figure 5.9). Imports from foreign agricultural and fishing sectors stagnated, while those from foreign food-and-beverage sectors steadily increased during this period. The volume of imported agricultural products for use as intermediate inputs was larger than that destined for direct consumption. Conversely, imported fish and food-and-beverage products were generally used for direct consumption. Put briefly, the Philippines imported agricultural products mainly for processing, and fish and food-and-beverage products mainly for direct consumption.

Imports from other ASEAN countries were small and stagnant compared with those from ROW. We can see from Figure 5.9 that, during 2000–2015, Thailand gradually strengthened its linkages with the ROW as an importer, rather than deepening its integration into the ASEAN region.

**Figure 5.9. Values of Imports, by Purpose, 2000–2015**



₱ = pesos (Philippine currency).

ASEAN = Association of Southeast Asian Nations, ROW = rest of the world.

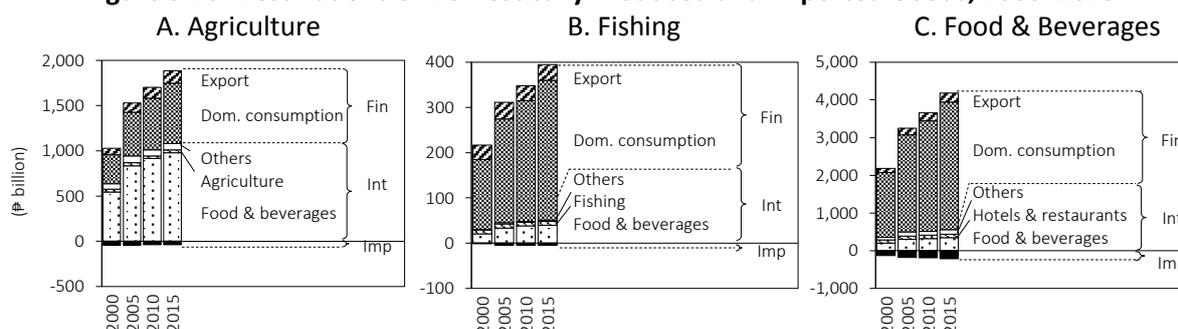
Notes: The values of imports shown in these graphs are based on constant 2015 prices. They include imports from foreign agricultural, fishing, and food-and-beverage sectors destined for domestic final consumption and for use as intermediate inputs in all domestic industries.

Sources: Estimates based on 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 gently during 2000–2015 (Figure 5.10). The flows from the food-and-beverage industries to the hotel-and-restaurant industries also increased slightly. The expansion of intra-industry transactions within the food and beverage sector is observable, as well, while those in agriculture and fishing stagnated. Several linkages within the FVC slowly tightened in the Philippines with regard to both interindustry and intra-industry transactions.

**Figure 5.10. Destinations of Domestically Produced and Imported Goods, 2000–2015**



₱ = pesos (Philippine currency).

Dom. = domestic.

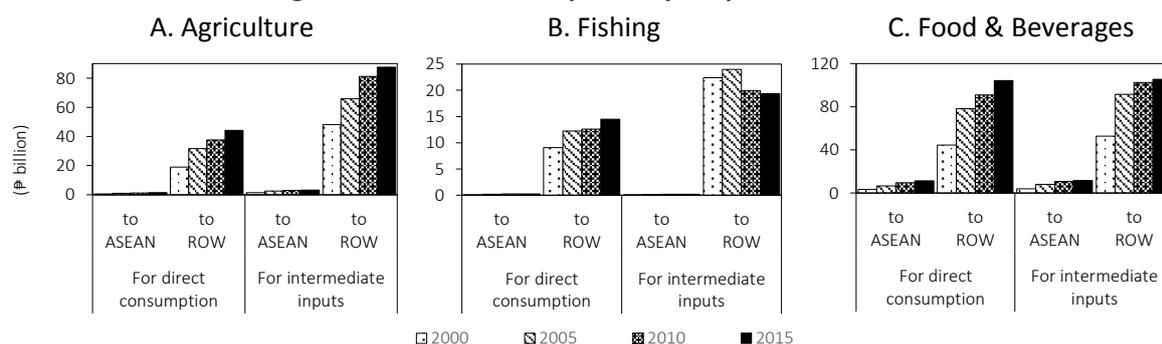
Notes: The values in these graphs are based on constant 2015 prices. 'Fin' = final demand for domestic and imported goods, 'Int' = intermediate demand for domestic and imported goods, and 'Imp' = the imports of final and intermediate goods. Total demand = Fin + Int. Domestic production = Fin + Int - Imp.

Sources: Estimates based on data from Eora (2018) and the International Monetary Fund (IMF, 2018).

Both final and intermediate demand grew in the agriculture, fishing, and food-and-beverage industries during 2000–2015. The agriculture and food-and-beverage industries saw their exports gradually increase during this period, though their share of final demand was small, and exports from the fishing industry stagnated from 2000 on. Figure 5.11 shows that a relatively large portion of the agricultural and fishery products exported from the Philippines was consumed as intermediate goods. Meanwhile, exports from the food and beverage industries were almost evenly divided between direct consumption and intermediate inputs.

The primary destination of exports from the agricultural, fishing, and food-and-beverage sectors was the ROW. With regard to these three sectors, the Philippines deepened its linkages more with the ROW (as an exporter), than with the rest of the ASEAN region.

**Figure 5.11. Values of Exports, by Purpose, 2000–2015**



₱ = pesos (Philippine 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 based on data from Eora (2018) and the International Monetary Fund (IMF, 2018).

## 2. Linkages amongst FVC-related Industries

### Final Demand in FVC 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 5.1 shows the composition of final demand during 2000–2015. Final demand was particularly strong in the food and beverage industries, followed by the retail trade industry and agriculture. The average annual growth of final demand in the food and beverage industries, ₱111 billion, outstripped the average values for the other FVC-related industries. Household consumption accounted for most of the value of the food and beverage industries. In fact, household consumption grew sharply during this period, by ₱88 billion annually. It is also notable that household consumption of agricultural and fishing products had comparatively large values and rapid growth.

**Table 5.1. Final Demand for Products/Services of FVC-related Industries, 2000–2015**  
(₱ billion)

Final demand as	Domestic production of											
	Agriculture		Fishing		Food & beverages		Wholesale trade		Retail trade		Hotels & restaurants	
	Value	Change	Value	Change	Value	Change	Value	Change	Value	Change	Value	Change
<b>Domestic consumption</b>												
Household consumption	323	10	291	9	2,850	88	223	7	496	15	241	7
Other consumption	16	0	14	0	140	4	11	0	24	1	12	0
Capital formation	320	12	0	0	238	10	60	2	133	4	0	0
<b>Export</b>												
Export to ASEAN	5	0	0	0	23	1	7	0	16	1	12	1
Export to ROW	132	4	34	0	210	7	110	4	246	9	139	4
<b>Total</b>	795	27	339	10	3,461	111	411	13	915	30	404	12
Annual change rate (%)		4.8		3.9		4.5		4.6		4.6		4.0

₱ = pesos (Philippine currency).

ASEAN = Association of Southeast Asian Nations, FVC = value food chain, ROW = rest of the world.

Notes: The values in this table are in constant 2015 prices. 'Change' refers to the average annual changes as estimated based on data for 2000–2015.

Source: Appendix 3.2.

### Production and VA Induced by Final Demand

Table 5.2 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 the Philippines. The table indicates that 17% of intermediate inputs into the hotel and restaurant sector

came from the domestic food and beverage sector, and that 25% 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 a large amount of agricultural production. The table also shows that FVC-related industries in the Philippines rarely used inputs from foreign countries, compared with products and services from domestic sources.

The small increments of annual change in the shares of inputs shown in Table 5.2 indicate a stable input–output structure in the Philippines during 2000–2015, except for the linkage between the hotel-and-restaurant and food-and-beverage industries. The hotel-and-restaurant industries saw a sharp decrease in intermediate inputs from the food-and-beverage industries, which implies a weakening of this inter-sector linkage. If this structural weakening continues, any growth in final demand in the hotel-and-restaurant industries will generate less VA in the food-and-beverage industries in the future.

**Table 5.2. Sources of Intermediate Inputs in Major FVC-related Industries, 2000–2015**

Input from	Domestic production of												
	Agriculture		Fishing		Food & beverages		Wholesale trade		Retail trade		Hotels & restaurants		
	Share (%)	Change	Share (%)	Change	Share (%)	Change	Share (%)	Change	Share (%)	Change	Share (%)	Change	
Agriculture	Domestic	2	-0.09	0	0.00	25	-0.14	0	0.00	0	0.00	2	-0.06
	ASEAN	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	ROW	0	-0.01	0	0.00	0	-0.01	0	0.00	0	0.00	0	0.00
Fishing	Domestic	0	0.00	2	-0.12	1	0.00	0	0.00	0	0.00	0	-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
Food & beverages	Domestic	3	-0.03	2	-0.02	8	-0.07	0	0.00	0	0.00	17	-0.72
	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	1	-0.01	0	0.00	0	0.00	3	-0.02
Wholesale trade	Domestic	1	-0.01	1	-0.01	2	-0.01	0	-0.01	0	-0.01	1	-0.04
	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	0.01
Retail trade	Domestic	1	-0.02	2	-0.03	4	-0.03	0	-0.03	0	-0.03	3	-0.08
	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 & restaurants	Domestic	0	0.00	0	0.00	0	0.00	0	-0.03	0	-0.03	0	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

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 based on data for 2000–2015.

Source: Appendix 3.2.

Table 5.3 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 ₱8 billion increase in the VA of agriculture, as well as a ₱18 billion increase in the VA of the food-and-beverage sector itself.

Increases in final demand in the food and beverage industries had an impact on the VA of upstream sectors, particularly agriculture. This result suggests that interventions in the food and beverage industries do contribute to the development of agriculture.

Downstream industries had only a limited effect on the VA of fishing compared with their effect on the VA of agriculture. An increase in final demand in the downstream sectors will not necessarily result in sequential growth in the fishing industry. In the short term, direct interventions to stimulate final demand in the fishing industry may be an efficient way to encourage its growth. In the long term, it can be an effective way to strengthen inter-sector linkages by increasing the use of aquatic products in downstream sectors and by changing the input–output structure to make it more conducive the ripple effects.

The inducement effect of final demand in the wholesale and retail trade sectors on the other four sectors discussed above was very small in 2015, as is shown in Table 5.3. Meanwhile, Table 5.2 indicates that FVC-related industries, especially the food-and-beverage and hotel-and-restaurant sectors, did depend on inputs from wholesale and retail trade during 2000–2015. It is suggested that services from the trade sectors were necessary, but alone not sufficient, to automatically drive the development of the FVC-related industries.

**Table 5.3. VA Induced by a 1% Increase in Final Demand, 2015**  
(₱ billion)

Induced value added in	1% increase in final demand for					
	Agriculture	Fishing	Food & beverages	Wholesale trade	Retail trade	Hotels & restaurants
Agriculture	6.45	0.02	7.69	0.00	0.01	0.21
Fishing	0.00	2.84	0.33	0.00	0.00	0.01
Food & beverages	0.13	0.03	18.46	0.00	0.01	0.37
Wholesale trade	0.06	0.03	0.72	3.41	0.01	0.06
Retail trade	0.12	0.07	1.60	0.01	7.59	0.13
Hotels & restaurants	0.00	0.00	0.03	0.01	0.02	2.59

₱ = pesos (Philippine currency).

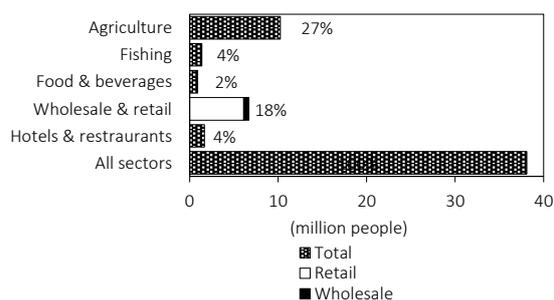
VA = value added.

Source: Appendix 3.2.

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

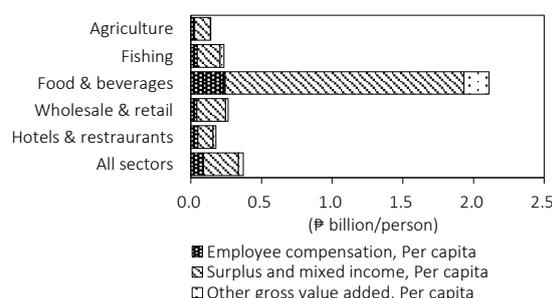
Now let us consider how an increase in production relates to changes in the number of employees and per capita employee compensation in an industry. According to figures 5.12 and 5.13, the agricultural sector in 2005 was characterized by a large number of employees, low labour productivity, and low per capita compensation compared with other FVC-related industries. By contrast, the food and beverage industries had a limited number of employees, but particularly high labour productivity and per capita compensation compared with the average values in the Philippines.

**Figure 5.12. Number of Employees, by Sector, 2015**



Sources: International Labour Organization (ILO, 2019); Appendix 3.3.

**Figure 5.13. Gross VA per Capita, by Sector, 2015**



₱ = pesos (Philippine currency).

VA = value added.

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

Figure 5.14 illustrates the relationship amongst the number of employees, per capita compensation, and production during 2000–2015. Figure 5.14A depicts the proportion of the average annual rate of change in production in each sector that was attributable to total employee compensation. In all

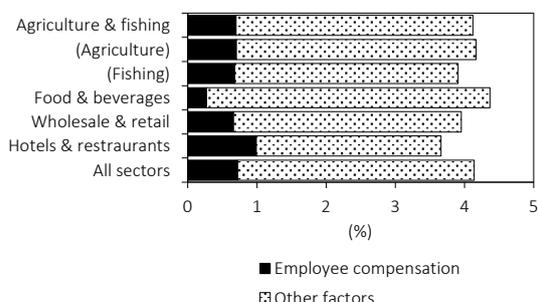
sectors, production growth averaged around 4%, including a contribution of 0.5% from the increase in the total value of the compensation.

The average annual rates of change in the total value of employee compensation were within the range of 4%–6% in all FVC-related sectors (Figure 5.14B). Two factors determine the changes in total employee compensation: the number of employees and per capita compensation. In the agriculture and fishing sectors, the number of employees decreased, accompanied by an increase in per capita compensation. Although the growth rate for total compensation was similar to that in other industries, per capita compensation grew faster, accompanied by the decrease in the number of employees. In other sectors, per capita compensation and the number of employees steadily increased, especially the number of employees in the food-and-beverage and wholesale/retail trade industries.

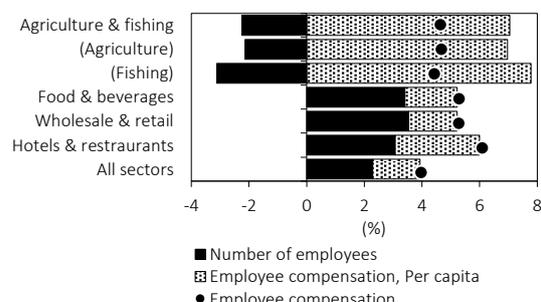
These results suggest that production growth can accompany a rise in per capita compensation in all FVC-related industries, particularly in the agricultural and fishing sectors. Another notable point is the decline in the number of employees in the agricultural sector. The large number of employees, low labour productivity, and low per capita compensation, together with a steep growth in per capita compensation and decrease in the number employees, imply the existence of a labour surplus in the agricultural sector. Any interindustry movement of labourers would be deeply connected to the productivity and efficient development of agriculture. The food and beverage industries, which had remarkably high per capita compensation and a stable increase in the numbers of their employees, seem to have been an attractive sector in terms of labour absorption, although the actual numbers of employees were still very limited.

**Figure 5.14. 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.

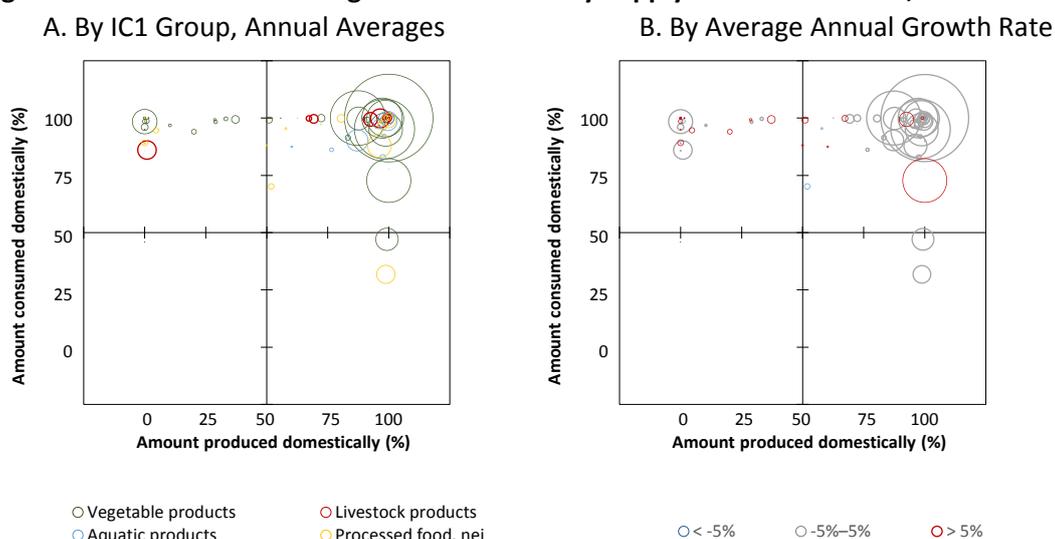
### 3. Supply–Demand Balance of Agri-food Products

#### Supply–Demand Structure

Figure 5.15 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 5.15 A and 5.15 B, the circles are scattered across three of the 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 5.15 A are colour-coded to indicate the agri-food sector, whilst those in Figure 5.15 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. Most of the agri-food products are concentrated in the first (upper-right) quadrant, which represents goods produced and consumed in the domestic market (i.e. domestic-oriented goods). We can also see some small and medium-sized circles in the second (upper-left) and fourth (lower-right) quadrants. Goods falling into the second quadrant were produced in foreign markets and consumed in the domestic market (i.e. import-oriented goods), whilst goods falling into the fourth quadrant were produced in the domestic market and consumed in foreign markets (i.e. export-oriented goods). Note the many small circles straddling the 100% level of domestic consumption (across the first and second quadrants). This means that products completely consumed in the Philippines come from both domestic and foreign producers. There are no circles in the third (lower-left) quadrant, which represents imported products destined for re-exportation (i.e. trade-oriented goods). Compared with the patterns for Malaysia (Figure 2.15) and Thailand (Figure 3.15), the large circles, indicating major products, are more concentrated in the first quadrant. Furthermore, more products are observed in the second quadrant than in the corresponding figures for Lao PDR (Figure 7.15), Cambodia (Figure 8.15), and Myanmar (Figure 9.15). The supply–demand structure of the Philippines’ agri-food sector is similar to that of Indonesia (Figure 4.15), though with fewer products falling into the fourth (export-oriented) quadrant.

**Figure 5.15. 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) item 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 5.4 shows that most agri-food products—particularly oil and sugar crops (12), cereals (11), and fruits and nuts (14)—were produced and consumed mainly in the domestic market during 2004–2013. A comparatively large quantity of cereals (11) was imported, followed by milk (22). The biggest export category, produced in remarkably large quantities, was fruits and nuts (14), mostly bananas and pineapples. The second-biggest export category was fat and oils (42), and the third biggest was oil and sugar crops (12). A major characteristic of the Philippines was the large production of fruits and nuts, which approached that of Indonesia, the most important producer of the countries covered in this report.

Annual change data indicates rapid growth in the production of cereals (11) and a corresponding expansion of domestic supply. A similar structure is observed in many IC2 groups, such as fruits and nuts, vegetables (13), meat (21), and aquatic plants (36). Oil and sugar crops are conspicuous for their decrease in production, imports, and exports, while their domestic supply increased.

**Table 5.4. 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	17,409	21,926	4,595	50	480	525	17	5
	12 Oil and sugar crops	46,935	45,979	458	714	-71	128	-5	-27
	13 Vegetables	8,690	9,398	740	32	234	258	23	-2
	14 Fruits and nuts	15,098	11,873	316	3,565	443	382	25	94
	15 Stimulants and spices	131	270	146	7	-3	19	22	0
2 Livestock products	21 Meat	2,897	3,201	313	9	87	116	30	2
	22 Milk	15	1,357	1,564	220	1	18	1	-14
	23 Eggs	409	411	3	0	13	13	0	0
3 Aquatic products	31 Freshwater fishes	695	696	4	3	28	28	0	1
	32 Marine fishes	2,102	2,178	279	204	10	-7	-9	9
	33 Crustaceans	145	123	4	26	3	3	0	0
	34 Molluscs	166	168	22	20	2	3	1	1
	35 Aquatic animals, nei	1	1	0	0	0	0	0	0
36 Aquatic plants	1,625	1,613	9	20	73	72	0	0	
4 Processed food, nei	41 Sugar	2,410	2,341	266	305	8	24	28	21
	42 Fat and oils	1,783	1,072	334	1,046	-16	8	19	1
	43 Food, nei	0	14	15	2	0	-2	-1	1
	44 Alcoholic beverages	1,360	1,365	27	23	19	23	0	-3

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 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 5.5 shows 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 5.15. The products existing in large quantities, such as sugar cane, coconuts, rice, and bananas, are concentrated in the column for domestic-oriented products. Most products are in the columns for domestic- or import-oriented products. Products for which supply quantity is large are mostly in the row for stable markets, while many products are also in the rows for expanding or shrinking markets.

Bananas, which outstripped the supplies of other products in the row for expanding markets, is notable as a domestic-oriented product by its large quantity of supply undergoing rapid growth. Meats (21)—such as poultry, offal, mutton, and goat meat—and coffee and products are also remarkable for their accelerated growth. Pineapples and coconut oil are the two only export-oriented products, both with stable markets. The markets for several import-oriented products sharply expanded, including those for potatoes, sweeteners other than sugar, and minor oil crops. A few import-oriented items—wheat and products, and milk—are conspicuous for their large supplies. Another feature of the supply–demand balance in the Philippines is the sharp growth of tea as the sole trade-oriented product.

**Table 5.5. Total Quantities of Supply for Product Categories, in Descending Order, 2004–2013**  
(1,000 metric tons)

Category Provided by Consumed in	Domestic-oriented				Export-oriented				Import-oriented				Trade-oriented			
	Domestic market								Foreign market							
	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	IC2	FBS items	Quantity
Annual change rate, 2004–2013 (%) r > 5 Expanding	1	14	Bananas	8,005				13	Potatoes and products	282	15	Tea (including mate)	5			
	2	21	Poultry meat	915				41	Sweeteners, other	174						
	3	15	Coffee and products	187				42	Oilcrops oil, other	146						
	4	21	Offals, edible	182				14	Oranges, mandarines	124						
	5	21	Mutton & goat meat	50				14	Apples and products	103						
Annual change rate, 2004–2013 (%) -5 < r < 5 Stable	1	12	Sugar cane	31,682	14	Pineapples and products	2,147	11	Wheat and products	2,565						
	2	12	Coconuts - incl copra	14,765	42	Coconut oil	1,446	22	Milk - excluding butter	1,577						
	3	11	Rice (milled equivalent)	12,397				11	Barley and products	230						
	4	11	Maize and products	6,725				13	Beans	87						
	5	13	Vegetables, other	5,612				12	Groundnuts (shelled eq)	71						
Annual change rate, 2004–2013 (%) r < -5 Shrinking	1	42	Palm oil	158				12	Soyabeans	104						
	2	42	Soyabean oil	29				43	Infant food	15						
	3	13	Yams	23				44	Cream	6						
	4	42	Groundnut oil	4				42	Rape and mustard oil	2						
	5	12	Cottonseed	0.9				12	Rape and mustardseed	0.9						

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 aquatic products such as raw and processed crustaceans (33), processed freshwater fishes (31), and processed molluscs (34) were remarkably high during 2014–2016 (Table 5.6). While the export values of these products were limited, those of high-priced processed marine fishes (32) were considerable. We can conclude that processed marine fishes (32) exported in large quantities had high enough values during this period to induce active trade.

The import prices of raw and processed eggs (23), raw crustaceans, and food, nei (43), exceeded those of many other products. The import values of most of these high-priced products were quite small, except for products in the food, nei, category (41). High-priced items that were imported in large quantities, such as processed food, nei (41), seemed to have had high import values for the Philippines.

It is not clear from Table 5.6 whether primary products or processed products were traded at higher prices. That would have depended on the differences between exports and imports, amongst the IC2 groups, and in the composition of the more detailed products within each IC2 group. As was the case for other ASEAN countries, the Philippines saw higher import prices for raw versions of a few aquatic products, and for sugar and eggs, than for most processed products.

**Table 5.6. 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	3.2	1.7	0.3	0.5	2	174	983	646
	12 Oil and sugar crops	1.8	1.7	0.6	1.7	221	65	97	155	
	13 Vegetables	1.0	1.8	0.4	0.8	6	5	73	148	
	14 Fruits and nuts	0.3	0.9	1.0	0.9	1,059	597	231	51	
	15 Stimulants and spices	3.9	2.2	2.1	2.9	9	15	74	414	
2	Livestock products	21 Meat	—	3.4	—	1.6	0.0	38	0.0	787
	22 Milk	2.1	3.3	1.4	2.5	0.9	67	146	612	
	23 Eggs	—	—	11.4	4.6	0.0	0.0	5	4	
3	Aquatic products	31 Freshwater fishes	2.7	6.6	0.8	1.4	39	155	0.1	63
	32 Marine fishes	3.2	3.2	3.0	0.5	67	404	0.7	206	
	33 Crustaceans	5.8	11.5	4.7	2.4	125	56	15	1	
	34 Molluscs	4.2	6.0	1.0	1.7	50	3	33	0.5	
	35 Aquatic animals, nei	—	—	—	—	0.0	0.0	0.0	0.0	
	36 Aquatic plants	1.5	—	1.4	—	31	0.0	11	0.0	
	38 Fishes, nei	—	3.5	—	0.8	0.0	5	0.0	3	
4	Processed food, nei	41 Sugar	—	0.6	3.6	0.5	0.0	232	2	407
	42 Fat and oils	—	1.2	—	1.1	0.0	1,222	0.0	336	
	43 Food, nei	—	2.0	—	4.0	0.0	159	0.0	673	
	44 Alcoholic beverages	—	1.1	—	1.7	0.0	8	0.0	98	

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 5.7 and 5.8 provide information about the agri-food products imported by ASEAN countries from the Philippines in 2014–2016. ASEAN countries imported many of these products from the Philippines more cheaply than they did from other ASEAN+6 countries (Table 5.7). Roughly 50%–80% of items in the IC2 groups were imported as low-priced products. Philippine exports to Malaysia were notably large, followed by those to Thailand, Singapore, and Viet Nam (Table 5.8).

As shown in Table 5.7, 2% of cereals (11) and 1% of fruits and nuts (14), both categorized in the low-price range, were imported by other ASEAN countries in significantly larger quantities than had been estimated based on approximate lines. Meanwhile, products imported in lesser quantities than estimated stood out more. Such products included stimulants and spices (15) and molluscs (34) in the low-price range, and vegetables (13) in the low- and mid-price ranges.

**Table 5.7. 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.
				Price ranges			Imported larger			Imported smaller			
				Low	Mid	High	Low	Mid	High	Low	Mid	High	
1 Vegetable products	11 Cereals	3.1	63	77	10	13	2	0	0	2	2	0	48
	12 Oil and sugar crops	2.4	11	78	11	11	0	0	0	4	0	0	27
	13 Vegetables	3.1	5	55	23	23	0	0	0	5	3	0	40
	14 Fruits and nuts	2.0	49	70	7	24	1	0	0	2	0	0	106
	15 Stimulants and spices	4.7	12	60	9	30	0	0	0	17	0	2	53
2 Livestock products	21 Meat	3.5	0.6	86	14	0	0	0	0	0	0	0	14
	22 Milk	3.4	3	53	22	25	0	0	0	0	0	0	36
	23 Eggs	2.1	0.0	—	—	—	—	—	—	—	—	—	0
3 Aquatic products	31 Freshwater fishes	7.5	0.6	67	17	17	0	0	0	0	0	0	6
	32 Marine fishes	4.0	37	75	16	9	0	0	0	0	0	0	32
	33 Crustaceans	10.3	9	50	39	11	0	0	0	0	0	0	18
	34 Molluscs	5.7	4	73	13	13	0	0	0	7	0	0	15
	35 Aquatic animals, nei	3.5	7	67	11	22	0	0	0	0	11	0	9
	36 Aquatic plants	10.2	2	50	50	0	0	0	0	0	0	0	4
4 Processed food, nei	38 Fishes, nei	7.9	4	55	23	23	0	0	0	0	0	0	22
	41 Sugar	2.9	32	45	33	21	0	0	0	0	0	0	33
	42 Fat and oils	2.6	26	59	16	25	0	0	0	3	0	3	32
	43 Food, nei	3.8	74	87	13	0	0	0	0	0	0	0	15
	44 Alcoholic beverages	1.6	3	75	25	0	0	0	0	0	0	0	8

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 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 under 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 5.8. 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.
			Price ranges			Imported larger			Imported smaller			
			Low	Mid	High	Low	Mid	High	Low	Mid	High	
Singapore	3.4	63	67	19	14	0	0	0	0	4	1	128
Brunei	3.5	5	70	7	23	0	0	0	0	1	0	71
Malaysia	2.5	128	66	16	18	2	0	0	0	2	1	95
Thailand	5.2	85	66	15	19	0	0	0	0	3	0	118
Indonesia	3.1	15	62	21	17	0	0	0	3	3	0	29
Philippines	—	0.0	—	—	—	—	—	—	—	—	—	0
Viet Nam	2.9	39	69	7	24	0	0	0	3	7	0	29
Lao PDR	8.2	0.0	0	100	0	0	0	0	0	0	0	1
Cambodia	2.1	1	64	14	23	0	0	0	0	5	0	22
Myanmar	2.6	0.0	36	32	32	0	0	0	0	4	0	25

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 Broad Economic Categories (BEC) three-digit category numbers and used for applying approximation lines. Data category: FAOSTAT Commodity List (FCL) and adjusted groups under 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**

Philippine vegetable products in low- and mid-price ranges—especially fruits and nuts (14) such as bananas and pineapples, and other products such as processed breakfast cereals and flour from roots and tubers, nes—tended to be imported in great quantities by other ASEAN countries in 2014–2016, considering their prices (Table 5.9). Regarding aquatic products, Malaysia imported seaweeds 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 the Philippines 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: dried fruits, soya paste, and yogurt from Thailand; breakfast cereals and ice cream from Indonesia; tilapias and other cichlids from Viet Nam; and soya sauce from Singapore.<sup>2</sup>

There were also many products for which import quantities were significantly smaller during 2014–2016, considering their prices, such as vegetable products in all the price ranges; and livestock, aquatic products, and processed food, nei, in the low-price range. Although those 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.

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<sup>2</sup> For reference, see tables 2.9 to 9.9. See also Table A4.2 on major exports from the +6 countries.

**Table 5.9. 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 Imports than Estimated Based on Prices**

IC1	Rank	Price ranges																				
		Low						Mid						High								
		Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value	Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value	Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value
1 Vegetable products	1	MYS	14	112	Bananas	0.6	7	0.04	THA	13	121	Flour, roots and tubers nes	13.2	0.2	0.18							
	2	MYS	11	122	Cereals, breakfast	3.4	9	0.10														
	3	SGP	14	112	Bananas	0.7	20	0.16														
	4	SGP	14	112	Pineapples	0.8	3	0.16														
	5																					
2 Livestock products	1																					
	2																					
	3																					
	4																					
	5																					
3 Aquatic products	1								MYS	36	111	Seaweeds, food, nei	11.4	2	0.18							
	2																					
	3																					
	4																					
	5																					
4 Processed food, nei	1																					
	2																					
	3																					
	4																					
	5																					

## B. Smaller Quantities of Imports than Estimated Based on Prices

IC1	Rank	Price ranges																				
		Low						Mid						High								
		Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value	Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value	Impor-ter	IC2	BEC	Detailed commodity name	Price (\$/kg)	Value (\$ million)	p-value
1 Vegetable products	1	KHM	15	122	Coffee, roasted	4.5	0.000	0.00	SGP	11	121	Flour, wheat	1.2	0.000	0.03	VNM	15	122	Coffee, extracts	10.9	0.000	0.02
	2	VNM	15	121	Cocoa, powder and cake	2.8	0.006	0.02	MYS	13	112	Asparagus	3.9	0.000	0.04	KHM	14	122	Nuts, prepared (exc. groundnuts)	2.8	0.000	0.11
	3	BRN	15	112	Tea	10.7	0.000	0.02	MMR	13	122	Mushrooms, canned	1.9	0.002	0.15	MYS	15	112	Spices, nes	9.9	0.005	0.12
	4	SGP	15	112	Tea, mate extracts	4.2	0.012	0.04								MYS	14	112	Fruit, stone nes	3.0	0.001	0.15
	5	THA	14	112	Fruit, stone nes	3.9	0.000	0.04														
2 Livestock products	1	SGP	22	122	Ice cream and edible ice	0.6	0.003	0.11							MMR	22	122	Cheese, whole cow milk	6.2	0.000	0.14	
	2	MYS	22	112	Milk, whole fresh cow	1.5	0.001	0.12														
	3	THA	22	112	Yoghurt	2.8	0.000	0.18														
	4	THA	21	122	Meat, beef and veal sausages	0.9	0.000	0.20														
	5																					
3 Aquatic products	1	MYS	34	112	Mussels	3.4	0.001	0.03							SGP	38	112	Fish and fish products, nei	21.8	0.021	0.11	
	2	THA	32	122	Herrings, sardines, anchovies	2.0	0.001	0.10							SGP	34	112	Squids, cuttlefishes, octopuses	12.0	0.002	0.17	
	3	SGP	34	112	Clams, cockles, arkshells	4.0	0.000	0.15														
	4	SGP	38	122	Fish and fish products, nei	5.2	0.106	0.15														
	5	SGP	31	122	Tilapias and other cichlids	1.1	0.000	0.15														
4 Processed food, nei	1	IDN	42	122	Oil, soybean	1.3	0.009	0.04							IDN	42	122	Margarine, short	2.0	0.000	0.08	
	2	THA	42	122	Ghee, butteroil of cow milk	4.3	0.000	0.10														
	3	KHM	43	122	Food preparations, nes	0.5	0.003	0.10														
	4	THA	42	121	Oil, palm	1.2	0.000	0.14														
	5	SGP	43	121	Food preparations, nes	3.5	0.000	0.19														

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, MMR = Myanmar, MYS = Malaysia, nei = not elsewhere included, nes = not elsewhere specified, 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 the adjusted groups under 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 stimulants and spices (15), vegetables (13), and fruits and nuts (14) had similarly high values in 2011–2015 (Table 5.10). The ratios of the yield, an indicator of comparative advantage in the ASEAN region, were for stimulants and spices (15) and cereals (11) the same or slightly higher than those for other IC2 groups in the category of vegetable products.

**Table 5.10. Median Levels of Productivity and Resource Allocation in Each IC2 Group**

IC1	IC2	Land productivity (₱1,000/ha) Chg (%)		Ratio of the yield Index (Yi/Yi') Chg (%)		Area harvested (1,000 ha) Chg (%)		Obs.
1 Vegetable products	11 Cereals	62	4	0.9	0	2,575	1	3
	12 Oil and sugar crops	34	1	0.7	-2	21	-1	8
	13 Vegetables	154	3	0.7	-1	5	0	28
	14 Fruits and nuts	154	0	0.6	-3	9	0	18
	15 Stimulants and spices	164	3	0.9	-2	7	-1	4
	Total	114	2	0.7	-2	8	0	61
IC1	IC2	Feed productivity (₱1,000/100 PU) Chg (%)		Ratio of the yield Index (Yi/Yi') Chg (%)		Producing animals (million PU) Chg (%)		Obs.
2 Livestock products	21 Meat	144	—	1.2	—	6	1	10
	22 Milk	579	—	2.9	—	0	-1	1
	23 Eggs	124	—	0.8	—	19	1	2
	Total	125	—	1.2	—	5	0	13

₱ = pesos (Philippine currency).

ha = hectare, IC1 = item category level 1, IC2 = item category level 2, PU = unit of pig feed requirements, Yi = yield in the Philippines, 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 peso prices. The figures are estimates based on all the FAOSTAT data under the 'Production' rubric. Data category: FCL.

Sources: FAO (2019); Appendix 3.7.

For stimulants and spices, vegetables, and fruits and nuts (14), the land productivity and ratios of the yield of nuts, nes, or minor nuts, exceeded those values for the other products during the same period (Table 5.11). While the production land area was quite small, the productivity and ratio of the yield of nuts, nes, gradually increased. Within the stimulants and spices and vegetables categories, pepper and asparagus had the highest land productivity, respectively. It is worth noting that the rapid increase in the productivity of asparagus was accompanied by drops in its ratio of the yield and producing land area. A similar trend is observed for pepper production. These trends imply that, even with diminished production and competitiveness, productivity could be high if the land area devoted to production is limited. For similar reasons, goat meat, turkey, and fresh whole cow's milk had high feed productivity and ratios of the yield compared with those values for other livestock products. Although the extent of the harvested areas or the number of producing animals for the products mentioned above were small, and were not necessarily increasing, 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 5.11, which lists examples of products imported by other ASEAN countries from the Philippines during 2014–2016 in greater quantities than expected based on their prices, a few products—such as roots and tubers; flour, nes; pineapples; and bananas—apparently had non-price competitiveness or were differentiated from the same items produced in other ASEAN countries. The comparative advantage of these products (other than pineapples) in

terms of physical productivity was low in the ASEAN region. Maintaining or increasing non-price competitiveness is critically important for their international competitiveness. As some products already have non-price competitiveness, that of other products should be actively improved for the sake of developing the FVC in the Philippines.

**Table 5.11. Levels of Productivity and Resource Allocation for Individual Items**

No.	IC2	FCL name	Land or feed productivity		Ratio of the yield		Area or producing animals		Intpn.		Items imported larger or smaller compared with the price (p<0.2)			
			(₱1,000/ha or ₱1,000/100 PU)	Chg (%)	Index (Yi/Yi')	Chg (%)	(1,000 ha or million PU)	Chg (%)	A	B	Imported larger	in	Imported smaller	in
1	11	Rice, paddy	68	4	0.9	0	4,674	1	iii	i				
2		Sorghum	62	16	4.2	13	0	9	iii	i				
3		Maize	38	3	0.6	-1	2,575	0	iv	iv				
4	12	Sugar cane	163	0	0.9	-3	433	1	iii	i				
5		Oil, palm fruit	45	-7	0.5	-5	54	7	iv	ii			Margarine, short	IDN
6		Groundnuts, with shell	42	4	0.7	3	26	-2	iii	ii				
7		Soybeans	39	-3	0.9	-2	1	-3	iii	i			Oil, soybean	IDN
8		Coconuts	29	3	0.7	0	3,542	1	iii	iii				
9		Seed cotton	19	—	0.2	-12	0	-44	iv	iv				
10		Castor oil seed	9	1	0.7	-1	0	-28	iii	iii				
11		Oilseeds nes	7	3	0.6	0	16	0	iv	iv				
12	13	Asparagus	908	16	1.0	-20	0	-16	i	i			Asparagus	MYS
13		Onions, dry	430	0	1.1	1	15	3	i	i				
14		Potatoes	400	1	0.9	-1	8	2	i	i				
15		Garlic	349	4	0.5	2	3	-6	ii	ii			Garlic	THA
16		Carrots and turnips	314	3	0.8	1	6	1	i	i				
17		Cauliflowers and broccoli	302	5	0.8	1	1	2	i	i				
18		Peas, green	264	0	0.3	-2	2	-4	ii	ii				
19		Cabbages and other brassicas	246	4	0.7	-2	8	0	ii	ii				
20		Lettuce and chicory	241	4	0.6	-7	1	3	ii	ii				
21		Eggplants (aubergines)	192	2	0.9	-3	21	0	i	i				
22		Leeks, other alliaceous vegetables	185	0	0.7	-2	1	-1	i	ii				
23		Tomatoes	177	2	0.7	-1	17	-1	i	i				
24		Pumpkins, squash and gourds	159	-1	0.5	-10	20	-1	ii	ii				
25		Okra	149	0	0.7	-5	4	1	i	iii				
26		Vegetables, fresh nes	129	2	0.6	-1	594	2	ii	iv				
27		Chillies and peppers, green	127	1	0.6	-3	5	1	ii	iv				
28		Pigeon peas	101	6	1.9	7	1	-5	iii	iii				
29		Beans, green	95	4	1.1	0	3	-1	iii	iii				
30		Cucumbers and gherkins	94	0	0.6	1	2	1	iv	iv				
31		Taro (cocoyam)	81	3	0.7	3	16	-2	iii	iii	Flour, roots and tubers nes	THA	Flour, roots and tubers nes	SGP
32		Cassava	74	4	0.5	1	219	1	iv	iv				
33		Sweet potatoes	73	6	0.5	-2	95	-4	iv	iv				
34		Cow peas, dry	70	3	2.9	5	0	-3	iii	iii				
35		Beans, dry	41	3	0.5	-4	44	2	iv	iv				
36		Pulses, nes	31	4	0.9	0	37	0	iii	iii				
37		Roots and tubers, nes	22	-7	0.3	-7	6	6	iv	iv	Flour, roots and tubers nes	THA	Flour, roots and tubers nes	SGP
38		Peas, dry	—	—	4.0	—	0	—	—	—			Peas, dry	MYS
39		Spinach	—	—	0.6	-2	0	6	—	—				
40	14	Nuts, nes	930	6	6.3	5	2	1	i	i			Nuts, prepared (exc. groundnuts)	VNM
41		Pineapples	311	4	1.3	-1	60	2	i	i	Pineapples	SGP		
42		Fruit, tropical fresh nes	220	1	1.2	0	379	1	i	i				
43		Watermelons	204	1	1.0	-3	7	0	i	i				
44		Bananas	187	2	0.6	-6	447	0	ii	i	Bananas	MYS		
45		Melons, other (inc.cantaloupes)	180	-4	0.6	-5	1	-1	ii	i				
46		Fruit, citrus nes	172	-1	1.7	-3	20	0	i	i				
47		Cashew nuts, with shell	163	5	3.6	5	28	1	i	i			Cashew nuts, shelled	SGP
48		Papayas	154	1	0.3	-4	8	-2	ii	ii				
49		Grapefruit (inc. pomelos)	139	-2	0.6	-4	5	0	ii	iv				
50		Oranges	90	-3	0.1	-3	1	-3	iv	iv				
51		Mangoes, mangosteens, guavas	83	-2	0.4	-3	196	1	iv	iv				
52		Avocados	66	0	0.3	-3	5	0	iv	iv				
53		Lemons and limes	54	-4	0.2	-5	1	-5	iv	iv			Juice, lemon, concentrated	MYS
54		Fruit, fresh nes	25	-9	0.2	-13	157	18	iv	iv				
55		Tangerines, mandarins, clementines, satsumas	22	-9	0.2	-2	9	-1	iv	iv				
56		Grapes	9	8	0.0	6	0	0	iv	iv				
57		Plantains and others	—	—	0.9	-2	261	0	—	—				
58	15	Pepper (piper spp.)	422	5	1.5	-7	2	-1	i	i				
59		Ginger	276	11	0.4	0	4	0	ii	ii			Ginger	THA
60		Coffee, green	51	-1	0.6	-5	117	-1	iv	iv			Coffee, green	SGP
61		Cocoa, beans	40	0	1.2	8	11	2	iii	iii				
62	21	Meat, pig	893	—	1.2	—	26	1	i	ii				
63		Meat, cattle	219	—	1.2	—	16	2	i	i				
64		Meat, turkey	197	—	1.4	—	0	0	i	i				
65		Meat, goat	191	—	1.6	—	7	2	i	i				
66		Meat, buffalo	165	—	1.2	—	9	0	i	i				
67		Meat, sheep	122	—	1.4	—	0	0	iii	iii				
68		Meat, duck	82	—	1.1	—	5	2	iv	iv				
69		Meat, goose and guinea fowl	69	—	0.7	—	0	0	iv	iv				
70		Meat, chicken	48	—	0.7	—	275	6	iv	iv				
71		Meat, horse	28	—	0.8	—	0	0	iv	iv				
72	22	Milk, whole fresh cow	579	—	2.9	—	0	-1	i	i				
73	23	Eggs, other bird, in shell	125	—	0.8	—	3	-2	ii	ii				
74		Eggs, hen, in shell	123	—	0.9	—	35	4	iv	iii				

₱ = pesos (Philippine currency).

FCL = FAOSTAT Commodity List, ha = hectare, IC2 = item category level 2, IDN = Indonesia, Intpn. = interpretation, MYS = Malaysia, nes = not elsewhere specified, p = p-value, PU = unit of pig feed requirements, SGP = Singapore, THA = Thailand, VNM = Viet Nam, Yi = yield in the Philippines, 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 rate of change during 2006–2015 (%). The data on land productivity was deflated to constant 2015 peso 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 (classified according to the Broad Economic Categories) listed in the table are those with the smallest  $p$ -value  $< 0.2$  estimated based on data during 2014–2016. Data category: FCL.

Source: Appendix 3.7.

Table 5.12 shows a positive correlation between the land/feed productivity and ratios of the yield of fruits and nuts (14) and meat (21) during 2011–2015. In other words, the profitability per unit area of those FCL items 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 under other IC2 groups.

Weak or non-existent correlations are observed between land/feed productivity or ratio 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 harvested land and producing animals in the Philippines were simply not allocated to products characterized by high productivity or competitiveness.

**Table 5.12. Correlation Matrix of Comparative Advantage, Productivity, and Resource Allocation, 2011–2015**

IC2	Land or feed productivity						Ratio of the yield					
	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	—	0.14	0.20	<b>0.87</b>	0.20	<b>0.66</b>	—	—	—	—	—	—
Area or producing animals	—	0.45	-0.33	0.29	<b>-0.80</b>	0.27	—	0.07	-0.30	0.37	-0.40	-0.13
Obs.	3	8	26	17	4	10	3	8	26	17	4	10

IC2 = item category level 2.

Notes: 'Area' refers to the total harvested area, and 'producing animals' refers to the number of producing animals. 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

- The Philippines' large population and strong population and economic growth suggest that the country has a large potential as a consumption market for agri-food products.
- The VA of agriculture, food and beverages, and wholesale and retail trade has been a major component of GDP in the Philippines; for instance, the VA of each accounted for about 10% of GDP in 2015. While the proportion of GDP due to the VA of most FVC-related industries shrank, that due to the VA of the hotel-and-restaurant and food-and-beverage industries gradually expanded.
- Interindustry transactions involving product flows from agriculture and fishing to the food and beverage industries gently increased. The transactions from the food-and-beverage industries to the hotel-and-restaurant industries also slightly increased. The growth of intra-industry transactions within the food and beverage industries was observable, while transactions within agriculture and fishing stagnated.

### Linkages amongst FVC-related Industries

- The increase of final demand in the food and beverage industries had some positive impacts on the VA of upstream sectors, particularly agriculture. This result suggests that interventions in the food and beverage industries do contribute to the development of agriculture.
- The effects of downstream industries on the VA of fishing was limited compared with those on agriculture. It is also suggested that services from the trade sectors were necessary, but alone not sufficient, to automatically drive the development of the FVC-related industries.
- Production growth can accompany a rise in per capita employee compensation in all FVC-related industries, especially the agricultural and fishing sectors.
- The food and beverage industries, which had remarkably high per capita compensation, as well as a stable increase in the number of employees, seemed to be one of the more attractive sectors in terms of labour absorption, although the number of employees was actually very limited.

### Supply–Demand Balance of Agri-food Products

- Most agri-food products—particularly oil and sugar crops, cereals, and fruits and nuts—were produced and consumed mainly in the domestic market. A comparatively large amount of cereals were also imported, followed by milk. Fruits and nuts, mainly bananas and pineapples, were exported in remarkably large quantities, making them the largest category of export goods. The second largest export category was fat and oils, and the third was oil and sugar crops. Even though cereals are mainly produced/consumed at home, the little that's produced in foreign markets are in large enough volumes to rank high compared with other exports and imports. One of the characteristics of the Philippines was the large volume of fruit and nut production, approaching that of Indonesia, the largest producer of the countries covered in this report.
- The export prices of aquatic products—such as both raw and processed crustaceans, processed freshwater fishes, and processed molluscs—were remarkably high. While the export values of those products were limited, the export values of certain high-priced processed marine fishes were considerable. We can conclude that processed marine fishes exported in large amounts had

high enough values to induce active trade. By contrast, high-priced processed food, nei, seemed to have high import values for the Philippines.

### **The Competitiveness of Each Product in the ASEAN Region**

- Philippine vegetable products in the low- and mid-price ranges, especially fruits and nuts such as bananas and pineapples, and other products such as processed cereals for breakfast and flour of roots and tubers, nes, tended to be imported in great quantities into the ASEAN region, considering their prices. With regard to aquatic products, Malaysia imported significantly larger quantities of seaweeds from the Philippines than had been estimated based on their import prices.
- Research on the characteristics of the goods actively exported by other countries to the Philippines might trigger a reconsideration of production and marketing strategies for domestic products that could compete with goods produced by other ASEAN states, for instance: dried fruits, soya paste, and yogurt from Thailand; breakfast cereals and ice cream from Indonesia; tilapias and other cichlids from Viet Nam; and soya sauce from Singapore.
- Within the categories of stimulants and spices, vegetables, and fruits and nuts, land productivity and ratios of the yield of nuts, nes, or minor nuts exceeded those values for all the other products. Amongst the stimulants and spices and vegetables, pepper and asparagus had the highest land productivity. Similarly, goat meat, turkey, and fresh whole cow's milk had high feed productivity and ratios of the yield, compared with those values for other livestock products. The potential of these products as exports to other ASEAN countries could be high if they became competitive with the products from those other countries by means of greater physical productivity.