

2 Value chain governance in export commodities: the case of Indonesia

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2.1 Introduction

Indonesia has been regarded as one of the success stories of developing countries escaping the resource curse (Rosser, 2004; 2007). In many developing countries, instead of becoming a source of economic growth, abundant natural resources have been associated with stagnant growth, a condition known as the resource curse or the paradox of plenty. As argued by Sachs and Warner (1997), economies with abundant natural resources have tended to grow less rapidly than those with scarce natural resources. Similarly, the resource curse has been defined as “the phenomenon whereby a country with an export-driven natural resources sector, generating large revenues for government, leads paradoxically to economic stagnation and political instability” (ODI, 2006). This chapter will review the efforts undertaken by Indonesia to diminish its dependency on natural resources and to better connect to global value chains (GVCs).

2.2 Some key challenges

Unlike other resource-abundant countries, particularly its counterparts in sub-Saharan Africa, Indonesia's economic growth since the 1970s has been remarkable, especially prior to the financial crisis. For Conceição, Fuentes and Levine (2011), the ability of a developing country to deal with the resource curse depends on two preconditions: avoiding conflict and enhancing its national institutions. According to these authors, developing countries need to effectively manage their natural resource wealth by improving governance and the institutional framework, avoiding “the Dutch disease” and minimizing the effects of price volatility and pro-cyclicality.

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Improving governance and the institutional framework is crucial since "the effectiveness of all policies to manage risk associated with natural resources requires a strong institutional framework" (*ibid*). Nevertheless, there are cases where countries with relatively low institutional capacity are also able to develop the right conditions to exploit their natural resources. Along with Chile and Malaysia, Indonesia has managed to create credible and stable groups of "technocrats" willing to engage and influence political leaders, while successfully managing to preserve social stability, accelerate economic growth and maintain economic diversification in addition to natural resources. Along with Botswana and Chile, Indonesia has been successful in beating the curse, "in part due to having small groups of highly qualified bureaucrats with the right expertise in macro-economic policy" (ODI, 2006).

In addition to sound governance structures and a good institutional framework, another important element in dealing with the resource curse is the ability of a country to avoid the so-called Dutch disease. The Dutch disease refers to some possibly unpleasant side-effects of a boom in oil or other mineral or agricultural commodities, which include a large, real appreciation in the currency, an increase in spending, an increase in the price of non-traded goods, a resultant shift of labour and land out of non-export-commodity traded goods, and a current account deficit (Frankel, 2010). Sachs and Warner (1997) argue that the Dutch disease can be avoided if the proceeds from natural resources are invested in projects that increase the productivity of the whole economy.

The ability of a country to successfully deal with the resource curse also depends on its capability to minimize the effects of commodity price volatility. The prices of oil, natural gas, gold and other commodities are extremely volatile, which obviously has the potential to create problems for countries relying on natural resources. In this regard, "price volatility is harmful because the effects during booms do not compensate for the losses during price busts" (Conceição, Fuentes and Levine, 2011). Government decision-making regarding investment linked to natural resource revenue is crucial to avoid the curse: "a country that makes use of its natural resource endowment will be sustainable if it invests the money obtained from the sale of minerals and other commodities (non-renewable) into other types of capital: human, physical or 'institutional'" (*ibid*).

2.3 The resource curse

Indonesia has been regarded as having successfully diversified its natural resource development into the tradable manufacturing sector, a process that was supported by appropriate trade and business infrastructure policies (ODI, 2006). During the 1970s and 1980s, Indonesia managed to use oil revenues to support improvements

in agricultural productivity and diversification into other sectors, for example by investing in natural gas, which was exported and used as input for fertilizer. During the period 2000-2010, the country's extractive industries only contributed an average of around US\$ 20 billion, or less than 23 per cent, per year as compared with non-extractive sectors, such as agricultural products (including horticultural products and plantations), forestry, machineries and chemical products (Indonesian Statistics Bureau, 2012).

Indonesia's next challenges are how to further diversify its exported commodities, notably by moving up the value chain in established sectors of activity. The top ten commodities include those from both extractive industries (such as petroleum gas, coal, oil and copper) and non-extractive ones (such as palm oil, rubber, coconut and paper), as shown in Table 1. On average, Indonesian production has been concentrated in the low-value-added segments of the value chains of the ten commodities, but the country has undertaken concerted efforts to "downstream" ("hilirisasi" in Indonesian) within the industries involved.¹

This study classifies those ten export commodities into three broad groupings: mining (HS 2701, 2603, 7403), oil and gas (HS 2711, 2709, 2710) and plantation (HS 1511, 4001, 1513, 4802). The groupings are based on the added-value chains within the respective industries.

Table 1 Top ten exports in Indonesia, 2007-2009 and 2009-2011

2007-2009		2009-2011	
1	Petroleum gases (2711)	1	Coal, briquettes (2701)
2	Coal, briquettes (2701)	2	Petroleum gases (2711)
3	Palm oil (1511)	3	Palm oil (1511)
4	Petroleum oils (2709)	4	Petroleum oils (2709)
5	Natural rubber and gums (4001)	5	Natural rubber and gums (4001)
6	Copper ores and concentrates (2603)	6	Copper ores and concentrates (2603)
7	Uncoated paper for writing, printing, office machines (4802)	7	Coconut, palm kernel, babassu oil (1513)
8	Coconut, palm kernel, babassu oil (1513)	8	Refined copper and copper alloys, unwrought (7403)
9	Petroleum coke, bitumen and other oil industry residues (2713)	9	Oils petroleum, bituminous, distillates, except crude (2710)
10	Refined copper and copper alloys, unwrought (7403)	10	Uncoated paper for writing, printing, office machines (4802)

Source: Comtrade (2009; 2011). Numbers in brackets reflect HS 4-digit codes.

In terms of value added (in the context of both domestic and foreign value-added content of export),² the features of Indonesia's exports are as follows. Based on the Trade in Value Added (TiVA) measure (OECD, 2013), mining contributed one-fifth of the country's value-added exports in 2009. However, the domestic value-added (DVA) content of Indonesia's exports was 86 per cent in 2009, well above the OECD average and the fifth highest in the G20 (UNCTAD, 2013). This high level of DVA reflects the fact that Indonesia's trade is characterized predominantly by the export of natural resources and raw materials which use little foreign value added (FVA) content.

However, among the top 25 developing economy exporters (excluding predominantly oil exporting countries), Indonesia, along with Chile, obtains a relatively high share of global value-added trade, when compared with other, relatively open, developing economies with strong performances and which are highly integrated in GVCs, such as Hong Kong (China), Malaysia, the Republic of Korea and Singapore.

Indonesia is placed within the countries which have exceptionally high DVA trade shares (≥ 90 per cent). It has a 91 per cent DVA component, similar to that of other countries such as Bangladesh (91 per cent), Colombia (91 per cent), India (90 per cent) and Peru (93 per cent). Forty-four per cent of Indonesia's exports participate in GVCs, well below the participation rates of economies such as Hong Kong, China (72 per cent) and Singapore (82 per cent). Even when compared with China (59 per cent), Malaysia (63 per cent), the Philippines (56 per cent), South Africa (59 per cent), Tunisia (59 per cent) and Thailand (52 per cent), Indonesia's rate of participation in GVCs reflects the fact that the country's international trade activities are based more on upstream components within value chains. Given the current context, Indonesia faces the challenge to upgrade within established value chains or diversify into new value chains, as highlighted in the government's recent *Master Plan: Acceleration and Expansion of Indonesia's Economic Development 2011-2025* (MP3EI) (CEMA, 2011).

2.4 Market structures and constraints to value addition and diversification

This section presents essential features, market structure and constraints faced by firms and/or businesses dealing with value-addition activities in the three industries under study: the mining industry (with specific reference to coal and copper), oil and gas industry, and plantation industry (with specific reference to palm oil, rubber and paper-related industries). Constraints in value addition/diversification are elaborated here in terms of horizontal policies with impacts which include expansion in the

number of products exported due to lowered transport costs (Moreira, Volpe and Blyde, 2008) and preventing countries from entering specific export markets or participating in global supply chains due to lengthy delays in trade shipment (Nordås, Pinali and Grossi, 2006; Hummels and Schaur, 2013) or being trapped in the low end of the value chain due to failure to properly value key factors of production, such as land (Teh, 2013), as well as of targeted or industrial policies.³

With an industry dominated by coal and copper, Indonesia is still a significant global player in the mining industry, with coal production reaching its peak following rising demand in China and India (PwC, 2011a). In the oil and gas industry, gas production is currently in the final stage of replacing oil production (PwC, 2011b). In competition with (but also complementing) similar industries in Malaysia, the Indonesian plantation industry – primarily producing palm oil and rubber – is the fastest growing non-oil and gas sector, making it a solid support for the country's economic growth.

The domestic market and export restrictions in the mining industry

Coal is the main commodity in Indonesia's mining industry, with strong demand from the Asia-Pacific region as well as growing domestic demand. Indonesia is the largest thermal coal exporter in the world, accounting for around 26 per cent of global exports. With coal production of approximately 200 million metric tons per year, Indonesia has coal reserves for the long term. South Sumatra has the largest coal reserves in the country (47.1 billion tons). Copper, abundant in the islands of Sulawesi and Papua, is second to coal in terms of production capacity. Production reached its peak in 2000, 2003 and 2005, averaging 1 million metric tons per year; furthermore, there has been a steady increase in the world price of copper since 2003. Apart from its contribution to exports, in its downstream supply chains copper plays a crucial part in the information and communication technology industry (CMEA, 2011).

The market structure of the country's mining industry is governed under Law No. 4/2009 regulating the conduct of mineral and coal mining. The industry has concerns with the law's derivative regulations on DMO (domestic market obligation) and export restrictions. The two directives are designed in line with the government's downstreaming strategic plan under MP3EI, that is, to generate more value addition activities domestically. In the context of GVCs, the country's coal industry is directed more towards supporting domestic energy sectors, that is, to provide adequate electrical power generation as industrial growth is steadily growing. Meanwhile, the copper industry has developed under a scheme to process its ore domestically in order to have domestic and international processing companies (including the existing major players) upgrade their capacities, that is, to move up their value chains in the industry.

Constraints faced by coal producers consist of how to remain competitive in the face of fluctuating world coal prices and domestic economic growth, inflation and exchange rate volatility. The DMO policy may have constructive implications for Indonesia's wider energy sector sustainability and electric power supply needs, as it increases the possibility of initiating the functional, intersectoral upgrading of the coal industry, releasing it from its lower value-added production and processing. Viewed within the wider perspective of horizontal policies over the mining industry, however, the DMO policy coincides with industry benefits from contemporary government schemes under MP3EI to improve major ports and the shipping and transportation infrastructure. Meanwhile, a targeted policy of export restrictions which aims at adding value in the domestic smelter industry has placed copper industries in the position of waiting for the government plans to further encourage domestic smelter investment. The industry faces capacity constraints on processing its products domestically, which are expected as early as next year.

Oil and gas industry

Indonesia's oil and gas sector has been characterized by a large proportion of production going to domestic petroleum consumption (compared with other sources of energy, such as gas, coal and liquefied petroleum gas/LPG). The country's economic recovery from the 1997/1998 crisis has contributed to increasing fuel energy demands, which led to a government decision to quit OPEC due to the country's increasing importation of oil/fuel. Then, as early as 2004, Indonesia's natural gas production surpassed its oil production. Natural gas production stood at 1,369,000 BOEPD (barrels of oil equivalent per day) in 2007 and 2,343,000 BOEPD in 2008, compared with oil production at only 964,000 barrels per day in 2007 and 978,000 barrels per day in 2008 (CMEA, 2011).

Indonesia's exportation of gas (particularly in the form of liquefied natural gas or LNG) has therefore been in an inverse relation to its importation of oil/fuel. The industry is shifting its attention to more domestically driven value-addition activities, particularly in an effort to finance and serve the country's rising demand for fuel.

The promulgation of a new law on the oil and gas industry (Law No. 22/2001) has offered a new perspective on and dimension to upgrading, diversification and other value-addition activities in Indonesia's oil and gas industry. Significant changes made by this law relate particularly to business and commercial relations between state-owned enterprises (SOEs) (i.e. Pertamina) and multinational corporations (MNCs). The law establishes two main bodies, responsible for the industry's upstream and downstream activities.

The establishment of two governmental agencies which operate and function under the coordination of the Ministry of Mining and Energy has paved the way for

Pertamina towards its first major organizational and business reform leading to new value-addition activities, diversification and upgrading, particularly in its downstream business activities. In terms of the country's oil and gas value chains, the strategies affect a full range of upstream, midstream and downstream activities.

Structural problems in the plantation industry

The last 30 to 40 years have seen historic development in Indonesia's plantation industry. Palm oil, largely planted and then industrialized in the 1970s and 1980s – as in Malaysia – has been the major factor in the industry, with production of 370 million tons in 2010 (195 million tons in Indonesia and 175 million tons in Malaysia). Rubber plantations have also increased productivity and industrial yields in the last 10 years. Productivity nearly doubled between 2002 and 2009 (CMEA, 2011).

However, inadequate and uncoordinated horizontal policies across the plantation industry have resulted in severe structural problems. The palm oil industry has long been hampered by constraints arising from issues of forest destruction, environmental degradation, land use, land pricing and the tenure system, low wages, industrial practices and other social and environmental problems. The industry has also been characterized by disputes and discordant relations among smallholder producers, large producers and surrounding communities. Conflicts over land use and land grabbing have extended to the extent that they affect endangered species such as the orang-utan on Kalimantan Island. Such constraints are typical not only in the context of the palm oil industry but also in the rubber industry and in the pulp and paper industry (which has resulted in more serious environmental and social impacts).

Despite these constraints, pulp and paper production has been one of key drivers in the growth of the forestry industry. Since its establishment in the late 1980s, the pulp and paper industry has grown rapidly, pushing the country into the world's top ten producers. Between 1988 and 2010, pulp production capacity grew from 606,000 metric tons to 7.9 million metric tons per year, and paper industry processing capacity rose from 1.2 million to 12.2 million metric tons per year.

Indonesia's exports of pulp and paper products generated US\$ 5.7 billion in 2010, or around 1 per cent of the country's GDP. However, due to longstanding structural problems in the industry, combined with its heavy reliance on natural forests for timber and despite extensive timber plantation development programmes, industrial growth in the pulp and paper sector has been seen more as part of wider environmental problems (due to clear-cutting and conversion of natural forests to other uses) and communal problems (due to displacement of local communities) than in the context of efforts to secure a sustainable supply of raw materials through the development of pulpwood plantations.

The country's pulp mills have relied heavily on unsustainable timber and much of what is obtained is through the clear-cutting of natural forests. As of 2010, key pulp and paper producers in Riau, Sumatra, sourced more than half of their raw material from the process of conversion of natural forest. Although extensive timber plantation development programmes have been implemented over the years, the supply of timber available from these plantations remains insufficient. As a result, the industry has been associated with negative environmental impacts.

In Indonesia's rubber industry, the majority of production (approximately 90 per cent) is exported, with the remaining 10 per cent used in the domestic automotive sector and other manufacturing industries. Under the China-ASEAN Free Trade Agreement (ACFTA or CAFTA), the industry has positioned itself to serve the China market with its growing automobile industry. China took the lion's share of Indonesian exports in 2010 at 600,000 metric tons, followed by the United States, India, Japan and South Korea. Domestic demand for rubber is also rising with an average increase of 23.2 per cent per year since 2005, reaching 244,000 metric tons in 2010. With increasing car and motorcycle sales, Indonesia is expected to become a major consumer of rubber at an estimated 20 per cent of total domestic production over the next five years. However, according to the Chair of the Indonesian Rubber Council (as of September 2013), the industry is very much in need of improvement in transport infrastructure. Due to the inadequate transport infrastructure, export costs (US\$ 750 per container) are much higher than for the country's competitors, such as Thailand. Other than transport infrastructure, the industry also needs improvement in its logistical facilities.

2.5 Policy recommendations on upgrading and diversification

This section offers an assessment of upgrading and diversification endeavours in the three industries, framed as policy notes for stakeholders in the respective market. In so doing, it first maps out typical value chains in each industry, giving an overall description by relevant stakeholders of current endeavours towards value-addition activities. Secondly, it proposes how respective industrial value chain activities could manage upgrading and diversification, that is, by adopting UNCTAD GVC conceptual developmental paths. Finally, it reviews how each industry could anticipate having a feasible scheme to develop its value chains governance, by presenting each industry's upgrading and diversification, DVA and FVA components, type of value chains governance and anticipated development paths.

Typical value chains

In terms of upgrading, the country's coal and copper value chains are positioned largely in production and processing (CMEA, 2011). Value-addition activities and

diversification efforts are therefore focused more on how stakeholders in the industry transform mining and mineral commodities into refined products, how they organize the process efficiently, how new technologies are applied, and how they introduce new and sophisticated commodity or product lines. However, as the value chains get closer to the end-user (intermediate industries and final consumers), mining industries have also achieved significant performance in terms of how they move into new functions in the chains.

Comparable to the mining industry, the oil and gas industry's value-addition activities and diversification typically highlight upstream and midstream endeavours. In the case of Indonesia's oil and gas value chains, the upstream and midstream activities are conducted in parallel with the progression of collaboration schemes between domestic SOEs and MNCs. The production-sharing contracts (PSC) scheme which has been in place since the 1960s is the key feature of such collaboration, which eventually determines the levels, scope and acceleration of upgrading, diversification and other value-addition activities.

In upstream business strategies, activities are then focused not only on maintaining the existing PSC scheme and finding new domestic oil and gas fields, but also in competing in international exploration and production activities. Pertamina's midstream business activities have made the corporation one of the key regional players in the transportation of oil and gas, by investing heavily in large tankers, diversified commercial transportation and human resources. On the downstream side, considerable and intensive changes are even more pronounced as the domestic public witnesses the strong organizational and physical performance of its oil and gas stations nationwide.

As noted by CMEA (2011), in the last two decades, Indonesia's rubber, palm oil and pulp and paper industries – from their plantation to downstream activities – have become more concentrated on both process- and product-based, and functional and intersectoral, upgrading. Not only are new product lines, techniques and technologies applied in a range of industrial business activities, but new functions are also acquired within the downstream business activities. In both the palm oil and pulp and paper industries, downstream upgrading activities comprise investment in manufacturing industries and processing factories in line with the need for more exported value-added products, such as derivative oils (rather than crude palm oil) and a variety of paper products (rather than pulp).

The rubber industry demonstrates business diversification and new commercial functions. New production lines in Sumatra, for example, include downstream industries in tyres, gloves, footwear and other chemical products. It has even acquired new functions in the synthetic rubber industry. Apart from process and product

upgrading in the plantation, milling and refinery stages, new downstream diversification strategies have also been initiated in the biofuel and oleochemical industries despite their still low added value (compared with the milling and refinery industries). However, considering how the Malaysian industry has performed in the last 30 years, higher added values are certainly within reach of the Indonesian palm oil industry.

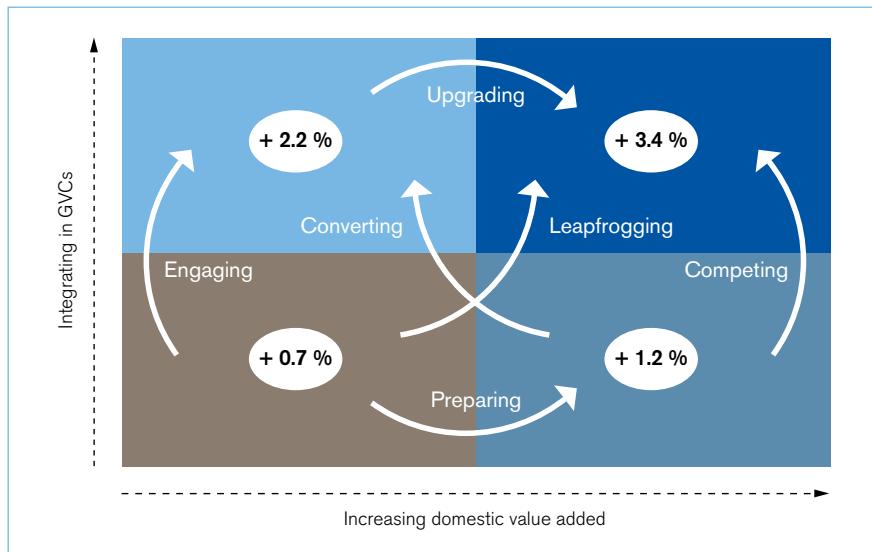
Development paths for upgrading and diversification

This study has elaborated on how upgrading and diversification endeavours in the three industries are applied and conducted by various players and stakeholders in a range of value chains in business and commercial activities. It will now describe how these endeavours could be seen as part of GVC development paths developed under the UNCTAD GVC and Development initiative (UNCTAD, 2013).

Based on a country's integration in GVCs and its DVA content, six possible conceptual development paths are identified: engaging, preparing, competing, converting, leapfrogging and upgrading (Figure 1).⁴

The six conceptual paths suggest how players in a GVC could move flexibly, not just in terms of "upgrading" (which indicates more integration into the FVA-driven GVC) but also on other possible routes, to the upper, right and left of the GVC quadrants. The three

Figure 1 GVC conceptual development paths



industries under study have several compelling features in terms of how they relate to the six possible development paths, and which are relevant for sectoral or industrial policy.

On the “engaging” path, Indonesia’s mining industry – particularly copper – is a precise example of where value-addition activities could be essential steps towards the long-aspired renegotiation of working contracts. The major player, Freeport McMoRan, is in a position which demonstrates that the industry as a whole could engage further with its international GVCs. Upgrading and diversification of the mining industry is routed to the “leapfrogging” path by increasing its DVA component but, at the same time, increasing its FVA component. In the case of coal and copper, leapfrogging could be envisaged as part of Indonesia’s wider strategy on energy conservation, diversification and security.

Elaboration of oil and gas industry upgrading and diversification endeavours suggests that the six paths are possible routes to gaining more in the value chains. The “preparing” and “competing” paths have been in place for quite a while as the major player, Pertamina, initiated its new business strategy to be a global player in the industry. In the last ten years, Pertamina’s performance is comparable to that of its international counterparts, particularly in the fields of exploration and production (EP) and sales and marketing. Its “leapfrogging” and “converting” paths, however, depend on how the corporation – as both an SOE and emerging-market MNC – develops its strategic collaboration with other MNCs. Recent changes in upstream regulations will also affect how easily Pertamina, as an emerging market MNC, will be able to traverse its “engaging” and “upgrading” paths.

Last but not least, value-addition activities in the plantation industry, as it focuses more on process and product upgrading and diversification, are inclined to be oriented towards the “preparing” path (where added values originate domestically) rather than other paths which promise more FVA components. However, recent trends in palm oil (driven by Malaysia’s integrated and advanced palm oil industry) and pulp and paper (driven by rising demand from China’s pulp and paper industries) open up possibilities for upgrading and diversification endeavours which are more inclined towards the “engaging”, “leapfrogging”, “upgrading” and even “competing” paths in the industry. Major international players in both the palm oil and pulp and paper industries – such as Malaysia-based Sime Darby, Singapore-based Wilmar International, Indonesia-based Sinar Mas in the palm oil industry and APP (Asian Pulp and Paper) in the pulp and paper industry – could, and should, develop substantial roles in such endeavours.

Developing governance for value addition

Based on Humphrey and Schmitz’s (2000; 2002) typology, Table 2 summarizes the proposed schemes to develop value chains governance in the three industries examined here, presenting the upgrading and diversification endeavours applied by industry stakeholders, along with the DVA and FVA components of each industry, types of GVC governance and anticipated development paths.

Table 2 Value chains governance and development paths

Industry	Upgrading and diversification	DVA component	FVA component	Value chains governance	Anticipated development paths
Mining	Coal • Process- and product-based	Very high as mostly relied on raw resources, reserves	Small portion of FDI, but quite highly dependent on export market	Hierarchical (with high DVA component)	Leapfrogging (as part of the country's wider strategy on energy conservation, diversification and security)
	Copper • Process- and product-based	Still quite high as abundant resources available	Kontrak Karya/ working contracts scheme (Freeport as the major player)	Hierarchical (with quite high FVA component)	Engaging (by increasing its GVC participation) as well as leapfrogging (as part of metal-related industrial development strategy)
Oil and gas	Upstream • PSC scheme in EP • International EP	Upstream investment (based on new oil and gas rules and regulations in the post-BP Migas era)	SOE-MNC business relations: technology transfer, technical cooperation, competition in EP, distribution and final selling	Hierarchical (with possible future significant changes to captive, modular or relational aspects, particularly in downstream activities)	Preparing as well as competing (as the major player, Pertamina, initiated its new business strategy to be a global player in the industry)
	Midstream • Transportation and logistics (Pertamina)				Leapfrogging and converting (as Pertamina's performance is comparable to that of its international counterparts, particularly in the fields of EP and sales and marketing)
	Downstream • BP Migas roles (on subsidized fuels) • Pertamina business and commercial reform				The latter two paths, however, depend on how Pertamina – as both an SOE and emerging-market MNC – develops its strategic collaboration with other MNCs
					Engaging and upgrading (as the industry has been supported by recent changes in upstream regulations)
					This will also affect how easily Pertamina, as an emerging-market MNC, will be able to traverse the paths

Table 2 Value chains governance and development paths (continued)

	Upgrading and diversification	DVA component	FVA component	Value chains governance	Anticipated development paths
Plantation	Rubber • Process- and product-based • Limited new functions, intersectoral upgrading	Highly dependent on existing plantations	Not applicable (as majority of tenures and ownerships are of small holders and SOEs)	Hierarchical in upstream activities (with high DVA component); Market, modular, relational in downstream activities (where domestic players served as turn-key suppliers)	Preparing (as the industry focuses more on process and product upgrading and diversification) to be oriented towards paths where added values originate domestically, rather than those which promise more FVA components
	Palm oil • Process- and product-based • Limited functional upgrading	Domestic policy incentives in processing stages	New FDI plantation scheme, notably in connection with Malaysia's palm oil industry	Hierarchical in upstream activities (with high FVA component); Market, modular, relational in downstream activities	Possibilities for upgrading and diversification endeavours which are more inclined towards engaging, leapfrogging, upgrading and even competing paths in the industry (in line with recent trends in palm oil driven by Malaysia's integrated and advanced palm oil industry, and in pulp and paper driven by rising demand from China's pulp and paper industries)
	Pulp and paper • Process- and product-based • Limited functional upgrading	Highly dependent on existing plantations	Several FDI plantation schemes, notably in connection with China's pulp and paper industry	Hierarchical in upstream activities (with high DVA component); Market, modular, relational in downstream activities	Major international players in both industries – such as Malaysia-based Sime Darby, Singapore-based Wilmar International, Indonesia-based Sinar Mas in the palm oil industry and APP (Asian Pulp and Paper) in the pulp and paper industry – could, and should, develop substantial roles in such endeavours.

Source: Based on Humphrey and Schmitz (2000; 2002).

The coal industry, with its high DVA component (as it mostly relies on raw resources and existing reserves) and low FVA component (despite its being highly dependent on export markets), is to move towards a leapfrogging development path as a way to envisage being a crucial part of the country's larger strategy in energy conservation and security. Comparable to coal, copper's endeavours are also mainly based on product and process upgrading. However, the copper industry, with its quite significantly high FVA component (as foreign direct investment, or FDI, has been the major driver of its expansion), has the

capacity to engage in greater GVC participation by fostering further internationalization on the manufacturing side of the industry. It is under such a scheme that the export restriction initiative would be justified.

The oil and gas industry has been characterized by more varied and dynamic upgrading when compared with mining, with process- and product-based, as well as functional and intersectoral, upgrading. Upstream investment, which is based on new oil and gas regulations in the post-BP Migas era, has typified the DVA component of the industry, along with the industry's SOE–MNC business relations in technology transfer, technical cooperation, competition in EP, distribution and final selling (in both midstream and downstream activities). Hierarchical in its value chains governance, the industry is all set for the six development paths.

The country's plantation industry exhibits endeavours and initiatives by relevant stakeholders in process- and product-based upgrading, with limited new functional and intersectoral upgrading. In terms of its DVA component, the industry is highly dependent on existing plantations (particularly in the cases of rubber and pulp and paper). However, recent domestic policy incentives in the processing stages of the palm oil industry have also been the main feature of its DVA component. In terms of the industry's FVA component, a new FDI plantation scheme, notably in connection with Malaysia's palm oil industry and China's pulp and paper industry, has recently emerged as the main attribute of the industry.

The country's rubber and pulp and paper industries have hierarchical value chains governance in their upstream activities, with a high DVA component. Market, modular and relational value chain governance in downstream activities is applied where domestic players serve as turnkey suppliers in the industry. The palm oil industry, meanwhile, has hierarchical value chain governance in upstream activities, with a high FVA component, and it has market, modular and relational value chain governance in downstream activities. The three plantation industries anticipate the preparing development path as they identify possibilities for upgrading and diversification endeavours which are more inclined to engaging, leapfrogging, upgrading, and even competing in the context of recent trends in Malaysia's integrated and advanced palm oil industry and rising demand in China's pulp and paper industries.

2.6 Conclusions

The plantation industry faces structural problems, with inadequate and perhaps insufficiently coordinated horizontal policies.

After a careful review of each sector's potential, it would seem that the mining industry and, more specifically, the coal sector, have more potential than the other industries. However, it is also obvious from the analysis that more time and determination at the government level will be required in order to achieve the key objective of better connecting to GVCs.

Endnotes

1. Initiated under the so-called MP3EI (Master Plan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia/Master Plan for the Acceleration and Expansion of Indonesian Economic Development, 2011–2025), strategies of industrial “downstreaming” cover a wide array of key commodities, areas and policy frameworks, ranging from rubber, palm oil and infrastructure to investment regulations.
2. Domestic value-added content of export (DVA) is domestic content of exported products, while foreign value-added content of export (FVA) is foreign content of exported products. The two measure a country’s GVC participation in world trade (UNCTAD, 2013).
3. The study recognizes the need (as suggested by Teh, 2013) to distinguish horizontal policies in upgrading and diversification from targeted or industrial ones. Horizontal policies would include those from which benefits flow across the entire economy and not just to a specific set of firms or industries, such as trade facilitation, lowering transportation cost, investments in education, research and development, capital market development, etc. Industrial policy would refer to targeted interventions, that is, policies aimed at developing a specific industry or set of firms, such as production subsidies, export subsidies, export taxes to encourage downstream development, use of state enterprises, etc.
4. Percentages in this chart reflect the median GDP per capita growth rates. As indicated by UNCTAD (2013) data for 123 developing countries, ranked by growth in GVC participation and domestic value-added share: high includes the top two quartiles of both rankings; low includes the bottom two; GDP per capita growth rates reported are median compound annual growth rates for countries in each quadrant.

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