The Australia-Indonesia Centre

FOOD PROCESSING AND VALUE CHAIN DEVELOPMENT IN INDONESIA

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Executive summary

Transformations in the Indonesian food processing sector are driven by a growing economy (the largest in South East Asia) and changing food consumption patterns. The substantial domestic market has hitherto been the key driver for the food industry, with export potential remaining underdeveloped. The manufacturing sector (excluding oil and gas) contributes around 20% of Indonesia's total gross domestic profit (GDP), and is valued at around AU$200 billion, with food, beverage and tobacco processing consistently the main contributor, at around 37% of total manufacturing. The sector has also been expanding rapidly. Despite recent fluctuations, sectoral growth has averaged 10% per year over the last decade, outstripping other manufacturing sub-sectors.

Food processing is also a major source of employment within Indonesia, increasing from 2.93 million in 2010 to 4.26 million people in 2013; a remarkable rate of 15% annually. Significantly, much of this growth in employment has come from micro enterprises (employing fewer than five employees) and small enterprises (employing fewer than 20), which together contribute to more than 76% of the total employment in food processing. Medium and large enterprises, however, are responsible for an estimated 83% of the total output value in the sector. The sector, therefore, is extremely diverse internally, and this makes coherent policymaking challenging.

The food processing sector has also experienced strong growth in investment, including foreign direct investment (FDI), which has even outstripped domestic investment in recent years. Some of this investment has been stimulated by policy settings that favour domestically produced products in the local market. In 2014, the food processing sector was responsible for 13% of total domestic investment (behind only investment in utilities) and 11% of total FDI (behind only mining), much of this being in palm oil processing.

Despite these positive indicators, Indonesia's participation in global food value chains remains marginal. It contributes around 1% of total global exports, much less than smaller but similarly endowed regional neighbours like Thailand and Malaysia. Processed food exports are dominated by palm oil products, but Indonesia is also developing export competitiveness in products such as processed seafood, intermediate cocoa products and instant noodles. An increasingly important indicator of competiveness in the global market is the degree to which a sector is integrated into regional and global production networks, and the Indonesian food processing sector remains poorly integrated by global standards. The foreign content of Indonesia's food exports was only 4% in 2010, compared to 23% in Malaysia, 12% in Australia and 35% in Taiwan.

Indonesian trade policy has been generally protectionist, and this is particularly true for food products due to particular political sensitivities. Protection has increasingly assumed the form of non-tariff barriers, such as licence and permit requirements, pre-shipment inspections, labelling requirements, local content requirements, and export restrictions. Indonesia's embrace of such protectionism contrasts with much lower rates of food protectionism in Malaysia and Thailand, where food products have become more internationally competitive.

Indonesia faces difficult political choices in developing a coherent policy framework for food production and food processing, but enhanced integration with regional and global value chains is likely to provide important growth opportunities for the food processing sector in the future.

Background to this report

The Australia-Indonesia Centre (AIC) is a bilateral initiative designed to strengthen ties between Indonesia and Australia. To work towards this objective and deliver solutions to shared national challenges, the AIC is investing in collaborative research. This report is the product of research funding provided by the AIC to researchers from the University of Sydney, the Australian National University, Bogor Agricultural University and Bandung Institute of Technology as part of its Rapid Start funding stream.

The AIC's Food and Agriculture Cluster team, comprising Australian and Indonesian researchers, identified value chain development in the food processing area as a potential area to address shared challenges and solutions between the two countries.

The food processing sector is one of Indonesia's largest and fastest growing sectors, and is the largest sub-sector of manufacturing, serving a domestic market of 255 million people with a rapidly expanding middle class. Increasing demand for value-added processed foods that meet the need for convenience, nutrition and evolving taste preferences is creating exciting new opportunities for the Indonesian food processing sector.

With these increased opportunities, it is in Indonesia's strategic interest to enmesh itself within globally competitive food value chains. Doing so requires increased sensitivity to how food is produced, innovative methods of food production, and awareness of nutrition, content and labelling practices.

This Rapid Start project report reviews recent developments in the food processing and ingredients sector in Indonesia and its integration within global and regional production networks. The report identifies key opportunities for future growth and constraints to competitiveness.

The first chapter introduces the guiding conceptual framework for the report by assessing recent developments in the global food sector from a global value chain (GVC) perspective. We then present an overview of the Indonesian food processing sector in Chapter 2. Chapter 3 then undertakes an analysis of Indonesia's position in GVCs through the use of global trade databases and input–output tables. We then review the regulatory settings for food processing in Indonesia in Chapter 4, followed by three case studies (instant noodles, seafood processing, and cocoa ingredients) with a firm-specific orientation in Chapter 5.

CHAPTER 1 Food processing, global value chains and development

Food processing sectors worldwide are in the midst of rapid transformation. These developments are even more dramatic in the Global South, where traditional agriculture and local distribution channels are being rapidly replaced by modern agriculture and retailing. These changes will continue with the growth of urban and middle-class market segments, as the strategies of large food companies (lead firms) will shape regional development outcomes in all countries, including Indonesia and Australia. To understand these complex processes, we adopt a framework of analysis known as global value chain theory. This approach helps explains the dynamic connections between the food processing sector and social and economic transformations in distinct places. An investigation of these highly complex processes, that includes inputs from companies, farmers, traders and retailers, provides insights into agricultural restructuring in South-East Asia and an understanding of system wide logics of change.

The global value chain framework

The approach known generically as 'value chain analysis' was popularised through the research of the United States of America (USA) sociologist Gary Gereffi in the 1990s. Gereffi argued that, in that rapidly globalising economic era, nation-centred frameworks for understanding economic systems were becoming increasingly redundant. Rather than frame an investigation within a nationally bounded space, it was more effective to begin from a global perspective and situate an industry case study within this. Gereffi outlined a methodology for GVC research that remains relevant more than two decades later (Gereffi 1994). This methodology proposed that value chains be examined in terms of four core principles:

- input–output systems (the technicalities of how a good or service is produced and thus enables value to be added)
- territoriality (the geographical dimensions of a product system)
- governance (the terms under which actors within chains must operate)
- institutional arrangements (how local, national, and international conditions and policies shape the globalisation process at each stage of the chain).

Of these four principles, the concept of governance dominated as the global economy witnessed a shift towards highly fractured value chains, involving extensive outsourcing. Lead firms are now seen to be involved largely in branding and retailing, but they still exert control (governance) over suppliers through a variety of inter-firm practices. Insights from this field of study highlighted how lead firms generated competitive advantage through their capacity to organise production on a global scale and take advantage of internationally competitive suppliers.

GVC analyses viewed globalisation from two perspectives. On the one hand, international subcontracting networks tended to incorporate developing countries into upstream value chain segments (such as primary production and basic processing) where opportunities for value capture were minimal and where ongoing participation was always threatened by chain exclusion, with the rise of cheaper production options elsewhere. At the same time, however, participation in global markets via GVCs provided exposure to new technologies, ways of doing business, and opportunities for skills development. GVC participation could provide a means for upgrading of firms and industries, and thus enhancing value capture within regional economies (Humphrey and Schmitz, 2002; Morrison et al., 2008; Sturgeon and Gereffi, 2009; Ivarsson and Alvstam, 2011).

Over the years, the GVC approach was complemented by the broadly parallel global production network (GPN) theory, which gave heightened emphasis to explaining geographical variability in lead firm practices (Coe et al., 2004; Yeung and Coe, 2015). Within the GPN approach, regional development outcomes could be considered the product of how regions interfaced with global value

chain restructuring and lead firm strategies. According to this framework, the chief regional development focus was on the various networks that enable firms in particular regions to *strategically couple* with lead firm strategies.

The discussion of these broad ideas is relevant because it signposts a way of asking questions about the restructuring of agrifood sectors in South-East Asia. Specifically, based on a broader value chain approach, we can ask core research agendas pertinent to the development of the food processing sector in Indonesia:

- What kinds of entities are driving changes to the organisation of agrifood chains in Indonesia, and what does this imply for participants and regions who wish to capture greater shares of value within chains?
- What wider geographical and political contexts influence why and how particular forms of global market engagement are emerging within the Indonesian agrifood sectors?

The South-East Asian agrifood sector

Focusing on the first question above, it has traditionally been the case that the governance of agrifood value chains has been relatively fragmented, and in accordance with supplier logics. Most farmers throughout history have been family units who sell surpluses locally after meeting their own consumption needs (Brookfield, 2008). In many jurisdictions through the twentieth century, governments stepped in to regulate these transactions via statutory marketing authorities, the promotion of farmer cooperatives or the establishment of minimum price floors. The ostensible purpose of these interventions was to protect family farmer interests and to safeguard the supplies of staples that were crucial for national food security. From the perspective of value chain governance, the common element in all these initiatives was that they were producer-driven, by organisations that primarily represented farmer interests.

In the 1980s, the extensive role of national governments in the governance of agrifood chains began to give way to market-based arrangements. The impetus for this shift came from several directions at once. Within countries, institutional controls on the structure of chains were reset as governments liberalised the sector – often on account of their inefficiency, sometimes to raise revenue, and sometimes (for developing countries) because they were included in conditionality requirements from multilateral financial institutions. Prior to the late 1980s, the level of industry concentration within supermarket sectors remained relatively low, and there was a virtual absence of multi-country supermarket companies. This altered dramatically in the 1990s, as companies such as Carrefour, Tesco and Walmart gained increased dominance of their home markets and launched aggressive international expansion strategies. Supermarkets have become the single-most important and influential category of lead firms in the global agrifood sector during recent years (Reardon et al., 2004; Burch and Lawrence, 2007).

In Indonesia, and indeed across South-East Asia, certain agrifood subsectors represent cutting edge examples of the rise of buyer-driven chains, firmly entrenched within globalised logics of trade and investment. In other subsectors, however, governance arrangements pivot on the regulatory activities of the state. As a broad generalisation, food staple subsectors (especially rice) are exemplary of the latter, whereas value-added horticulture and aquaculture reflect the former. Hence, in Indonesia, the situation is complicated by the coexistence of the vestiges and legacies of the pre-existing state-led regulatory arrangements, alongside emergent consumer-oriented and privatised supply chains.

Governance arrangements for food staples

Focusing firstly on food staples, many South-East Asian countries, including Indonesia, have traditionally adopted variations of what has been labelled the 'Asian approach to food security' (Intal et al., 2012: 3). This has entailed the stabilisation of rice prices through combinations of national procurement, buffer stock maintenance, price controls, import restrictions and subsidised

distributions to the poor. The historical importance of these interventions was contextualised by the fact that rice (when compared to other major agricultural commodities) has relatively low levels of international trade, and the thinness of this market leads to price instability. In the 1970s, only 3–5% of international rice was traded internationally, and, four decades later, this has only grown to 7–8% (Timmer 2014: 76). Insulating poor consumers from price instability is widely considered to have important positive spin-offs for food security.

Alongside Malaysia and the Philippines, Indonesia continues to tightly control domestic rice production and marketing, in contrast to more liberalised regimes in the rice-exporting countries of Thailand, Myanmar and Vietnam (Table 1.1). The varied paths taken by these countries reflect different roles of rice production in the national politics of food security. Nevertheless, the proportion of national rice production purchased by Indonesia's Bureau of Logistics (BULOG) is now overshadowed by purchases by private traders. In 2014–15, BULOG procured approximately 3 million tonnes of rice (milled equivalent) out of a total national production of approximately 60 million tonnes (United States Department of Agriculture Global Agricultural Information Network [USDA GAIN], 2015). Hence, these entities operate in competitive contexts where there are distinct limits in the capabilities of the government to unilaterally determine market outcomes.

Table 1.1 Institutional arrangements in rice markets, major South-East Asian countries

Country	Agency and description
Indonesia	BULOG. Responsible for ensuring rice supplies are held in sufficient quantities to meet national food security needs. Purchases slightly less than 10% of Indonesian rice production annually, and is responsible for the Raskin (rice to the poor) program. In 2003, was restructured to become a for-profit state-owned enterprise.
Malaysia	BERNAS. Responsible for maintaining the national rice stockpile, acting as the buyer of last resort for paddy farmers, managing the Bumiputera Rice Millers Scheme and distributing paddy price subsidies. Privatised in 1996 and currently a listed company on the Kuala Lumpur Stock Exchange.
Myanmar	Private sector-led. The erstwhile monopoly state-owned rice buyer, Myanmar Agricultural Produce Trading (MAPT), was abolished in 2003 (Wong and Aye Wai, 2013).
Philippines	National Food Authority. Responsible for paddy procurement and distribution of rice allocations to poor households. Is a government agency within the Office of the President.
Thailand	Private sector-led. The Public Warehouse Organization, under the Ministry of Commerce, manages buffer stocks of rice, but since the 1990s has had no price-setting or special trading rights.
Vietnam	Private sector-led for domestic procurement. However, the state-owned trading entity Vinafood has powers to manage exports through a reporting mechanism for private traders.

Source: Rutten (2007) updated with information from entities' websites

The increasing role of private sector interests in the rice trade of South-East Asia over time raises important issues for value chain governance. Even in the context of Indonesia being a net rice importer (alongside the Philippines), it is the private sector which undertakes most of the trade, albeit under conditions of trade tightly regulated by the state. Recent evidence from an assortment of Asian countries on value chain transformations in the rice industry has been compiled in a series of publications by Reardon et al. (2012; 2014) and Reardon (2015). Key trends, all pertinent to Indonesia, can be summarised as follows:

- In upstream segments of rice value chains, greater commercialisation in farming decision-making is identified, particularly with regards to the acquisition of land either by purchase or lease. This includes factor markets for farm machines, water and land, and farmers linked in to broader information systems through mobile phones and the internet.
- In midstream segments of value chains, rapid enlargement and modernisation of rice mills is identified, as smaller village mills are replaced by larger mills catering for farmers over a larger area. With consolidation, mills are tending to bypass village agents in favour of direct purchases from farmers and then selling directly to large-scale agents with warehousing and transport capacity.
- In downstream segments, rice retailing has moved from wet markets and small stalls to the formal retail sector, where it is increasingly purchased by consumers in packaged and branded formats.

The key insight from the research is that the pivotal driver of changed governance arrangements in these sectors is the accumulated investments by rice millers and agents in midstream segments of chains. It corresponds with arguments made by Fold (2008: 96) that the commodity characteristics and embedded infrastructure in markets determine which actors in a chain take on lead firm characteristics. For rice, it is significant that, with increased size of rice mills, have come enhanced capabilities to improve product quality. As noted by Reardon et al. (2014: 109), larger mills are able to more efficiently polish and double-polish rice, thus creating a basis for increased value capture via product upgrading. 'Disintermediation' by larger mills (where intermediate agents are cut out of chains) also enables greater value capture.

Government restrictions and ongoing support for entrenched interests in the Indonesian rice sector have, however, mitigated against the full-scale transformation in Indonesia, as it has also in sugar (which is a critical input for the food processing sector).

Governance arrangements for high-value foods

The growth of middle-class food markets in South-East Asia, along with greater opportunities for the export of value-added foods, has led to rapid growth in this subsector during the past two decades. Thailand was the leader in this sector, being identified as early as the 1990s as one of a number of 'new agricultural countries' in the developing world focused on the export of value-added foods to affluent markets (Friedmann, 1991). As time has progressed, the 'Thai model' of value-added export agriculture has been replicated across the region, notably in Vietnam, Malaysia and, to a lesser degree, in Indonesia and the Philippines.

The shift into value-added agriculture requires the mobilisation and coordination of hard infrastructure, regulatory systems and human capital. A key distinguishing feature of the governance structures of these subsectors is the strong role played by lead firms in intervening in upstream supply segments, so that the particularities of customer requirements are met.

Characteristically, the starting point for investment in value-added agriculture is the rolling out of contract farming schemes by lead firms. In developing countries, the concept of contract farming describes an amalgam of different forms of farmer coordination premised around a tightening of coordinated buyer-seller arrangements. While in developed countries, the anchor of schemes is the contract itself – the legal instrument designed to set out the specific responsibilities of each party – arrangements tend to differ in developing countries, where weak legal infrastructure in combination with the imperative for upgrading farmers' skills and technology encourages contractual relations to be bound more in social than legal terms.

Given the importance of social relations in contract farming, the practice exhibits a diversity of arrangements across the developing world, including Indonesia. Speaking generally of the developing world, Simmons (2002: 3) observes that 'There are probably as many types of contracts as there are contracted smallholders'. Nevertheless, Eaton and Shepherd (2001) categorised this diversity to create a fivefold classification of contract farming types found in the developing countries (Table 1.2).

Table 1.2 Contract farming models

Centralised model	A centralised processor and/or packer buys from a large number of small farmers; highly vertically coordinated, with quota allocation and tight quality control; sponsors' involvement in production varies from providing minimal input to the opposite extreme, where the sponsor takes control of most production aspects
Nucleus estate model	A variation of the centralised model, where the sponsor also manages a central estate or plantation; the central estate is usually used to guarantee throughput for the processing plant; is often used with resettlement or transmigration schemes; involves a significant provision of material and management inputs
Multipartite model	May involve a variety of organisations, frequently including statutory bodies; can develop from the centralised or nucleus estate models, e.g. through the organisation of farmers into cooperatives or the involvement of a financial institution
Informal model	Characterised by individual entrepreneurs or small companies; involves informal production contracts, usually on a seasonal basis; often requires government support services such as research and extension; involves greater risk of extra-contractual marketing
Intermediary model	Involves sponsor in subcontracting linkages with farmers to intermediaries; potential loss of control of production and quality as well as prices received by farmers

Source: Eaton and Shepherd (2001: 44–45)

The social relations of contract farming in developing countries are made manifest by lead firms through several key points of intervention, as described in numerous studies (inter alia, Wolf et al., 2001; Vellema, 2003; Vellema et al., 2005; Ton, 2008). First, to ensure approved seeds and agro-inputs are used, lead firms can make extensive use of loans or concessional finance. A common practice is for lead firms to provide these inputs free of charge, with their costs discounted from the final sale price of agricultural products, thereby effectively providing farmers with zero-cost seasonal finance. As discussed below, the need for lead firms to exercise control over seeds and agro-inputs has become increasingly important in the context of stricter compliance requirements by end-buyers, notably supermarkets. Second, social relations are manifested through close monitoring (sometimes day-to-day) by company field officers.

At a technical level, these activities serve the joint purpose of ensuring farming takes place in line with buyer-driven or regulatory requirements, as well as imparting information about 'best practices', as defined in terms of lead firm priorities. Moreover, close monitoring of farmers by lead firms' field officers also has the effect of embedding the companies within production sites, and field officers often have the ancillary function of instilling corporate goodwill through making financial donations to community organisations, festivals, temples or mosques. Finally, corporate farming intervenes to direct farm decisions on the time of harvest and purchase, and to prevent (or at least discourage) side-selling. Such contract farming–style arrangements are evident in Indonesia through the activities of companies such as Bayer, PT Indofood Sukses Makmur (Indofood), Nestlé, Unilever and Cargill (all members of the PISAgro initiative[1], which are active even in the tightly controlled rice sector.

In recent times, the expansion of buyer-driven standards, certification and codes of conduct schemes have created even greater incentives for lead firms to extend their degree of intervention

[1] http://pisagro.org/

in upstream agricultural supply chains in Indonesia. As a general rule, the lucrative export markets of the Global North have progressively made market access contingent on producers meeting more stringent requirements. These requirements have covered a vast array of attributes, including physical qualities of the good (such as minimum residue limits), and the methods under which the good was produced (such as minimum labour or environmental standards). Corporate-specific codes of conduct, and collective private standards, have enacted a sometimes revolutionary change to value chain governance in these subsectors, as private firms take over standards-setting procedures from public sector institutions.

Standards such as GlobalG.A.P, a standards-setting organisation owned by a consortium of major supermarkets, are often more onerous than import requirements set by governments, with the effect of leveraging upwards the costs and requirements for market access. In theory, the additional costs that accompany GlobalG.A.P are compensated by producers receiving price premiums from selling into affluent markets, but evidence is mixed on whether this occurs in practice (Dannenberg, 2008; Colen et al., 2012; Kariuki et al., 2012). Regardless, the advent of GlobalG.A.P has provided large producers with an additional source of competitive advantage over small producers in the sale of product to affluent markets in the Global North, because compliance costs can be spread across a larger production volume (Henson et al., 2011; Lemeilleur, 2013 Holzapfel and Wollni, 2014; Tallontire et al., 2014).

These processes have been mirrored locally with the growth of the supermarket sector servicing an increasingly large and affluent middle class. Indonesia, however, has experienced only moderate growth in modern large-format retailing (hypermarkets, supermarkets) and in smaller format retailing (convenience stores) over the last 15 years, with these two categories capturing only 16% of total food sales in 2014 (USDA GAIN, 2015b) compared to 43% in Malaysia (USDA GAIN, 2014) and over 50% in China (Dyck et al., 2012). Nevertheless, the growth of organised retail is emerging as a dominant theme in driving change within Indonesia. Although supermarkets have been present in Indonesian cities for many years, the Asian financial crisis of 1997–98 proved to be a catalyst, providing opportunities for global supermarket companies to buy local property and business assets, in a context of enhanced FDI liberalisation (Reardon et al., 2005; Vandergeest, 2006). Large-scale supermarket investment was accompanied by investment in transport, logistics and communication facilities that have affected the organisational streamlining of value chains (Schaffner et al., 2005). Yet it is important to note that this retail-driven process of change was instigated not only by large supermarkets but by the rapid proliferation of convenience stores across the region – an important, but sometimes unheralded, aspect of South-East Asian retail change (USDA GAIN, 2015b). Because of their smaller size, the convenience store model has been able to generate extensive reach into dense urban markets and the smaller towns and cities in which a large proportion of South-East Asia's population esides. These changes have had powerful effects in terms of encouraging processed, packaged and snack-type foods into South-East Asian food markets (Coe and Bok, 2014) – perhaps exemplified best by the way that the instant noodle pack has become pervasive within South-East Asian diets (Pingali, 2007).

Finally, it is worth noting that different sourcing models reflect the strategic preferences of lead firms. Some firms are highly hands-on and interventionist, developing arrangements for long-term strategic priorities. For others, short-term product supply requirements may be paramount; these firms are less inclined to sink costs and assets into production regions. The determinants of these priorities are connected to insights by Coe and Yeung (2015) on the drivers of firms' actor-practices and actor-strategies. In the agrifood sector, national heritage also plays a role, such as the rolling out of *kaihatsu yunyu* modes of upstream product procurement and coordination by Japanese firms, where there is a strong preference for lasting partnerships based on the transfer of technology and the capture of key suppliers for long-term strategic goals (Oro and Pritchard, 2011).

This general overview of recent transformations within global and regional agrifood value chains is intended as a contextual analysis of the keys issues, themes and trends facing the competitiveness of

food processing firms in Indonesia within the global economy. The report will now focus more explicitly on the Indonesian context of food processing.

CHAPTER 2 Overview of the Indonesian food processing sector

Transformations in the Indonesian food processing sector are driven by a growing economy and changing food consumption patterns. In this overview of the sector, we examine key indicators underlining this growth, including the sector's contribution to Indonesia's GDP and employment, and the role of different scales of enterprises. Recent investment trends, market consolidation and food consumption trends also play an important role in shaping the transforming sector.

Indonesia is the largest economy in South-East Asia, contributing nearly 40% to the region's GDP, and is ranked sixteenth in the world (Badan Pusat Statistik [BPS], 2015).[2] In 2014, the country's GDP reached Rp10,094 trillion (Indonesian rupiah), or around AU$1 trillion[3], with an average GDP growth rate of 5% since 2004. During the last decade, the manufacturing sector (excluding oil and gas) has contributed around 20% to total GDP. Within manufacturing, the food, beverage and tobacco sector has been the main contributor (37%), followed by the machinery industry (28%) and then rubber, chemical and fertiliser (11%). The sector also continues to show robust growth. Despite recent fluctuations due to weakening purchasing power as food prices increased, over the past 10 years, the sector has averaged a very strong 10% growth rate.

Table 2.1 provides a summary of the key economic indicators for the food processing sector, showing the strong overall growth, including a steady growth in exports of processed food products while imports have declined. This appears to be related to the strong growth in domestic and especially foreign investment in the sector in recent years.

Table 2.1 Economic indicators for Indonesia's food processing sector (2011–2014)

INDICATOR	2011	2012	2013	2014
Growth (%) baseline 2010	10.98	10.33	4.07	9.54
Contribution to manufacturing GDP (non-oil & gas) (%)	35.20	36.28	35.76	36.93
Export value (US$ billion)	4.51	4.65	5.38	5.51
Import value (US$ billion)	6.85	6.16	5.80	5.76
Domestic investment (Rp trillion)	7.94	11.16	15.08	19.59
Approximate conversion (US$ billion)	(0.92)	(1.18)	(1.59)	(1.63)
Foreign investment (US$ billion)	1.1	1.78	2.12	3.14
Employment (people)	742,195	884,602	832,411	780,220
(incl. micro, small medium enterprises)	(2 769 628)	(2 625 214)	(3 389 851)	(n.d)

Source: Kemenperin (2015)

The Government of Indonesia's Ministry of Industry (Kemenperin, 2015) has identified six strategic issues for further development of the sector, including:

- further developing the food and beverage industry to raise the currently low level of per capita consumption of processed food and beverage products

[2] Information shown in this chapter was extracted and analysed primarily from BPS's statistical data, unless mentioned otherwise. Due to BPS data aggregation, the food processing sector includes the beverage industry and, in some cases, the tobacco industry.

[3] For the purpose of analysis, monetary value shown in this chapter uses Indonesian rupiah (Rp) and Australian dollar (AU$) as currencies, with an exchange rate of AU$1 ~ Rp10 000, unless mentioned otherwise.

- narrowing the gap between imports and domestic production
- developing infrastructure in accordance with national and international quality standards
- developing value-added activities for the processing of agricultural commodities
- developing a food ingredient industry for the domestic market, and
- improving the human resource and R&D capacity in the industry.

Employment in food processing

As the fourth most populated country in the world, Indonesia is currently experiencing a demographic bonus due to the sheer size of the productive workforce relative to the total population. In 2013, the workforce in Indonesia was approximately 121.9 million people, or around half of the total population, out of which 94% were considered employed. Primary industries (including agriculture, 31% of the workforce) remain the chief source of employment, followed by trading, hotels and restaurants (22%), services (16%) and then manufacturing (13%). The food and beverage processing sector employed around 20% of all manufacturing workers (or 3.4% of the total workforce), increasing from 2.93 million in 2010 to 4.26 million people in 2013 (growing at 15% annually). This shift is largely the result of growth of micro and small enterprises (MSEs), which contributed to more than 76% of total employment in the food sector in 2013 (Figure 2.1).

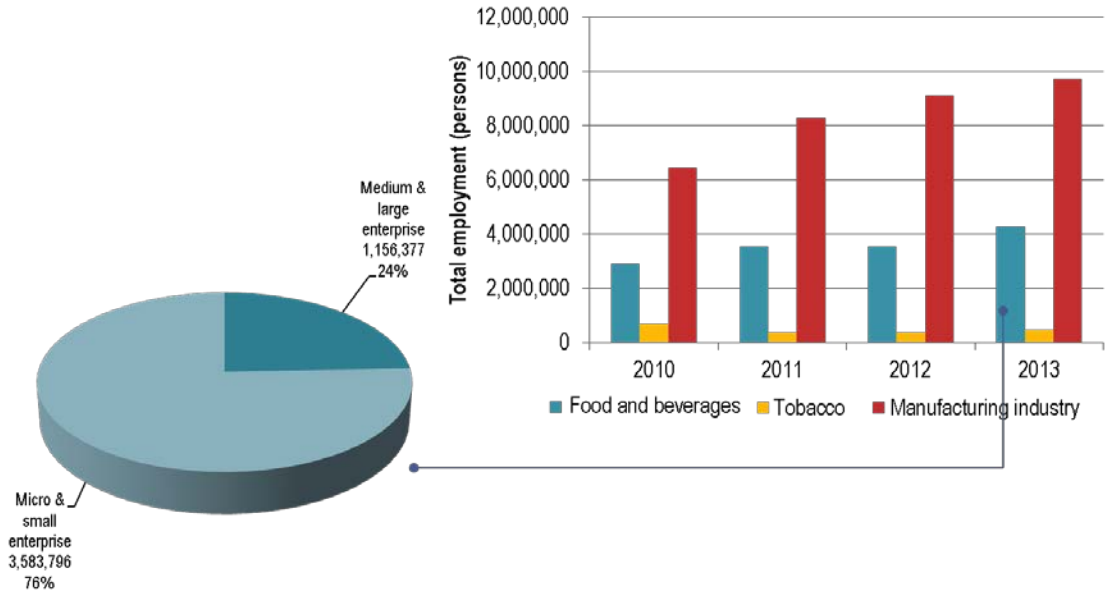


Figure 2.1 Total employment generated by food, beverages and tobacco industries

Micro and small enterprises in the food processing sector

The Statistics Office of Indonesia (Badan Pusat Statistik [BPS]) defines a micro industry as any enterprise in the industrial sector employing between one to four people, while small industry employs between five and 19 people, regardless of capital and assets. The growth of MSEs in Indonesia has been significant to the economy. As shown in Table 2.2, a comparison between the number of MSEs in 1998 and 2012 reveals a significant increase, with employment nearly doubling, reaching 107.6 million people in 2012.

Table 2.2 Comparison of MSEs between 1998 and 2012

Comparison	1998	2012

Number of MSEs (million units)	37	57
Total employment from MSEs (million people)	64	107
Total size of MSE sector (Rp trillion)	553	1505
MSEs export value (Rp trillion)	69	208

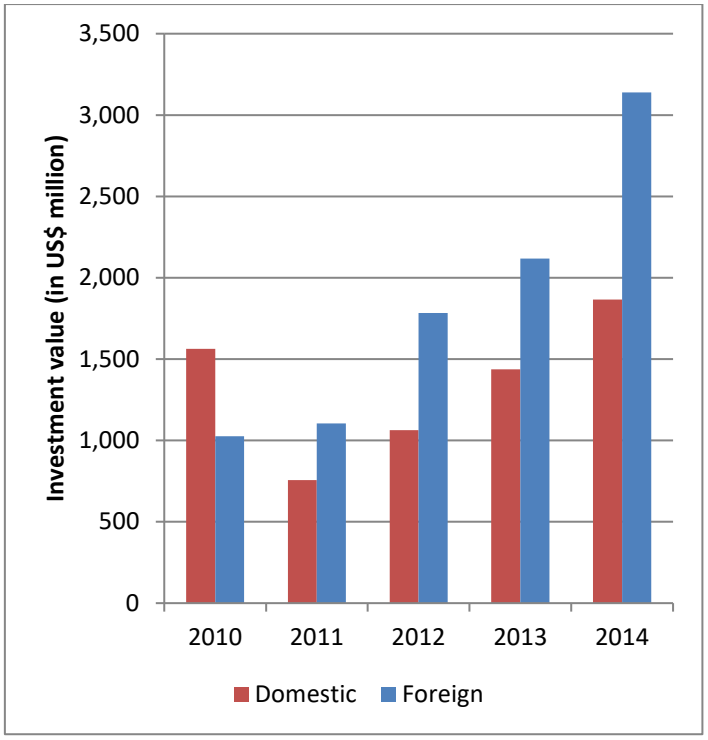
Source: BPS, 2015

The growth in MSEs is also found in the food and beverage industry, with the number increasing by 14.7% in 2014 (contrasted with the growth of medium and large enterprises by only 1.8%). There were a little over 1.5 million micro units in food and drink processing in 2015, and a further 95,000 small enterprises, against 6349 medium- to large-scale units. In terms of output value, however, MSEs contributed only around 25% to total output for food and beverage processing in 2014 (but 50% of value added). The capacity of the vast majority of these MSEs to upgrade towards an export-oriented marketing platform, furthermore, remains extremely limited, with very low rates of labour productivity. As a pathway out of alleviation, however, small-scale food processing is an important entry-level activity with relatively low entry barriers, and so retains immense social importance. There is, understandably, a strong temptation for policymakers to protect these MSEs due their sheer size and importance for employment.

Recent investment trends in the food processing sector

Data from Indonesia's Investment Coordination Board (Badan Koordinasi Penanaman Modal [BKPM], 2015) shows a significant increase in the investment value of realised projects across the Indonesian economy. Domestic investments increased from around AU$6 billion in 2010 to AU$15.6 billion in 2014, while FDI increased from AU$16.2 billion in 2010 to AU$28.5 billion in 2014. Food processing was the second most important sector for domestic investment in 2014, making up 14% of the value of new investments, behind only gas and water supply (23%). Food processing was also second for FDI (11%), behind mining (16%).

Between 2012 and 2014, the CPO-based cooking oil and vegetable oil industries had the highest investment value from both foreign and domestic investors, amounting to 38% and 45%, respectively, of the total investment value in food processing. While there are variations in investment data for other subsectors, the investment value for the food processing sector has steadily increased in both domestic and foreign direct investment. A comparison between domestic and foreign investment in the sector from 2011 to 2014 shows a rising contribution from foreign investment over the period (Figure 2.2).



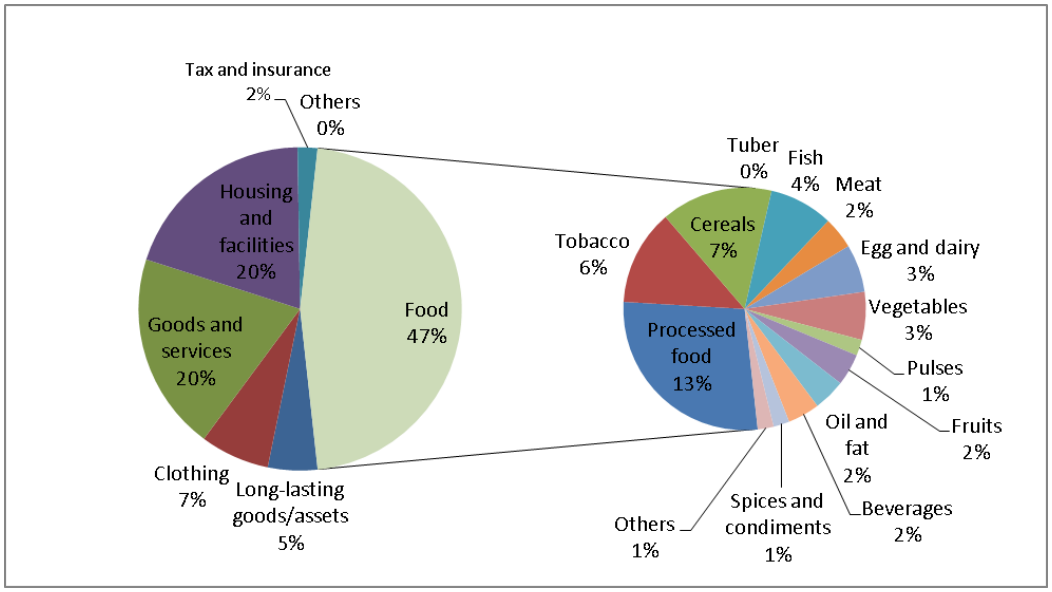
Note: Exchange rate as per 2014 (BKPM) US$1 ~ Rp10,500

Figure 2.2 Value of domestic and foreign investment for food processing sector, 2010–2014

In an attempt to attract investment, the Indonesian Government has introduced various incentives, such as a tax holidays, tax allowances and tariff exemptions. Tax holiday incentives, for instance, are directed at certain manufacturing industries that use renewable resources, such as the cocoa processing industry. The government, through its Minister of Finance's decree, also offers tariff exemptions for importing capital goods that comply with certain conditions, for example, capital goods that are not produced domestically or high-tech machinery with a complex licence technology content. Chapter 4 discusses the regulatory climate in more detail.

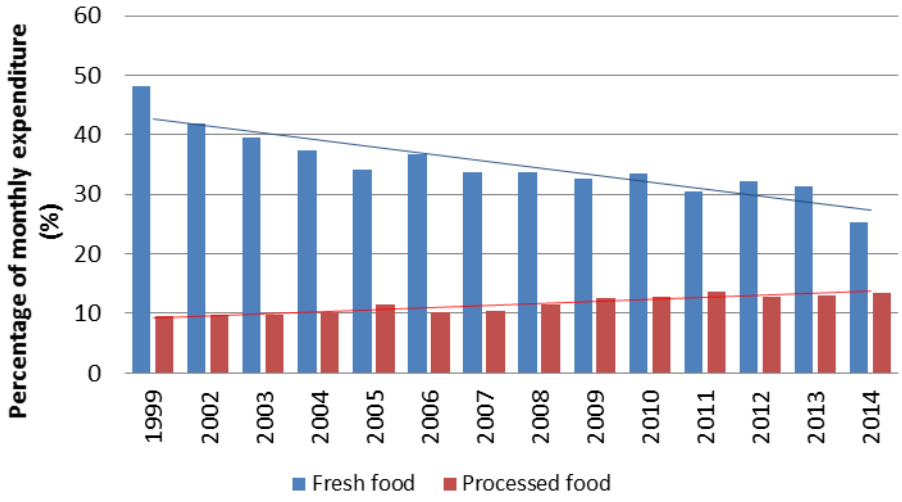
Key food consumption trends in Indonesia

An understanding of food consumption trends is critical to guiding government policy and strategic industry developments. A recent study by Mintel (2015) on the global food and beverage industry highlights 12 major trends in food and beverage consumption in developing countries. These trends include: natural and raw products, ecological awareness, alternative food, food with a story, e-commerce, food for the highly active, food sharing in social media, individual consumption, food based on family genetics, healthy fat consumption, beauty from the inside, and food appearance. These trends, led mainly by the new middle class in metropolitan areas, support a previous report by Dyck et al. (2012) that documents changing dietary patterns in Indonesia over the past 10 years (1999–2010), from a cereal-based diet to higher proportions of vegetable, fruit, meat and processed foods. This is reflected in Figure 2.3, showing that while food is still the most important item of average expenditure per capita, a large part is spent on processed foods. Importantly the share of expenditure on processed foods has been steadily increasing since 1999, along with the declining proportion spent on fresh foods (Figure 2.4).



Source: BPS (2015)

Figure 2.3 Proportion of average monthly expenditure per capita in 2014



Source: BPS (2015)

Figure 2.4 Percentage of monthly expenditure per capita for fresh food and processed food, 1999 and 2002–2014

Modern retailers have emerged as key players in the provisioning of food (both fresh and processed) to urban consumers. Traditional food outlets like *warungs* (small stalls) and the *pasar* ('wet' traditional market) continue to dominate food retailing, with the modern retail sector growing but still only making up 16% of total food sales in 2014 (USDA GAIN, 2015b). There has, however, been significant growth in the packaged and prepared foods segment associated with visible growth in modern retailers (hypermarkets, supermarkets and minimarts) that target different consumer segments (Dyck et al., 2012). Dyck et al. show that, in 2009, there were 2.5 million traditional outlets in Indonesia with estimated sales of US$46.7 billion, compared with modern retailers reaching 11,342 units and US$5.64 billion in sales. Three companies dominate the hypermarket segment, namely, Carrefour, Hypermart and Giant. Market concentration also occurs in the smaller

convenience store sector (minimarts), with Indomaret and Alfamart controlling 74% of the market, and successfully penetrating into rural areas not otherwise served by the larger format modern retailers. Further growth in all modern retail formats is predicted in the next five years (Table 2.3).

Table 2.3 Food retail sales by format (Rp billion)

	2014	2015	2016 f	2017 f	2018 f	2019 f
Hypermarket sales	213,305.1	241,631.0	269,238.1	301,481.1	337,147.4	376,657.7
Supermarket sales	177,545.8	202,023.4	225,983.9	253,653.1	284,303.7	318,256.9
Convenience store sales	79,990.1	91,081.2	101,509.0	113,743.0	127,371.6	142,399.7
Total retail sales	470,841.1	534,735.7	596,776.0	668,877.2	748,822.8	837,314.3

Source: BMI (2016a)

Note: f indicates forecast

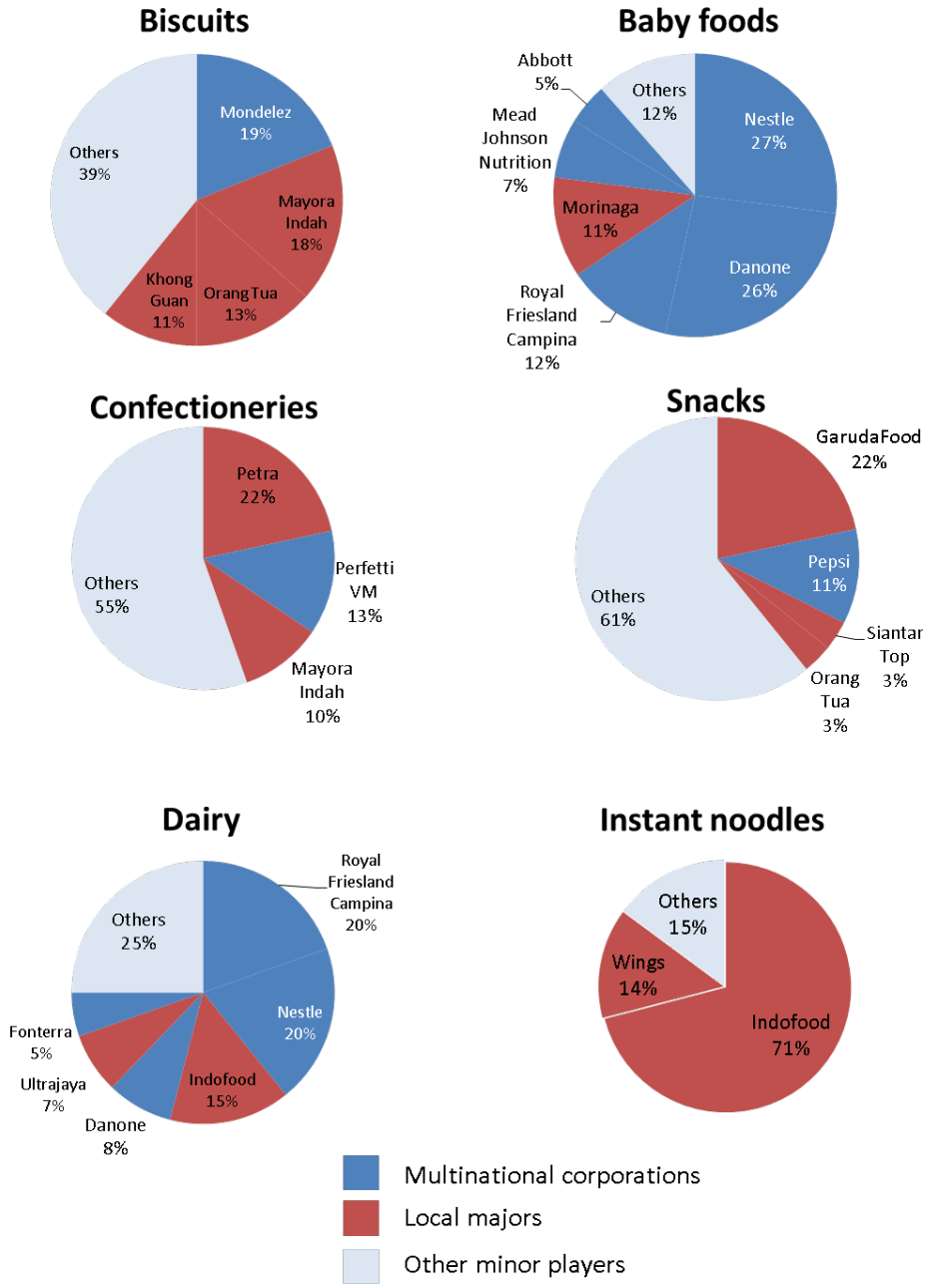
Importantly, the emergence of modern retailing has opened up markets for processed foods and beverages, with supply coming from both the domestic food processing industry and imported products. An expanding modern retail sector in Indonesia is dynamically connected with growth in fast-moving consumer goods (FMCG). Based on a study by Kantar Worldpanel[4] (2015a; 2016), Indonesia was identified as experiencing the world's second fastest FMCG growth, with a rate of 15% in 2014. The sector is, however, highly sensitive to prevailing economic conditions, and the 2015 economic slowdown in Asia led to FMCG growth of only 0.7% in the calendar year of 2015, with food and dairy products experiencing negative growth in 2015. The beverage sector proved more resilient, with continued positive growth (of 1.3%). The FMCG sector has, moreover, already experienced significant consolidation with the top four players comprising between 60% and 90% of the market (Elkhweet et al., 2013).

Although Indonesia's retail sector is still dominated by traditional markets, reflecting a strong consumer preference for fresh, local produce, FMCG is still expected to grow over the next few years due to an emerging middle class that is predicted to grow to 150 million by 2020 (Kantar Worldpanel, 2016).

Processed food and branding

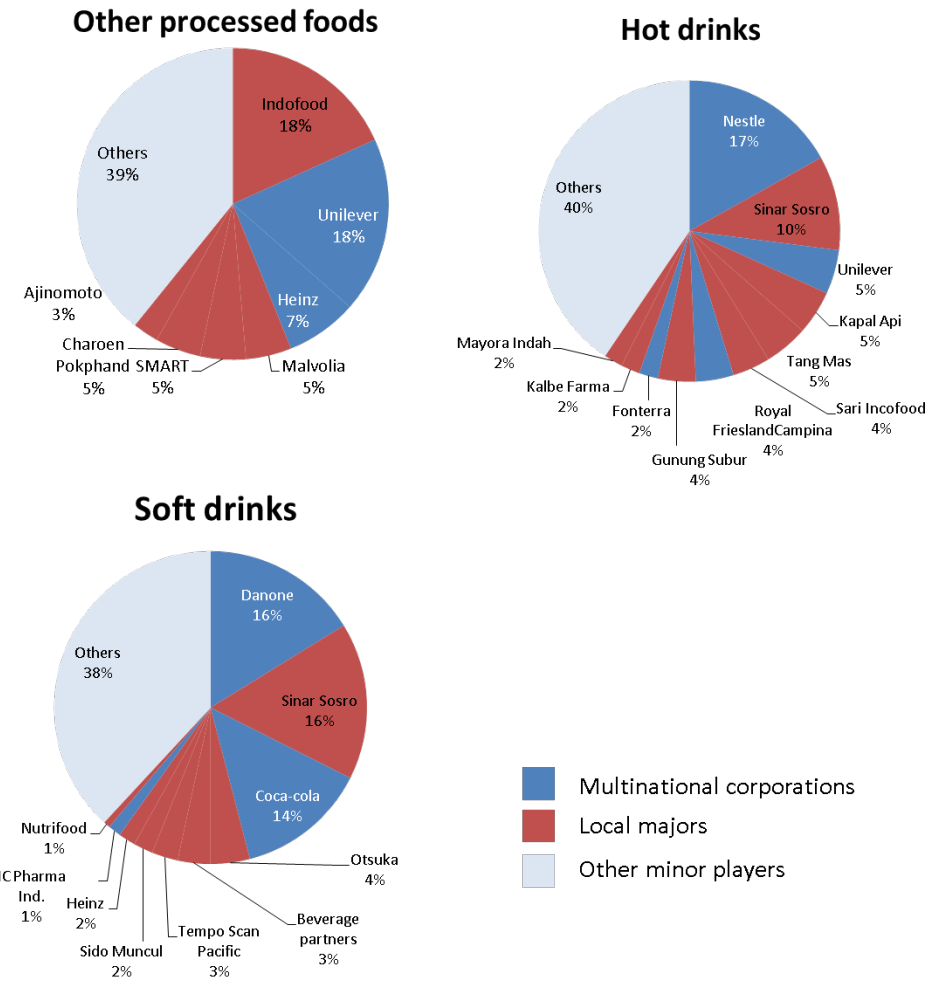
Rates of consolidation among food processors and their brands are quite high in Indonesia, with a particularly strong presence by large nationally owned firms, such as Indofood and GarudaFood (Figures 2.5 and 2.6, and further discussed in Chapter 5). The dominant players vary in different categories, although the consolidation is particularly apparent in categories such as instant noodles, dairy and baby food. International firms are dominant in the areas of baby food, dairy and soft drink categories, while nationally owned firms are dominant in noodles, biscuits and hot drinks. The confectionary and snack categories are more fragmented categories, with a number of smaller regional players. This is the result of the continued high cost of product delivery to consumers due to Indonesia's 'dispersed geography and population, poor infrastructure, and fragmented retail landscape' (Elkhweet et al., 2013:2).

[4] In Indonesia, Kantar Worldpanel (2015, not paginated) 'tracks household purchase of over 70 different FMCG categories across food and nonfood from its sample of 7,000 households across urban and rural Indonesia on a weekly basis; representing around 50 million households'. The FMCG is monitored on the basis of their value change, volume change and market penetration over the years.



Source: Modified from Elkhweet et al., 2013:15

Figure 2.5 Share of major players in processed foods in 2012 based on retail sales value



Source: Modified from Elkhweet et al., 2013:15

Figure 2.6 Share of major players in processed foods in 2012 based on retail sales value for beverages and other processed foods

In a 2015 report released by Kantar Worldpanel, entitled *Brand Footprint*, of the top 20 brands in Indonesia, 11 represent food and beverage products. Indomie and Mie Sedap take first and second place, respectively. Moreover, these brands are also achieving international recognition, with Mie Sedap reaching over one billion customers worldwide (Kantar Worldpanel, 2015b).

With an increasing number of globally recognised brands, Indonesia is well placed to strengthen its value-added potential. This, together with growth in Indonesia's overall food consumption and an expanding middle class pushing sales for premium and convenient food products, will continue to present the food processing sector with strong opportunities for future growth.

A comparative perspective on food processing: Thailand

Despite strong existing and potential growth in the Indonesian food processing sector, and its importance to the national economy, there are also several weaknesses that limit international competitiveness. To gain a broader understanding of these challenges, and to identify approaches for continued growth, a regional benchmarking snapshot provides interesting comparisons. Thailand, as the second-largest economy in South-East Asia after Indonesia, acts as an important point of comparison in food and agriculture. Both countries are well positioned for sustained growth due to their strategic location in the fast-growing Association of South-East Asian Nations (ASEAN)

region, relatively competitive labour costs and abundant natural resources. The growing middle class in both countries provide an important platform for product development in the sector. Key economic and demographic indicators are presented in Table 2.4.

Table 2.4 Key comparative indicators for Indonesia and Thailand

	Indonesia	Thailand
Land size (World Bank, 2015)	1,919,000 sq km	514,000 sq km
Population (World Bank, 2015)	257 million	68 million
Urban population (World Bank, 2015)	54%	50%
Labour force (World Bank, 2014)	124 million	40 million
GDP (IMF, 2014)	US$872.6 billion	US$404.8 billion
GDP per capita (World Bank, 2013)	US$3491.9	US$5977.4
Average GDP growth (2010–15) (World Bank, 2016)	5.6 %	3.7%
Ease of doing business (World Bank, 2016)	109/189	49/189
Agricultural value added (% GDP) (World Bank, 2014)	13.7	11.6
Top export food products	palm oil, cocoa, coffee, seafood	frozen shrimp, sugar, poultry, canned tuna, confectionary, snacks, canned pineapple, rice tapioca, processed fruits and vegetables, ready-to-eat food
Top export partners	Japan, China, Singapore, USA, India, South Korea, Malaysia	China, USA, Japan, European Union (EU), Malaysia, Australia, Singapore
Foreign value add of exports (UNCTAD, 2013)	9	30
Productivity growth (2009–14) (Euromonitor)	3.7%	3.8%
Female participation in labour force (% females over 15 years) (World Bank, 2015)	51%	64%
Human development index (UN, 2015)	0.684 – medium	0.726 – high

The economies of both countries grew at average rates of around 7% during the 1980s and 1990s, up until the 1998 Asian financial crisis, which deeply affected both countries. Then, while Thailand's growth tapered off following the global financial crisis (GFC) of 2008, Indonesia's economy continued to grow at above 5%. Based on its higher levels of per capita GDP, Thailand is now considered an upper middle income country, while Indonesia is considered a lower middle income country (World Bank, 2016).

Thailand is an active participant in global trade, with exports accounting for more than two-thirds of the country's GDP, and is particularly competitive in terms of food and agricultural exports (it ranks twelfth in the world for food exports and is the largest in South-East Asia) Targeted investments have seen the development of improved infrastructure, technology and productivity, which have successfully positioned Thailand as a global leader in food processing. The country now has among the most advanced food processing industries in the world, and is the world's top canned tuna exporter (USDA GAIN, 2015c). It is also an important supplier of basic food products for the world market, as the second-largest sugar exporter after Brazil and the second-largest rice exporter after India.

Thailand's reliance on the international export markets, however, exposes the country to global market fluctuations, as evident from the relatively greater impact of the GFC compared to Indonesia. Over recent years, this has further contributed to a downturn in key agrifood industries such as sugar. In the first two months of 2015, sugar exports dropped by 6.2% (year-on-year) due to slow growth in the global economy.

The governments of both Indonesia and Thailand encourage growth in the food processing sector, recognising the benefits of producing value-added products for the domestic and export markets. Yet there are a number of other factors or constraints that impact on sectoral developments (Table 2.5).

Table 2.5 Advantages and constraints for food processing in Thailand and Indonesia

	Indonesia	Thailand
Advantages	Size of market (257 million) Growing middle class Abundant natural resources Competitive operational costs for food processing companies in ASEAN Competition between large players Consolidation and diversification among key players	Abundant natural resources Improved logistics/infrastructure Increased investment in technology and R&D Government policy to promote Thailand as 'kitchen to the world' Regional production hub Consolidation and diversification among key players Relatively high female workforce participation
Constraints	Restrictive investment and trade policies (poor integration in GVCs) Poor intellectual property protection Poor logistics/infrastructure Lack of innovation in production management and processes Lack of investment throughout food system Interference in retail planning Low productivity among smallholders	Fragmented sector leading to inefficiencies Sociopolitical instability Poor intellectual property protection Interference in retail planning Low productivity among smallholders

Protective trade policies have been a major factor negatively impacting on the ability of Indonesia, in particular, to be better integrated with food-based GVCs, and some steps have been taken to ease these restrictions. Thailand's trade liberalisation policies, while still inconsistent in some areas, have been more effective (it has relatively fewer barriers to trade, as demonstrated in Chapter 4). In Indonesia, many trade regulations remain complex and lack transparency. The impacts of these regulations can be observed in terms of 'harmful trade measures', in which Indonesia scores 115 compared to Thailand's 22 harmful measures (Global Trade Alert, accessed 2016, which are discussed further in Chapter 4. Harmful trade measures have contributed to challenges faced by Indonesia in better integrating its food processing sector into GPNs. The value of Thailand's processed food exports far exceeds that of Indonesia, despite having a far smaller population, and it has achieved this while also remaining competitive in unprocessed food exports.

The governments of Indonesia and Thailand recognise some sector weaknesses and have introduced policies to bolster sectoral development. In both countries, the private sector has also been driving many of these changes. Increasing consolidation among the large players has led to improved efficiencies. Thailand's Charoen Pokphand Group, for example, is the country's largest agri-industrial firm; it possesses a well-integrated and diversified value chain, and has become a major regional player (BMI, 2016b). Indofood is Indonesia's leading processed food manufacturer and one of the largest producers of instant noodles in the world. Like the Charoen Pokphand Group, Indofood's

operations include upstream activities and downstream businesses. This vertical integration, in challenging markets with limited infrastructure and capacity, enables these conglomerates greater capacity to manage inputs and streamline processes such as traceability, sourcing and product quality, thus improving production efficiencies and competitiveness.

In the 2014–2015 Global Competitiveness Index of the World Economic Forum, Indonesia ranks fifty-sixth out of 144 economies, a considerable increase from its previous ranking of eightieth out of 148 (Schwab & Sala-i-Martin, 2015). Thailand ranks forty-eighth. With neighbouring Malaysia and Singapore ranking twenty-fifth and second respectively, both Indonesia and Thailand stand to gain from policies that promote a more competitive environment.

CHAPTER 3 Indonesia's position with global food value chains

Analysis of global food value chains is central to understanding the relationship of interconnected functions through which food products are produced, distributed and consumed, and providing a framework to assess regional and global production dynamics. To gain a better understanding of Indonesia's participation in food-based GVCs, we analyse trade patterns based on gross value of exports and imports, and the proportion of foreign content in export of food products.

WITS (World Integrated Trade Solution) and the UN Comtrade (United Nations Commodity Trade) databases are used to examine the pattern of trade in food products at the global level. Foreign content in exported food products is then analysed, combining the insights from GVC analysis, using World Input–Output Database (WIOD), of such products. This type of analysis relies on the use of the input–output tables of Indonesia and comparative countries. Due to the nature of data aggregation, and the use of different data categories across scale, countries and time, we have attempted to apply a best-fit approach to our analysis. For further discussion about these data and methodological constraints, refer to Appendix A; refer to Appendix B for the list of codes used.

Analytical approach

For this discussion on the global trade in food products, we use the gross trade values from WITS and/or UN Comtrade (for detailed statistical discussion, see Appendix A). We initially rank countries based on the export value of such items. Then we see the relative importance of that item in the associated country's total national exports. We also discuss export destinations. This exercise is repeated for imports.

Based on this first assessment in which input–output tables are used to estimate foreign content in exports, Malaysia and Australia have been selected as comparison countries to Indonesia. [5] In order to estimate the foreign content in exports, we employ the standard approach of 'offshoring' (Feenstra and Hanson, 1995) and 'vertical specialisation' (Hummels et al., 2001).

In simple form, vertical specialisation can be represented in the following matrix equation:

$$VS = \boldsymbol{u}\boldsymbol{A}^{M}(\boldsymbol{I} - \boldsymbol{A}^{D})^{-1}\boldsymbol{X}/x_k \qquad (1)$$

where *VS* is the measure of vertical specialisation, the proxy for foreign content in trade; $\boldsymbol{u}$ denotes an 1x*n* unity matrix; $\boldsymbol{A}^{M}$ is an *n*x*n* imported input–output coefficient matrix; $\boldsymbol{I}$ is the identity matrix, $\boldsymbol{A}^{D}$ is the *n*x*n* domestic input–output coefficient matrix; $\boldsymbol{X}$ is the *n*x1 export matrix; and x_k is a scalar of total exports of country *k*. Note that $\boldsymbol{A}^{M}$ and $\boldsymbol{A}^{D}$ are derived from:

$$\boldsymbol{A}^{M} = \left[a_{ij}^{m}\right], a_{ij}^{m} = M_{ij}/X_j \qquad (2)$$

$$\boldsymbol{A}^{D} = \left[a_{ij}^{d}\right], a_{ij}^{d} = D_{ij}/X_j \qquad (3)$$

where M_{ij} and D_{ij} are the *i,j*-th elements of import matrix $\boldsymbol{M}$ and domestic matrix $\boldsymbol{D}$, respectively; and X_j is sector *j*'s total gross output.

[5] We want comparators to also have complete input–output tables, i.e. both domestic and import transaction matrices. The lack of an import transaction matrix would require creating one based on 'import proportionality assumption'; however, this approach has been criticised by Winkler and Milberg (2012) and Puzzello (2012).

In the last part, we turn to the WIOD tables, following Timmer et al. (2015). That is, we calculate value-added exports of every country:

$$\boldsymbol{K} = \boldsymbol{F}(\boldsymbol{I} - \boldsymbol{B})^{-1}\boldsymbol{C} \qquad (4)$$

where $\boldsymbol{K}$ is the vector of value added by all factors involved in any stage of production of final demand C; $\boldsymbol{F}$ is a diagonal matrix of value added to gross output ratios in all industries in all countries; and $(\boldsymbol{I} - \boldsymbol{B})^{-1}$ is the Leontief inverse matrix. We then proceed to disentangle the value added into those who stay in the originating country and those contributing to the production abroad.

Global patterns of trade in food products

Three distinct patterns emerge from observing the global trade in food products since the 2000s (Table 3.1 and Table 3.2). First, the top three countries contributed about 20% to 30% to global trade, and major food exporters are also major importers. In 2014, for example, the USA, Germany and the Netherlands were responsible for about 25% of global exports of food products, while 25% of global imports were shared between the USA, Germany and the United Kingdom (UK). More broadly, the market for food products and food processing in the last two decades has been dominated by the USA, UK, France, Germany, Japan and the Netherlands – again with one-third of the trade concentrated among the top three exporters and importers. Interestingly, the trade partners of the top exporters and importers are also relatively concentrated into three countries. For example, more than 40% of exports from the Netherlands went to Germany, Belgium and UK in 2014, while the USA sent almost 50% of its exports to Japan, Canada, and Mexico in 2000.

Second, there is a strong indication of intra-industry trade in food products, based partly on an aggregated definition of 'food products'. A corresponding relationship is evident between the top exporters and top importers during 2000 to 2014. The USA was the top exporter in 2000 and 2014 (and second in 2010), but it was also the top importer in 2000 through to 2014.

Third, food products are not the main export products of the leading exporters and importers in this category. In the USA in 2014, for example, both food products exports and imports are less than 3% of total USA export and imports, respectively.

Table 3.1 Top food products exporters

Country	Share of global exports (rank)	Share of national exports (rank)	Value (US$ million)	Top three partners [combined share, %]
2000				
USA	11.4 (1)	2.43 (11)	18,927	Japan, Canada, Mexico [48.95]
France	9.84 (2)	5.53 (5)	16,336	Germany, Belgium, UK [42.40]
Netherlands	7.31 (3)	5.68 (5)	12,131	Germany, France, Belgium [43.76]
2010				
Germany	8.02 (1)	2.74 (8)	34,852	France, Netherlands, Italy [30.39]
USA	7.35 (2)	2.50 (11)	31,903	Canada, Mexico, Japan [49.51]
France	7.2 (3)	6.11 (6)	31,274	USA, Germany, Belgium [34.86]
2014				
USA	8.53 (1)	2.84 (10)	45,976	Canada, Mexico, China [46.79]
Germany	8.27 (2)	2.95 (7)	44,585	France, Netherlands, UK [28.97]
Netherlands	7.55 (3)	7.08 (5)	40,696	Germany, Belgium, UK [43.39]

Source: WITS, UN Comtrade

Table 3.2 Top food importers

Country	Share of global imports (rank)	Share of national imports (rank)	Value (US$ million)	Top three partners [combined share, %]
2000				
USA	12.98 (1)	1.83 (11)	23,138	Canada, Mexico, France [38.68]
UK	8.64 (2)	3.80 (9)	14,725	France, Ireland, Netherlands [33.18]
Japan	8.46 (3)	3.93 (9)	14,432	USA, China, Thailand [59.64]
2010				
USA	10.13 (1)	2.29 (10)	43,788	Canada, Mexico, France [38.59]
Germany	7.12 (2)	2.88 (10)	30,767	Netherlands, France, Italy [38.55]
UK	6.83 (3)	4.71 (8)	29,545	France, Netherlands, Germany [34.64]
2014				
USA	11.4 (1)	2.38 (10)	55,879	Canada, Mexico, France [41.00]
Germany	7.7 (2)	3.08 (10)	37,734	Netherlands, France, Italy [36.63]
UK	7.12 (3)	5.02 (8)	34,895	France, Netherlands, Germany [36.41]

Source: WITS, UN Comtrade

Indonesian food exports

Indonesia's exports of food products increased significantly from US$1 billion in 2000 to US$6 billion in 2014 (Table 3.3). Despite this increase, Indonesia's share of the global export market remains small.

This share equalled 0.7% in 2000 and grew to 1.2% in 2014, placing Indonesia thirty-second in 2000 and twenty-third in 2014 in international food export rankings. Indonesia's main export destinations include the USA, Japan, the Netherlands, and countries in the ASEAN region, including Malaysia and Singapore. These countries received almost 60% of Indonesia's exports of food products in 2000. In 2014, Japan was replaced by the Philippines as a top five export destination for Indonesian food exports. The relative importance of food products in Indonesia's total exports also increased from fourteenth in 2000 to ninth in 2014. This all suggests expanding participation by Indonesian in global food value chains.

Imports of food products also rose significantly from US$1.1 billion in 2000 to US$7.3 billion in 2014 (Table 3.4), surpassing export figures and making Indonesia a net importer of food products, along with Malaysia, Australia and the USA, based on these categories. The relative importance of food product imports in Indonesia remained steady at tenth in 2000 and ninth in 2014. Indonesia's top sources for imports include Thailand, USA, India, China, Brazil, and Argentina.

In the interest of comparison, we also show figures for Malaysia and Australia. These countries are selected because, first, they rank closely to Indonesia in both the export and import of food products. Second, both Malaysia and Australia publish 'complete' input–output tables (that is, tables with domestic and import matrices). This information allows the calculation of foreign content in exports without having to adopt 'import proportionality assumption'. From 2000 to 2014, the value of Indonesia's food exports has overtaken Australia's, both in absolute value and in terms of its relative importance to total exports.

Table 3.3 Food products exports: Indonesia, Malaysia and Australia

Country	Share of global exports (rank)	Share of national exports (rank)	Value (US$ million)	Top five partners [combined share, %]
2000				
Indonesia	0.65 (32)	1.74 (14)	1,082	USA, Malaysia, Singapore, Netherlands, Japan [58.48]
Malaysia	0.68 (29)	1.14 (11)	1,124	Singapore, Indonesia, Netherlands, Hong Kong, USA [55.05]
Australia	1.28 (17)	3.32 (12)	2,119	UK, Japan, USA, New Zealand, Hong Kong [66.89]
2010				
Indonesia	1.03 (24)	2.83 (10)	4,461	Malaysia, USA, Philippines, Singapore, Netherlands [53.73]
Malaysia	1.06 (23)	2.32 (9)	4,603	Singapore, Indonesia, USA, Thailand, Vietnam [46.78]
Australia	1.01 (25)	2.12 (10)	4,379	New Zealand, USA, UK, Japan, China [60.4]
2014				
Indonesia	1.18 (23)	3.61 (9)	6,351	USA, Malaysia, Philippines, Netherlands, Singapore [45.53]
Malaysia	1.23 (20)	2.84 (8)	6,650	Singapore, Indonesia, Thailand, China, Australia [46.00]
Australia	0.81 (26)	1.81 (12)	4,352	New Zealand, USA, Singapore, Thailand, China [55.16]

Source: WITS, UN Comtrade

As is the case with Indonesia, the USA holds significant export market share in both Malaysia and Australia. There is also sizeable bi-directional trade between Indonesia and Malaysia in food products. In the case of Australia, bi-directional trade with ASEAN countries concentrates on Indonesia as well as Thailand and, more recently, Singapore.

Table 3.4 Food products imports: Indonesia, Malaysia and Australia

Country	Share of global imports (rank)	Share of national imports (rank)	Value (US$ million)	Top five partners [combined share, %]
2000				
Indonesia	0.65 (29)	3.31 (10)	1,108	Thailand, USA, India, China, Brazil [55.72]
Malaysia	0.71 (27)	1.49 (27)	1,213	Australia, USA, Indonesia, Thailand, Argentina [59.55]
Australia	1.05 (23)	2.69 (11)	1,790	USA, New Zealand, Brazil, UK, Thailand [54.95]
2010				
Indonesia	1.05 (25)	3.34 (10)	4,535	USA, Thailand, Argentina, Brazil, China [67.19]
Malaysia	1.17 (23)	3.07 (9)	5,046	Indonesia, Brazil, Argentina, Thailand, Australia [52.22]
Australia	1.43 (14)	3.28 (10)	6,184	New Zealand, USA, Thailand, Ireland, China [47.99]
2014				
Indonesia	1.49 (16)	4.10 (9)	7,304	Brazil, Argentina, Thailand, USA, China [63.31]
Malaysia	1.47 (17)	3.45 (8)	7,195	Indonesia, Thailand, Argentina, Brazil, Singapore [49.20]
Australia	1.82 (12)	3.92 (8)	8,924	New Zealand, USA, Singapore, Thailand, China [51.19]

Source: WITS, UN Comtrade

Foreign content in exports of food products

As a precursor to global food chain analysis, it is important to examine imported or foreign content in a country's food products.[6] We use the input–output tables of Indonesia, Malaysia, Australia and Taiwan[7] to calculate the level and growth of vertical specialisation, defined as the amount of imported inputs in food exports.

[6] Some countries do not have complete tables. The USA, for example, only has a total transaction matrix. Deconstructing it into domestic and import matrices requires a strong assumption.

[7] Taiwan is not covered in the WITS or UN Comtrade data, so we could not include them in the earlier analysis.

Table 3.5 Foreign content in export (%)

Indonesia	1995	2000	2005	2010
(1) All sectors	0.13	0.19	0.17	0.15
(2) Manufacturing	0.18	0.24	0.21	0.23
(3) Food products	0.05	0.09	0.07	0.04
Malaysia	1991	2000	2005	2010
(1) All sectors	0.38	0.52	n.a	0.41
(2) Manufacturing	0.47	0.59	n.a	0.48
(3) Food products	0.20	0.26	n.a	0.23
Australia	1998	2005	2007	2012
(1) All sectors	0.16	0.14	0.15	0.15
(2) Manufacturing	0.22	0.21	0.23	0.26
(3) Food products	0.12	0.12	0.13	0.12
Taiwan	1996	2001	2006	2011
(1) All sectors	0.36	0.40	0.50	0.52
(2) Manufacturing	0.40	0.45	0.55	0.57
(3) Food products	0.26	0.28	0.33	0.35

Source: Calculated from the official input–output (IO) tables from each country

In general, exported food products contain less foreign content than other exported manufactured products, suggesting lower rates of integration within GVCs. This is true in all four countries, although there are variations: food products exports of Taiwan contain the highest import content (up to 35% in 2011) and Indonesia has easily the lowest foreign content in its exports of food products (4% in 2010, which is actually a decrease from 5% in 1995).

The fact that Indonesia's foreign content in export of food products remains low does not necessarily mean that Indonesia's dependence on imported content is low across the board. The figures reported in Table 5 are all export-weighted averages. It may, however, be the case that an item in the food products category has high import content but is not exported in large amounts. As shown in Table 3.6 and Table 3.7, this is indeed the case in Indonesia. The low levels of foreign content also reflect the particularly high reliance on vegetable oil exports (Table 3.7), which is comprised almost entirely of domestically produced palm oil. Table 3.6 shows that wheat flour consistently records a very high import content (between 33% and 62%), followed by noodles, soybean products, and tobacco.

Table 3.6 Indonesia's top foreign-dependent food products

Sector	Foreign content (%)	Sector	Foreign content (%)
1995		2000	
Wheat flour	46.89	Wheat flour	41.08
Noodle, macaroni and similar products	17.96	Soybean products	26.87
Other flour	14.51	Tobacco products	23.04
Animal feed	14.27	Bakery products and similar products	22.44
Tobacco products	13.92	Dairy products	21.56
2005		2010	
Wheat flour	61.50	Wheat flour	33.80
Noodle, macaroni and similar products	30.41	Soybean products	23.65
Soybean products	23.83	Noodle, macaroni and similar products	17.42
Bakery products and similar products	20.93	Tobacco products	17.18
Tobacco products	15.31	Alcoholic beverages	15.14

Source: Calculated from the official IO tables from Indonesia

Table 3.7 Indonesia's top food product exports

Products	Rp million	Products	Rp million
1995		2000	
Animal and vegetable oil	2,289,368	Animal and vegetable oil	13,006 594
Processed and preserved fish	1,879,627	Processed and preserved fish	7,522 905
Milled and peeled coffee	864,590	Milled and peeled coffee	2,095 935
Cigarettes	274,629	Cigarettes	1,172,435
Other flour	255,601	Chocolate and sugar confectionary	1,094,112
2005		2010	
Animal and vegetable oil	41,608,726	Animal and vegetable oil	123,454,841
Processed and preserved fish	15,494,977	Processed and preserved fish	15,685,554
Chocolate and sugar confectionary	2,058,269	Other food	4,336,007
Cigarettes	1,653,826	Chocolate and sugar confectionary	4,110,044
Canned and preserved fruits and vegetables	1,619,320	Cigarettes	4,050,224

Source: Calculated from the official IO tables of Indonesia

Integration within global value chains

We now turn to the analysis of value added in the global food products trade. This is made possible by using the WIOD. This global analysis involves the use of the 'import proportionality assumption', a

technique that assumes that an industry uses an import of a particular product in proportion to its total use.[8]

As this GVC analysis incorporates all countries using the WIOD-provided tables, we should treat the following results as possibly *understating* the share of foreign value added.[9]

Table 3.8 Shares of foreign value added in global food products trade (%)

	1995		2000		2005		2010	
Rank	Country	Share (%)	Country	Share (%)	Country	Share (%)	Country	Share (%)
1	JPN	21.22	USA	20.99	USA	17.21	RoW[1]	19.64
2	USA	16.76	JPN	19.25	RoW	17.15	CHN	15.76
3	RoW	15.70	RoW	15.53	JPN	13.15	USA	14.25
4	DEU	6.31	CHN	6.68	CHN	8.77	JPN	11.71
5	CHN	4.36	DEU	4.38	DEU	4.63	IDN	3.56
6	GBR	3.85	GBR	3.97	GBR	4.10	MEX	3.44
7	FRA	3.54	MEX	3.88	MEX	4.00	BRA	3.12
8	ITA	2.97	FRA	3.16	FRA	3.63	DEU	2.81
9	BRA	2.59	ITA	2.65	ITA	2.95	GBR	2.44
10	ESP	2.21	CAN	1.86	ESP	2.24	ITA	2.28
11	IDN	2.04	BRA	1.76	BRA	2.18	FRA	2.10
12	MEX	1.96	ESP	1.68	CAN	2.18	CAN	2.08
13	CAN	1.71	IDN	1.66	RUS	1.79	RUS	2.07
14	NLD	1.64	AUS	1.23	IDN	1.78	ESP	1.98
15	TUR	1.43	TUR	1.19	AUS	1.53	IND	1.52
16	RUS	1.31	NLD	1.18	NLD	1.48	AUS	1.46
17	AUS	1.29	KOR	1.09	TUR	1.45	NLD	1.39
18	KOR	1.12	IND	1.05	IND	1.35	TUR	1.38
19	BEL	0.91	RUS	1.04	KOR	1.10	POL	0.87
20	IND	0.86	POL	0.65	POL	0.91	KOR	0.79
21	TWN	0.81	BEL	0.64	BEL	0.77	GRC	0.67
22	AUT	0.71	TWN	0.58	IRL	0.73	ROU	0.64
23	DNK	0.65	SWE	0.48	ROU	0.60	IRL	0.60
24	POL	0.62	AUT	0.47	GRC	0.58	BEL	0.54
25	SWE	0.54	IRL	0.46	AUT	0.56	AUT	0.44
26	GRC	0.52	DNK	0.46	DNK	0.55	DNK	0.39
27	IRL	0.49	GRC	0.40	SWE	0.48	SWE	0.37
28	FIN	0.39	ROU	0.31	TWN	0.41	TWN	0.33

[8] However, recent studies have shown that this assumption has led to underestimation of foreign content in exports (Winkler and Millberg, 2012; Puzzello, 2012).

[9] While these may be underestimates, this table provides estimates that suggest Indonesia's relative level of involvement in global value chains.

29	PRT	0.32	PRT	0.30	PRT	0.38	CZE	0.29
30	ROU	0.32	CZE	0.23	CZE	0.34	PRT	0.24
31	CZE	0.24	FIN	0.22	FIN	0.29	FIN	0.22
32	HUN	0.20	HUN	0.17	HUN	0.24	HUN	0.17
33	BGR	0.10	SVK	0.07	SVK	0.09	SVK	0.10
34	SVK	0.08	SVN	0.06	LTU	0.09	LTU	0.09
35	SVN	0.07	LTU	0.06	BGR	0.07	BGR	0.07
36	LTU	0.05	BGR	0.05	SVN	0.06	SVN	0.05
37	CYP	0.04	CYP	0.04	CYP	0.05	LVA	0.04
38	LVA	0.03	LVA	0.03	LVA	0.04	CYP	0.03
39	LUX	0.03	LUX	0.02	LUX	0.03	EST	0.03
40	EST	0.02	EST	0.02	EST	0.03	LUX	0.02
41	MLT	0.01	MLT	0.01	MLT	0.01	MLT	0.01

Source: Author's calculation based on WIOD, various years

Note: [1] RoW = rest of world

Calculations in this section are important because traditional measures of trade flows are based on the gross value of exports and imports, as applied in the first section. This analysis fails to take into account the possibility that gross exports contain foreign value added through imported inputs (Grossman and Rossi-Hansberg, 2006).

Table 3.8 shows the shares of value added in global trade of food products. It covers 40 countries and a 'rest of the world' (RoW), to complete the global picture. As it turns out, accounting for value added, instead of just gross value, leads to a slightly different picture than those depicted in Table 3.1 and Table 3.2. While the dominant role of USA still remains, Japan and China now emerge as having large shares of value added.[10]

Indonesia, on the other hand, shows an interesting pattern (IDN, highlighted in the table). While it ranks relatively low in the gross value measurement, it is now quite high in terms of value added. In fact, in 2010, Indonesia rose to only slightly trail China, USA, and Japan, with a share of 3.6% of global value added in food products. In the previous years, Indonesia's share had dropped from 2% in 1995 to 1.8% in 2005, so the twofold increase in 2010 is worth noting.

The figures in Table 3.8 also include value added for domestic use. In order to see whether a country's value added contributes to the production system in another country, it is necessary to subtract the total value added share figures in Table 3.8 with value added that 'stays at home' (presented in Table 3.9).

[10] Obviously, RoW is also among the top, but, as it is the world residual as a proxy for an aggregation of many smaller countries, it is safe to ignore it in this case.

Table 3.9 Indonesia's FBT sector[1]: net value added (VA) abroad

Year	Total VA in the world (US$ million)	VA by Indonesia (US$ million)	Indonesia's share in the world's VA (%)	VA by Indonesia that stays in Indonesia (US$ million)	VA by Indonesia that stays in Indonesia (%)	VA by Indonesia abroad (%)
	1	2	3[2]	4	5[3]	6[4]
1995	748,564	15,293	2.04	14,404	94.19	0.12
2000	774,099	12,887	1.67	11,680	90.63	0.16
2005	998,542	17,775	1.78	14,960	84.16	0.28
2010	1,441,129	51,236	3.56	42,735	83.41	0.61

Source: Calculated based on WIOD, various years

Notes: [1] FBT = food, beverages and tobacco – WIOD's classification

[2] 3 = (2/1)*100

[3] 5 = (4/1)*100

[4] 6 = ((2–4)/(1–4))*100

In Table 3.9, we show the 'net' value added abroad of Indonesia's food products. Column 1 is the total value added of the sector generated in the world. Column 2 shows Indonesia's value added in US$ million, and Column 3 is the share in percentage to the total world value added. Column 4 and Column 5 show that most value added stay in Indonesia. In Column 6, we subtract the value added that stays in Indonesia from both the total world value added and Indonesia's total value added.

The resulting numbers are the net value added shares abroad. These numbers are far smaller than those in Table 3.8. In fact Indonesia's 'net' value added shares abroad is only between 0.12% and 0.61%. But, over time, the net share gradually increased, in contrast to the measures based on gross value in Table 3.8, where Indonesia's share fluctuated. This might suggest that while Indonesia's involvement in the global value chain for food products is still small, it is gradually increasing. It also reflects the fact that the food value chain does not have the level of fragmentation of some other industries, for example, the automotive industry (Timmer et al., 2015).

For comparison, the same calculation is applied to China, Japan and USA as the leading countries in Table 3.8. Calculations for these countries are further examined in Table 3.10, Table 3.11 and Table 3.12. With the exception of China in 1995, all the net value added shares abroad range between 0.22% (Japan, 2010) and 0.96% (China, 2010). Unlike Indonesia, Japan's share constantly declined, from 0.27% in 1995 to 0.22% in 2010. The shares of China and the USA, on the other hand, fluctuated.

Table 3.10 China's FBT sector: net value added abroad

Year	Total VA in the world (US$ million)	VA by China (US$ million)	China's share in the world's VA (%)	VA by China that stay in China (US$ million)	VA by China that stay in China (%)	VA by China abroad (%)
	1	2	3[1]	4	5[2]	6[3]
1995	748,564	32,603	4.36	9,496	29.12	3.13
2000	774,099	51,726	6.68	50,114	96.88	0.22
2005	998,542	87,576	8.77	82,847	94.60	0.52
2010	1,441,129	227,184	15.76	215,473	94.85	0.96

Source: Calculated based on WIOD, various years
Notes: [1] 3 = (2/1)*100
[2] 5 = (4/1)*100
[3] 6 = ((2–4)/(1–4))*100

Table 3.11 Japan's FBT sector: net value added abroad

Year	Total VA in the world (US$ million)	VA by Japan (US$ million)	Japan's share in the world's VA (%)	VA by Japan that stay in Japan (US$ million)	VA by Japan that stay in Japan (%)	VA by Japan abroad (%)
	1	2	3[1]	4	5[2]	6[3]
1995	748,564	158,864	21.22	157,268	98.99	0.27
2000	774,099	148,978	19.25	147,369	98.92	0.26
2005	998,542	131,316	13.15	129,112	98.32	0.25
2010	1,441,129	168,774	11.71	165,990	98.35	0.22

Source: Calculated based on WIOD, various years
Notes: [1] 3 = (2/1)*100
[2] 5 = (4/1)*100
[3] 6 = ((2–4)/(1–4))*100

Table 3.12 USA's FBT sector: net value added abroad

Year	Total VA in the world (US$ million)	VA by the USA (US$ million)	USA's share in the world's VA (%)	VA by the USA that stay in the USA (US$ million)	VA by the USA that stay in the USA (%)	VA by the USA abroad (%)
	1	2	3[1]	4	5[2]	6[3]
1995	748,564	125,494	16.75	122,191	97.37	0.53
2000	774,099	162,488	20.99	159,314	98.05	0.52
2005	998,542	171,878	17.21	168,205	97.86	0.44
2010	1,441,129	205,429	14.26	198,200	96.48	0.58

Source: Calculated based on WIOD, various years
Notes: [1] 3 = (2/1)*100
[2] 5 = (4/1)*100
[3] 6 = ((2–4)/(1–4))*100

Based on the same global value added shares matrix, we observe the flow of value added from different origins to Indonesia's FBT sector. In this way we can see where value added used by Indonesia's food sector originates.

The summary is shown in Table 3.13. Indonesia's use of world value added increased over time, from US$33.5 billion in 1995 to US$79.5 billion in 2010. Included in these numbers are, however, Indonesia's own value added, as indicated in the second row. The percentage figures show that these numbers hover around 88% to 92% – relatively similar to the previous measures of value added that stays in Indonesia. It is interesting that, of the own value added used in the food product sectors, more than 80% come from only two sectors, namely, the food products sector itself and the agriculture sector.

Table 3.13 Value added used by FBT sector in Indonesia

	1995	2000	2005	2010
US$ million				
Total world VA used by Indonesia's FBT sector	33,509	23,173	29,470	79,579
Indonesia's VA used by Indonesia's FBT sector	30,563	20,389	25,748	72,801
of which, contributed by FBT sector itself	12,736	9,428	12,131	33,584
of which, contributed by AHFF sector[1]	12,238	7,538	8,771	27,419
%				
Total world VA used by Indonesia's FBT sector	100.00	100.00	100.00	100.00
Indonesia's VA used by Indonesia's FBT sector	91.21	87.98	87.37	91.48
of which, contributed by FBT sector itself[2]	41.67	46.24	47.11	46.13
of which, contributed by AHFF sector	40.04	36.97	34.06	37.66

Source: Calculated from WIOD, various years

Notes: [1] AHFF = agriculture, hunting, fishing, and forestry

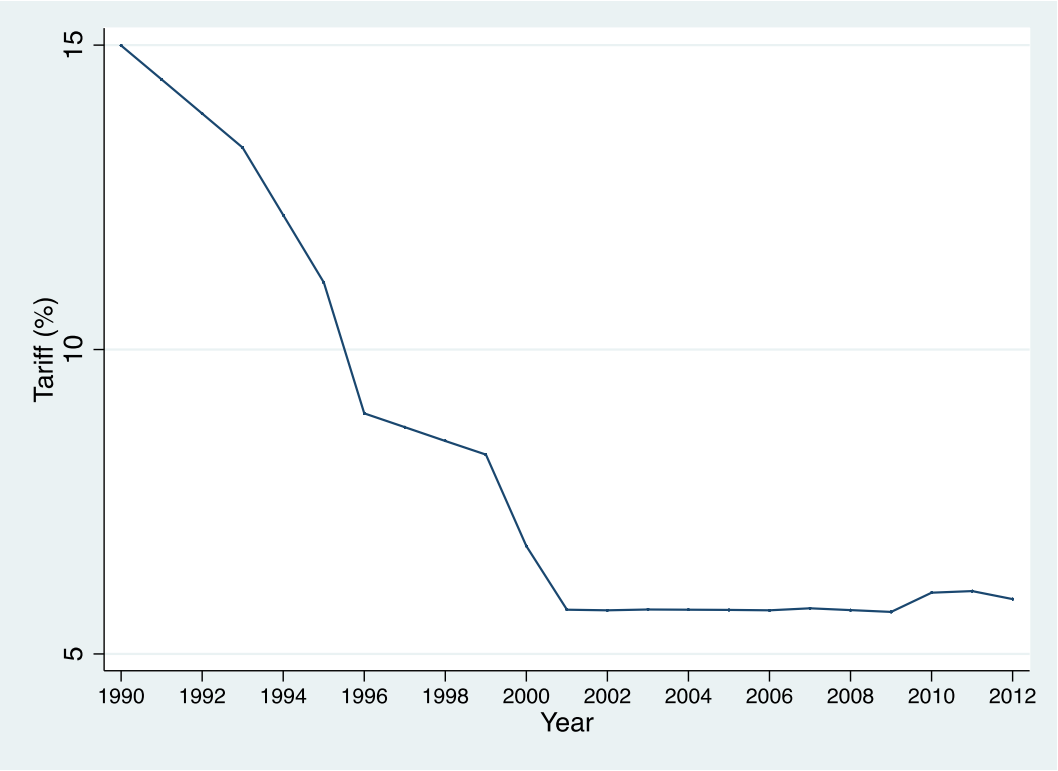
[2] As percentage of Indonesia's VA used by its FBT sector

CHAPTER 4 Trade policy analysis: food products

Recent trade policies in Indonesia have been generally protectionist. Drawn from laws such as the 2010 Horticulture Law, 2012 Food Law, 2013 Farmers Law, 2014 Industry Law, 2014 Trade Law and the 2014 Standardization Law, the policies tend to restrict trade with the objectives of stabilising domestic prices, protecting producers and fostering domestic linkages.

As tariffs have gone down significantly in Indonesia (Figure 4.1), protection takes other forms. Such non-tariff barriers include licence and permit requirements, pre-shipment inspections, new labelling requirements, local content requirements and export restrictions. Table 4.1 shows the number of trade measures implemented by Indonesia, in comparison to other countries in the region (Malaysia and Thailand) and other big, emerging economies (China and India). The table indicates that the tendency to resort to non-tariff barriers (including local content requirement, investment measures, and export restrictions) in Indonesia is among the highest.

Figure 4.1 Average effective tariff rates in Indonesia, 1990–2012



Source: The UNCTAD Trade Analysis Information System (TRAINS) database (UNCTAD, 2017)

Table 4.1 Number of 'harmful trade measures' implemented

Type	Indonesia	China	Malaysia	Thailand	India
Bailout/state aid measure	6	6	1	1	19
Competitive devaluation	0	0	0	0	0
Consumption subsidy	0	1	0	0	0
Export subsidy	3	11	2	1	25
Export taxes or restriction	18	10	1	2	14
Import ban	6	3	1	0	6
Import subsidy	0	0	1	1	2
Intellectual property protection	0	2	0	0	0
Investment measure	13	17	4	3	12
Local content requirement	15	9	4	0	107
Migration measure	2	1	2	1	2
Non-tariff barrier (not otherwise specified)	25	9	3	1	12
Other service sector measure	4	3	0	0	1
Public procurement	9	7	0	0	13
Quota (including tariff rate quotas)	5	7	0	0	2
Sanitary and phytosanitary measure	4	0	0	0	0
State trading enterprise	0	0	0	0	0
State-controlled company	2	1	0	0	1
Sub-national government measure	0	2	0	0	1
Tariff measure	12	15	3	1	37
Technical barrier to trade	3	1	0	0	0
Trade defence measures	17	45	7	14	135
Trade finance	1	1	2	0	95
Total	115	131	18	22	356

Source: Global Trade Alert (2016)

Table 4.2 Number of harmful trade measures in food products

	Indonesia		Australia		Malaysia	
	Amber[1]	Red[2]	Amber	Red	Amber	Red
Meat, fish, fruits, vegetables, oil and fat	10	33	4	9	1	5
Dairy products	3	10	1	0	0	0
Grain mill products, starches and starch products, other food products	9	22	1	0	0	1
Beverages	5	15	1	2	0	0
Total	27	80	7	11	1	6

Source: Global Trade Alert (2016).

Notes: [1] Amber refers to protectionist measures that may discriminate against foreign commercials
[2] Red refers to measures that almost certainly discriminate against foreign commercials

Table 4.2 shows the breakdown for food products, comparing Indonesia with Malaysia and Australia, clearly showing elevated restrictions on trade in Indonesia on food products. Marks and Rahardja (2012) computed the nominal rates of protection (NRP) and effective rates of protection (ERP) in Indonesia in 1987, 2005, and 2008. Both measures indicate the extent to which domestic prices deviate from the international market prices and hence reflect the degree of protectionism, both in terms of tariff and non-tariff barriers. Table 4.3 summarises their results. It shows that food, beverages and tobacco sector (shaded; an aggregate that can be used as a proxy for 'food products') is one of the most protected sectors. In 2008, for example, this sector experienced the second highest protection after food crops.

Table 4.3 Nominal and effective rates of protection in Indonesia

	NRP			ERP		
	1987	2005	2008	1987	2005	2008
Food crops	19	11	17	28	16	24
Estate and other crops	3	–2	–7	12	–2	–9
Livestock	21	11	1	34	17	1
Forestry	–17	–41	–4	–20	–45	–5
Fisheries	5	22	0	4	30	0
Oil and gas extraction	0	1	1	–1	1	1
Other mining	0	2	–6	–4	2	–7
Food, beverages and tobacco	26	10	5	221	65	14
Textiles, apparel and leather	34	0	1	150	1	0
Wood products	17	–9	0	149	60	0
Paper products	29	5	1	292	12	0
Chemicals	17	7	2	52	39	8
Oil refining and LNG	0	3	0	–2	7	0
Non-metal products	27	9	2	157	221	7
Basic metals	8	2	2	14	–1	3
Machinery and transport equipment	48	23	5	278	116	8
Other manufacturing	35	8	2	104	24	4
All tradable sectors	17	7	3	95	39	6

Source: Marks and Rahardja (2012)

Recent regulations affecting food sectors

In Table 4.4 we summarise the recent regulations that affect food products and food processing sectors in Indonesia. The data was compiled from Global Trade Alert (2016).

Table 4.4 Recent regulations affecting the Indonesian Food Sector

Date of issuance	Name	Nature of regulation	Notes/highlights
24-Dec-08	MOT[1] Regulation 56/2008	Additional requirements to import over 500 products	Pre-shipment inspection, limited ports of entry
28-May-09	MOF Regulation 101/2009	New import tariff on products competing with locally manufactured products	Subjects include milk powder and processed milk products
	MOF Regulation 7/2009	Five per cent import tariff on wheat flour	
19-Nov-09	MOA Regulation 27/2009	Stricter regulation on fruits and vegetables import	Rationale: compliance with Food and Agriculture Organization of the United Nations (FAO) regulation
1-Jan-11		Selected list of entry points	Preparation of meat; preparation of cereals, flour, or milk
3-Nov-11		Ban on consumption of salt imports	
12-Dec-11	FDA Regulation	Registration requirement on raw materials in food and beverages franchises	
	MOA Regulation 50/2011	Import permit requirements for processed meat	
27-Jan-12		Safeguard investigation on imports of mackerel	
24-Aug-12		Safeguard duties on imports of wheat flour	
	MOA Regulation 60/2012	Import ban on certain fruits and vegetables	
2-Jan-13		Import quotas for fruit and vegetable products	Subjects include onions, shallots, garlic, frozen potatoes
28-Aug-13	MOA Regulation 84/2013	Import restrictions for meat, offal and processed meat	Reference price system, labelling
	MOF Regulation 207/2013	Discriminatory tax for strong alcoholic beverages	

Date of issuance	Name	Nature of regulation	Notes/highlights
	MOT Regulation 7/2013	Local content requirement on raw materials in food and beverage franchises	Minimum of 80% local content
28-May-13	FDA Regulation 27 and 28/2013	Importer permit and distribution licence for food and drugs	
	MOT Regulation 20/2014	Controlling and monitoring of alcoholic beverage	
	MOT Regulation 1300/2014	Export ban on refined sugar	
	MOT Regulation 6/2015	Restriction on the sale of alcoholic beverages	

Source: Global Trade Alert (2016)
Note: [1] MOT = Ministry of Trade, MOF = Ministry of Finance, FDA = US Food and Drugs Administration, MOA = Ministry of Agriculture

It is clear from Table 4.4 that most regulations were issued by the Ministry of Trade and Ministry of Agriculture, followed by Ministry of Finance and the US Food and Drug Administration agency. Note that the information compiled by the Global Trade Alert is only that reported by commercial parties. Therefore, there might be more regulations potentially affecting the food sectors that have not been captured by the GTA.

The types of regulations identified in Table 4.4 include both import restrictions (import tariffs, safeguard duties, bans, quotas, local content requirements, permits, designated ports of entry) and export restrictions (bans). The dominant portion of protection falls on the import side, reflecting the mercantile views of policymakers. USDA GAIN (2015a) further identifies the complex Import Registration System for consumer food products as a key factor effectively discriminating against imported food products, and so shielding local processors from international competition.

Some of the items in the regulations are extremely difficult to actually enforce, such as excluding Jakarta's main port of Tanjung Priok from the list of legal entry seaports for horticulture products. This forces consumers in the western part of Java (including the capital city) to rely on imports through Jakarta's airport or Surabaya seaport in East Java, both of which will likely result in higher prices. The 80% local content requirement for raw materials in food and beverages is also difficult to enforce. Restrictions on the import of alcoholic beverages have also been subject to confusing exchanges between the central government (Ministry of Trade) and the Governor of Jakarta, which has led to business uncertainty (Patunru and Rahardja, 2015).

Recent economic packages

The government, via the Coordinating Minister of Economic Affairs, has launched a series of economic packages since September 2015. Below are examples of policies included that are likely to affect food products sectors:

- Package I: Ministry of Trade regulation to drop the requirement to obtain Ministry of Industry's recommendation to import rice for industrial purposes; Ministry of Trade regulation to drop the

requirement to obtain registered importer number and letter for import from Ministry of Agriculture for horticulture products.

- Package VI: Food and Drug Administration regulation to switch to paperless licensing for food and drugs imports.
- Package IX: Government to urge the state-owned enterprises (SOEs) to become 'aggregators' for small and medium-size enterprises (SMEs) – that is, SOEs to consolidate exports products of SMEs – including those in food industry.

While eliminating some overlapping administrative procedures in package 1 is commendable, it is not clear why certain policies target only a particular sector and are not applied across the board (for example, paperless licensing for food and drugs only). Making SOEs parents for SME exports is also problematic as many SOEs experience their own set of problems, and involving them is likely to complicate, rather than promote, efficiencies.

In summary, tariffs may have gone down but protectionism has proliferated in recent years, mostly in the form of non-tariff barriers. While this is evident in almost all sectors, the food products sector remains one of the most protected. This increasing protectionism has proved counterproductive as it tends to inhibit the involvement of Indonesian firms in more dynamic regional production networks, affecting competitiveness and stymieing access to new technologies and ideas. Attempts to protect domestic producers (of agricultural products, for example) have come at the expense of the competitiveness of food processors, who are forced to pay high prices for key inputs such as sugar, salt, milk and grains. Food processors overwhelmingly rely on the relatively protected domestic market as a result. Many of the recent regulations have hindered rather than supported development in the food sector. Instead of pursuing protectionist policies, the Indonesian Government would do well to focus on improving infrastructure, connectivity and logistics, and consistency of regulations (Patunru and Rahardja 2015).

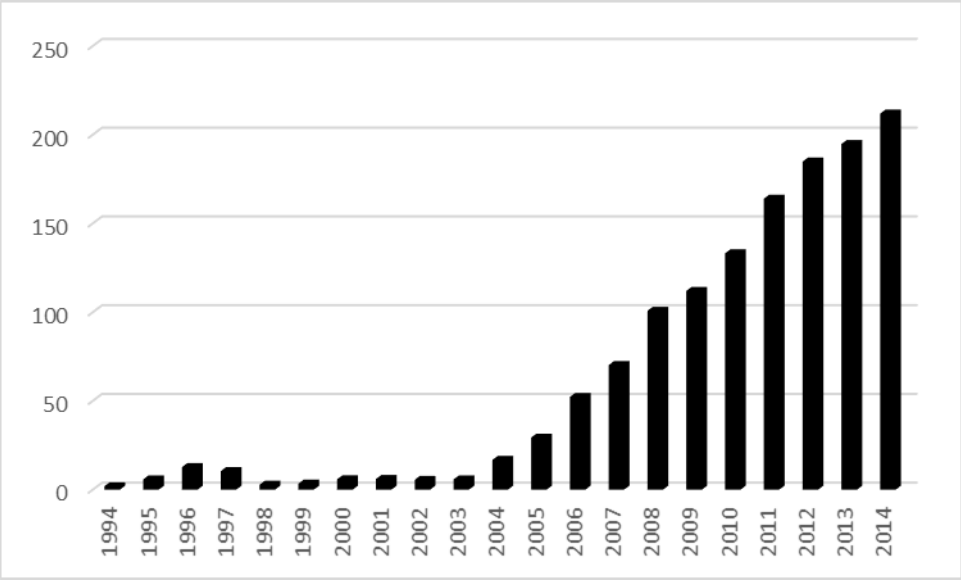
CHAPTER 5 A sectoral analysis of lead foods involved in food processing in Indonesia

Despite several constraints in terms of policy settings and infrastructure, the Indonesian food processing sector has demonstrated relatively strong rates of growth over the last decade (Chapter 2). While this has occurred primarily by tapping into the rapidly evolving, and well-protected, domestic consumer market, several sectors have also established a degree of export competitiveness. This chapter will examine Indonesia's engagement with three processed food sectors, where Indonesia is exporting considerable volumes of processed foods or food ingredients into the world market. Through each sectoral case study, we will analyse the policy settings, use of inputs, and the role played by lead firms in that sector. The three sectors to be examined are: cocoa–chocolate processing; canned seafood processing; and instant noodle manufacturing. Unless otherwise stated, all trade data used in this chapter has been obtained from UN Comtrade database[11]

Indonesia's involvement in instant noodle manufacturing

Instant noodles were initially developed in Japan in the 1950s, and are now a widely traded food product due to their affordability, convenience, and long shelf life. The global trade in instant noodles (based on HS Code 190230[12]) has expanded from around US$1 billion in 2004 to US$2.8 billion in 2014. Indonesia has gone from being the fifteenth largest exporter in 2004 to the third-largest in 2014 (behind only China and South Korea). Indonesian exports of instant noodles were worth US$212 million in 2014, having grown at an annual rate of 29% over the last decade (Figure 5.1).

Figure 5.1. Export value (in US$ million) of instant noodles from Indonesia (1994–2014)



Indonesia itself is a major consumer of instant noodles, the world's second-largest (after China) according to the World Instant Noodles Association (WINA). Leading companies have used this strong domestic demand as a platform for export development. Key export destinations for these products

[11] https://comtrade.un.org/

[12] HS refers to the Harmonized Commodity Description and Coding Systems. See Appendix B. Preparations of cereals, flour, starch or milk; pastry cooks' products; Pasta, whether or not cooked or stuffed (with meat or other substances) or otherwise prepared, such as spaghetti, macaroni, noodles, lasagne, gnocchi, ravioli, cannelloni; couscous, whether or not prepared; Other pasta.

have been to other Asian countries, such as Malaysia, the Philippines and Hong Kong, as well as less obvious destinations, such as Papua New Guinea and Timor-Leste (Table 5.1), where instant noodles are an extremely cheap meal option, and where product durability is important. Australia is another important market.

Table 5.1 Leading export destinations for Indonesian instant noodles

	2010	2011	2012	2013	2014
1	Malaysia	Malaysia	Malaysia	Malaysia	Malaysia
2	Philippines	Australia	Australia	Australia	Australia
3	Australia	Philippines	Philippines	Philippines	Jordan
4	Hong Kong	Papua New Guinea	Timor-Leste	Hong Kong	Timor-Leste
5	Timor-Leste	Timor-Leste	Hong Kong	Timor-Leste	Papua New Guinea
6	Papua New Guinea	Hong Kong	Papua New Guinea	Papua New Guinea	Hong Kong
7	Jordan	Jordan	New Zealand	Jordan	New Zealand
8	New Zealand	New Zealand	Jordan	New Zealand	Saudi Arabia
9	Netherlands	Netherlands	Brunei Darussalam	Saudi Arabia	USA
10	USA	Brunei Darussalam	Madagascar	Other Asia, nes	Philippines

In contrast to the following two product categories (seafood and chocolate), Indonesian instant noodles rely primarily on an imported raw material (wheat flour, mostly from Australia). This is combined with domestically produced refined palm oil and tapioca starch as the next most important ingredients. Indonesia's agricultural production of wheat is negligible, so these imports do not compete with local producers and, therefore, few imports restrictions are applied. This means that Indonesian noodle processors are able to access raw materials at internationally competitive prices, as part of regional production network, and successfully develop export markets as a result.

The Indomie brand of instant noodles is now well known globally, and is produced by Indofood, possibly Indonesian largest food company, and listed on the Jakarta Stock Exchange. A controlling 50.07% share of the company, however, is owned by CAB Holdings, a subsidiary of the Hong Kong–listed First Pacific Company, controlled by Anthoni Salim (also Indofood's President Director). The company sold an estimated US$2 billion worth of noodles in 2015, contributing approximately one-third of Indofood's consolidated sales that year. Like many Indonesian food companies, Indofood is both diversified and highly integrated. It maintains an extensive range of branded consumer products across dairy, snack foods, food seasonings and beverages. Indofood's corporate trajectory actually commenced with wheat milling (through Bogasari) in the 1970s during the Suharto-era push towards import substitution, and now also includes oil palm cultivation and an extensive product distribution network.

Indonesia's involvement in seafood processing

After China, Indonesia is the world's second-largest producer of marine capture fisheries (FAO, 2016), much of which is oriented towards domestic food consumption. Since 2014, the Indonesian Government has taken an aggressive stance on what it considers illegal fishing conducted by foreigners in its territorial waters, including the highly publicised destruction of numerous foreign vessels. This strategy was aimed at increasing domestic fish stocks and protecting the sector for small and medium-sized Indonesian fishing operations, but led to an initial decline in fish exports in 2015. The government has, however, remained open to foreign investment in the fish processing industry, which remains an important source of export earnings.

In terms of exports, Indonesia's most important seafood commodity is shrimp, mostly frozen but also processed, with annual exports consistently exceeding US$1 billion per year, and with strong annual growth (Figure 5.2). Indeed, Indonesia is a major world player in both the frozen and processed shrimp

trade (Table 5.2). Indonesia is a significant exporter of prepared (canned) tuna products, but, despite increasing the overall value of its exports, Indonesia slipped from being the world's fifth largest exporter in 2004 to the seventh largest in 2014 (UN Comtrade, 2016). Furthermore, Indonesia continued to export large volume of frozen fish products to Thailand (the world's largest exporter of prepared tuna products) in 2014 (valued at US$125 million), (Table 5.2).

Figure 5.2 Exports of key seafood products from Indonesia (US$ '000)

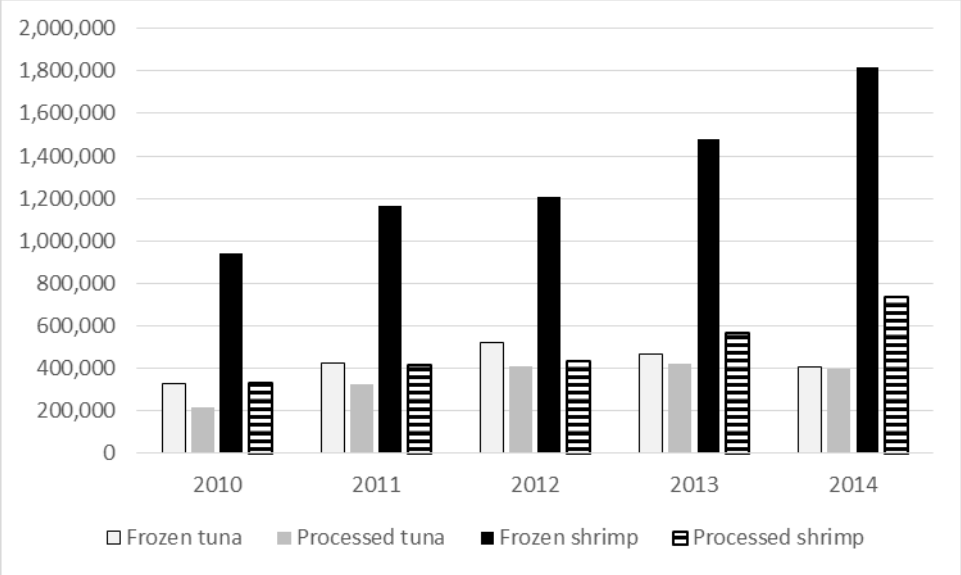


Table 5.2 Indonesia's ranking in selected seafood exports, 2014 (US$ '000)

	Frozen fish (HS 303)		Frozen shrimp (HS306)		Processed tuna (160414)		Processed shrimp (HS1605)	
1	China	2,609,542.80	India	3,834,859	Thailand	2,378,198	China	3,783,798
2	USA	2,054,404	Viet Nam	2,553,754	Ecuador	1,005,391	Viet Nam	1,556,048
3	Russia	1,884,975	Ecuador	2,520,243	Spain	555,654	Thailand	1,223,559
4	Norway	1,761,992	Canada	2,295,975	China	382,275	**Indonesia**	**737,472**
5	Chile	1,707,757	China	2,043,898	Philippines	326,002	Denmark	446,686
6	Spain	917,517	**Indonesia**	**1,815,230**	Seychelles	319,696	Japan	414,738
7	Netherlands	829,741	USA	1,138,533	**Indonesia**	**311,834**	Canada	359,992
8	Rep. of Korea	738,620	Thailand	966,598	Mauritius	300,770	Chile	303,031
9	India	704,323	Argentina	776,836	Viet Nam	228,416	Netherlands	276,777
10	Japan	484,978	Australia	699,795	Italy	174,634	Peru	240,770
11	Iceland	470,965	Netherlands	621,759	Netherlands	172,799	USA	169,096
12	Namibia	413,196	Russia	548,821	El Salvador	97,830	Belgium	143,137
13	**Indonesia**	**407,528**	Denmark	475,554	Portugal	79,321	Spain	129,633

The main activities in shrimp processing are washing, peeling, cutting, packing and freezing, with value-added modifications such as breading, removing heads and semi-peeling. Van Duijn et al. (2012) reported that there were 80 shrimp processing factories approved for export to the EU market across Indonesia, the majority located in East Java. Many of these are medium-sized companies, averaging around 2000 tonnes, with a few larger companies exporting up to 40,000 tonnes of frozen shrimp. These larger companies have well-established relationships with overseas buyers, and several are, in fact, joint venture companies with foreign investors (Appendix D). CP Prima is probably Indonesia's largest shrimp producer, with integrated operations from aquaculture farms through to branded manufacturing. The firm is nationally owned and listed on the Jakarta Stock Exchange, but has long-term relationships with buyers in Europe, North America and Japan.

The canned tuna export industry is similarly dynamic, but is concentrated among a smaller number of firms, many of whom are vertically integrated with their own fishing vessels. While there is a similar concentration on Java, a secondary processing centre has emerged in North Sulawesi.

Table 5.3 Export value of processed tuna from Indonesia to major markets (US$ million)

2000		2014	
USA	31	Saudi Arabia	55
Japan	26	Japan	45
Egypt	7	USA	41
UK	6	UK	33
Saudi Arabia	4	Italy	25

Indonesia's involvement in cocoa processing and chocolate manufacturing

Indonesia emerged in the 1990s as the world's third-largest producer and exporter of raw cocoa beans, grown mainly on the island of Sulawesi. Indonesia has since become the largest cocoa grinder in Asia, producing intermediate processed products, such as cocoa paste, cocoa butter and cocoa powder, for export and for the domestic food processing sector. Indonesia is also home to several large chocolate manufacturers. Figure 5.3 provides an overview of the processing chain for cocoa–chocolate products. Indonesia engages with chain as: a producer of raw cocoa beans and some other products such as sugar and milk; an important cocoa grinder and producer of industrial chocolate; a chocolate product manufacturer; and a growing consumer market.

Through this sector, Indonesia has engaged in a strategy of value-adding to its natural resource wealth, known as *hilirisasi* or 'downstreaming' in Indonesia.

Figure 5.3 Indonesia's engagement with the global value chain for cocoa and chocolate (source: author's own)

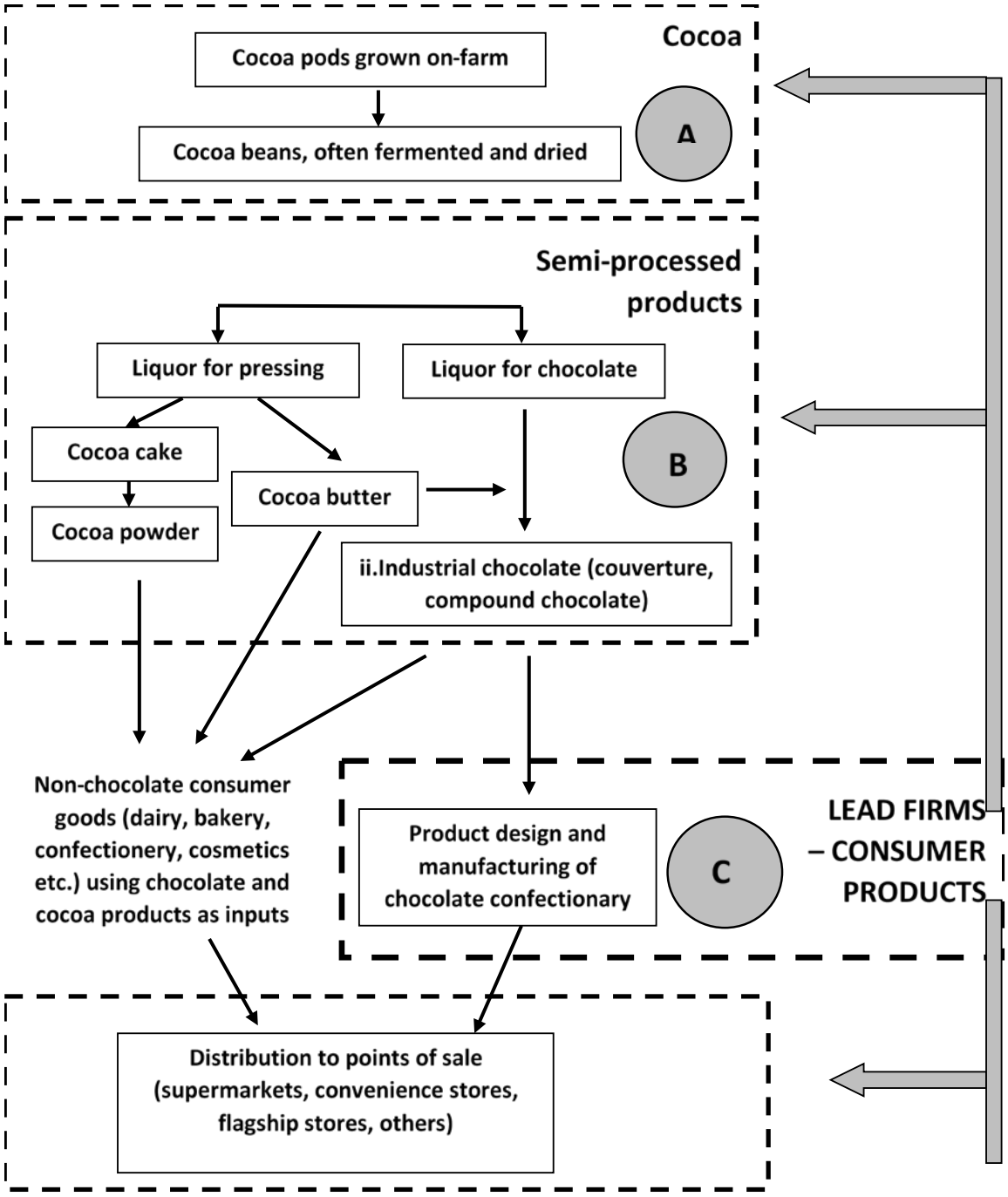


Figure 5.4 shows the transformation of Indonesian cocoa exports over the period since 2009, from a high reliance on cocoa beans to the export of semi-processed products. While the composition of exports has changed towards greater value-adding, this has not necessarily resulted in enhanced export earnings, due an apparent decline in the total export volume for all products since 2010; reflecting the continued reliance of intermediate products on commodity price fluctuations. Indonesia has not become a significant exporter of higher value chocolate products.

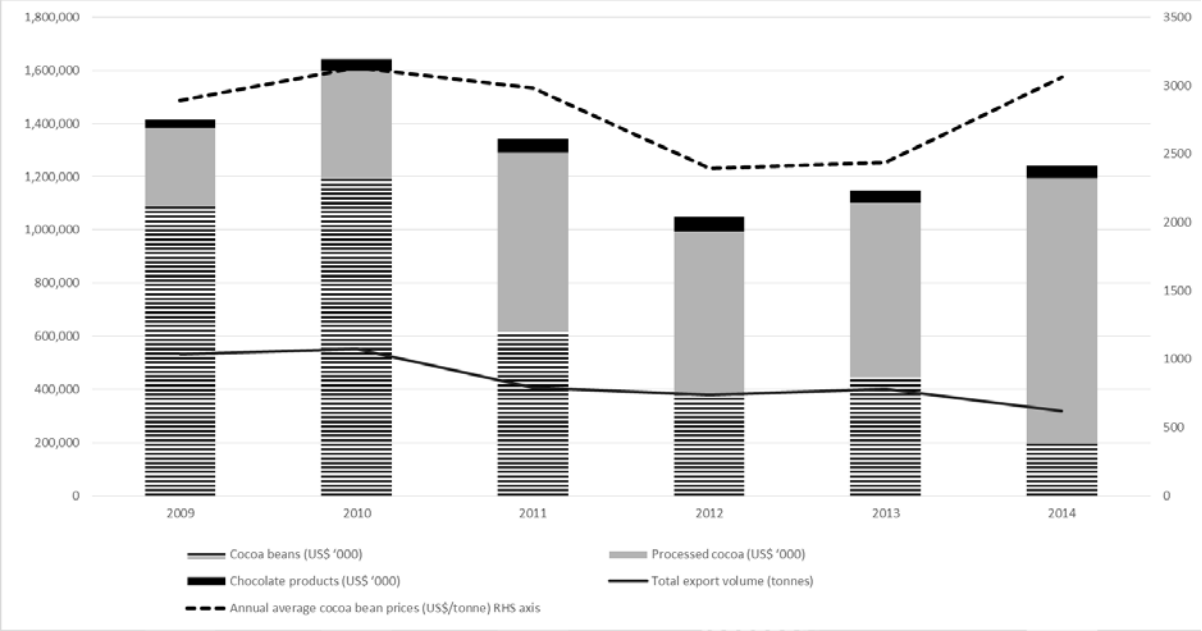


Figure 5.4 Indonesia's raw and processed cocoa exports[1] (2009–2014). (image source: author's own)

Note: [1]Cocoa beans uses HS Code 1801; processed cocoa is butter, paste and powder (HS 1803, 1804, 1805); chocolate products uses HS 1806

The growth in intermediate product exports was driven by a policy decision that complemented the corporate strategies of lead firms towards the outsourcing of cocoa grinding to producer countries. The policy decision was the imposition of an export tax on raw cocoa beans in 2010, which attracted considerable foreign direct investment to cocoa grinding, including through the world's two largest cocoa grinders (Cargill and Barry Callebaut).

Despite Indonesia being an important consumer market for chocolate products, and the largest in South-East Asia, none of the world's six largest chocolate manufacturers (Mondelez, Mars, Nestlé, Hershey, Ferrero, and Lindt and Sprüngli) currently produce their flagship brands in Indonesia. Cadbury previously maintained a manufacturing facility in Indonesia, but wound this down and eventually relocated to Malaysia in 2007, citing increasing costs of raw materials such as milk and sugar (Mada and Wisnumurti, 2007), which are held artificially high due to a restrictive import licensing regime. Nestlé operates various other facilities in Indonesia, including an instant coffee factory and various dairy facilities, but manufactures Kit Kat and other key brands in other Asian countries, including China and Malaysia. Hershey and Mars, similarly, manufacture elsewhere in Asia and import their product into Indonesia.

The relative absence of major global brands in Indonesia has meant that the local chocolate market is dominated by brands owned by Singapore-based Delfi (formerly known as Petra Foods and estimated to hold a 47% share of the Indonesian market) (Euromonitor, 2015). The company was initially established as a chocolate manufacturer in Indonesia in the 1950s, and then incorporated in Singapore in 1984. It then began to more actively participate in the global chocolate production network, first as a distributor of global brands in Indonesia (and subsequently Singapore and Malaysia), and then as a major player in intermediate cocoa ingredients, picking up processing facilities from Nestlé in Brazil and Mexico in 2003, and then European facilities from Armajaro in 2010. In 2013, it completed the sale of its cocoa ingredients division to Barry Callebaut to concentrate instead on branded manufacturing and distribution across South-East Asia. Through PT. Ceres Indonesia, it produces key brands such as market leader Silver Queen, Top and Cha-Cha. Other domestic producers of chocolate

confectionary include PT. Mayora Indah (with the Beng-beng brand), PT. GarudaFood Putra Putri (Gery), PT. Fajar Mataram Sedayu (L'Agie), and PT. Orang Tua Group.

The semi-finished products from grinding (cocoa butter, powder and paste) are then inputs to the next sub-segment – the production of industrial chocolate. This includes couverture and compound chocolate, where the latter substitutes, partially or entirely, cocoa butter for alternatives such as vegetable oil. While this was once incorporated in-house as an initial step in the manufacturing of branded chocolate, there has been a tendency over time towards branded chocolate firms outsourcing this activity. While the Indonesian export industry has not upgraded further to include significant volumes of industrial chocolate or chocolate products, Barry Callebaut built a new factory in East Java in 2016 to produce 10,000 tonnes of compound chocolate as part of a long-term supply agreement with GarudaFood (Barry Callebaut, 2016). Several domestic firms have also moved into the market for industrial chocolate (Appendix D provides an overview of these major firms).

In summary, Indonesia has emerged as a world-leading cocoa grinder, competitively transforming raw cocoa beans into intermediate food ingredients for both the domestic and export markets. While some nationally owned firms are active in this sector, FDI has played an important role. The introduction of an export tax in 2010 complemented the pre-existing trend towards outsourcing and in-country grinding in the industry. The upgrading of Indonesian-based firms into the production of industrial chocolate and branded chocolate confectionaries is also occurring, but this is mostly restricted to the domestic market. Indonesian-owned firms (or those with close cultural ties, such as Delfi) are key players in this sub-sector, with little investment by the global majors. Furthermore, Indonesia has not achieved regional competitiveness in these value chain functions, and appears to be hindered by trade restrictions on associated raw material inputs, such as sugar and milk, combined with the low competitiveness of domestic production.

CHAPTER 6 Conclusion

Indonesia has a large, rapidly growing and relatively mature food processing sector. For the most part, it is oriented towards the country's substantial domestic market, where the middle class in particular is pushing up sales of processed convenience foods and driving a diversified diet. The domestic consumer market for branded food products is relatively well protected from imports through complex trade restrictions. This has provided space for the emergence and consolidation of large, nationally owned and highly integrated food companies. It has, however, not necessarily assisted these companies to develop export competitiveness.

Indonesian-based lead food processing firms, such as Indofood, GarudaFood, CP Prima and Delfi, have emerged as market leaders in their respective category markets with sophisticated managerial and technical capacities, and have successfully penetrated export markets. 'National' ownership, however, is complicated, as ownership structures are frequently embedded within the broader South-East Asian cultural diaspora, with strong links to holding companies in Singapore and Hong Kong. This is, perhaps, less important anyway as the Indonesian food processing sector has remained relatively open to foreign direct investment, and global food companies such as Nestlé, Danone, Coca-Cola, Mondelez and Unilever all maintain a manufacturing presence in the country, and have been responsible for capacity building and technology transfers.

By regional standards, Indonesia still has an undeveloped distribution and retail infrastructure, with a relatively limited reach by modern retailing beyond the major towns and cities. This has provided something of a brake on upstream sectoral development, and one that is likely to be released in the coming years, resulting in further sectoral growth and investment in food processing. Modernisation of retail and distribution will also likely lead to greater competition between local and imported products. Indonesia's distribution network is complex and infrastructure often inadequate, especially outside Java and the major cities; the lack of cold storage facilities is a particular problem. Lead firms, such as Indofood and Delfi, have responded by downstream vertical integration of their own distribution networks. Over the long term, modern retail distribution channels are expected to become more efficient as centralised warehousing and distribution centres expand around the country.

Due to protective trade and industry policy, Indonesia is poorly integrated into regional and global value chains. This is consistent with a relatively high degree of self-sufficiency and insulation from global market perturbations, but it also means that Indonesia is missing out on growth opportunities that accompany the expansion of global value chains. Indonesia-based food processors are often forced to pay more for basic ingredients than their regional competitors, often as a result of policies that are ostensibly designed to protect farmers and ensure food security.

Despite these limitations, Indonesia has developed export competitiveness in processed product sectors that utilise basic ingredients produced in Indonesia, where the country has a clear comparative advantage with existing exports. This includes the production of intermediate cocoa ingredients from raw cocoa beans and the processing of seafood items, such as tuna, shrimp and crab. It is noteworthy that export competitiveness appears to decline when processed products include tightly regulated ingredients, such as rice, sugar and dairy. In contrast, instant noodle manufacturing appears to have developed competitiveness by combining locally produced palm oil with imported wheat products, but the imported wheat is relatively free from regulation as it does not compete with domestic production.

Foreign investment and joint ventures have been important in developing export competitiveness in the cocoa ingredients and seafood processing sectors, but have been far less important in instant noodle manufacturing. Due to significant bottlenecks and inefficiencies in both agricultural supply chains and distribution networks, Indonesia-based food processors are often required to be more vertically integrated than in other countries, and local firms are far better positioned to make the necessary investments that foreign firms may find too risky.

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APPENDIX A Discussion of data and methodological constraints for the trade data analysis (Chapter 3)

Due to the nature of data aggregation, the definition of 'food products', as defined by both WITS and UN Comtrade, includes residues, animal food, tobacco and manufactured tobacco substitutes. A breakdown of this Harmonized Item Description and Coding System, the international standard maintained by the World Customs Organization, for 'food products' can be found in Appendix B. A further complicating factor involves country-specific individual input–output tables. While far more disaggregated, the classification of this data differs from one country to another. In Indonesia, this sector classification even varies across years of input–output tables.

When assessing the foreign content in exports, therefore, we have to make the best aggregation to represent 'food products', even though the calculation is done for every single category in that aggregation. For Indonesia in 2005, for example, we use estimates from 24 sectors to represent 'food products': processed and preserved meat; dairy products; canned and preserved fruits and vegetables; salted fish and dried fish; processed and preserved fish; copra; animal and vegetable oil; rice milling; wheat flour; other flour; bakery products and similar products; noodle, macaroni and similar products; sugar; peeled grains; chocolate and sugar confectionary; milled and peeled coffee; processed tea; soybean products; other food; animal feed; alcoholic beverages; tobacco products; and cigarettes.[13]

The world input–output tables from WIOD, on the other hand, provide the most aggregated classification that can be used as a proxy for 'food product'. It is only one sector, namely, food, beverages and tobacco. Such aggregation is understandable as it is the role of the WIOD to provide standard tables across countries to build its world input–output data. To achieve this, there is a maximum of 35 sectors in each individual country.[14] This aggregation obviously loses some information as an official table can have more than 150 sectors (for example, Indonesia has 175 sectors for 2005 and 185 sectors for 2010).

To ensure a degree of time consistency across available datasets, the WIOD and UN Comtrade databases are used to provide the most recent data, up to 2014. Individual, official input–output tables, however, are only available up to 2010 for Indonesia, and similarly for other countries that publish input–output tables (though some, like Australia, have published up to 2012). The world input–output tables issued by WIOD, however, only include data up to 2011. This is because they extrapolate the recent tables of a given country based on that country's official input–output tables. In fact, they also interpolate the tables for the years between any two published tables of the country in order to provide continuous tables from 1995 to 2011, despite the fact that countries such as Indonesia only publish input–output tables every five year (that is, Indonesia has official tables for 1995, 2000, 2005 and 2010; the last one being launched in 2016). These drawbacks notwithstanding, the WIOD tables are very useful to analyse linkages across countries, including the type of analysis of GVC.

[13] Due to these classifications, it is natural that we use 'food products' and 'food processing' interchangeably in this analysis.

[14] WIOD covers 40 countries and one RoW (rest of the world). For detailed explanation of their tables, see Dietzenbacher et al. (2013).

APPENDIX B Use of codes applied in trade analysis

Harmonisation codes

The Harmonized Commodity Description and Coding System (HS) is an international standard maintained by the World Customs Organization that classifies traded products. Items are identified by a six-digit number that is recognised by countries that have adopted the harmonised system. Tobacco is included in food and beverage categories, distorting data in on agricultural and food products.

Two-digit HS codes

HS 01 live animals

HS 02 meat, edible offal

HS 03 fish, crustaceans

HS 04 dairy, eggs, honey

HS 05 products of animal origin, e.g. coral, horse hair

HS 06 live trees, other plants

HS 07 edible vegetables

HS 98 fruits, nuts, citrus peel

HS 09 coffee, tea, spices

HS 10 cereals

HS 11 milling industry, e.g. wheat

HS 12 oil seeds, miscellaneous grains

HS 13 gums, resins

HS 14 vegetable plaiting material, bamboo, reeds

HS 15 animal or vegetable fats, oils, waxes

HS 16 meat, fish and seafood food preparations not elsewhere specified

HS 17 sugars and sugar confectionary

HS 18 cocoa and cocoa preparations

HS 19 cereal, flour, starch, milk preparations and products

HS 20 vegetables, fruit, nut, etc. food preparations

HS 21 miscellaneous edible preparations

HS 22 beverages, spirits and vinegars

HS 23 residues, wastes of food industry, animal fodder

HS 24 tobacco and manufactured tobacco substitutes

APPENDIX C Glossary of terms, definitions and abbreviations

Agrifood	Any food or beverage, or food or beverage material, from unprocessed through highly processed food and beverages
BKPM	Indonesia's Investment Coordinating Board (Badan Koordinasi Penanaman Modal)
BPOM	Indonesia's Food Regulatory Authority (Badan Pengawas Obat dan Makanan)
BPS	Statistics Office of Indonesia (Badan Pusat Statistik)
CPO	Crude palm oil
FAO	The Food and Agriculture Organization of the United Nations
FBT	Food, beverage and tobacco
FDI	Foreign direct investment
FMCG	Fast-moving consumer goods. These are products that are sold quickly and at relatively low cost, such as soft drinks and chocolate bars
Food system	The path that food travels from farm to fork. It includes the growing, harvesting, processing, packaging, transporting, marketing, consuming and disposal of food
GDP	Gross domestic profit
GlobalG.A.P	An internationally recognised set of farm standards dedicated to Good Agricultural Practices (GAP)
GPN	Global production network.
GVCs	Global value chains.
HS Codes	Harmonized Commodity Description and Coding Systems (see Appendix B)
IMF	International Monetary Fund
IP	Intellectual property
MSE	Micro and small enterprises
Kemenperin	Ministry of Industry (Indonesia)
SME	Small and medium-sized enterprise

The following reviews (Appendices D-F) of lead firms in the Indonesian food were prepared based upon information gathered from relevant corporate websites during the period September – December 2016. No attempt has been made to verify the accuracy of the data presented here with the relevant companies, and should be treated with care as a result. These reviews are intended to provide a general overview of operations of the main companies that might guide further research in these sectors.

APPENDIX D Review of lead firms involved in noodle manufacturing

ABC President Indonesia

EightyEight@Kasablanka Office Tower A Lt.31 Unit A-H

Jl.Casablanca Raya Kav 88

Jakarta Selatan 12870

Phone: +62 21 2982 0168

Website: http://www.abcpresident.com/eng/index.php

Overview of operations: PT. ABC President Indonesia was established in September 1991 under a joint venture agreement between PT. ABC Central Food of Indonesia and Uni-President Enterprises Corporation of Taiwan. ABC is one of key players in the Indonesian instant noodle market. Over the years, Uni-President Enterprises has expanded to various businesses like food, edible oils, beverages, dairy products, health food, frozen food and convenience stores.

Locations: Jakarta, West Java

Ownership structure: Private, foreign direct investment. PT ABC President, an FDI company, previously known as a producer of food and beverage products (sauce, ketchup, etc.). This company is a joint venture between PT Aneka Bina Cipta (62%), with Nan Gai Investment Co. Ltd from Hong Kong (35%) and Yeuan Yeou Enterprises Co. Ltd from Taiwan (3%).

Sales: Not disclosed

Main products: Instant noodles

Brands (noodles only): Mi ABC Selara Asal, Mi ABC Selara Pedas, Mi ABC Cup, Mi ABC Gule Salero

Ingredients (noodles): wheat flour, vegetable oil, salt, acidity regulator, vegetable stabiliser, vegetable thickeners, and colourants (tartrazine CI 19 140)

Certification: Hazard Analysis Critical Control Point (HACCP), ISO, Non Preservatives (KOMBET)

Export markets: Taiwan, Singapore, Europe

Gaga Foods

Jl. Ancol Barat VII Blok A 5D No. 2

Jakarta 14430, Indonesia

export@jakaranatama.co.id

Phone: +62 21 6909244

Website: http://healtiramen.com/

Overview of operations: PT Jakarana Tama, known for its Gaga Foods brand, was established on 20 June 1980. The company focuses on the manufacture of instant noodles but also has interests in canned products and seasoning. The Gaga brand is one of Indonesia's most popular instant noodle brands.

Locations: Jakarta, North Sumatra and West Java (Bogor) and 40 sales offices spread across Sumatra, Kalimantan and Java

Ownership structure: Private, domestic investment

Owner: Djajadi Jaya

Sales: Not disclosed

Products: Instant noodles, canned seafood, sauces, seasonings, sausages

Brands (noodles only): Mie 100, Mie 1000, Mie Gepeng, Mie Telor A1, Gaga Cup, Healthimie (Green Barley Noodle)

Ingredients: Wheat (milled from 100% Australian prime wheat), vegetable oil, salt, guar guan (E4 12), sodium tripolyphosphate, potassium carbonate, sodium carbonate, food colour (Tartrazine I19140, E102)

Certification: HACCP, ISO

Export markets: Africa, Oceania, Middle East, Eastern Asia

Indofood Sukses Makmur

Sudirman Plaza, Indofood Tower,

Jl. Jend. Sudirman Kav. 76–78

Jakarta 12910

Phone: +62 21 57958822

Website: http://www.indofood.com/company/indofood-at-a-glance

Overview of operations: PT Indofood CBP Sukses Makmur Tbk is a diversified company and one of the world's leading manufacturers of wheat-based instant noodles. While noodles are a key business area, Indofood is referred to as a leading 'total food solutions' company, with operations in all stages of food manufacturing from the production of raw materials and their processing through to consumer products and distribution to the market. Through its five complementary strategic business groups, Indofood manufactures and distributes a wide range of food products: consumer branded products (noodles, dairy, snack foods, food seasonings, nutrition and special foods, and non-alcoholic beverages); Bogasari (flour and pasta); agribusiness (oil palm, rubber, sugar cane, cocoa and tea plantations, cooking oils, margarine and shortenings); distribution: and cultivation and processed vegetables (fresh and processed vegetables).

Locations: Indofood has at least 47 branches/plants across Java, Sumatra, Sulawesi, Kalimantan. (including CPO refineries in Jakarta, Surabaya, Medan and Bitung; and a margarine plant in Tanjung Priok)

Ownership structure: Publicly listed company: CAB Holdings Limited (a wholly owned subsidiary of First Pacific) own 50.07% of shares; 49.9% publicly owned

Sales: 2015 net sales consolidated Rp64,061.9 billion; 2015 sales, noodle division Rp20,996.1 billion

Products: Instant noodles

Brands: Indomie, Supermi, Sarimi, Sakura, Pop Mie, Pop Bihun and Mi Telur Cap 3 Ayam

Ingredients (noodles): Wheat flour, refined palm oil, tapioca starch, salt, potassium carbonate, guar gum, sodium carbonate, riboflavin, TBHQ (preservative), colour (101), acidity regulator, thickeners. (Note: this does not include ingredients in the seasoning powder)

Certification: ISO 9001:2008, 14001:2004, Halal, SNI, Good Manufacturing Practice (GMP), AIB International Consolidated Food Safety, HACCP ISO 22000:2005

Domestic distribution: Indofood has at least 47 branches/plants across Java, Sumatra, Sulawesi, Kalimantan

Export markets: Indofood exports its product to more than 60 countries. The key export destinations are: the Netherlands, South Korea, China, the Philippines, Vietnam, Malaysia, Singapore, Timor-Leste, Australia, New Zealand, Papua New Guinea, Hong Kong, Jordan, Saudi Arabia and USA

PT. Mayora Indah, Tbk/PT Dellifood Sentosa Corpindo

Jl Industri II Kawasan Industri Jatake Bl E/5

Pasir Jaya, Jatiuwung

Tangerang 15135 Banten

Phone: +62 21 5902061

Website: www.mayoraindah.co.id

Location: Banten

Overview of operations: PT Mayora Indah Tbk is an Indonesia-based company primarily engaged in food manufacturing. Founded in 1977, Mayora Group has been progressively transformed from a humble home biscuit industry into one of the biggest fast-moving consumer goods companies. It is currently one of Indonesia's top performing companies.

Mayora subsidiary Dellifood Sentosa produces noodles. Although Mayora's noodle products have a low profile, they are quoted as being in the top eight noodle companies in Indonesia.

Ownership structure: Publicly listed, foreign direct investment

Owners: Indonesian institutional investor 32.9% (PT. Unita Branindo), 6% Other Indonesian institutional, foreign shareholding 61%

Revenue: Net sales Rp3,456,375,356,421 (Annual report, 2015)

Products: Biscuits, wafers, chocolate, candy, coffee, cereal, noodles

Noodle Brands: Migelas, Mi Duo

Ingredients: Wheat flour, refined palm oil, tapioca starch, salt, guar gum, sodium tripolyphosphate, potassium carbonate, sodium carbonate, food colour tartrazine CI 19140. Seasoning: Salt, sugar, food enhancer, garlic powder, artificial chicken flavour

Certification: Halal, ISO

Domestic distribution: Indonesia-wide

Export markets: China, India, Philippines, Malaysia

PT Nissin Foods Indonesia

Intercontinental Hotel Jakarta, LG Floor. Jalan Jend. Sudirman Kav 10–11 Jakarta Pusat 10220

Website: www.nissinfoods.co.id

Phone: +62 21 5710304

Overview of operations: Parent company Nissin started manufacturing noodles in 1948 in Japan. PT. Nissin Mas is a foreign investment (PMA) company established by Roda Mas and Nissin Food Product Co. Ltd of Japan in Indonesia in 1992. Nissin is one of the largest producers of instant noodles in Japan. Nissin Food of Japan was the first in the world to produce instant cup noodles, in 1971.

Location: Jakarta, Bekasi and Karawang, West Java

Ownership structure: Publicly listed in Japan (The Nissin Group)

PT. Nissin Mas is a foreign investment (PMA) company established by Roda Mas and Nissin Food Product Co. Ltd of Japan in 1992

Owner: Koki Ando (President and CEO)

Revenue: Nissin Group US$4986 million sales in 2015

Products: Noodles

Brands: Gekkira Ramen, TOP Ramen, Cup Noodles

Ingredients: Enriched wheat flour (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), palm oil, rice, wheat, eggs, salt, flavourings, TBHQ, sodium alginate

Certification: ISO, SNI, HACCP, Halal

Export markets: Nissin products are manufactured in 29 plants located in 11 countries and consumed in over 70 countries worldwide (Asia, Africa, Europe, Middle East, America)

PT Olagafood

No. 54, Jalan Sentosa Kel. Buntu Bedimbar

Kec. Tg. Morawa

Medan, 20212

Phone: +62 61 794 0678

Website: www.olagafood.co.id

Overview of operations: Pt Olagafood Industri Makanan produces and sells several food and beverage products, such as instant noodle products, snack products and coconut-based products. The company was founded in 1997 and is based in Medan, Indonesia. PT Olagafood Industri Makanan operates as a subsidiary of Consciencefood Holding Limited. Consciencefood Holding Limited is a Singapore-based investment holding company. Its flagship product, instant noodles, contributed approximately 94% of its total revenue.

Ownership: The company was listed on the Singapore Stock Exchange, but was delisted in 2014.

Owner: Djoesianto Law

Sales: US$82 million (estimate, 2012)

Product: Instant noodles (the group also produces sports drinks)

Brands: Alhami, Alhami 100, Rasa Mi Goreng, Santremie, Hola Hole, Mikka

Ingredients: Wheat flour, refined palm oil, tapioca starch, salt, potassium carbonate, guar gum, sodium carbonate, riboflavin, TBHQ, colour (101), acidity regulator, thickeners. (Note: this does not include ingredients in the seasoning powder)

Certification: Halal, ISO

Domestic distribution: Six provinces in Sumatra Island, namely, North Sumatra, Aceh, Riau, Jambi, West Sumatra and South Sumatra, and Java Island

Export markets: Malaysia, Papua New Guinea, South Africa, Hong Kong, Palestinian Territories, Madagascar and Singapore

Radjawali Group

Jl. Mekar Jaya Kp Sulang RT 05/04

Kel. Sepatan Kabupaten Tangerang

Website: http://radjawaligroup.com/index.php, http://tiptopfood.co/

Overview of operations: Radjawali is a Singapore-based holding company with noodle manufacturing operations in Indonesia under the name PT. Indosari Pangan Sarana Abadi. Radjawali Distribution Singapore (RDS) noodles established a manufacturing unit in Banten, West Java, in 2008. The company also produces sauces and condiments. Currently the factory in Indonesia produces five flavours of instant noodles and egg noodles under the Tip Top brand.

Locations: Singapore, West Java

Ownership: Private company, foreign direct investment

Sales: Not disclosed

Brands: Tip Top Soto Ayam, Tip Top Kaldu Ayam, Tip Top Mi Goreng, Tip Top Ayam Bawang

Ingredients: Noodles: wheat flour, refined palm oil, tapioca starch, salt, guar gum, sodium tripolyphosphate, potassium carbonate, sodium carbonate, food colour tartrazine CI 19140. Seasoning: Salt, sugar, food enhancer (monosodium glutamate), garlic powder, artificial chicken flavour, white pepper powder, dried leek and chilli powder.

Certification: HACCP, ISO 22000

Domestic distribution: Indonesia-wide

Export markets: Singapore, Brunei, Vietnam

PT Sentrafood Indonusa (Medco Group)

Jl Ampera Raya 20 Medco Bldg Lt 4

Cilandak Timur, Pasar Minggu

Kota: Jakarta 12560

Phone: 021 7822057 - 021 7822129

Overview of operations: PT Sentrafood Indonusa manufactures and distributes instant noodles under the brand Salami and Cintamie. The company is also an OEM manufacturer for few private label products, such as Mie Sehati and Pandaroo. PT Sentrafood Indonusa was founded in 1994 and is based in Karawang, Indonesia. As of July 2011, PT Sentrafood Indonusa operates as a subsidiary of PT Etika Indonesia.

The parent company, the Medco Group, is one of the largest palm oil plantation companies in Indonesia. Medco also has significant interests in banking and energy.

PT Sentrafood Indonusa produces 140,000 tonnes of instant noodles per year. It has a 5% share of instant noodle market in the country. With two production lines, PT Sentrafood produces at least 300,000 cartons, or 12 million packs, of instant noodles a month.

Locations: Jakarta, West Java

Ownership structure: Private (FDI through Etika Holding Company, based in Singapore)

Owner: Arifin Ponigoro (Medco Group)/Dato' Kamal Tan (Etika Group)

Sales: not disclosed

Products: Instant noodles

Brands (noodles only): Cintamie, Salam Mie Kari Melayu, Salam Mie Goreng Jawa and Salam Mie Goreng Abon

Ingredients (noodles): Wheat flour, vegetable oil, tapioca starch, sodium polyphosphate, salt, natural gum, sodium carbonate, potassium carbonate and tartrazine colour C1 19140. Seasoning: Salt, enhancer monosodium glumate, hydrolysed vegetable protein, chicken, flavour powder, sugar, garlic powder and vegetable powder

Certification: Halal, ISO

Domestic distribution: Indonesia-wide

Export markets: Saudi Arabia, Malaysia, Brunei

PT Tiga Pilar Sejahtera Food Tbk

Alun Graha 1st Floor

Jl. Prof. DR. Soepomo, SH No. 233, Tebet

Jakarta Selatan, Indonesia

Phone: +62 21 8318775

Email: info@tigapilar.com

Website: http://www.tigapilar.com/

Overview of operations: PT. Tiga Pilar Sejahtera (TPS) was established in 1992, as a noodle processing company, by the family of Tan Pia Sioe. In 2002, TPS acquired PT. Asia Inti Selera, which also produces instant noodles. In 2003, TPS listed shares on the Jakarta Stock Exchange. TPS has continued to grow and diversify and now has sizeable palm oil and rice production interests. Through TPS's consumer food division, the company also produces snack food, biscuits, flavours and candies. TPS Food is divided into two types of food groups: basic food, which is run by PT TPS and PT Subafood Pangan Jaya (SPJ); and the food ready for consumption (FMCG), which is run by PT Poly Meditra Indonesia (PMI), PT Balaraja Bisco Palma (BPP) and PT Putra Taro Paloma (PTP). Currently PT TPS has a production capacity of around 72,000 tonnes of instant noodles per year.

Locations: Jakarta, Sragen (Central Java), Lampung

Ownership structure: Publicly listed company

Foreign shareholders account for 67.66% of total shares (71% of stock held by institutions and 11% of stock held by individuals), PT Tiga Pilar Corporate 14.77%, JP Morgan Chase Bank NA RE Non-Treaty Clients 9.33%, PT Permata Handrawina Sakti 9.20%, Trophy 2014 Investor Limited 9.09%, Primanex Limited 6.60%, Primanex Pte Ltd 6.59%, and Morgan Stanley and Co. LLC 6.52%.

Sales: 2015 sales, Rp6 trillion rupiah (US$450 million). Note: consolidated sales

Products: Egg noodles, rice noodles, corn noodles, vermicelli (dried and instant), palm oil

Noodle brands: Mie Superior, Mie Ayam Dua Telor, Bihun Raja, Bihunku, Subahoon dan Cap Tanam Jagung,, HaHa Mie, Mikita, Filtra, Kurma, Spider, Yumi, Mie Kremezz and Shorr

Ingredients (noodles): wheat flour, refined palm oil, tapioca starch, salt, potassium carbonate, guar gum, sodium carbonate, riboflavin, TBHQ, colour (101), acidity regulator, thickeners. (Note: this does not include ingredients in the seasoning powder)

Certification: Halal, HACCP, Food Safety Management System (SMKP/FSMS) ISO 22000:2005, National Standard Product Certification (SNi)

Markets and distribution: Domestically, TPS has 266 distributors in Java, Sumatra, Kalimantan, Sulawesi, Bali, Maluku and Papua.

Export markets: US, Australia, UK, Singapore, South Korea, Papua New Guinea, China, The Netherlands, Madagascar, Jordan, Canada, Spain, Timor-Leste, Saudi Arabia, South America

PT Wings

Jl Tipar Cakung Kav. F 5–7,

Cakung Barat, Cakung, Jakarta Timur

Phone: +62 21 460 2696

Website: http://www.wingscorp.com/, http://www.miesedaap.com/

Overview of operations: Wings, which had its beginnings as a soap and detergent company, was founded over 60 years ago in East Java. It is now a diversified company with interests in cleaning products, personal care and food products. Its instant noodle brand has grown in popularity in recent years, and in 2015 was awarded the Roy Morgan Customer Satisfaction Award for Instant Noodle of the Year. Mie Sedaap is listed is one of the most recognised global food brands (Kantar Worldpanel, 2015). The group is owned by one of the wealthiest families in Indonesia. Other interests include property, chemicals and packaging.

Locations: Jakarta, Surabaya, Gresik

Ownership structure: Private company, three main subsidiaries: PT Karunia Alam Segar (KAS), PT. Prakarsa Alam Segar (PAS) and PT Sayap Mas Utama. Owned by the Katuari family

Sales: Not disclosed

Products: Instant noodles (in the Wings food division there are also sauces, coffee, powdered drinks and ready-to-drink beverages)

Brands: Mi Sedaap, Mie Sedaap Cut – Goreng Kriuk, Sambal Goreng, Soto, Ayam Bawang, Kari Ayam, Ayam Special, Kari Kental Special, Ayam Goreng Special, Baso Special

Ingredients (noodles): Wheat flour, vegetable oil, antioxidants, TBHG, salt, thickener, acidity regulator, colouring, mineral (iron). Flavouring: Sugar, salt, flavour enhancer (621), garlic powder, artificial chicken flavour, pepper powder, refined palm oil, onion, sugar, water, salt, soya bean, preservative (211), chilli, onion, wheat flour

Cerification: HACCP, ISO 22000

Markets and distribution: Indonesia-wide

Export market: Worldwide

APPENDIX E Review of lead firms involved in Indonesian seafood processing

PT Aneka Tuna

Jl. Surabaya-Malang Km. 38 Gempol

Pasuruan 67155 - Jawa Timur

Phone: +62 343 851361

Fax: +62 343 851361

Email: info@tunaindonesia.com

Website: http://tunaindonesia.com/index.html

Overview of operations: PT Aneka Tuna Indonesia (ATI) was established in October 1991 as a joint venture company between Itochu Corporation, Hagoromo Foods Corporation – a leading tuna brand owner in Japan – and one other foreign firm. ATI began commercial operations in November 1992, specialising in production and sale of canned tuna.

Japanese firm Itochu is responsible for overall sales and management, while Hagoromo Foods is in charge of production. All of the partners are actively involved in improving product quality, including dispatching technicians from Japan and sending local technicians to Japan for training.

Locations: Pasuran (East Java)

Ownership structure: Parent company based in Japan, listed on Tokyo Stock Exchange

Owner: JV Itochu Corp, Hagoromo

Sales: Total annual sales value US$100 million (www.bizearch.com/company/Cv_Pasific_harvest_38006.htm)

Products: canned sardines, mackerel, tuna, tomato, sugar, salt, garlic, onions

Brands: Besttunaku, Sunbell, Hagoromo brands

Ingredients: Tuna, sugar, salt, potatoes, soy bean oil, chilli, garlic, tomato, monosodium glutamate

Certification: Halal, HACCP

Markets and distribution: Nationwide distribution

Export markets: Japan, Europe, Middle East, Australia, Canada, Africa

PT Central Proteina Prima Tbk (CP Prima)

Wisma GKBI, 19th Floor

Jl. Jend. Sudirman No. 28

Jakarta 10210

Website: http://www.cpp.co.id/

Overview of operations: CP Prima is a leading aquaculture company in Indonesia which was incorporated in April 1980. CP Prima produces and sells feed, fry, pet food, probiotics, and shrimp products and processed food products for domestic and export markets. It is also involved in downstream processing of branded seafood products.

Locations: Production across nine Indonesian provinces with a food processing unit in Lampung

Ownership structure: Publicly listed (Jakarta)

Sales: Rp8.9 trillion in 2015 (US$800 million)

Products: Thirty-one varieties of food products, being sold in 5500 retail outlets in Indonesia, including shrimp tofu, soup, seafood sticks

Brands: Fiesta Seafood, Champ Seafood, Shifudo, and Frosh

Ingredients: Could not be determined.

Certification: Aquaculture Stewardship Council (ASC), GLOBAL Good Agricultural Practices (GLOBALG.A.P.), Global Aquaculture Alliance Best Aquaculture Practices (GAA BAP), British Retail Consortium Global Standards (BRC), HACCP, GMP

Export markets: Long-term business partners in the USA, Europe and Japan

PT. Bali Maya Permai

Jl. Pluit Raya No. 19 Blok D No. 1–2

Jakarta Utara 14440

Jakarta, Indonesia

Phone: +62 21 666 000 55

Fax: +62 21 666 059 99

Website: http://www.bmpfood.co.id/

Overview of operations: PT. Bali Maya Permai Food Canning Industry began operating since 1978 as a producer of canned seafood, and today is one Indonesia's top canned fish producers. Bali Maya Permai delivers three product categories: canned sardines, canned tuna and canned mackerel. Employing more than 1500 well-trained workers, the company produces more than 80 tonnes of fish every day. With extensive cold storage facilities, Bali Permai Maya has a large inventory of fish from sources worldwide.

Locations: Bali: Jalan Pengambengan, Desa Tegal Badeng Barat, Negara, Bali, Indonesia

Ownership structure: Private

Owner: Yusuf Sukardjo, President Director

Sales: Not disclosed

Products: Canned tuna, mackerel, sardines

Brands: King's Fisher Tuna, Mackerel, Sardines

Ingredients: Tuna, mackerel, sardines, tomato sauce, kecap manis, chilli sauce, water, oil, pepper, starch, MSG

Certification: GMP, SSOP, and HACCP, Dolphin Safe, Halal

Markets and distribution: Nationwide distribution

Export markets: Mainly to North America, Eastern Europe, Oceania, Middle East, Eastern Asia, Western Europe

PT. Kelola Mina Laut

Jl. KIG Raya Selatan Kav.C-5

Kawasan Industri Gresik

Gresik, East Java- Indonesia 61121

Phone: +62 31 3976351–53

Fax: +62 31 3976350

Email: kml@kmlseafood.com

Website: http://www.kmlfood.com, http://kmlseafood.en.forbuyers.com/about

PT. Kelola Mina Laut was established in 1994 as a dried anchovy processing plant in East Java. It has expanded to incorporate 12 subsidiaries, based primarily in Java, with a seafood processing companies in Ambon, Makassar and Kendari.

Locations: Forth-three processing plants – **West Java**: Cirebon, Banten, Serang; **Central Java**: Rembang, Kendal, Pemalang, Kragan, Semarang; **East Java**: Situbondo, Tuban, Sampang, Gresik, Sumenep, Poteran Island, Jember, Sidoarjo, Lamongan, Palang, Dungkek, Probolinggo, Pamekasan, Gili Island; **South Sulawesi**: Makassar; **Southeast Sulwesi**: Kendari; **Maluku**: Ambon

Ownership structure: Private

Owner: Ir. Muhamad Najikh

Sales: Total annual sales value: US$10–50 million (http://kmlseafood.en.forbuyers.com/about)

Products: Frozen seafood, dried seafood, tinned seafood, surimi, frozen vegetables, meatballs

Brands: Prima Star, Panorama, KML, Minaku, Foody, Minakita, BKL, Starfood International, MariBlue, Daitsabu, M27

Ingredients: Fish, octopus, tuna, baby clams, shrimp, squid

Certification: Halal, HACCP, BRC, iSO 22000, BAA BAP, Custom Trade Partnership Against Terrorism (CTPAT), EU Approved

Markets and distribution: Nationwide distribution

Export markets: Mainly to North America, Eastern Europe, Oceania, Middle East, Eastern Asia, Western Europe

PT. Maya Food Industries

Jl Jlamprang Kel Krapyak Lor, Kec Pekalongan Utara

Pekalongan, Central Java 51149

Phone: +62 285 421676/424557

Fax: +62 285 422551

Website: http://www.ptmayafoodindustries.com/

PT. Maya Food Industries is one of Indonesia's leading seafood processors and a wholly owned subsidiary of the Maya Group in Singapore. The Maya Group has diversified manufacturing, trading, property, chemical, plastic businesses around South-East Asia. The Maya Corporation began as a food-importing business, importing food and other goods from China. In the food area, Maya also produces soy sauce, vinegar, sugar cubes and rice vermicelli.

In Indonesia, Maya Food Industries employs 1000 to 1500 workers, and is capable of producing 5000 cartons (two 40-foot containers) daily, depending on the availability of local or imported fish.

Locations: Jakarta and Pekalongan

Ownership structure: Private (subsidiary of Maya Group Singapore), foreign direct investment

Owner: Benson Wang (Director)

Sales: Revenue US$50 million (based on data suggested by Alibaba.com)

Products: Canned sardines, mackerels

Brands: Sesi Bon, Botan, Ranesa

Ingredients: Sardines, mackerel, oil, tomato paste, starch, sugar, salt, citric acid, flavour enhancers

Certification: Halal, HACCP, ISO 9001, GMP US FDA(Food and Drug Administration), CFIA (Canadian Food Inspection Agency), EU

Distribution: Nationwide

Export Markets: Mainly to Africa, India, Japan, Malaysia, Singapore, Cambodia, Vietnam, Chile

Medan Tropical Canning and Frozen Industries

Jl. K.L. Yos Sudarso Km. 10,

5 Kawasan Industri Medan, Medan

Phone: +62 61 685 0038

Website: http://en.indonesia-seafood.com/, www.indonesiaseafood.com

Overview of operations: Established in 1984, Medan Canning and Frozen is now one of the leading manufacturers of canned seafood in Indonesia. The company employs in excess of 1500 people. It also has its own microbiology laboratory which tests total bacteria plate count (TPC), salmonella, *E. coli*, coliform and vibrio test.

Location: Medan, North Sumatra

Ownership structure: Private

Owner: Abu Djaja Bunyamin (CEO)

Sales: US$5–10 million (estimated, bizsearch)

Products: Canned seafood, frozen stuffed crab, frozen squid, frozen whole round soft-shell crab, frozen cuttlefish, frozen baby octopus

Brands: Vinisi Cumi Sambal Goreng, Vinisi Tuna, Vinisi Sardines, Vinisi Tuna Rica-Rica, Vinisi Cumi Gulai Padang

Ingredients: Tuna, baby clams, shrimp, crab, cephalopods (squid, octopus, cuttlefish), salt, sugar, oil, tomato, soybean sauce, flavours

Certification: HACCP; approved by EU, US FDA, CFIA

Export markets: Products have been marketed and sold worldwide, including USA, Canada, UK, Japan, Spain, Netherlands, China

Nison Indonesia

Jalan Raya Kletek 196 - 197

Taman, Sidoarjo, 61257 Indonesia

Overview of operations: PT. Nison Indonesia, established in 2006, has grown to become one of the food industry's highly sought sardines suppliers. The company manufacturers canned sardines, canned mackerel and canned tuna in Banyuwangi and Sidoarjo, East Java.

Location: East Java

Ownership structure: Private, domestic investment

Owner: Charlie K. Singgih

Sales: not disclosed

Products: Canned tuna, mackerel and sardines.

Brands: Nison, Papa Chef, Fujisan, Bonex

Ingredients: Sardines, tuna, mackerel, tomato, salt, pepper, garlic, chilli, flavourings

Certification: HACCP, GMP, Halal

Domestic distribution: Indonesia-wide

Export markets: Africa, the Middle East and South-East Asia.

CV, Pasific Harvest

Jl. Tratas Nomor 61

Muncar, Banyuwangi East Java

Phone: +62 333 593641, +62 333 593488

Email: info@pasificharvest.com

Website: http://www.pasificharvest.com/

Overview of operations: CV. Pasific Harvest was founded in 1993 as a company that manufactures seafood products, including canned sardines, canned mackerels, canned tuna, frozen fish (seafood), and fish flour as well as fish oil. It is headquartered in Banyuwangi, Indonesia. The company has grown very rapidly and now has three manufacturing plants. Pasific Harvest has a manufacturing capacity of 200 tonnes of fish per day.

Location: Banyuwangi, East Java

Ownership structure: Private

Owner: Aminoto G Mokta

Sales: Total annual sales value US$100 million (www.bizearch.com/company/Cv_Pasific_harvest_38006.htm)

Products: Canned sardines, mackerel, tuna, tomato, sugar, salt, garlic, onions

Brands: Asahi, Ko-Be, Avena, Gaga, Bella, ABC

Ingredients: Sardines, mackerel, tuna, oil, tomato, seasoning

Certification: Halal, HACCP, NPN, GMP

Markets and distribution: Nationwide distribution

Export markets: China, Europe, Asia, Canada, USA

PT Canning Indonesian Products

Jl. Diponegoro 101, Denpasar, Bali 80113

Phone: +62 361 228 816

Fax: +62 361 235 316

Website: http://www.pronas.co.id/home.html

Overview of operations: Pronas is the flagship brand of Canning Foods Indonesia, which was established in 1942. It is best known as a canned corned beef company, although it has branched into other product areas, including canned sausages, canned vegetables, canned seafood, canned fruits, seasoning, pasta and ready-made meals. The parent company is Pronasindo Group, controlled by the Soetantyo family. The family has extensive holdings in the food and canning sector across North America and Asia.

Locations: Bali, Jakarta (distributional office only)

Ownership structure: Private

Owner: Teguh Soetantyo, Budi Soetantyo, Darren Soetantyo

Sales: Not disclosed

Products: Canned sardines in tomato sauce, canned sardines in chilli, canned mackerel in tomato sauce, canned mackerel in chilli

Brands: Pronas, Indofish

Ingredients: Tuna, mackerel sugar, salt, vegetable oil, garlic, tomato, monosodium glutamate

Certification: Halal, HACCP, ISO 9001, GMP

Markets and distribution: Nationwide

Export markets: Through online traders, worldwide

PT Toba Surimi Industries

Jalan Pulau Pinang 2,

Kawasan Industri Medan II

Saentis - Deli Serdang, Medan 20371

Email: gindra@nusa.net.id, gindra@indosat.net.id

Phone: +62 61 6871022

Fax: +62 61 6871007

Overview of operations: PT. Toba Surimi Industries was established 1997 by a group of friends experienced in the seafood processing industry. The business, started as a pasteurised crab meat processing line, can be divided into three divisions: the pasteurised crabmeat division; the sterilised canned division; the frozen division. The company now has operations in Jakarta. PT Toba Surimi Industries employs 850 people through Indonesia.

Location: North Sumatra

Ownership structure: Private, domestic investment

Owner: Gindra Tardy (Director)

Sales: US$40 million per annum (in exports), total sales figures not available

Products: Canned sterilised seafood, such as tuna, crabmeat, baby clams, clam juice, shrimps,

cuttlefish, squid, octopus, tilapia, seafood cocktail, tuna bread spread, fish ham

Brands: Napoli, Roma, Gold Seal, Admiral, California Girl, Geisha

Ingredients: Tuna, crabmeat, baby clams, shrimps, octopus, squid, salt, flavours, tomato

Certification: HACCP, CTPAT approved, EU approval, BRC certification

Domestic distribution: Indonesia-wide

Export markets: USA, EU, Japan, Hong Kong, Canada, UK and Australia

APPENDIX F Review of lead firms involved in Indonesian chocolate manufacturing

PT. Perusahaan Industri Ceres (CERES) Under Delfi Limited Ltd

Jl Raya Dayeuh Kolot No 92

Phone: +62 22 5207421

Fax: +62 22 5232552

Website: www.ceres.co.id, www.petrafoods.com

Headquarters: Singapore

Production facilities: West Java, Malaysia, The Philippines

Overview of operations: Ceres/Petra Foods/Delfi was established by Chuang family in the 1950s as a chocolate manufacturer in Indonesia. The parent company is now headquartered in Singapore and was listed on the Singapore Stock Exchange in November 2004. Petra Foods Limited (now Delfi) markets and distributes its own brand of chocolate confectionary products in its core markets of Indonesia, Philippines, Singapore and Malaysia. In the late 1980s, the group ventured into the cocoa ingredients business with a cocoa processing plant in the Philippines. This was followed by the acquisition of processing plants in Mexico, Brazil and Europe. Over the next decade, Petra Foods grew to become the largest bean grinder in Asia and the fourth largest in the world after Archer Daniels Midland (ADM), Cargill and Barry Callebaut, providing cocoa ingredients to companies in over 60 countries. Customers included household names such as Nestlé, Cadbury and Mars. In 2013, this business was sold at a premium to Barry Callebaut as part of a strategic move to allow the group to focus on growing its regional branded consumer business. The group has an established portfolio of chocolate confectionary brand names in Indonesia including Silver Queen and Ceres, which were introduced in the 1950s, and Delfi in the 1980s. The portfolio of chocolate and sugar confectionary brands now spans over 400 products.In May 2016, Delfi Limited and Orion Confectionary (a South Korean firm) formed a joint venture that will see the company command 50% of the countries retail chocolate market.

Ownership structure: Parent company, formerly Petrafood, now Delfi Limited, is listed on the Singapore Stock Exchange

CEO: John Chuang Tiong Choon

Revenue: 2014 USD$504 million revenue (Petra food, globally); Indonesian revenue US$365.3 million

Products: Chocolate, wafers, sugar confectionaries, chocolate beverages

Brands: Ceres, Silver Queen, Delfi, Top, Goya

Ingredients: Sugar., vegetable oil (palm oil; antioxidant E320), milk powder, maltodextrin, cocoa powder, whey powder, cashew, peanuts emulsifier (soy lecithin E322), salt, vanilla, chocolate flavour (artificial)

Certification: HACCP, OSHAS 18000, ISO 22000, ISO 9001 and BRC standards

Export markets: Products sold in over 10 countries, including Thailand, Brunei, India, South Korea and Vietnam.

PT. Fajar Mataram Sedayu

Jalan Soekarno-Hatta 225, Bandung, Jawa Barat, Indonesia

Website: www.lagie.co.id

Phone: +62 22 6122608, +62 22 6075174

Ownership structure: Private

Owner: President Director Slamet Bratasena

Revenue: Not disclosed

Products: Chocolate bars, compound chocolate flakes

Brands: L'Agie Safari, L'Agie Bonanza, L'Agie Choco Chips, L'Agie Peanut Pie, L'Agie Flamboyant, L'Agie Rainbow Chips, L'Agie Diamond, L'Agie Chocowafer, L'Agie Golden City, L'Agie Golden Coin

Ingredients: Sugar, cocoa, milk, dairy, peanuts, raisins, wheat flour

Certification: Halal

Export markets: not disclosed

PT. Federal Food Internusa

Komplek Permata Kota

Jl. P. Tubagus Angke 170 Blok B26

Pejagalan, Jakarta Utara 14450 Indonesia

Phone: +62 21 66671475

Fax: +62 21 66674225

Website: http://www.elmerchocolatier.com/

Overview of operations: The company operates across the country, producing both couverture chocolate and compound chocolate for bakeries and other industrial food companies and distributors. The company produces more than 50 types of chocolate to be applied in numerous baking necessities, from various chocolate blocks, powders, fillings, coatings, spreads, dipping, sprinkles, as well as chocolate for topping and decorations, produced from the highest quality raw materials from Indonesia and West Africa.

Ownership structure: Private

Owner: Not disclosed

Revenue: US$50–100 million (estimate only)

Products: Coverture, dark chocolate compound, white chocolate compound, coloured and flavoured chocolate compound, coating chocolate, dipping chocolate, filling chocolate, chocolate decorations, cocoa powder, chocolate spread,

Brands: Elmer

Ingredients: Sugar, cocoa, milk, vegetable fats

Certification: Halal

Distribution: Indonesia-wide

Export Markets: Africa, Middle East and South-East Asia

PT. Freya Abadi Indotama

Kawasan Industri KIIC, Jalan Maligi 3 Lot J2-A, Karawang Barat, Karawang, Jawa BaIndonesia

Phone: +62 21 89109135

Website: www.freyabadi.com/index.php

Overview of operations: Established in 1995 by McKeeson Investments of Singapore and the Fuji Oil Group of Japan, Freyabadi Indotama is a globally integrated chocolate company with R&D expertise, sourcing of ingredients and a broad range of food sector knowledge and innovation to bring to our customer offer. Freyabadi produces professional chocolate for the food and beverage industries, bakeries, patisseries, chocolate artisans and home pastry industries. The company works directly with farmers and their communities with the tools, education and support that they need to increase the volume of quality sustainable cocoa. According to the company website: 'Our stakeholders are committed to operating responsibly - focusing specifically on the issues of food security, environmental sustainability, food safety and responsibility across our supply chains and acting in the best interests of future generations.'

Ownership structure: Private, foreign direct investment

Owner: Mr William T.K. Chuang

Revenue: Parent company Fuji Oil Group, year ending March 2016 revenue ¥287,537 million.

Products: Dark chocolate compound, white chocolate compound, coloured and flavoured chocolate compound

Brands: Wholesale – Freyabadi Indotama

Ingredients: Sugar, cocoa, milk, vegetable fats

Certification: Halal

Distribution: Indonesia-wide

Export markets: Asia, Europe

PT Garudafood Putra Putri Jaya

Jl. Bintaro Raya No. 10A Kebayoran Lama Utara, Kebayoran Lama

Website: www.garudafood.com

Phone: +62 21 7290110

Fax: +62 21 7290112

Locations: West Java: Sumedang; Lampung, East Java: Gresik. Production facilities also in India (produces Choco Stick)

Overview of operations: GarudaFood was founded in 1990 under the Tudung Group, an investment holding company in Indonesia. GarudaFood started as a peanut company and now manufactures biscuits, confectionary products, dairy and beverages (through a joint venture with Suntory), and employs about 18,000 people. It also owns and operates an extensive distribution network throughout Indonesia covering 21 regions, 153 depots, 154 distribution partners and 360,000 outlets. GarudaFood has become one of the leading domestic biscuit companies in Indonesia and is the recipient of multiple top national brand awards. Garuda Food operates 15 production plants across Indonesia. In June 2015, GarudaFood Group and the Barry Callebaut Group, the world's leading manufacturer of high-quality chocolate and cocoa products, announced the signing of a long-term supply agreement.

Ownership structure: Private company

Owner: Hardianto Atmadja, CEO

Sales, Garuda Food Group: US$550 billion in revenue (http://www.anneahira.net/pt-garudafood-putra-putri-jaya/, 2015)

Products: Biscuits, peanut, confectionary, beverages, functional drinks, snacks

Brands (chocolate): Gery, Gery Wafer Stick, Gery O'Donut, Gery Cocoroll, Chocolatos, Chocolatos Gold

Ingredients Peanut, cocoa, flour, palm oil, milk, sugar

National distribution network: Eighteen regions in Indonesia and around 300,000 outlets

Export markets: Asia, Europe, Middle East, America, Australia, Africa, Pacific Ocean

PT. Mayora Indah, Tbk

Jl. Tomang Raya 21 – 23 Jakarta, 11440

Indonesia

Website: www.mayoraindah.co.id

Phone: +62 21 5655320

Fax: +62 21 5655323

Location: Banten: Tangerang; West Java: Bekasi, Bogor

PT Mayora Indah Tbk is an Indonesia-based company primarily engaged in food manufacturing. Founded in 1977, Mayora Group has been progressively transformed from a humble home biscuit industry into one of the biggest fast-moving consumer goods companies. It is currently one of Indonesia's top performing companies.

Mayora Group was listed on the Jakarta Stock Exchange in 1990. Mayora Group continues its rapid expansion throughout ASEAN, by establishing production facilities and marketing offices in several South-East Asian countries.

Its subsidiaries include PT Sinar Pangan Barat, PT Sinar Pangan Timur, Mayora Nederland B.V. and PT Torabika Eka Semesta.

Ownership structure: Publicly listed, foreign direct investment

Owners: Indonesian institutional investors 32.9% (PT. Unita Branindo), 6% Other Indonesian institutional, foreign shareholding 61%

Revenue: Net sales Rp3,456,375,356,421 (Annual report, 2015)

Products: Biscuits, wafers, chocolate, candy, coffee, cereal

Chocolate Brands: Beng-beng, Astor, Choki-choki, Danisa, Super … man

Ingredients: Glucose, sugar, milk powder, wheat flour, vegetable fat, cocoa butter, cocoa mass, cereal, maltodextrin, dextrose, milk fat, emulsifier (soya lecithin), salt, leavening agent (ammonium bicarbonate, sodium bicarbonate), chocolate flavour, vanilla, oats, fruits

Certification: Halal, ISO

Export markets: Countries with distribution office: China, India, Philippines, Thailand, Malaysia, Singapore, Vietnam, Nigeria. Exports to over 60 countries.

Monggo Chocolate

PT Anugerah Mulia Sentosa

Jl. Dalem KG III/978 RT 043 RW 10

Kel. Purbayan Kotagede 55173 Yogyakarta Indonesia

Phone/Fax: +62 (0274) 373192

Email: marketing@chocolatemonggo.com

Location: Central Java

Overview of operations: Chocolate Monggo was started in 2005 by a Belgium man, Thierry Detournay. Headquartered in Yogyakarta, Monggo has expanded with almost 150 staff now based in the company's main offices in Yogyakarta, Jakarta and Surabaya. Currently, the company distributes to many cities around Java and Bali, and the company plans to expand to other islands throughout Indonesia in the not too distant future.

Monggo is marketed as a boutique chocolate retailer.

Ownership structure: Private

Owner: Thierry Detournay

Revenue: Not disclosed

Products: Chocolate bars, pralines

Brands: Monggo Praline, Monggo Carmello, Monggo Dark, Monggo Nutmeg, Monggo Ginger, Monggo Chili

Ingredients: Sugar, cocoa, milk, dairy, peanuts, raisins, wheat flour

Certification: Halal

Distribution: Indonesia only

Nestlé Indonesia

Arkadia Green Office Building B

Jl. TB. Simatupang Kav. 88 South Jakarta 12520

Website: www.nestle.co.id

Phone: +62 21 78836000

Fax: +62 21 78836001

Locations: West Java, East Java, Lampung

Overview of operations: Nestlé Indonesia is a subsidiary of Swiss-based Nestlé SA, the world's largest food production company, which has been in operation for 150 years. Nestlé began operations in Indonesia in 1971 and now employs more than 3300 people. In Indonesia, the company operates four factories. According to the website, Nestlé's motto 'Good Food, Good Life' illustrates the commitment of Nestlé to continuously harness science and technology to produce products that meet basic human needs, namely food and beverage quality, nutritious, safe to eat, and delicious taste. Nestlé says that creating 'shared value' lies at the core of its business strategy. The company places emphasis on both compliance and sustainability, as well as on creating new and greater value for its stakeholders.

Ownership structure: Publicly listed

Owner: Nestlé SA

Sales: US$92 billion (2015) – group sales

Products: Confectionary, chocolate bars, snacks, beverages, cereal

Brands (chocolate): Fox, Kitkat, Polo, Milo, Crunch

Ingredients: Chocolate sugar, wheat flour, cocoa butter, milk, chocolate, refined palm kernel oil, lactose (milk), milk fat, PGPR (emulsifier), yeast, artificial flavour, wheat glucose syrup, mass raising agent (500), whey, salt, and sodium bicarbonate

Certification: Halal, ISO, UTZ,

Export markets: Countries with distribution office: China, India, Philippines, Thailand, Malaysia, Singapore, Vietnam, Nigeria

PT. Orang Tua Group

Jl. Lingkar Luar Barat Kav. 35–36,

Cengkareng, Jakarta Barat, 11740, Indonesia

Website: ot.id

Phone: +62 21 5839777

Headquarters: Singapore

Locations: East Java: Pasuran and Surabaya; West Java, Central Java: Semarang

Overview of operations: OT began its journey with production of traditional healthy drinks in Indonesia in 1948. Today it produces a wide range of consumer products, from food and beverages to personal care products. It sells its products through a network of distributors in Indonesia and internationally. Its production facilities in Indonesia are managed through PT Ultra Prima Jaya.

Ownership structure: Private

Owner: Husain Djojonegoro

Revenue: Annual sales US$50–100 million

Products: Wafers, biscuits, chocolate, candy, nut, jelly and Ready-to-drink (RTD) beverages, healthy drink, powder drink, toothpaste, toothbrush, mouthwash, hair products, razor.

Chocolate brands: Fullo, Mio Stick, Cannon Ball, Blaster, Tango Wafer, Tango Waffle

Ingredients (biscuit and chocolate brands): Peanuts, cocoa, wheat flour, whey, palm oil, milk, sugar, tea, salt, flavours

Certification: HACCP, ISO

Domestic distribution: Indonesia-wide

Export markets: Thirty countries around the world in Africa, Asia, Middle East, South America

Wahana Interfood Nusantara, PT/SCHOKO

Jl. Dadali no. 16

Bandung 40184

West Java, Indonesia

Phone: +62 22 6011375

Fax: +62 22 6033265

Email: info@wahana-interfood.com

Website: http://www.wahana-interfood.com/index.html

Locations: West Java: Jakarta, Bandung

Overview of operations: Wahana Interfood Nusantara, PT was established in 2003. It is a fully integrated company that is able to create and produce high-quality and premium cocoa and chocolate products. Initially the company only produced special processed cocoa powder; it now has a more complete chocolate offering. Wahana products are manufactured under premium brand of SCHOKO and various premium and exclusive brands for overseas. Focus is on providing high-quality cocoa and chocolate products for food services and retailers

Ownership structure: Private company

Director: Reinald Siswanto

Annual Sales: USD$5–10 million (estimate)

Products: Cocoa powder, cocoa butter, compound chocolate, chocolate bites, chocolate spread

Brands, Chocolate: SCHOKO Cocoa Powder, SCHOKO Cocoa Butter, SCHOKO Cocoa Mass/Liquor (Conched), SCHOKO Couverture Chocolate, SCHOKO Compound Chocolate, SCHOKO Chocolate Dips and Spread/Filling, SCHOKO Chocolate Powder Drink, SCHOKO Chocolate Bites

Ingredients Peanut, cocoa, flour, palm oil, milk, sugar, tea

Certification: Halal, TÜV Nord, HACCP, ISO 9001:2008

Export markets: Asia, Europe, Australia, New Zealand and USA

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