Chapter 6

Viet Nam

September 2019

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Chapter 6

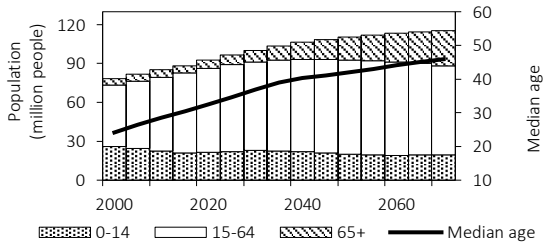
Viet Nam

1. Social and Economic Conditions

Population and Per Capita GDP

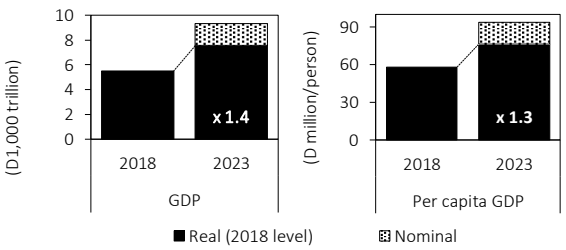
The population of Viet Nam, 96 million people in 2018, accounts for 15% of the total population of the ASEAN region, placing it third amongst the ASEAN countries. It is expected to reach 115 million by 2050 (Figure 6.1). The working-age people, those between 15 and 65, are the majority of the country's population, and their numbers are expected to steadily increase until 2040. This trend may imply economic growth for a time, but with the possibility of an economic slowdown in the long term. The large size of Viet Nam's population and its strong prospect of population and economic growth suggest that the country has a high potential as a consumption market for agri-food products. At the same time, this prospect also implies a growing importance of foreign markets as destinations for Vietnamese goods in the long term.

Figure 6.1. Population by Age Group, 2000–2060



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

Figure 6.2. Changes in GDP and Per Capita GDP, 2018 and 2023

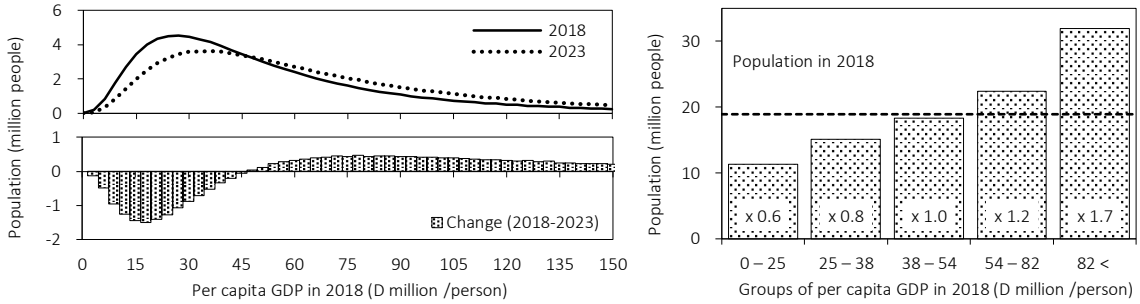


D = dong (Vietnamese currency).
GDP = gross domestic product.
Source: Estimates based on data from the International Monetary Fund (IMF, 2018).

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 6.2). According to a projection of Viet Nam's population based on the level of per capita GDP (Figure 6.3, Appendix 3.1), as per capita GDP approaches D45 million, 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 D45 million will increase across a wide range of the distribution. In particular, the population with incomes above D82 million (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 6.3. Estimated Population of Viet Nam by Per Capita GDP, 2018 and 2023

A. Distribution of Population Changes B. Population Divided into Five GDP Groups



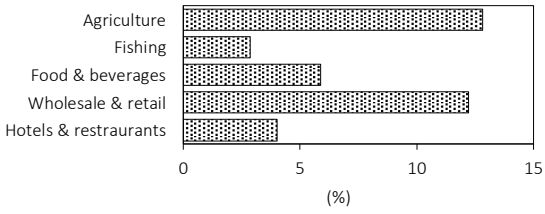
D = dong (Vietnamese currency).
GDP = gross domestic product.
Note: The per capita GDP is based on constant 2018 prices. Bars in Figure B are estimated population in 2023. Numbers in bars denote changes of the population from 2018 to 2023.
Source: Appendix 3.1.

The VA of FVC-related Industries

The VA of agriculture and of wholesale and retail trade has been a major component of Viet Nam's GDP; for instance, the VA of each accounted for about 13% of GDP in 2015 (Figure 6.4). Meanwhile, the VA of the other FVC-related industries was comparatively small.

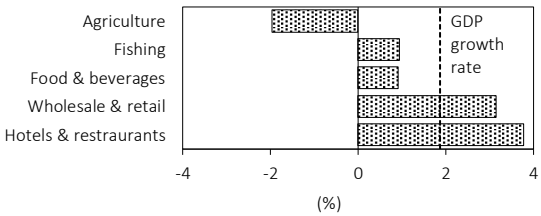
The annual growth rates of real VA in FVC-related industries were within the range of -2%–4%, lower than the rates for the other ASEAN countries covered in this report (Figure 6.5). The growth rates of the hotel-and-restaurant and wholesale and retail trade industries were higher than the average GDP growth rate, though the rates for other industries, especially agriculture, were lower. 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 wholesale and retail trade industries gradually expanded.

Figure 6.4. The Proportion of VA in GDP, 2015



GDP = gross domestic product, VA = value added.
Sources: Estimates based on data from Eora (2018).

Figure 6.5. Average Annual Change in Real VA, 2000–2015



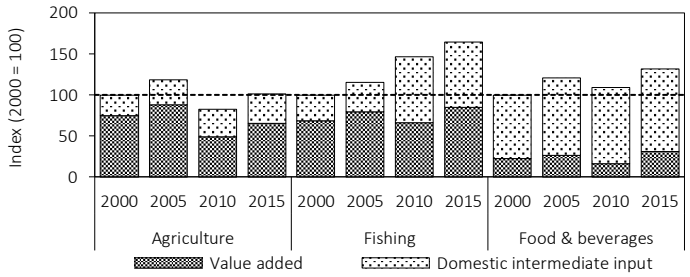
GDP = gross domestic product, VA = value added.
Sources: Estimates based on data from Eora (2018) and the Internatioanl Monetary Fund (IMF, 2018).

The production values of the agriculture and food-and-beverage industries were almost flat from 2000 to 2015, while that of fishing increased slowly during that period (Figure 6.6). The part of production value due to the VA (i.e. the VA rate) was large in the agriculture and fishing industries, at around 60%, and small in the food and beverage sector, at around 20% after 2010 (Figure 6.7). 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.

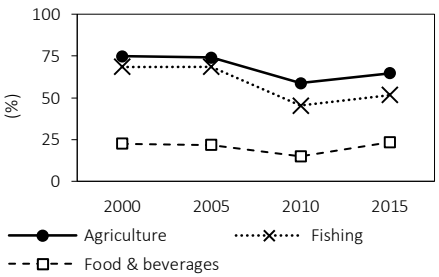
The VA rates of the food and beverage industries were almost flat between 2000 and 2015 (Figure 6.7). That may reflect the fact that the production structure stayed the same in terms of cost of sales to revenue ratios, the product mix, and/or the ability of technology to generate savings on inputs. The sudden drop in the VA rates of agriculture and fishing during 2005–2010 may indicate a change in the production structures that included a further use of intermediate inputs or a strengthening of ties with other industries.

Figure 6.6. Values of Domestic Production, 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).

Figure 6.7. VA Rates, 2000–2015



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

Intermediate Inputs in Agri-food Industries

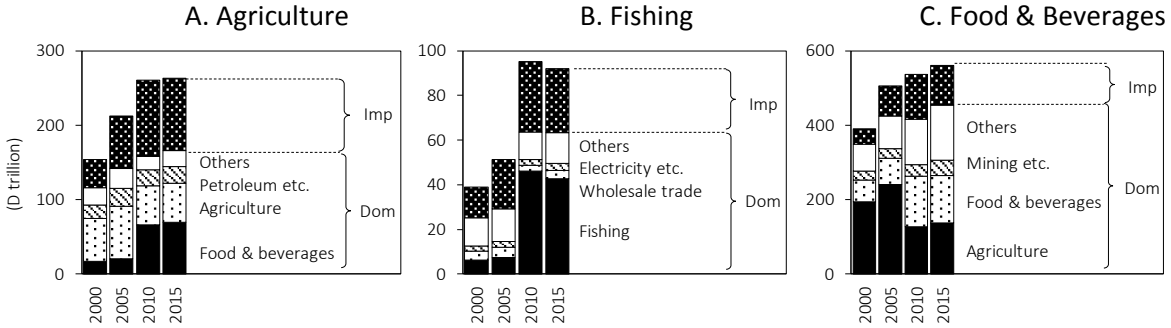
Figure 6.8 shows which industries contributed to the growth of the agriculture, fishing, and food-and-beverage industries from 2000 to 2015. Intermediate inputs into all three agri-food production sectors came largely from domestic sources, whilst a certain value of intermediate inputs was imported. Inputs in agriculture and fishing stagnated after 2010, while inputs in the food-and-beverage industries gradually increased.

Intermediate inputs from the food and beverage industries accounted for the largest portion of inputs into agriculture, followed by inputs from agriculture itself and from petroleum, chemical, and non-metallic mineral product ('petroleum etc.') industries.[1] The largest sources of inputs into the fishing and food-and-beverage industries were fishing and agriculture, respectively. An example of an input from the food and beverage industry into agriculture was feed used for livestock production.

The agriculture and food-and-beverage industries accounted for large portions of intermediate inputs into the food and beverage industry itself after 2010 (Figure 6.8 C). This implies that the growth of the food and beverage industry was largely driven in equally by supply of processed food and raw agricultural products. This growth in Viet Nam induced a certain degree of agricultural development through the industries' demand for intermediate inputs.

[1] 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 6.8. Sources of Intermediate Inputs, 2000–2015

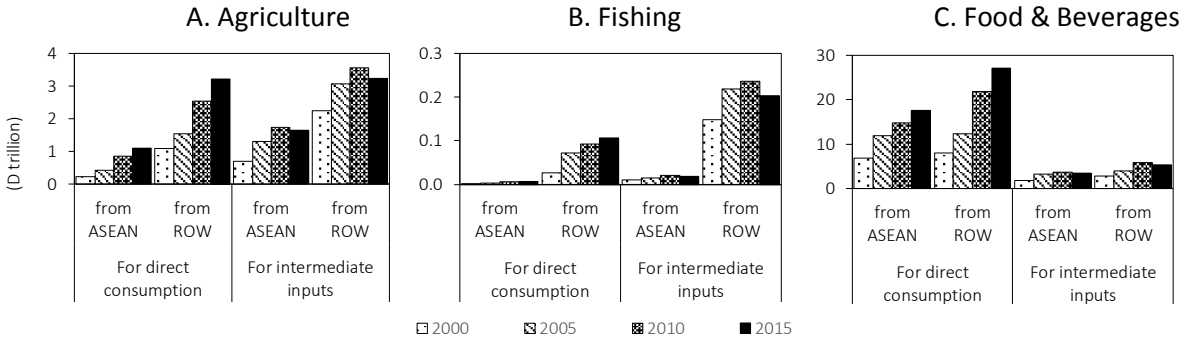


D = dong (Vietnamese currency).
Dom = domestic supply, Imp = imports.
Notes: The values in these graphs are based on constant 2015 prices. 'Petroleum etc.' refers to the petroleum, chemical, and non-metallic mineral product industries.
Sources: Estimates using data from Eora (2018) and the International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

The value of imports from foreign agricultural, fishing, and food-and-beverage sectors were limited compared with the value of domestic production between 2000 and 2015 (Figure 6.9). Agricultural and food-and-beverage imports gradually increased, but imports of fishing products mostly stagnated from 2010 to 2015. Imported agricultural products for direct consumption and for use as intermediate inputs were at the same level. By contrast, Viet Nam imported more fishery products for use as intermediate inputs, and more food-and-beverage products for direct consumption.

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 6.9 that, during 2000–2015, Viet Nam gradually strengthened its linkages as an importer with both the ROW and ASEAN countries.

Figure 6.9. Values of Imports, by Purpose, 2000–2015

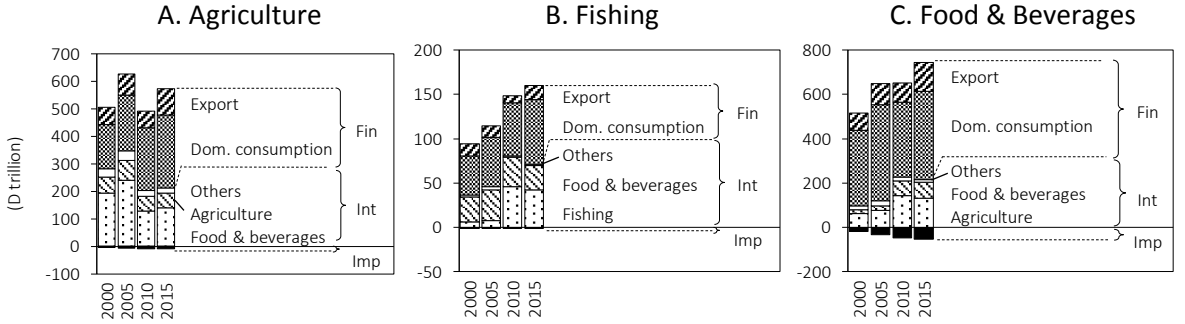


D = dong (Vietnamese currency).
ASEAN = Association of Southeast Asian Nations, ROW = rest of the world.
Notes: The values of imports shown in these graphs are based on constant 2015 prices. They include imports from foreign agricultural, fishing, and food-and-beverage sectors destined for domestic final 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 stagnated after 2010 (Figure 6.10). Unlike many other ASEAN countries in this report, there are no indications of domestic product flows from fishing to the hotel-and-restaurant industries or from the food-and-beverage industries to the hotel-and-restaurant industries. Intra-industry transactions within the agriculture, fishing, and food-and-beverage industries levelled off after 2000 or 2010, depending on the industry. Several linkages in the FVC remained at the same levels in Viet Nam, especially after 2010, with regard to interindustry and intra-industry transactions.

Figure 6.10. Destinations of Domestically Produced and Imported Goods, 2000–2015

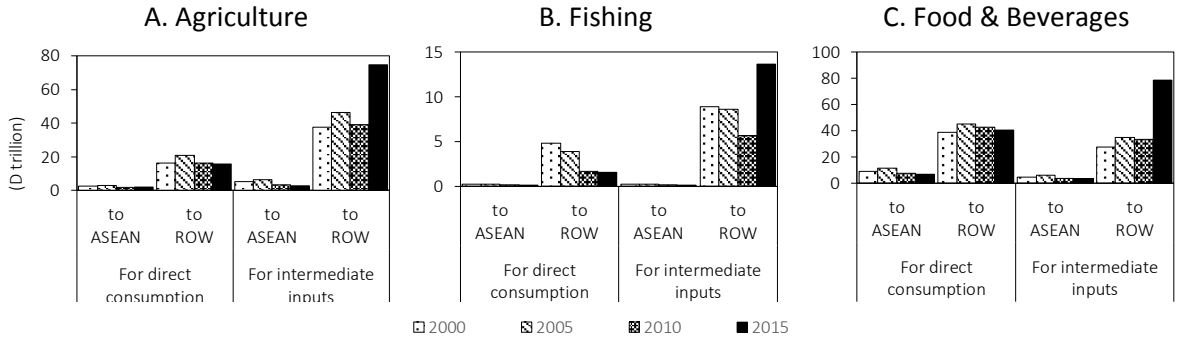


D = dong (Vietnamese currency).
Dom. = domestic.
Notes: The values in these graphs are based on constant 2015 prices. 'Fin' = final demand for domestic and imported goods, 'Int' = intermediate demand for domestic and imported goods, and 'Imp' = the imports of final and intermediate goods. Total demand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

Final demand in the agriculture, fishing, and food-and-beverage industries hovered around the same level during 2000–2015 (Figure 6.10). Export value jumped during 2010–2015, after having levelled off or declined before 2010. Figure 6.11 shows that a relatively large portion of Viet Nam's agricultural and fishery exports were consumed as intermediate goods. Meanwhile, from 2000 to 2010, the exports from the country's food and beverage industries were almost evenly divided between direct consumption and use as intermediate inputs. In 2015, the exports used as intermediate inputs doubled, substantially exceeding those destined for direct consumption.

The primary destination of the exports from the agriculture, fishing, and food-and-beverage industries was the ROW. As an exporter, Viet Nam deepened its linkages more with the ROW than with the rest of the ASEAN region.

Figure 6.11. Values of Exports, by Purpose, 2000–2015



D = dong (Vietnamese 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 6.1 shows the composition of final demand during 2000–2015. Final demand was strongest in the food and beverage industries, followed by agriculture. The annual growth of final demand in the food and beverage industry was driven by exports to the ROW, rather than by domestic household consumption, which was a major driver of final demand in the other ASEAN countries covered in this report. It is notable that household consumption of goods from the food and beverage industries levelled off in Viet Nam. The average annual growth of final demand in agriculture, D8 trillion, outstripped the rates for the other FVC-related industries. Household consumption claimed the largest share of final demand in agriculture, having grown rapidly.

Table 6.1. Final Demand for Products/Services of FVC-related Industries, 2000–2015

(D trillion)

Final demand as	Domestic production of											
	Agriculture		Fishing		Food & beverages		Wholesale trade		Retail trade		Hotels & restraurants	
	Value	Change	Value	Change	Value	Change	Value	Change	Value	Change	Value	Change
Domestic consupmtion												
Household consumption	218	5	72	2	324	-1	115	3	9	0	86	3
Other consumption	3	0	1	0	5	0	2	0	0	0	1	0
Capital formation	40	2	0	0	25	0	30	1	0	0	0	0
Export												
Export to ASEAN	5	0	0	0	10	0	2	0	0	0	5	0
Export to ROW	91	2	15	0	119	3	47	0	4	0	36	0
Total	356	8	89	2	483	2	196	4	13	0	128	3
Annual change rate (%)		2.9		2.6		0.5		2.4		1.1		2.4

D = dong (Vietnamese currency).
ASEAN = Association of Southeast Asian Nations, FVC = food value 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 6.2 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 Viet Nam. The table indicates that 5% of intermediate inputs into the hotel and restaurant sector came from the domestic food and beverage sector, and 20% 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 FVC-related industries in Viet Nam rarely used inputs other than from the wholesale trade industry, and these came more from foreign than from domestic sources.

The data in this table suggests that several linkages composing the input–output structure in Viet Nam drastically changed. Fishing rapidly increased the value of intermediate inputs sourced from within that industry: by 1.7% annually. Meanwhile, the food and beverage industries reduced the inputs they obtained from domestic agriculture by 1.5% annually. If structural changes such as these continue in the future, the development of fishing will drive a larger share of the growth of that sector, while the development of the food and beverage industry will have less of an effect on agriculture.

Table 6.2. 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	9	-0.15	1	0.00	20	-1.53	0	-0.02	0	0.00	1	-0.12
	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	0.01	0	0.00	0	0.00	0	0.00
Fishing	Domestic	0	-0.01	27	1.70	4	-0.12	0	0.00	0	0.00	1	-0.06
	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	12	0.74	0	-0.01	18	0.58	0	-0.03	0	-0.02	5	-0.41
	ASEAN	0	0.00	0	0.00	0	0.01	0	0.00	0	0.00	0	0.00
	ROW	0	0.00	0	0.00	0	0.01	0	0.00	0	0.00	0	0.01
Wholesale trade	Domestic	1	-0.06	2	-0.18	5	0.04	0	-0.24	1	-0.39	1	-0.09
	ASEAN	1	0.02	1	0.01	1	0.04	1	0.02	1	0.02	1	0.02
	ROW	3	0.15	3	0.13	6	0.28	3	0.13	5	0.20	3	0.15
Retail trade	Domestic	0	0.00	0	-0.01	0	0.00	0	-0.02	0	-0.13	0	0.00
	ASEAN	0	0.02	1	0.01	1	0.04	0	0.02	1	0.02	1	0.02
	ROW	1	0.03	1	0.02	2	0.06	1	0.03	1	0.04	1	0.03
Hotels & restraurants	Domestic	0	0.00	0	0.00	0	0.01	0	-0.03	0	-0.04	1	-0.02
	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 6.3 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 D0.7 trillion increase in the VA of agriculture, as well as a D1.2 trillion increase in the VA of the food-and-beverage sector itself.

Increases in final demand in the food and beverage industries had some 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 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 food and beverage industries (D0.14 trillion) was large compared with that driven by the final demand in the fishing sector itself (D0.51 trillion). Increasing final demand in the food and beverage industries can thus be an effective way to promote the development of the fishing industry.

The inducement effect of final demand in the wholesale and retail trade sectors on the other four sectors discussed above was very small, as is shown in Table 6.3. Meanwhile, Table 6.2 indicates that FVC-related industries, especially the food and beverage industries, did depend on inputs from the wholesale 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 6.3. VA Induced by a 1% Increase in Final Demand, 2015

(D trillion)

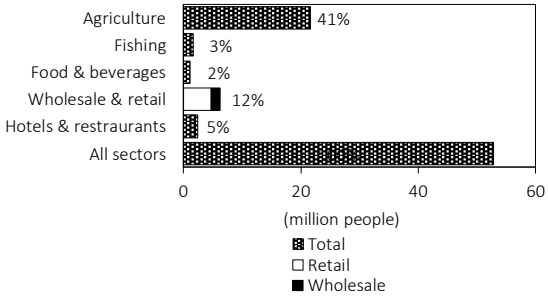
Induced value added in	1% increase in final demand for					
	Agriculture	Fishing	Food & beverages	Wholesale trade	Retail trade	Hotels & restraurants
Agriculture	2.18	0.01	0.72	0.00	0.00	0.02
Fishing	0.01	0.51	0.14	0.00	0.00	0.01
Food & beverages	0.12	0.00	1.21	0.00	0.00	0.02
Wholesale trade	0.08	0.03	0.29	1.43	0.00	0.02
Retail trade	0.00	0.00	0.00	0.00	0.09	0.00
Hotels & restraurants	0.00	0.00	0.01	0.01	0.00	0.84

D = dong (Vietnamese currency).
VA = value added.
Source: Appendix 3.2.

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

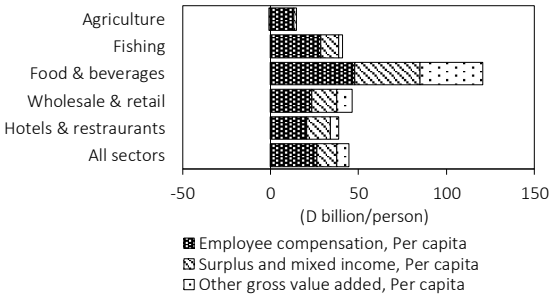
Now let us consider how an increase in production relates to changes in the number of employees and per capita employee compensation. According to figures 6.12 and 6.13, the agricultural sector in 2015 was characterized by a large number of employees, low labour productivity, and low per capita compensation compared with other FVC-related industries. By contrast, the food and beverage industries had a limited number of employees, but particularly higher labour productivity and per capita compensation than the average values in Viet Nam.

Figure 6.12. Number of Employees, by Sector, 2015



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

Figure 6.13. Gross VA per Capita, by Sector, 2015



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

Figure 6.14 illustrates the relationship amongst the number of employees, per capita compensation, and production during 2000–2015. Figure 6.14A depicts the proportion of the average annual rate of change in production in each sector that was attributable to total employee compensation. The values differ by sector; for instance, they show stagnation in agriculture (0.3%) and rapid growth in fishing (3.8%). Among the countries covered in this report, the contribution of employee compensation to agricultural production has a negative value only in Viet Nam.

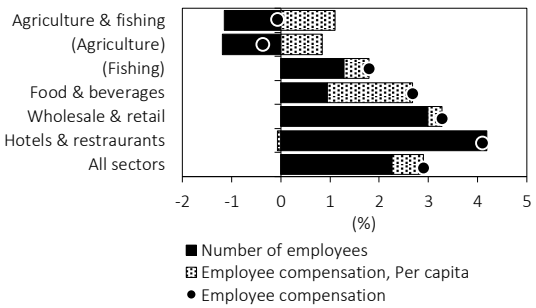
The average annual rates of change in the total value of employee compensation were within the range of 0.4%–4.1% in all of the observable FVC-related sectors (Figure 6.14 B). Two factors determine the total value of employee compensation: the number of employees and per capita compensation. In these sectors, the changes occurred in both the number of employees and per capita compensation. In the agricultural sector, the number of employees decreased, accompanied by an increase in per capita compensation. As the number of employees declined faster than the increase in per capita compensation, the total compensation appears to have slightly decreased. In the other sectors, with the exception of the food and beverage industries, the growth in the number of employees exceeded that of per capita compensation.

These results suggest that production growth can accompany a rise in per capita compensation in many FVC-related industries, particularly in the agricultural sector. Another notable point is the decline in the number of employees in the agricultural sector. The sector's large number of employees, low-level labour productivity, and low per capita compensation, along with a certain degree of growth in per capita compensation and a decrease in the number of employees, imply the existence of a labour surplus. Any interindustry movement of labourers would be deeply connected to the productivity and efficient development of agriculture. The food and beverage sector, which had higher per capita employee compensation than the other FVC-related industries, seems to have been an attractive sector in terms of labour absorption, although the number of employees was very limited and was increasing only slowly.

Figure 6.14. 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

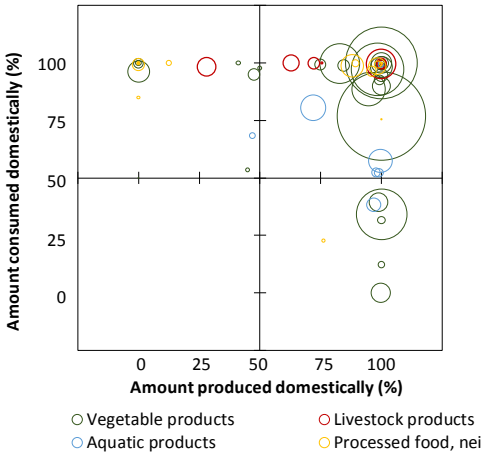
Figure 6.15 shows the structure of domestic commerce and foreign trade in 2004–2013. There are two graphs, each of which is divided into four quadrants defined by two criteria: whether agri-food goods were produced domestically or in foreign markets and whether they were *consumed* in domestically or in foreign markets. In 6.15 A and 6.15 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 6.15 A are colour-coded to indicate the agri-food sector, whilst those in Figure 6.15 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 agri-food products are concentrated in the first (upper-right) quadrant, which represents goods that were produced and consumed in the domestic market (i.e. domestic-oriented goods). There are a number of small and medium-sized circles falling along the level representing 100% domestic consumption, across the first and second (upper-left) quadrants, the latter representing goods produced in foreign markets and consumed domestically (i.e. import-oriented goods). There are also many small and medium-sized circles falling along the level representing 100% domestic production, across the first and fourth (lower-right) quadrants, the latter representing goods that are produced domestically and consumed in foreign markets (i.e. export-oriented). This means that many goods produced in Viet Nam were consumed in foreign markets, and many goods produced in foreign markets were consumed in Viet Nam.

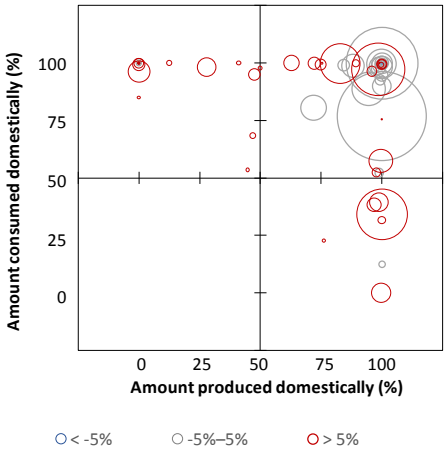
There are no circles to be observed in the third (lower-left) quadrant, which represents imported products that are destined for re-exportation (i.e. trade-oriented goods). Figure 6.15 shows fewer large circles at the spot representing 100% domestic production and consumption than are seen for Indonesia (Figure 4.15) and the Philippines (Figure 5.15). Furthermore, more products are observed in the second and fourth quadrants than are seen in the corresponding figures for Lao PDR (Figure 7.15), Cambodia (Figure 8.15), and Myanmar (Figure 9.15).

Figure 6.15. Classification of Agri-food Products by Supply–Demand Balance, 2004–2013

A. By IC1 Group, Annual Averages



B. By Average Annual Growth Rate



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 6.4 shows that most agri-food products—particularly cereals (11), oil and sugar crops (12), and vegetables (13)—were produced and consumed mainly in the domestic market in 2004–2013. A comparatively large quantity of cereals was imported, followed by vegetables, milk (22), marine fishes (31), and fat and oils (42). Many vegetable and aquatic products, especially cereals (11) and vegetables (12), were also exported in significant quantities. Several IC2 groups, such as stimulants and spices (15) and crustaceans (33), were consumed more in foreign markets than in the domestic market. Another characteristic of Viet Nam is the large production and domestic supply of meat (21), which exceeded those of the other ASEAN countries covered in this report.

Annual change data indicates a soaring growth in the production and domestic supply of cereals, oil and sugar crops, and vegetables. Cereal imports and exports, as well as vegetables exports, also grew rapidly. Similarly, data on the production and domestic supply of fruits and nuts, meat, and freshwater fishes (31) shows steady growth during this period.

Table 6.4. 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	30,495	27,042	2,840	6,061	864	761	334	401
	12 Oil and sugar crops	18,678	18,747	300	159	448	525	93	1
	13 Vegetables	19,770	14,266	306	5,809	1,058	411	31	1,042
	14 Fruits and nuts	7,612	6,771	347	1,151	200	132	49	140
	15 Stimulants and spices	1,567	197	40	1,429	88	16	7	78
2 Livestock products	21 Meat	3,992	4,419	440	12	195	309	112	-1
	22 Milk	316	1,114	816	19	29	85	56	1
	23 Eggs	275	273	0	2	23	23	0	0
3 Aquatic products	31 Freshwater fishes	1,823	1,063	9	789	150	55	2	110
	32 Marine fishes	1,567	1,777	655	446	61	74	34	22
	33 Crustaceans	625	247	20	398	38	4	3	37
	34 Molluscs	478	254	8	232	19	18	1	3
	35 Aquatic animals, nei	9	9	0	0	4	4	0	0
	36 Aquatic plants	86	86	0	1	22	22	0	0
4 Processed food, nei	41 Sugar	1,488	1,696	232	24	30	72	45	3
	42 Fat and oils	387	974	622	31	15	69	61	6
	43 Food, nei	0	10	10	0	0	1	1	0
	44 Alcoholic beverages	1,254	1,269	40	24	55	55	6	6

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 6.5 shows FBS items (as designated by FAOSTAT) listed in descending order of total supply quantity within each category in 2004–2013, corresponding to each quadrant in Figure 6.15. The products existing in large quantities, such as rice, sugar cane, and other vegetables, are concentrated in the column for domestic-oriented products. Most products are in the cells representing stable or expanding markets for domestic-, export-, or import-oriented products.

Other vegetables—mainly leaf fruit vegetables (other than tomatoes), onions, pulses, and starchy roots— are identifiable as domestic-oriented products by their large quantities of supply undergoing rapid growth. Maize and its products, freshwater fishes, and meats (21) such as poultry and bovine meats, also stand out for their rapid growth. Cassava and products, followed by coffee, nuts, and nut products, were major export-oriented items with rapidly growing supplies. By contrast, wheat and wheat products, as well as milk, are examples of import-oriented products.

Table 6.5. 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	9,139	13	Cassava and products	8,435	11	Wheat and products	1,551			
		2	11	Maize and products	5,280	15	Coffee and products	1,172	22	Milk - excluding butter	1,132			
		3	31	Freshwater fish	1,852	14	Nuts and products	1,119	42	Palm oil	477			
		4	21	Poultry meat	821	33	Crustaceans	645	12	Soyabeans	464			
		5	21	Bovine meat	455	15	Tea (including mate)	177	11	Barley and products	315			
	Stable -5 < r < 5	1	11	Rice (milled equivalent)	25,953	15	Pepper	129	14	Apples and products	101			
		2	12	Sugar cane	16,934				42	Oilcrops oil, other	32			
		3	14	Fruits, other	3,671				42	Rape and mustard oil	3			
		4	21	Pigmeat	2,785				11	Cereals, other	3			
		5	32	Marine fish, other	2,109				44	Cream	0.8			
	Shrinking r < -5	1	12	Cottonseed	11									
		2												
		3												
		4												
		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 all aquatic products, especially processed crustaceans (33), were remarkably high during 2014–2106 (Table 6.6). Export values, as well as export prices, were relatively high for both raw and processed crustaceans (33). We can conclude that the raw and processed crustaceans exported in large amounts had high enough values during this period to induce active trade.

The import prices of aquatic products, including raw aquatic animals, nei (35), raw marine fishes (32), and both raw and processed crustaceans (33), exceeded those of many other products. The prices of raw and processed eggs (23), stimulants and spices (15), and food, nei (43) were also conspicuously high. The import values of most of these high-priced products were quite small, with the exception of food, nei (41), raw crustaceans, and raw stimulants and spices. High-priced items that were largely imported, such as processed food, nei, raw crustaceans, and raw stimulants and spices, apparently had high import values for Viet Nam.

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 6.6. 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	0.4	0.5	0.3	1.2	21	3,298	679	538
	12 Oil and sugar crops	1.1	2.5	0.6	2.5	119	74	858	59
	13 Vegetables	1.1	1.5	1.0	2.4	674	119	310	77
	14 Fruits and nuts	4.3	2.4	1.3	2.4	2,548	349	1,088	27
	15 Stimulants and spices	2.5	5.4	5.6	6.3	4,233	306	208	60
2 Livestock products	21 Meat	—	2.9	—	2.6	0.0	72	0.0	239
	22 Milk	1.6	3.1	1.3	3.5	10	92	27	537
	23 Eggs	1.7	2.1	6.7	5.7	5	0.5	5	3
3 Aquatic products	31 Freshwater fishes	6.1	3.1	7.0	4.0	1	1,783	17	109
	32 Marine fishes	5.5	4.9	14.5	2.2	37	546	4	276
	33 Crustaceans	8.7	10.7	9.5	10.3	2,150	1,234	394	7
	34 Molluscs	4.3	6.9	4.6	5.5	413	117	50	1
	35 Aquatic animals, nei	4.4	6.2	16.2	—	1	1	0.2	0.0
	36 Aquatic plants	9.3	—	9.3	—	1	0.0	3	0.0
	38 Fishes, nei	6.1	4.1	8.2	2.9	55	691	2	94
4 Processed food, nei	41 Sugar	3.7	1.0	3.7	0.8	111	329	4	326
	42 Fat and oils	—	1.2	—	1.3	0.0	242	0.0	773
	43 Food, nei	—	3.2	—	6.3	0.0	265	0.0	704
	44 Alcoholic beverages	—	1.8	—	2.5	0.0	176	0.0	80

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 6.7 and 6.8 provide information about the agri-food products imported by ASEAN countries from Viet Nam in 2014–2016. ASEAN countries imported many of these products from Viet Nam more cheaply than they did from other ASEAN+6 countries (Table 6.7). Roughly 65%–80% of items in the IC2 groups were imported as low-priced products. The values of exports from Viet Nam to the rest of the ASEAN region, other than the CLM countries, were at similar levels (Table 6.8).

As shown in Table 6.7, many Vietnamese products that were imported by other ASEAN countries in significantly larger quantities than estimated (based on approximate lines) were the low-price range. One example was freshwater fishes (31). More conspicuous were products that were imported in smaller quantities than initially estimated. Such products included meat (21), fat and oils (42), and sugar (41), all of them in the low-price range.

Table 6.7. 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	1.1	678	82	8	10	0	0	1	1	0	1	84
	12 Oil and sugar crops	1.6	18	68	14	18	0	0	0	2	0	2	44
	13 Vegetables	1.2	72	74	12	14	0	1	0	3	2	0	143
	14 Fruits and nuts	1.8	137	75	13	11	0	0	0	3	1	0	158
	15 Stimulants and spices	3.3	429	80	7	13	1	0	0	0	0	0	95
2 Livestock products	21 Meat	4.0	10	64	18	18	0	0	0	14	0	0	22
	22 Milk	2.0	12	74	11	16	0	0	0	0	0	0	38
	23 Eggs	1.2	3	75	0	25	0	0	0	0	0	0	4
3 Aquatic products	31 Freshwater fishes	2.1	116	65	26	10	6	3	0	0	0	0	31
	32 Marine fishes	2.1	85	84	8	8	0	0	0	4	0	0	50
	33 Crustaceans	7.8	63	76	16	8	0	0	0	3	0	0	37
	34 Molluscs	4.4	60	77	13	10	0	0	0	3	0	0	30
	35 Aquatic animals, nei	1.6	5	91	0	9	0	0	0	0	0	0	11
	36 Aquatic plants	8.8	0.1	67	33	0	0	0	0	0	0	0	3
	38 Fishes, nei	2.7	146	81	11	7	0	0	0	0	0	0	27
4 Processed food, nei	41 Sugar	1.6	83	68	15	17	0	0	0	6	0	0	47
	42 Fat and oils	1.3	15	68	14	18	0	0	0	7	0	0	44
	43 Food, nei	1.8	79	76	18	6	0	0	0	0	0	0	17
	44 Alcoholic beverages	1.7	55	78	11	11	0	0	0	0	0	0	18

ASEAN = Association of Southeast Asian Nations, IC1 = item category level 1 and IC2 = item category level 2 (FAOSTAT), 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 6.8. 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	2.5	353	77	9	15	0	0	0	1	5	2	200
Brunei	2.0	2	68	9	23	0	0	0	0	7	0	57
Malaysia	1.8	412	76	17	7	1	1	0	0	2	0	190
Thailand	3.1	508	78	15	7	1	0	0	0	4	1	161
Indonesia	1.6	292	84	6	10	2	0	0	0	0	0	50
Philippines	1.3	433	76	13	11	0	1	0	0	1	0	82
Viet Nam	—	0.0	—	—	—	—	—	—	—	—	—	0
Lao PDR	2.3	13	92	8	0	0	0	0	0	0	0	13
Camboodia	1.0	35	77	3	20	0	0	1	1	0	0	96
Myanmar	2.2	0.0	50	26	24	0	0	0	0	0	0	54

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

Vietnamese vegetable products in low- and mid-price ranges—such as stimulants and spices (15), including green coffee and pepper; and vegetables (13), such as chilies and green peppers—tended to be imported in great quantities by other ASEAN countries in 2014–2016, considering their prices (Table 6.9). Regarding the aquatic category, products in various IC2 groups were imported in substantial amounts, including miscellaneous freshwater fishes, and tilapias and other cichlids. Similarly, products categorized as processed food, nei (such as sugar confectionery) 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 Viet Nam 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: coconut oil from Malaysia; dried fruits, nes, and breakfast cereals from Thailand; and crabs, nei, from Myanmar.[2]

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

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

Table 6.9. 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							
		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	IDN	15	111	Coffee, green	1.8	26	0.10	MYS	13	112	Chillies and peppers, green	1.8	29	0.05	KHM	11	121	Flour, maize	0.6	0.0	0.09
	2	THA	15	112	Pepper (piper spp.)	9.8	27	0.10	SGP	12	111	Sugar beet	1.0	0.5	0.13							
	3	KHM	15	121	Cocoa, powder and cake	4.1	0.0	0.12	PHL	13	112	Yams	1.8	0.1	0.15							
	4	THA	15	111	Coffee, green	2.1	69	0.13	MYS	15	112	Pepper (piper spp.)	9.5	15	0.15							
	5	IDN	15	112	Tea	0.9	10	0.16														
2 Livestock products	1																					
	2																					
	3																					
	4																					
	5																					
3 Aquatic products	1	MYS	31	122	Miscellaneous freshwater fishes	1.7	14	0.02	PHL	31	122	Tilapias and other cichlids	1.5	25	0.04	SGP	38	112	Fish and fish products, nei	24.1	6	0.13
	2	THA	31	122	Miscellaneous freshwater fishes	1.9	39	0.02	THA	33	112	Lobsters, spiny-rock lobsters	15.6	2	0.14							
	3	KHM	38	112	Fish and fish products, nei	0.6	1	0.16	THA	38	122	Fish and fish products, nei	2.0	77	0.17							
	4	SGP	33	122	Shrimps, prawns	9.1	19	0.18	PHL	33	112	Shrimps, prawns	6.8	8	0.19							
	5																					
4 Processed food, nei	1	SGP	42	121	Oils	0.7	1	0.18	MMR	41	122	Sugar confectionery	3.9	2	0.12							
	2	MYS	43	121	Food preparations, nes	1.3	6	0.20														
	3																					
	4																					
	5																					

B. Smaller Quantities of Imports 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	MYS	11	122	Mixes and doughs	1.6	0.011	0.01	SGP	13	122	Vegetables, homogenized preparations	6.0	0.000	0.02	KHM	11	122	Cereals, breakfast	9.1	0.000	0.07
	2	THA	12	122	Peanut butter	2.4	0.000	0.01	THA	14	122	Fruit, cooked, homogenized preparations	7.5	0.000	0.07	SGP	12	122	Flour, mustard	28.2	0.000	0.07
	3	SGP	13	121	Flour, pulses	1.3	0.000	0.02	SGP	13	122	Vegetables, preserved nes	4.6	0.013	0.09	SGP	13	112	Lentils	1.5	0.000	0.13
	4	MYS	13	122	Vegetables in vinegar	2.0	0.000	0.04	SGP	13	112	Peas, dry	4.4	0.001	0.09	SGP	14	112	Apricots, dry	14.0	0.000	0.14
	5	SGP	14	112	Grapes	5.1	0.000	0.05	BRN	13	112	Cabbages and other brassicas	1.6	0.000	0.19	PHL	11	122	Mixes and doughs	6.2	0.002	0.15
2 Livestock products	1	THA	21	121	Meat, extracts	8.0	0.000	0.02	SGP	21	122	Meat, chicken	2.3	0.019	0.19	SGP	22	122	Ice cream and edible ice	7.5	0.022	0.18
	2	SGP	21	122	Meat, beef and veal sausages	1.7	0.009	0.07								PHL	22	112	Milk, whole fresh cow	2.0	0.000	0.19
	3	SGP	21	122	Meat, homogenized preparations	8.3	0.000	0.07														
	4	THA	22	121	Milk, products of natural constituents nes	4.8	0.000	0.15														
	5																					
3 Aquatic products	1	THA	33	112	Crabs, nei	4.1	0.000	0.01	MMR	36	111	Seaweeds, food, nei	8.9	0.000	0.17							
	2	SGP	32	112	Sharks, rays, chimaeras	22.6	0.002	0.03														
	3	MYS	32	112	Miscellaneous pelagic fishes	1.1	0.000	0.06														
	4	SGP	34	122	Mussels	2.8	0.000	0.07														
	5	SGP	32	122	Herrings, sardines, anchovies	5.4	0.015	0.17														
4 Processed food, nei	1	THA	41	121	Molasses	0.7	0.000	0.01	THA	41	122	Sugar refined	7.0	0.000	0.13							
	2	SGP	42	122	Margarine, liquid	1.0	0.000	0.02	MMR	43	122	Infant food	7.8	0.048	0.16							
	3	THA	42	121	Oils	0.6	0.008	0.02														
	4	BRN	41	122	Sugar confectionery	2.5	0.003	0.03														
	5	SGP	42	122	Oil, rapeseed	0.5	0.001	0.06														

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, PHL = Philippines, SGP = Singapore, THA = Thailand.

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

Median land productivity was the highest for fruits and nuts (14), followed that of vegetables (13), in 2011–2015 (Table 6.10). The ratios of the yield, an indicator of comparative advantage in the ASEAN region, were similar for all IC2 groups except vegetables in the category of vegetable products.

Table 6.10. Median Levels of Productivity and Resource Allocation in Each IC2 Group

IC1	IC2	Land productivity (D million/ha)	Chg (%)	Ratio of the yield Index (Yi/Yi')	Chg (%)	Area harvested (1,000 ha)	Chg (%)	Obs.
1 Vegetable products	11 Cereals	38	2	1.4	1	1,158	0	3
	12 Oil and sugar crops	48	5	1.1	0	126	1	7
	13 Vegetables	61	5	0.9	0	136	2	9
	14 Fruits and nuts	127	5	1.3	2	46	1	10
	15 Stimulants and spices	25	0	1.3	0	80	3	5
	Total	67	5	1.2	1	86	1	34
IC1	**IC2**	**Feed productivity (D million/100 PU)**	**Chg (%)**	**Ratio of the yield Index (Yi/Yi')**	**Chg (%)**	**Producing animals (million PU)**	**Chg (%)**	**Obs.**
2 Livestock products	21 Meat	52	—	0.9	—	32	3	7
	22 Milk	731	—	2.1	—	2	4	2
	23 Eggs	97	—	1.3	—	24	2	1
	Total	69	—	1.0	—	16	3	10

D = dong (Vietnamese currency).

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

Sources: FAO (2019); Appendix 3.7.

In the category of fruits and nuts, grapes and grapefruit had comparatively high land productivity and ratios of the yield during the same period (Table 6.11). While the ratio of the yield of grapes increased slightly at this time, productivity and the harvested land area steadily decreased. These trends imply that it was a decline in grape productivity in other ASEAN countries, rather than the vigorous production of grapes in Viet Nam, that created a favourable situation for the country's grape exports. Meanwhile, the productivity, ratio of the yield, and harvested area of grapefruit all gradually increased. In the vegetable products category, the productivity and the ratios of the yield of spices and stimulants (15), such as peppers and green coffee, and vegetables, especially cauliflower and broccoli, outstripped those values of the other products. Similarly, fresh whole cow's milk and buffalo meat had high feed productivity and ratios of the yield, compared with those of other livestock products. Although the harvested areas or numbers of producing animals for 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 6.11, which lists examples of products imported by other ASEAN countries from Viet Nam during 2014–2016 in greater quantities than expected based on their prices, several products apparently had non-price competitiveness or were differentiated from the same items produced in other ASEAN countries. Half of these products were processed foods such as milled/husked rice, maize flour, and sugar confectionery; and the other half were primary products such as pepper, green coffee, and tea. In the case of Viet Nam, these items had a higher physical productivity than they did in most ASEAN states. Maintaining or increasing the non-price

competitiveness of these products would help improve the efficiency of agricultural production in the region. As some products already have non-price competitiveness, that of other products should be actively improved for the sake of developing the FVC in Viet Nam.

Table 6.11. Levels of Productivity and Resource Allocation for Individual Items

No.	IC2	FCL name	Land or feed productivity (D million/ha or D million/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**	Millet	40	2	1.5	3	1	-5	iii	i				
2		Rice, paddy	38	1	1.4	1	7,793	1	iii	i	Rice, milled/husked	IDN		
3		Maize	32	5	1.1	-1	1,158	0	iv	iv	Flour, maize	KHM		
4	**12**	Coconuts	80	6	1.9	3	136	2	i	i			Oil, coconut (copra)	THA
5		Sugar cane	65	3	1.0	0	297	1	iv	ii	Sugar confectionery	MMR	Sugar raw centrifugal	SGP
6		Groundnuts, with shell	48	5	1.4	4	214	-3	iii	i				
7		Sesame seed	31	12	1.4	6	46	1	iii	iii			Sesame seed	SGP
8		Soybeans	25	4	1.0	-1	126	-7	iv	iv				
9		Castor oil seed	—	—	1.1	0	8	2	—	—				
10		Seed cotton	—	—	0.7	-10	5	-22	—	—				
11	**13**	Cauliflowers and broccoli	192	0	1.5	1	5	12	i	i				
12		Potatoes	159	11	0.9	4	24	-6	ii	i				
13		Cabbages and other brassicas	143	3	1.2	1	34	-2	ii	i			Cabbages and other brassicas	BRN
14		Sweet potatoes	69	10	0.9	-1	136	-4	ii	i				
15		Cassava	53	3	0.9	-1	555	2	iv	iv				
16		Onions, dry	42	1	0.3	0	92	2	iv	iv				
17		Beans, dry	26	10	0.7	-3	170	-3	iv	iv			Beans, dry	SGP
18		Pulses, nes	20	6	0.8	0	159	2	iv	iv			Pulses, nes	THA
19		Vegetables, fresh nes	—	—	1.5	0	737	9	—	—			Vegetables, fresh nes	BRN
20	**14**	Grapes	636	-9	1.6	3	1	-5	i	i				
21		Oranges	231	6	0.5	4	44	-5	ii	ii			Oranges	SGP
22		Grapefruit (inc. pomelos)	154	5	1.4	2	38	5	i	i				
23		Mangoes, mangosteens, guavas	139	5	1.2	3	79	5	i	ii				
24		Watermelons	127	6	1.3	2	48	9	i	ii				
25		Pineapples	118	8	0.4	2	35	-1	ii	iv				
26		Bananas	108	5	0.7	0	112	3	ii	iv				
27		Cashew nuts, with shell	87	-1	7.5	-1	304	0	i	iii				
28		Nuts, nes	51	2	3.2	2	3	2	iii	iii			Nuts, nes	BRN
29		Fruit, fresh nes	—	—	2.2	3	242	1	—	—				
30	**15**	Pepper (piper spp.)	364	12	3.9	-3	54	5	i	i	Pepper (piper spp.)	THA		
31		Coffee, green	84	5	3.9	0	576	3	i	i	Coffee, green	IDN		
32		Chillies and peppers, dry	25	0	0.8	-6	64	2	iv	ii				
33		Tea	13	-7	1.3	3	115	1	iii	iii	Tea	IDN		
34		Cinnamon (canella)	7	-1	0.4	3	80	10	iv	iv				
35	**21**	Meat, pig	231	—	0.8	—	67	3	ii	ii				
36		Meat, cattle	74	—	0.9	—	32	5	ii	i				
37		Meat, buffalo	69	—	1.1	—	8	-3	i	i				
38		Meat, goat	52	—	1.1	—	2	0	iii	i				
39		Meat, chicken	43	—	0.9	—	131	5	iv	iii			Meat, chicken	SGP
40		Meat, horse	32	—	0.7	—	0	-5	iv	iv				
41		Meat, duck	16	—	0.4	—	32	6	iv	iv				
42	**22**	Milk, whole fresh cow	731	—	2.4	—	3	9	i	i				
43		Milk, whole fresh buffalo	—	—	1.9	—	1	-1	—	—				
44	**23**	Eggs, hen, in shell	97	—	1.3	—	24	2	i	i				

D = dong (Vietnamese currency).

BRN = Brunei, FCL = FAOSTAT Commodity List, ha = hectare, IC2 = item category level 2, IDN = Indonesia, Intpn. = interpretation, KHM = Cambodia, MMR = Myanmar, nes = not elsewhere specified, p = p-value, PU = unit of pig feed requirements, SGP = Singapore, THA = Thailand, Yi = yield in Viet Nam, 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 dong 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 6.12 shows a positive correlation between the land productivity and ratios of the yield of vegetables (13) and stimulants and spices (15) 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 belonging to other IC2 groups.

Negative or non-existent correlations are observed between land/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 Viet Nam were simply not allocated to products characterized by high productivity or competitiveness.

Table 6.12. 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	0.83	-0.27	0.90	0.50	—	—	—	—	—	—
Area or producing animals	—	0.60	-0.79	-0.33	-0.30	0.18	—	-0.20	-0.60	-0.03	-0.10	-0.25
Obs.	3	5	8	9	5	7	3	5	8	9	5	7

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

- Viet Nam's large population and its strong prospect of population and economic growth suggest that the country has high potential as a consumption market for agri-food products. At the same time, this prospect implies a growing importance of foreign markets for Vietnamese exports in the long term.
- The VA of agriculture and wholesale and retail trade has been a major component of Viet Nam's GDP; for instance, the VA of each accounted for about 13% 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 wholesale/retail trade industries gradually expanded.

- Interindustry transactions involving product flows from agriculture and fishing to the food and beverage industries stagnated in Viet Nam after 2010. Unlike in other ASEAN countries, there were no observable interindustry transactions such as those from fishing to the hotel-and-restaurant industries or from the food-and-beverage to the hotel-and-restaurant industries. Intra-industry transactions within the agricultural, fishing, and food-and-beverage sectors levelled off after either 2000 or 2010, depending on the sector.

Linkages amongst FVC-related Industries

- The increase in final demand in the food and beverage industry has had some positive impacts on the VA of upstream sectors, particularly agriculture. This result suggests that interventions into the food and beverage industries do contribute to the development of agriculture.
- The effects of the food and beverage industries on the VA of fishing was notable, as the size of the fishing market 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 the per capita compensation in all FVC-related industries, particularly agriculture.
- The food and beverage industries, which had higher per capita employee compensation than other FVC-related industries, seems to have been one of the attractive sectors in terms of labour absorption, although the number of employees was actually very limited and was increasing only slowly.

Supply–Demand Balance of Agri-food Products

- Most agri-food products—particularly cereals, oil and sugar crops, and vegetables—were produced and consumed mainly in the domestic market. A comparatively large amount of cereals was nevertheless imported, followed by vegetables, milk, marine fishes, and fat and oils. Many vegetable and aquatic products, particularly cereals and vegetables, were exported in significant quantities. Even though cereals and vegetables are mainly produced/consumed at home, the little that's produced/consumed in foreign markets are in large enough volumes to rank high compared with other exports and imports. Several IC2 groups, such as stimulants and spices and crustaceans, were consumed in foreign markets that were larger than the domestic markets for these products. Another characteristic of Viet Nam was the large production and domestic supply of meat, exceeding those of all the other ASEAN countries covered in this report.
- The export prices of all aquatic products, especially processed crustaceans, were remarkably high. We can conclude that raw and processed crustaceans exported in large amounts had high enough values to induce active trade. By contrast, high-priced processed food, nei, raw crustaceans, and raw stimulants and spices seemed to have been valuable imports for Viet Nam.

The Competitiveness of Each Product in the ASEAN Region

- Vietnamese vegetable products in the low- and mid-price ranges—such as stimulants and spices, including green coffee and pepper, and vegetables such as chilies and green peppers—tended to

be imported in great quantities in the ASEAN region, considering their prices. In the category of aquatic products, those in various IC2 groups such as miscellaneous freshwater fishes and tilapias and other cichlids were imported in large quantities. Similarly, products in the processed food, nei, category such as sugar confectionery, 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 countries to Viet Nam might 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: coconut oil from Malaysia, dried fruits, nes, and breakfast cereals from Thailand; and crabs, nei, from Myanmar.
- In the category of fruits and nuts, grapes and grapefruits had relatively high land productivity and ratios of the yield. In the vegetable products category, the productivity and the ratios of the yield of spices and stimulants, such as peppers and green coffee, and vegetables, especially cauliflower and broccoli, outstripped those of most other products. Similarly, fresh whole cow's milk and buffalo meat had high feed productivity and ratios of the yield, compared with those of other livestock products. 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.