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The political economy of moving up in global value chains: How Malaysia added value to its natural resources through industrial policy

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Keywords: Natural resources; global value chains; industrial policy; heterodox economics; Macroeconomic Analyses of Economic Development

Codes: B5; L7; O11; O13; O14; O53; Q17

Acknowledgments

This article is part of the author's Ph.D. research that was undertaken at the University of Cambridge. Special thanks, therefore, go to Ha-Joon Chang for supervising the doctoral work on which this paper is based. I am also thankful to the RIPE editors and three anonymous reviewers who provided very constructive comments, and to Jomo Kwame Sundaram, Maha Abdelrahman, Rajah Rasiah, Keun Lee, Carlo Pietrobelli, JP Faguet and Natalya Naqvi for pointing me towards useful literature and theoretical concepts. Early versions of this paper were presented in the International Schumpeterian Society 2018 conference in Seoul (South Korea) and at the European Association for Evolutionary Political Economy 2018 conference in Nice (France). Special thanks also go to all the academics, government officials, private sector representatives, and other experts who gifted me their time and insights during fieldwork interviews in Malaysia. In particular, for their tremendous support during my fieldwork, I would like to thank Professor Jomo Kwame Sundaram, Tan Sri Azman Mokhtar, Professor Rajah Rasiah, Nik Khaw, Datuk Chander, Steven Cheng Seng Hock, Dr. Cheong Kee Cheok, Yu Leng Khor, Abd Rahim Mahmood, Vasiliki Mavroeidi, Johan Merican, Tan Sri Mahathir Mohamad, Dato' Dr. Thillainathan, Tong Yee Siong, and Dato Wong. Any remaining errors and omissions are my sole responsibility.

This work was supported by the Department of Politics and International Studies Fieldwork Fund, University of Cambridge.

1. INTRODUCTION

This paper draws on the Malaysian case to study the political economy of commodity value addition in a way that contributes to conceptualizing the role of the state in the process of upgrading in value chains. More particularly, it investigates the role of industrial policy –and its political underpinnings– in the face of market obstacles to value addition in developing countries.

Malaysia's resource-based industrialization features an informative case that could form the basis of lessons for developing countries seeking to harness their natural resources as an engine of industrial development, beyond raw material exports. At independence in 1957, Malaysia was heavily dependent on tin and rubber, which represented about 85% of all Malaysian exports (Goldthorpe, 2015). These two sectors were marked by price fluctuations that led to export instability until Malaysia started to diversify its resource base towards the palm oil and petroleum sectors from the 1970s onwards.¹ Nevertheless, as this study shows, Malaysia did not merely rely on exporting its raw commodities but vertically integrated around those resources. Malaysia has managed to shift from simple activities in which competitiveness relies on the availability of raw material, towards higher value-added activities that are characterized by knowledge intensity, R&D capabilities, and technological sophistication.

To what can we attribute Malaysia's successful upgrading in commodity value chains? On the one hand, scholars such as Jesudason (1989), Jomo and Edwards (1993) and Wheelwright, (1965) have argued that the *laissez-faire* policies of the British colonial rule *discouraged* value addition in Malaya because such a colony was seen as a source of raw materials to supply British Industry and provided a market for manufactured goods from the United Kingdom.² On the other hand, some scholars argue that the *laissez-faire* policies of the colonial rule *laid out* the foundation for the establishment of production linkages around resource sectors (Thoburn, 1977). This line of argument puts forward the high levels of technology transfer from western-owned engineering firms to local enterprises, through the subcontracting of manufacture and construction works (Thoburn 1977; Rasiah 1995).

By focusing on the historical development of the petroleum, palm oil, and rubber industries, this study evidences the key role of post-independence industrial policies for value addition despite high market barriers, contrarily to what had been

¹ It is worth pointing out that neither rubber nor palm oil are native to Malaysia, as they were brought by the colonial administration.

² As noted in Goldthorpe (2015), a further argument is that the British considered that manufacturing expansion would offer alternative employment for estate labour, which would in turn increase pressure on plantation wage rates, thus reducing their profitability (Wheelwright, 1965:97; Jesudason, 1989:48; Jomo and Edwards, 1993:18).

anticipated by the neoclassical scholarship.³ Dynamic approaches to comparative advantage, which devote more attention to technological upgrading, capabilities accumulation, and learning-by-doing, are therefore more suitable in explaining Malaysia's resource-based industrialization than neoclassical approaches, which tend to be path-dependent upon established capabilities.

The next section of this paper reviews competing theories of linkage development, global commodity chains, and the developmental state to offer critical insights on the market and power dynamics that influence value addition processes. The third section puts forward statistical evidence of the extent of value addition in Malaysia's commodity sectors over time. The fourth, fifth, and sixth sections review the role of industrial policy in the rubber, palm oil, and petroleum sectors, respectively. The seventh section analyses the political motives for commodity value addition and the political and historical context in which commodity upgrading policies were pursued in Malaysia. The eighth section presents the key findings of this study, concerning the scope for state interventions –and their political underpinnings– for commodity value addition.

2. THEORETICAL PERSPECTIVES ON UPGRADING IN GLOBAL COMMODITY CHAINS

The subject of value addition in resource sectors can be enriched by various theoretical perspectives that belong to distinct bodies of the political economy literature. The literature on linkage development offers key insights on pathways for commodity value addition but has mostly overlooked the role of non-market barriers (such as power dynamics) in affecting how firms upgrading in commodity value chains. In contrast, the literature on global commodity/value chains, which has provided key insights on the power dynamics between lead firms and their suppliers, has also mostly overlooked the role of the state outside its regulatory responsibilities (Behuria, 2020). Meanwhile, the literature on developmental states has generally taken a state-centrist perspective to examine structural transformation. This section consequently attempts to bridge the above-mentioned theoretical perspectives to offer critical insights on the market, power dynamics, and policies that influence value addition processes.⁴

2.1 Linkages that arise out of commodity sectors

³ While extensive academic research has been conducted on the petroleum, palm oil, and rubber industries in Malaysia (eg. Khera, 1976; Goldthorpe, 2015; Gopal, 2001; Rasiah and Shahrin, 2006; Fold and Whitfield, 2012), these industries have less often been analysed together in the broader context of Malaysia's diversification and resource-based development.

⁴ Behuria (2020) and Hauge (2020) aim to fill a similar gap in the international political economy literature by merging the GVC perspective and the developmentalist perspective.

Linkage development in commodity sectors has been a key concern amongst development economists aiming to identify pathways to structural transformation in developing countries. In his pioneering work, Hirschman (1981) identified three types of linkages arising out of commodity extraction: fiscal, consumption, and production linkages. He believed that the production linkages (both forward and backward) from natural resources to industry were the most likely to lead to economic diversification through upgrading in a commodity chain. Backward production linkages (or upstream value addition) involves the localization of supply of goods and services required as inputs for commodity exploitation. Forward production linkages (or downstream value addition) can be achieved through processing and beneficiation, which is the process of transformation in which the processed commodity is converted into an entirely different product (Morris et al. 2012). Since Hirschman, several scholars (e.g. Hirschman, 1981; Mackintosh, 1923; Maloney, 2002; Morris et al. 2012; Ovadia, 2016) have suggested that vertical integration was the best avenue for diversification in resource-rich countries, rather than attempting to build a competitive advantage in unrelated industries. This line of argument stands in contrast with the wisdom (often anchored in resource pessimism) that countries should diversify by expanding their industrial and knowledge-intensive sectors in areas unrelated to their commodities.⁵

Although Hirschman did not explicitly address the respective roles of market and government forces in this process of production linkage development, it seems that his idea that ‘one thing leads to another’ implies that production linkages unfold somehow ‘naturally’, accordingly to market forces, and comparative advantage, which would ‘run against conventional wisdom that linkages only exist as a function of government interventions’, according to Morris et al.’s (2012) interpretation. However, several counterarguments can be provided:

Firstly, there can be considerable market barriers to commodity value addition, which explains why policies to increase vertical integration in extractive sectors have achieved mixed results (Tordo et al., 2013). For instance, the petroleum industry is characterized by high capital investment, technological complexity, and highly globally consolidated supply chains, which often create barriers to local participation, especially in countries with little existing capacity (ibid.). Katz and Pietrobelli (2018) also evidence that many exogenous forces such as the rate of expansion of external demand, the volatility of commodity prices and technological progress influence linkage development outcomes. Hirschman (1981:167) recognized that “perhaps the principal reason why it is difficult to establish backward and forward linkage industries around the staples is not so much that, as argued originally, there are fewer linkage effects in agriculture than in industry, but that they largely point to industries whose technologies are alien to the grower of the staple. Hence, for a very long time, these industries are carried on abroad.”

⁵ As early as the 1920s, advocates of the staple theory even argued that the reallocation of factors of production to non-staple production would slow economic growth (Altman, 2003).

Secondly, it can be argued that there is a range of non-market relationships that influence how material, financial and non-tangible resources flow and are allocated up and down value chains (Gereffi, 1994; Gereffi et al.; 2005; Ponte and Sturgeon, 2014). In that perspective, the literature on value chain governance within the global commodity chains (GCC) framework (reviewed in section 2.2) is particularly useful as it offers critical insights on the power dynamics that influence value addition processes.

2.2. The political economy of upgrading in global commodity chains (GCC)

The GCC research agenda emerged in the 1990s to examine the interactions and power relations between ‘lead’ firms and their suppliers, in order to understand how suppliers in poor countries can ‘upgrade’ in the value chain (See Bair, 2005; Selwyn, 2015). Upgrading is defined as “a move to higher value-added activities in production, to improve technology, knowledge, and skills, and to increase the benefits or profits deriving from participation in GCC” (Barrientos et al., 2011:323).

Lead firms determine what other firms do and how they do it, and thereby influence the upgrading opportunities of suppliers (Gibbon and Ponte, 2005; Gereffi, 1994). Lead firms pursue strategies that may reproduce global poverty and inequality, by attempting to monopolize profits within the commodity chain, using their institutional power to lobby international institutions and national governments for protection, and intensifying the exploitation of labor and the natural environment across the chain (Selwyn 2015). The lead firms’ ability to manage and restrict technology diffusion may allow peripheral firms to maintain a presence in industrial sectors, but with lower profit and wage rates (O’Hearn, 1994).

There are two main approaches to the governance dimension of the GVC framework, which lead to different conceptions of the optimal role of the state (Werner et al., 2014). The dominant view focuses on the beneficial dynamics of firm coordination and is in line with the post-Washington Consensus re-framing of the role of the state as a market enabler correcting for market failures, such as information asymmetry and under-investment in innovation and technology (ibid.). However, the scope for state intervention is much wider if we subscribe to the second approach that focuses on power asymmetry because public policies have increasingly been acknowledged as a tool to rebalance asymmetric power relations within value chains by creating incentives for lead firms to provide suppliers with longer-term contracts, and to participate in knowledge transfer (see Pietrobelli and Staritz, 2018). As a result of the constraints to upgrading in foreign-dominated GVCs, Lee et al. (2018) even argue that while low-income countries must actively participate in GVCs to learn from the outside at the initial stage of growth, they need to seek separation and independence from foreign-dominated GVCs, if they are to upgrade their economies further.

The question that remains is: what kind of policies – and therefore what kind of states – may be needed for addressing both market and non-market obstacles to upgrading in

commodity value chains? Within the GCC/GVC framework, although there is recognition of the role of the institutional context, the role of the state (outside being a regulator) often remains underestimated and inadequately understood (Behuria, 2020; Cramer, 1999; Hauge, 2020; Horner, 2017; Neilson, Pritchard, & Yeung, 2014; Vicol et al, 2018). A focus on conceptualizing the role of the state for commodity value addition is therefore necessary (Behuria, 2020).

2.3 The Developmental State

The acknowledgment of the need for strategic state interventions to address barriers to commodity value addition leads to an important discussion on the scope for industrial policy, which makes the concept of the developmental state particularly relevant. The concept of the developmental state has been championed by several scholars (including Amsden, 1989; Chang, 1994; Evans, 1995; Johnson, 1982; Nem Singh and Ovidia, 2018; and Wade, 1990), who have essentially offered a heterodox theoretical approach to growth by emphasizing the role of government intervention as well as the significance of strong states (and particular social coalitions) featuring some degrees of autonomy of the state from rent-seeking private interests (Haggard, 2018). The notion of the development states is in line with the literature on business politics according to which the ability of governments to impose their policies against business preferences depends on the power and influence of business elites vis-à-vis the state (See Culpepper, 2015; Fairfield, 2015; Hope, 2019; Naqvi, 2019; Schulz, 2020).

In contrast to the developmental state literature, a strand of scholarship rooted in neoclassical economics suggests that state interventions and the persistence of rent-seeking behavior lead to economic inefficiencies, which should be addressed through the ‘disciplinary’ forces of free markets (Bhagwati, 1982; Krueger, 1974). Nevertheless, and paradoxically, both neo-classical and developmental state models stress the need for lower rent-seeking costs (Khan, 2000). A third theoretical perspective sustains that focusing on rent-seeking costs is misleading because it is differences in the types of rents rather than differences in rent-seeking costs that have implications for economic performance across countries (ibid.:77). Rent-seeking does not have to be inefficient because rents associated with successful learning, innovation, or monitoring can have large positive effects and play a critical developmental role (Chang, 1994; Gomez and Jomo, 1999; Khan and Jomo, 2000; Wade, 1990).

In the case of Malaysia, the nature and outcomes of rent-seeking appear to have varied substantially across sectors. In the automotive sector, there is a dominant view that rent-seeking has largely been unproductive because the Malaysian government bypassed competitive Malaysian Chinese firms in the components and parts industry, which resulted in the neglect of existing production, sales, and management experiences (Wad and Govindaraju, 2011; Siew Yean, 2015). In the financial sector, studies such as Gomez and Jomo (1999) and Rethel (2010) examined how the effects

of crony capitalism frequently spilled over into the financial sector. Johnson and Mitton (2003) further suggested that cronyism increased with capital controls imposed in 1998. This study will contribute to this discussion by focusing on Malaysia's resource-based sectors, where more developmental outcomes seem to have been achieved.

Another key argument in the developmentalist literature is that the market conditions of developed and developing countries differ, which reframes the role of industrial policy in developing countries, where substantial market imperfections are more likely to persist in hindering industrial activities, technology transfer, and adoption, innovation and learning-by-doing. An important issue that arises from this argument is whether government intervention should be limited to, or should defy, 'comparative advantage' (see Lin and Chang, 2009). We can distinguish two broad approaches to comparative advantage, which are relevant to our subject of study. The first one, rooted in neoclassical theory, features a static view of comparative advantage and is path-dependent upon established capabilities. Such an approach has been unfavorable to the localization of resource-based industries in developing countries where capabilities in upstream and downstream activities have been lacking. For instance, in the context of Malaysia, several studies (e.g Berger, 1984; Todd, 1978) considered the processing and refining of crude palm oil in Malaysia as having limited potential and viability in light of the lack of experience and technological capacity in refining.

The second approach features a dynamic view of comparative advantage and a wider scope for the role of the state, responsible for shaping productive transformation away from 'low-quality activities' towards 'high-quality activities' that are characterized by economies of scale, technological upgrading, high productivity and wages (Cimoli et al., 2009; Chang, 2013; Findlay, 1973; Lebdioui, 2019b). In the context of resource sectors, this approach would therefore consist in the promotion of knowledge-intensive value-added activities along the commodity value chains through industrial policies (see Radetzki, 1977; Perez, 2008), as opposed to simply focus on maximizing rents (fiscal linkages) from commodity extraction or exploitation. This view notably echoes Schumpeter's (1943) emphasis on the need to foster new value-generating activities through innovation to generate higher profits, rather than statically maximizing profits by appropriating higher rents from an existing income source.

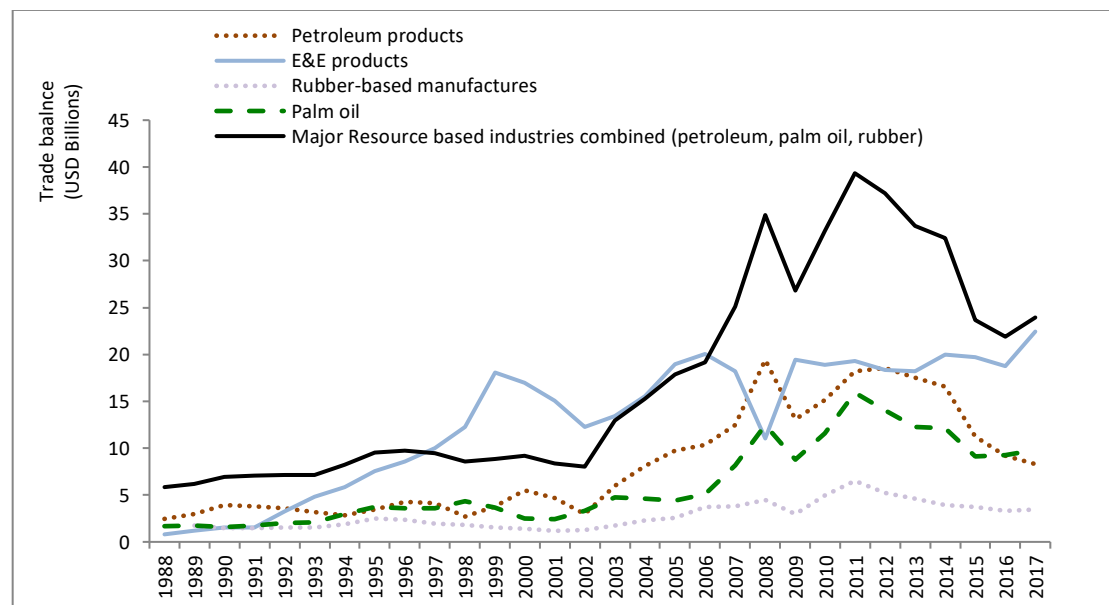
Rather than accepting that countries have gotten where they are by exploiting their existing comparative advantages, the key question we should ask is how they have developed new productive capabilities and acquired new comparative advantages. It is through such a developmentalist approach that this paper explains the dynamic process of linkage development in Malaysia's resource sectors. Why did Malaysia pursue value addition policies? What was the role of the State? What lessons can be learned and replicated in other regions? These are some of the questions that will be addressed in the remainder of this paper.

3. OVERVIEW OF VALUE ADDITION IN RESOURCE SECTORS IN MALAYSIA

While a common explanation for Malaysia's economic success emphasizes the country's diversification towards the Electronics and Electrical (E&E) sector, the quantitative data presented in this section justifies why resource-based industrialization deserves attention in the context of Malaysia's development.

While the E&E sector continues to dominate Malaysia's export basket (with almost 40% of total exports in 2017), this sector's net exports (trade balance) have stagnated since 1999. In contrast, the collective contribution of the palm oil, rubber-based, and petroleum industries to the country's trade balance has been increasing and has been higher than the E&E sector over the past decade, even reaching twice the value of E&E net exports in 2011 (see figure 1).⁶

Figure 1: Malaysia's trade balance by sector (1988-2017)

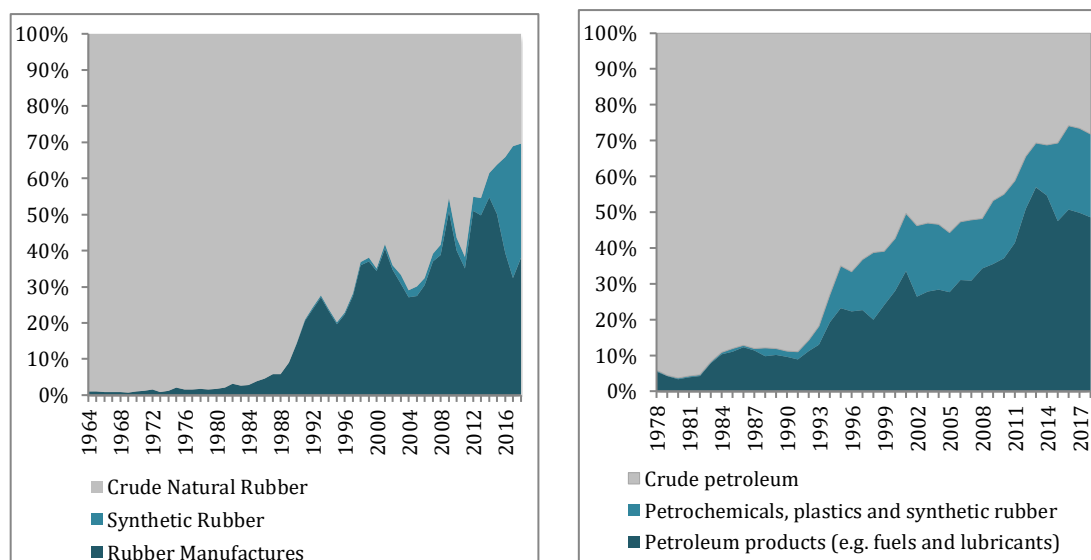


Source: Author's elaboration based on UN Comtrade data

Besides, Malaysia did not merely rely on exporting its raw commodities but vertically integrated around those resource sectors. By the 2000s, value-added in commodity-based manufacturing accounted for 12% of GDP, compared to 18% for raw commodities, while 50% of commodity-related exports were processed (World Bank, 2013). Figures 2 and 3 reveal the extent of value addition in Malaysia's palm oil, rubber, and petroleum exports.

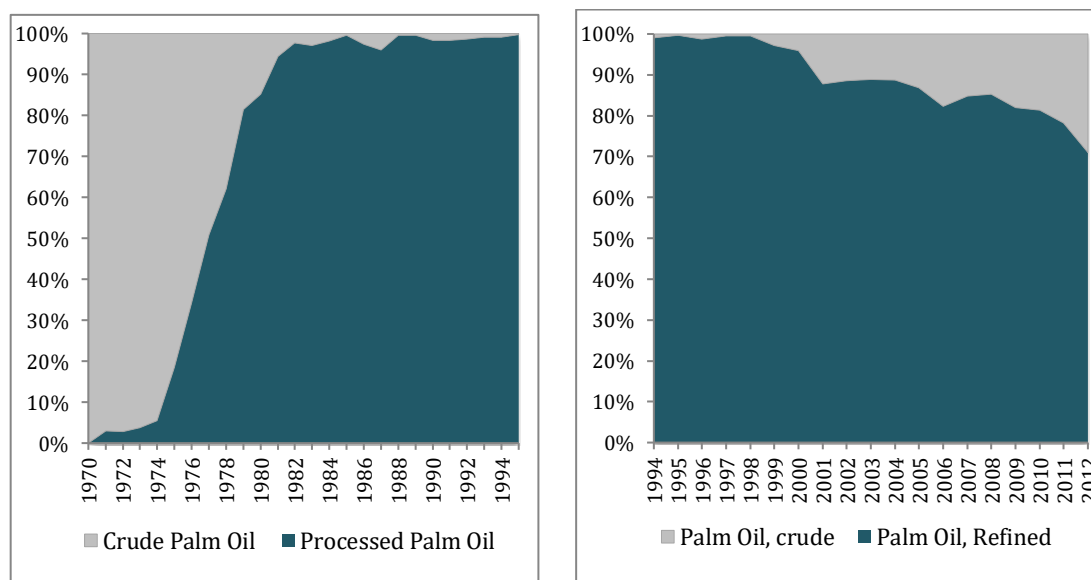
⁶ Government sources also indicate that palm oil- and rubber-based industries combined remained the largest net exporter in 2017, with a trade balance of RM100.8 billion, compared to RM90.1 billion for the E&E sector and RM36bil for petroleum (The Star, 2018). Disaggregated data on value-added by sector was not available for resource-based industries.

Figure 2: Composition of the exports of the rubber (left) and petroleum (right) industries (1964-2018)



Source: Author's elaboration based on UN Comtrade data

Figure 3: Composition of Malaysia's palm oil exports, based on volume (tons) between 1960 and 1994 (left); based on value (USD) between 1994 and 2012 (right).



Sources: Author's elaboration based on Gopal (2001) and UN Comtrade data

Malaysia transitioned from being a minor crude palm oil producer to becoming a major exporter of processed palm oil. As shown in figure 3, the share of processed palm oil exports in total palm oil exports increased from 0% in 1974 to 99% by 1994.⁷ With an annual growth rate of 34% in the 1970s and 1980s, palm oil processing in

⁷ However, such trend began to reverse after 2000.

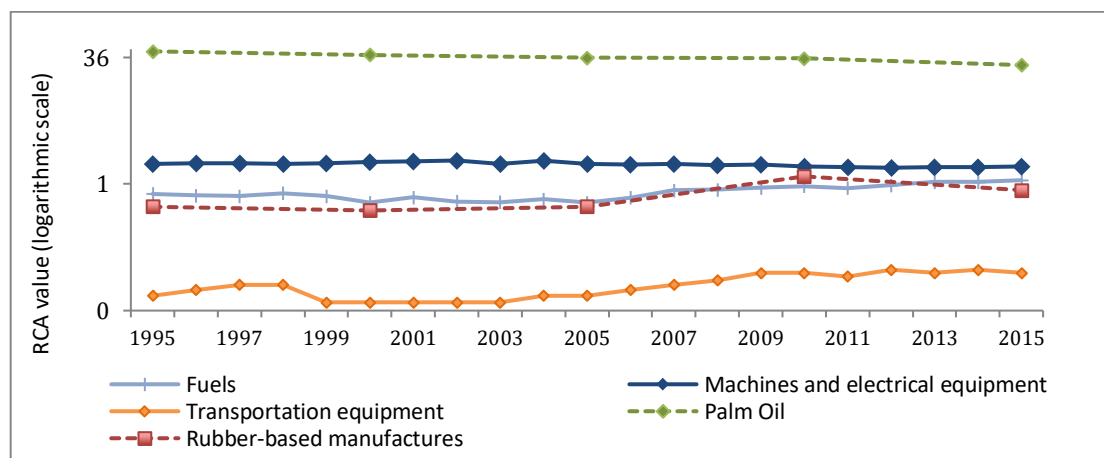
Malaysia grew three times faster than other domestic industries and the world average (Gopal, 2001). The palm oil sector has become the second-largest contributor to exports, the fourth largest contributor to gross national income, and generates direct employment for around 600,000 people (Azhar, 2009).

The Malaysian rubber industry has evolved from raw rubber exports to an –almost-fully integrated industry. The value of exports of rubber-based manufactured goods has exceeded twice the value of raw rubber exports since 2012.⁸

The petroleum sector has also shown considerable value addition, both downstream and upstream, since the 1990s. Local firms have accumulated downstream capabilities related to oil refining, lubricant production, and petrochemical production, which feeds into the domestic plastics and synthetic rubber production. As a result, the share of crude oil in Malaysia’s petroleum exports reduced from over 95% to 20% over the last five decades (figure 2).

Malaysia’s resource-based industries also show signs of global competitiveness. Figure 4 shows that Malaysia maintains an extremely high revealed comparative advantage (RCA) in palm oil products.⁹ Malaysia’s RCA in the fuel and rubber-based manufacturing have exceeded a value of 1 since 2007, indicating that it has become a competitive exporter of those products. Meanwhile the automotive sector has failed to become globally competitive.

Figure 4: Malaysia's RCA by sector (1995-2015)



Source: Lebdioui, Lee and Pietrobelli (2020)

The key question that now arises is: What has been the role of the state in such value addition processes? Table 1 summarizes information contained in sections 4 to 6 of this article by mapping out some of the key policy interventions that contributed to

⁸ In 2017, Malaysia’s exports of rubber-based products reached RM21.6 billion, 81.6% of which came from latex goods (MREPC, 2018).

⁹ The RCA metric can be used to provide an indication of a country’s competitive export strengths. When a country has a RCA for a given product (>1), it is inferred to be a competitive exporter of that product.

promote value addition in resource sectors. Such interventions involved a mix of R&D support, fiscal incentives, skills development and trade promotion.

Table 1: Key policies towards value addition in commodity sectors in Malaysia

	Petroleum		Palm Oil		Rubber	
	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
Fiscal incentives	Fiscal incentives for re-investment in resource-based industries		Fiscal incentives for re-investment in resource-based industries Replanting subsidies		Fiscal incentives for re-investment in resource-based industries, which include Pioneer Status (with income tax exemption) and Investment Tax Allowance. Incentives for priority sectors (which include the rubber sector)	
	The Promotion of Investments Act (1986) offers tax breaks to petroleum firms if they contribute to local industrial linkages & knowledge transfer		Preferential export duties between crude & refined palm oil Tax credits for downstream processing 7 years tax breaks for pioneer status refineries Tax breaks for the utilisation of oil palm biomass.			
Trade Promotion & protection	Local content requirements for staff and the supply of goods and services Petronas Vendor Development Programme (1993)	Export taxes on crude oil (1993)	Malaysian Palm Oil Council for promotional efforts (since the 1980s) Barter trade and POCPA credit (since the 1990s) The sustainable palm oil certification scheme (MSPO) since 2015		The Malaysian Rubber Export Promotion Council promotes local products and identifies new export opportunities since 2000 The Malaysia Rubber Board (1998) offers product quality testing and compliance services for local firms to match changing International Standards	
					Tariff protection on tires imports (1960s)	
R&D support	The Petronas Research Cess, an annual research contribution paid by partner companies to promote R&D		Oil Palm Genetics Laboratory (1960s) Malaysian Palm Oil Board (2000) (a merger of the Palm Oil Research Institute (1979) and the Palm Oil Registration & Licensing Authority (1979)		The MRB (created from a merger of the Rubber R&D Board; Rubber research institute; Rubber Exchange & Licensing Board; Malaysian Rubber Producers Research association; Tun Abdul Razak Research Centre)	
Human Capital	Institut Teknologi Petroleum of Petronas (1983) Universiti Teknologi PETRONAS (1997)		Universiti Putra Malaysia to train agro-industrial engineers and agro-business graduates.			

4. RUBBER-BASED MANUFACTURING

In contrast to the World Bank's (2013) argument that the success of the Malaysian rubber industry evidences the role that sector-blind policies play in economic diversification, this section shows that several policies that contributed to promoting rubber-based manufacturing were sector-specific. The sustained growth of the rubber-based industry can be attributed to the role of several specialized government agencies that undertook R&D in rubber-related areas, FDI promotion to gain access to foreign technology and export markets, ensured quality control to promote sales in foreign markets, and incentivized value addition through tax incentives. Such policies have been fruitful: between 1970 and 2018, rubber-related exports grew exponentially from RM17 million to RM31 billion (even reaching RM42 billion in 2011).

*4.1. Overview of the historical development of linkages in the rubber sector*¹⁰

During the 1950s, Malaya produced half of the world's rubber.¹¹ Rubber estates occupied about 65% of the entire cultivated area of peninsular Malaysia and rubber provided around 60% of export earnings (Goldthorpe, 2015). After the country's independence, the World Bank did not consider that it could become a major producer of rubber products and concluded that the most economically efficient location of rubber manufacturing industries is in the major centers of consumption because of the low cost of shipping rubber relatively to its market prices (ibid.:66).

During the 1960s and 1970s, policymakers in Malaysia also showed a lack of interest in the rubber sector, following the idea that palm oil would become a more valuable commodity. Many rubber estates had been reconverted for palm oil plantations because policymakers, following the World Bank's advice, wanted to decrease dependence on rubber (ibid.). However, the role of the rubber sector had been reassessed from the late 1980s onwards with the three Industrial Master Plans (which specified targets for vertical integration in the rubber sector), and the ETP, which aims to double the contribution of the rubber industry in gross national income and increase the country's global market share in the latex sub-sector.¹² Until the mid-1980s, Malaysia still exported most of the natural rubber it produced as raw material. Since then, the rubber industry has become vertically integrated through the development of an export-oriented rubber-manufacturing sector that produces a wide range of goods for various sectors, including the automobile, medical, footwear,

¹⁰ See Goldthorpe (2015) for an extensive contribution to the topic.

¹¹ Rubber trees were first introduced by British Colonists to the Malay peninsula in 1877.

¹² For instance, the more recent IMP3 aims to build and safeguard Malaysia's image as a supplier of reliable rubber products through increased product quality control and emphasizes the development of the linkages towards the plastics, chemicals, and automotive industries.

construction, and electronics sectors.¹³ The number of firms manufacturing rubber goods rose from 50 firms in 1970 and 349 firms in 2012 while the number of workers they employed grew eightfold in the same period, accounting for 6% of employment in the manufacturing sector by 2012 (Sawal, 2001; Goldthorpe, 2015; MIDA, 2008).

Rubber-based manufacturing in Malaysia can be categorized into three sub-sectors: latex products, tires and tire-related products, and industrial and general rubber products. The latex sub-sector is the largest one in terms of sales, employment and natural rubber consumption, and is mostly oriented towards the healthcare sector, through the production of rubber gloves, prophylactics, and disposable hospital kits. Several Malaysian firms have become world-leading companies in the manufacturing of latex products, such as Karex Industries, the world's largest condom manufacturer, and Top Glove, the world's leading producer of latex gloves.¹⁴

Malaysia has also managed to localize some of the backward linkages arising out of rubber production (both natural and synthetic).¹⁵ In the late 1960s, the local expenditures for equipment used in rubber plantations represented 64% of total expenditure, due to the local supply of building works, bulking and coagulating tanks, size reduction equipment, cast-iron rollers, and minor items such as tapping knives (Thoburn, 1977; Goldthorpe, 2015). Nowadays, several Malaysian firms are even involved in the design, fabrication, and installation of rubber plants overseas.¹⁶

Around 80% of the country's rubber manufacturing companies are Malaysian-owned, while FDI is concentrated in the production of industrial parts and tires (Goldthorpe, 2015). Interestingly, there is a large difference in purchasing behavior between domestic and foreign firms. For instance, around 80% of Malaysian firms use locally produced synthetic rubber while 75% of manufacturers with foreign involvement purchase over 50% of their synthetic rubber from abroad (Goldthorpe, 2015). Foreign firms also have fewer forward linkages with other domestic manufacturers (*ibid.*).

It is undeniable that lower prices of natural rubber incentivized the use of rubber as a cheap feedstock for industry. Indeed, most Malaysian firms manufacturing rubber-based products have responded to price signals by moving away from scale production towards higher value-added products, such as nitrile gloves for the healthcare industry prophylactics (World Bank, 2013). Nevertheless, as the following

¹³ Most of the domestic natural rubber production has consequently been consumed by the domestic rubber-manufacturing sector while rubber imports increased from 31,000 tons in 1985 to more than 1 million ton in 2013 (Malaysian Rubber Board, 2016).

¹⁴ TopGlove started as a family-owned rubber trading company and shifted to contraceptives production to enter more lucrative activities in the rubber value chain (Liau, 2012).

¹⁵ Synthetic rubber is mostly composed of polymers that derive from petroleum byproducts, which have been supplied by Malaysian refineries in recent years.

¹⁶ However, except for the machinery to produce latex goods, the machinery and equipment for rubber-based manufacturing has mostly been imported (Goldthorpe, 2015:78).

subsections show, the role of industrial policies has been essential to the process of upgrading in the rubber value chain.

4.2. Price control mechanisms: Trade protection and Fiscal incentives

The Malaysian government has played a key role in incentivizing rubber value addition through the manipulation of market prices. In the 1960s, after the introduction of tariffs on tires imports, several multinational firms (such as Dunlop and Goodyear) invested in the manufacturing of automobile tires in Malaysia, initially targeting domestic consumption through an import-substitution logic.

Besides trade protection, a range of fiscal incentives was subsequently offered for investments in the rubber-based manufacturing sector. In addition to fiscal incentives that are currently available for prioritized sectors and activities, the government has added tax incentives for reinvestment in resource-based industries. Local companies in rubber-based manufacturing that reinvest to expand their projects are thus eligible for Pioneer Status and Investment Tax Allowance (MIDA, 2017).

4.3. Quality control for export promotion

Because rubber-based manufacturing in Malaysia is mostly oriented towards the healthcare sector (through prophylactics and disposable medical devices), the success of local firms has relied on a strict quality management system to comply with international standards. Much of the growth of the rubber industry exports from the 1990s was related to a boom in demand for latex medical examination gloves and condoms in Western countries, as the result of a worsening AIDS crisis and increased consciousness regarding the use of contraceptives (Jomo K. S., Personal Communication, March 2017). In this period, Malaysia was the most attractive country for FDI in medical glove production as it was the world's larger producer of latex concentrate, had a well-established industrial infrastructure, and strong technical support from several government funded-research institutes (Goldthorpe, 2015). These factors are directly related to government interventions in the sector. Malaysia has since become the largest supplier of rubber medical gloves to the US market, with 30% of the market share (MITI, 2006).

However, before the increased product quality control was encouraged by the IMP3, poor quality control led to a tragedy of the commons amongst the large number of companies involved in latex gloves and condoms. It only took one company producing defective condoms to jeopardize the reputation of the industry as a whole (Jomo K. S., Personal communication, March 2017). In that perspective, the role of the government has thus been key in alleviating such tragedy of commons by setting up stronger institutions to ensure quality control and new product quality certification

schemes such as the Standard Malaysian Glove (SMG).¹⁷ For instance, the Malaysia Rubber Board (MRB), offers product quality testing and compliance services for local firms to improve the quality of their products. The MRB's physical testing laboratory undertakes tests to match domestic rubber products with International Standards (ISO) and other major consumer market standards (Malaysian Rubber Board, 2011). Such support is key because Malaysian products constantly face the challenge to comply with stringent standards and regulations imposed by export markets. For instance, Malaysian rubber products exporters recently faced challenges to comply with new regulations by the European Chemical Agency. The government has therefore played a key role in building and safeguarding Malaysia's image as a supplier of quality and reliable rubber products, thereby maintaining its position as the world's largest latex goods exporter.

4.4. Research and Development

Malaysia has a competitive advantage as the foremost authority in R&D in natural rubber (Goldthorpe, 2015). Malaysia's enhanced R&D capacity has been key in ensuring the productivity and quality of its domestic rubber-based industries, which need to remain competitive against low-cost producers (particularly China and India) and other natural rubber-producing countries (such as Thailand and Vietnam).

Following the IMP2's recommendations, the MRB was created in 1998 from a merger of the Rubber Research and Development Board, the Rubber research institute, the Rubber Exchange and Licensing Board, the Malaysian Rubber Producers Research Association, and the UK-based Tun Abdul Razak Research Centre (TARRC). The MRB became a major center for applied research on rubber-based manufacturing. It has accumulated expertise across the rubber value chain (from cultivation, plantation management, extraction, and processing of raw rubber, to rubber manufacturing techniques and rubber products marketing). Around 80% of Malaysian manufacturers use production technology developed by the Malaysian Rubber Board (ibid.).

4.5. Trade promotion and market access

Government agencies, such as the Malaysia External Trade Development Corporation (MATRADE) and the Malaysian Rubber Export Promotion Council (MREPC) have played an important role in identifying and expanding new export markets for Malaysian rubber products. MREPC was established in 2000 to promote Malaysia-made rubber products and identify new export opportunities. Trade promotion activities have targeted both new regional markets, such as Latin America, Africa, West and Central Asia; and specific industrial markets, such as the automotive, petroleum, construction, and marine transportation industries, which offer vast end-use potential for Malaysian rubber products.

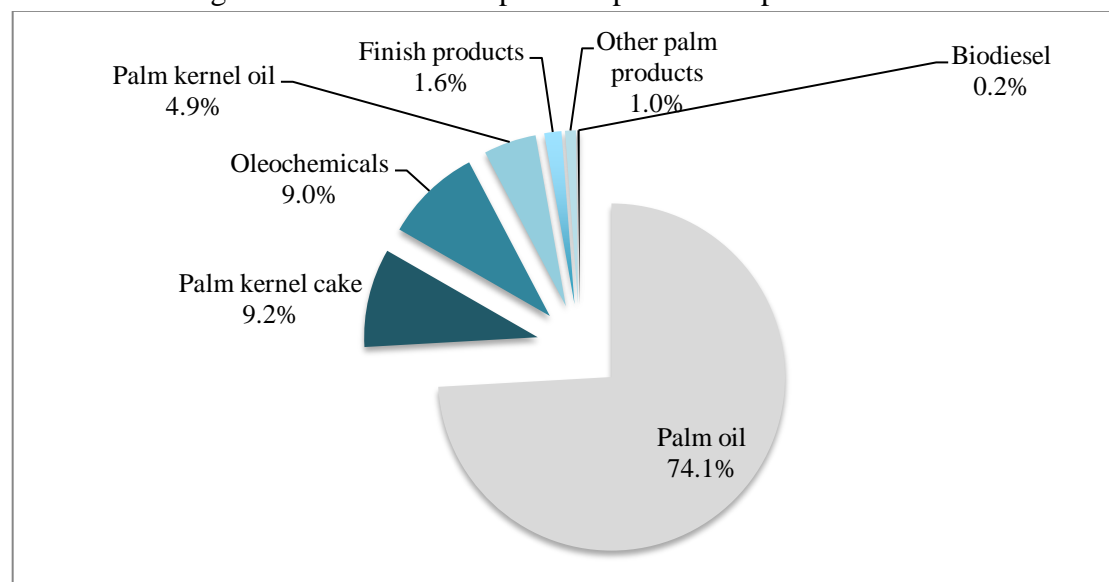
¹⁷ The SMG was formulated by the MRB and the Malaysian Rubber Glove Manufacturers' Association in consultation with regulatory bodies such as the US Food and Drugs Agency.

5. PALM OIL¹⁸

4.1 Historical evolution: emergence, ownership and value addition

Value addition in the palm oil sector has been a key achievement in Malaysia's economic development. Several phases of development can be distinguished. The first one was the establishment of the palm oil industry to diversify away from dependence on volatile rubber prices. The second phase was the development of palm oil refining capacity from the 1970s. The third one was the development of further downstream activities from the 1990s. Indeed, beyond refining, a further layer of downstream value addition (albeit quite modest) has taken place. Value-added palm oil-based products represented about 25% of total palm oil exports in 2011 (figure 5).

Figure 5: Breakdown of palm oil products exported in 2011



Source: May (2012)

Upstream value addition also deserves attention. Initially, in the 1970s, refining, and fractionation equipment was mostly imported, while local expenditures were mainly for the fabrication of simple vessels, tanks, and piping (Gopal, 1999). However, the demand for inputs and services required in palm oil processing has become increasingly met locally, as a result of the accumulation of experience, technology, knowledge, and engineering skills in palm oil processing techniques (ibid.).¹⁹ Since the 2000s, local providers of goods and services in palm oil processing are even exporting their expertise to countries establishing local processing facilities.²⁰

¹⁸ This section relies on the comprehensive analysis provided in Gopal (1999, 2001).

¹⁹ By the late 1980s, foreign capital expenditures were limited to sophisticated equipment such as separators, high pressure presses, engines, laboratory equipment (Gopal, 1999).

²⁰ For instance, Oiltek is a Malaysian firm specialized in edible oil processing and

How did the palm oil industry emerge and develop? Palm oil was initially introduced to Malaysia in 1875 by the British as an ornamental plant. The rapid development of oil palm cultivation in the 1960s aimed to reduce the dependence on natural rubber, which was facing cyclic price declines because of technical developments in synthetic rubber. The Malaysian government recognized the need for agricultural diversification and considered oil palm to be a profitable alternative crop to rubber (Gopal, 2001; Goldthorpe, 2015). The government policy for palm oil development (as well as rubber) consisted of the introduction of land development schemes, which were also seen as a means to eradicate poverty as they allowed plantation developed land to be distributed to the landless poor.²¹ Between 1960 and 1990, FELDA alone accounted for 33% of the newly planted oil palm areas (Gopal, 2001:126). In 1966, five years after the beginning of FELDA's palm oil program, Malaysia became the world's largest exporter of palm oil. By 1995, it accounted for 52% of world palm oil production (ibid.).

Interestingly, when palm oil plantations were foreign-owned, there was no interest in value addition. Before 1974, there were few attempts to undertake refining and fractionation of palm oil for the export market because the largely European-controlled plantation companies preferred to export crude palm oil and did not see many gains in relocating their vegetable oil processing facilities in Malaysia (Gopal, 2001:239). In 1981, as part of the New Economic Policy (NEP), which was incorporated in the 2nd Malaysia Plan (covering the years 1971-1975), the government undertook the nationalization (or more accurately, the hostile takeover in the London Stock Exchange) of foreign-owned plantations (Guthrie, Golden Hope, and Sime Darby). The desire to process palm oil increased after the industry was nationalized.

Nevertheless, several economists considered the processing of crude palm oil in Malaysia as having limited potential and viability (see Berger, 1984; Dunn, 1978; Todd, 1978) due to the lack of experience of Malaysian firms in sourcing, processing, blending, manufacturing and marketing palm oil products, in comparison to refiners in industrialized countries. Another reason was that the transportation, handling, and shipping facilities and procedures in Malaysia were designed for the bulk movement of crude palm oil instead of processed palm oil. Long transportation between Malaysia and consumer markets such as the European Union was also believed to lead to quality deterioration and reduced interaction between suppliers and purchasers. Western Europe's high import duties on processed palm oil products also discouraged the import of processed palm oil products. These arguments, which

engineering, and that has undertaken several projects overseas.

²¹ These programmes successfully combined both commercial and social objectives. FELDA and FELCRA were created to resettle rural families in schemes in which smallholders contribute their land and labor and receive dividends while the management and marketing operations was carried out by FELDA, enabling economies of scale (World Bank, 2013). More than 500,000 people have benefitted from FELDA (ibid.)

derive from a static understanding of the process of capabilities accumulation, implied that the palm oil refining industry in Malaysia was facing too many major barriers to becoming competitive and export-oriented.

4.2 Role of industrial policies

Although palm oil processing in Malaysia initially lacked comparative advantage and faced various market barriers, the policies implemented by the government since the 1970s have been essential in developing competitive palm oil-based industries, against the advice of international institutions.

The palm oil industry was identified as a priority sector in each of the three industrial master plans (IMPs) since 1985. The IMP1 (1985-1995) suggested addressing skills shortages through on-the-job training and outlined the role of the Palm Oil Research Institute of Malaysia (PORIM) to conduct R&D in palm oil processing. By the end of the IMP1, Malaysia's processing capacity exceeded the supply of CPO (Gopal, 2001). The IMP2 (1996-2005) aimed to strengthen production linkages and increase value-added activities and productivity in the palm oil sector. The IMP3 (2006-2020) emphasized downstream manufacturing activities into a wider range of higher value-added products, through enhanced R&D and closer collaboration between government research agencies and operators in the palm oil sector.

4.2.1 Fiscal incentives

The government of Malaysia implemented a range of fiscal incentives since 1968 to encourage value addition and the export-orientation of the palm oil sector. Such incentives included a preferential export duty, which escalated with the degree of processing of palm oil. This duty has been a very important policy instrument for the growth of an export-oriented palm oil refining industry in Malaysia. It involved "a complex system of 'transfer pricing' to increase the margins for CPO processing and PPO export, at the expense of, but without being a burden to CPO producers, and without any government subsidy" (Gopal, 2001:305). Fiscal incentives also included tax credits for further downstream processing; seven years tax holidays for pioneer status refineries; and tax exemptions for the utilization of oil palm biomass.

Several of those tax incentives (such as the export duty exemptions on exports of higher value-added processed palm oil products) were specific to the palm oil sector. Others were part of a broader strategy targeting resource-based industrialization more generally (in particular the rubber, palm oil, timber, and petroleum sectors). Other fiscal incentives (such as the export credit-refinancing scheme for pre- and post-shipment of exports) were applied to all priority sectors.

4.2.2 R&D and skills development

In the late 1960s, R&D in oil palm breeding began to expand after the Malaysian Department of Agriculture established the Oil Palm Genetics Laboratory through an exchange program with West African economies and four private plantations

(Donough and Chia, 2005; Rasiah and Shahrin, 2006). Later, in 1979, the Palm Oil Research Institute (PORIM) and the Palm Oil Registration and Licensing Authority (PORLA) were established. They merged in 2000 as the Malaysian Palm Oil Board (MPOB), which has been responsible for research on all palm oil-related activities.

R&D was also undertaken in collaboration with local universities through government grants.²² The government notably set aside RM1 billion under the Intensification of Research in Priority Areas program for R&D carried out in the Malaysian Agricultural Research and Development Institute (MARDI), PORIM, and different universities (Rasiah and Sharin, 2006). Overall, the palm oil-related R&D support from the government enabled firms to increase value-added in existing products, as well as introduce new products in markets, such as biodiesel, specialty fats, and vitamin A (ibid.). The state also set up Kolej Serdang (later known as ‘Universiti Putra Malaysia’), an agriculture-focused institution that has trained agro-industrial engineers and agro-business graduates (ibid.).

4.2.3 Trade promotion

The marketing efforts overseas by the government to promote palm oil-based products have been considerable. Malaysia’s attempts to export processed palm oil in the 1970s were initially blocked by the European common market, which practiced tariff escalation to make sure that refining capacity would remain in Europe. To counter the EU import duty structure, the Malaysian government had initially decided to introduce an export duty on crude palm oil production. Nevertheless, the EEC had subsequently increased its tariffs: “The effective protection in the EEC increased from about 100% in the 1970s to more than 200% in the 1990s” (Gopal, 2001). Such escalation in tariffs was the most important barrier to palm oil refining in Malaysia because the EEC was a major market that imported more than 30% of Malaysian crude palm oil exports and processed about 50% of world palm oil consumed in the early to mid-1970s (ibid.). As underlined by Professor Jomo Sundaram, “the Malaysian government realized they could not beat the Europeans at their game and had decided to overcome this problem by focusing on alternative markets for palm oil” (Personal Communication, March 2017). Since the early 1990s, most of market deals for Malaysian processed palm oil have consequently been signed through government-to-government partnerships under so-called barter arrangements.²³ The barter trade under Malaysia’s palm oil credit and payment arrangement (POCPA) involved the exchange of processed palm oil for finished goods (The Star, 2009).²⁴ As

²² Research calls under the three IMPs had focused on different areas according to the needs and stages of the industries (for instance, the research focus under the IMP2 was to improve planting material quality).

²³ System of trade in which participants in a transaction directly exchange goods or services for other goods and services of equivalent value without the use of money.

²⁴ Of the RM1.8bil allocated by the government, the credit utilised up to 2009 was about RM900mil (USD245mil) (The Star, 2009). Around 22 countries have received POCPA credit.

a result of this barter trade, palm oil refining activities in Malaysia considerably increased and became the most competitive internationally within ten years, thanks to both economies of scale and scope.²⁵ Simply depending on the conventional mode of doing business would not have been adequate to expand the export market for palm oil products (Nambiappan and Norfadilah, 2002). Barter (or counter) trade, was an innovative and mutually beneficial method of trading, especially when dealing with countries facing foreign exchange difficulties (ibid.).

In addition, in the 1980s, the Malaysian Palm Oil Council was established to develop a comprehensive promotional strategy for Malaysian palm oil to counter the US soybean lobby against palm oil based on the alleged unhealthy nutritional quality and links to heart diseases (Gopal, 2001). More recently, in 2014, in the face of environmental campaigns against palm oil (that are partly influenced by EU-based producers of rapeseed oil and sunflower oil lobbies) (Porritt, 2018), the Malaysian Palm Oil Certification Council (MPOCC) was established to develop the Malaysian Sustainable Palm Oil (MSPO) Certification Scheme.²⁶ Interestingly, it appears that most governmental efforts in trade promotion were a reaction to market barriers to exporting value-added palm oil products. It thus sustains the idea that free markets are not free and evidences the important role of government intervention to promote exports in foreign markets.

4.2.4 *Future developments and challenges*

Despite the growth of palm-based industries, it can be argued that the *depth* of forward linkages in the palm oil sector has been insufficient, given that most of the downstream value addition is limited to basic refining, while oleochemicals and biodiesel only respectively constitute 9.0% and 0.2% of palm oil exports (see figure 5). Besides, Malaysia concentrates almost exclusively on simple oleochemicals, (e.g. fatty acids and fatty alcohols), which accounted for 99% of overall oleochemical output in 2011 (World Bank, 2013). To achieve higher value-addition, Malaysia would need to produce more complex oleochemical derivatives, such as surfactants, bio-lubricants, and agrochemicals (ibid.) Further value addition can also be achieved through the production of biofuels, which could meet the renewable energy demand in the EU and US markets (Loh and Choo, 2013; Nambiappan et al, 2018). However, several challenges have hindered bio-diesel production. Firstly, the fluctuations of crude palm oil prices have led to market risk and decreased competitiveness compared to conventional fuel (Loh and Choo, 2013; Lim and Teong, 2010). Secondly, it can be

²⁵ The concept of economies of scope, developed by Chandler (1990), refers to the degree of specialization. Malaysia had specialized in one type of oil (palm oil), while Europeans had no scope nor scale as they were processing different types of oils, according to the season (Jomo K.S., personal communication, March 2017).

²⁶ MPOCC is governed by a Board of Trustees that includes representatives from the Ministry of Plantation Industries and Commodities (MPIC), Malaysian Palm Oil Board (MPOB), academia, non-governmental organisations, and oil palm industry associations.

argued that governmental efforts in developing palm oil-based biodiesel have been too modest (Jomo K.S., personal communication, March 2017).²⁷ Perhaps it is too soon to assess whether Malaysia's efforts in R&D in palm oil are bearing fruits, but what can be said with certainty is that the commercial application of the research has not yet reached scales needed to become significant in the country's export basket. Thirdly, a considerable degree of uncertainty stems from the recent proposition in January 2018 by the EU to phase out palm oil from biofuels mix by 2021 and cap crop-based biofuels at the member states' 2017 consumption levels and 7% of all transport fuels until 2030 (European Parliament, 2018).²⁸

Notwithstanding the future challenges of the sector, this section confirms the argument that the Malaysian palm oil refining industry would not have been able to compete globally without key government interventions, and that its growth was not due to the lack of market barriers or counter-attacks from the incumbent firms.

6. PETROLEUM SECTOR

Petroleum resources have played a key role in the country's industrialization efforts through the establishment of upstream and downstream knowledge-intensive activities.²⁹ This section evidences the role of various policies underlying the development of productive capabilities along the petroleum value chain in Malaysia.

6.1 Policies for the accumulation of upstream capabilities³⁰

While international oil companies initially remained the providers of upstream technology in the early periods of resource exploitation, especially given the context of Malaysia's technology-demanding offshore and deep-water fields (Tordo and Anouti, 2013), 74% of the total value of contracts in upstream activities in the petroleum sector was granted to local companies by 1995 (Malaysian Government, 1995). Several local suppliers have even emerged as globally competitive firms, operating in different regions and sectors (Klueh et al., 2009; Lebdioui, 2019a).

Upstream linkage development in Malaysia's petroleum sector was the result of a mix

²⁷ Other sources sustain that the MPOB has carried out extensive R&D in palm biodiesel since the 1980s (Augustin, 2017) and emphasize the rising number of patents and the establishment of a biodiesel pilot plant in 1985. The government also launched the National Biofuel Policy in March 2006 and the Biofuel Industry Act in 2007 (Johari et al., 2015).

²⁸ The government has also recently reiterated its pledge to maintain the natural forest cover of more than 50% of its total land mass (Borneo Post, 2018). This will undoubtedly have implications for the policy will to further promote the intensification/value addition (partly through R&D) of palm oil industries (and perhaps rubber, although rubber has been classified as forest). This pledge also bears implications for the external growth of Malaysia palm oil companies overseas, especially in neighbouring Indonesia.

²⁹ Malaysia is the 9th natural gas exporter and the 25th largest oil exporter (CIA, 2018).

³⁰ See Lebdioui (2019a) for further details on local content in Malaysia's petroleum sector.

of policy instruments, including legal and regulatory requirements, tax incentives, capacity-building programs, and state-led investments through Petronas.

6.1.1 The legal and regulatory framework for local content requirements

There are three main effective frameworks for local content in Malaysia: licensing requirements of suppliers; production-sharing contracts (PSCs); and tax incentives. Firstly, suppliers of oil field services and equipment (OFSE) must receive a license that can only be obtained by foreign suppliers if they partner with local firms. If incorporated locally, foreign suppliers are restricted to a 30% equity stake (US Department of State, 2011). Secondly, PSCs must also comply with the national objective of maximizing Malaysian participation in petroleum operations. If inputs are not locally available, production sharing contractors must submit a 5-year plan indicating how they will achieve the objectives of maximizing the use of local inputs required for petroleum operations (PSC, Art.12.2). Petronas' partners are also required to pay to Petronas an annual research contribution to promote R&D (PSC, Arts 9.1 and 9.2). Thirdly, in addition to local content requirements, local content is also incentivized through tax breaks to petroleum companies and suppliers if they contribute to the local economy through industrial linkages and knowledge transfer (Promotion of Investments Act of 1986, Arts.5, 26).

Malaysia's recent international commitments may constitute an obstacle to continuing to use some of its local content policy tools. As a member of the World Trade Organization (WTO) since 1995, Malaysia must abide by the Trade-Related Investment Measures, which preclude requirements to purchase products of domestic origin, limitations on the amount of imported products that an enterprise may purchase; and restrictions on foreign exchange necessary to import goods and services (CCSI, 2016).³¹ The General Agreement on Trade in Services (GATS) also bans several types of local content requirements. Nevertheless, GATS only applies to the sectors that a country chooses to include in its schedule of commitments. Malaysia has not included the petroleum sector in its schedule of commitments (CCSI, 2016).

6.1.2 State-led investments

The establishment of Petronas was part of a nationalistic drive to use public enterprises to achieve national economic and social goals, including the development of linkages around the hydrocarbon sector (Gale, 1981:1142). One of Petronas' responsibilities is the reinvestment of resource revenues, which partly explains Petronas' vertical diversification. Prime Minister Mahathir provided the following comments on the role of the petroleum industry:

³¹ As of September 2018, Malaysia had also entered 71 bilateral investment treaties and 27 Treaties with Investment Provisions (TIPs). Such treaties can contain restrictions on local content requirements.

“Most oil producing developing countries do not have the expertise nor capital to extract oil and have to invite international oil companies [...] But in Malaysia, we decided that we cannot be satisfied with only collecting royalties and we must have the capacity to exploit our own resources. [...] So unlike most other national oil companies who merely collect royalty, we wanted to get into the [upstream] industries because they have good returns.” (Mahathir, Personal Communication, cited in Lebdioui, 2019a).

In the beginning, Petronas encountered difficulties venturing outside the Asia-Pacific region, but it eventually succeeded and currently operates in 32 countries. As a result of this internationalization, Petronas had become the third-largest non-financial TNC from a developing country in terms of the size of foreign assets by the 2000s (UNCTAD, 2010, 2019). One of the reasons put forward by managers at Petronas for its internationalization was the relatively small size of the domestic petroleum resources, meaning that internationalization is the only way to maintain long-run productivity. While resource exhaustibility can constitute an obstacle for linkage development, Petronas has managed to expand its operations overseas in the face of depleting natural resources.

6.1.3 Human capital accumulation

Despite its relatively good education system compared to other developing countries at the time, Malaysia initially faced skills shortage problems because of a lack of technical expertise in the petroleum sector (Lall, 2001). However, “Petronas realized its ignorance and made strenuous efforts to overcome it”, notably through training programs, by seeking assistance from foreign government petroleum agencies and by establishing several technical training institutes from 1983 onwards (ibid:1141). For instance, Petronas established the Institut Teknologi Petroleum of Petronas and the Universiti Teknologi PETRONAS (in 1983 and 1997 respectively), which have produced over 140,000 petroleum engineers, technicians, and technical executives. Petronas has also sponsored Malaysian students to pursue tertiary education in the country and overseas. Since 1975, through the Petronas Education Sponsorship Programme, Petronas has invested more than USD 850million in education sponsorship, technical training, and capability building, enabling more than 36,500 students to pursue secondary education and tertiary education at home and abroad (Petronas, 2017). Petronas also established its Leadership Centre in 1992, to develop the managerial skills of its employees.

6.1.4 The Petronas Vendor Development Programme (VDP)

The VDP was set up in 1993 to develop a competitive Malay industrial base in petroleum-related manufacturing. It has helped over 99 domestic companies become vendors, who collectively have been awarded contracts worth more than USD2billion (Petronas, 2013, Tay 2018). In several instances, the VDP has acted as a stepping-

stone for Malaysian companies to compete globally.³² After becoming Petronas vendors, firms enjoyed several benefits such as the development of marketing capabilities, an increase in their revenues, increased exposure to international markets as well as more stable contracts given that their products and services would be technically accepted by all Petronas subsidiaries (domestically and abroad) and by international petroleum companies operating in Malaysia (Lebdioui, 2019a). Vendors also benefit from the sharing of best practices by Petronas (notably through touring “clinics”, which allows local suppliers to interact with Petronas staff and learn about the company’s procurement system and future opportunities, both domestically and abroad) (Tordo and Anouti, 2013).

6.2 Policies for the accumulation of downstream capabilities

Malaysia pursued downstream value addition in the petroleum sector by accumulating capabilities related to oil refining, oil trading, lubricant production, and the production of petrochemicals that are used to manufacture plastic products and synthetic rubber. Policy-makers in Malaysia have indeed viewed the oil and gas sector as a catalyst for industrialization: “Gas can be used as feedstock in many industries, including in petrochemicals and the plastics industry, which is a big industry in itself. Today, plastics are even used in building airplanes, so there is no end to the industries that originates from oil and gas production.” (Prime Minister Mahathir, Personal Communication, 7 April 2017).

Malaysia went from being an importer to becoming an exporter of petrochemical products, which now constitute the second largest contributor to Malaysia’s manufactured exports, with an export value of about USD37.2 billion in 2014 (MITI, 2017). Within that sector (which employs about 122,000 people), the plastics industry, which generated USD3.30 billion of exports in 2016 (Malaysian Petrochemicals Association, 2016) and employs around 80,000 workers (MITI, 2017), has become one of the most competitive in Asia. Malaysia’s growing petrochemical (and plastics) industry also supports other major sectors of the domestic economy by providing a steady supply of feedstock material to automotive, electronics, and synthetic rubber production.

Successful downstream value addition in Malaysia’s petroleum sector relied on the local availability of feedstock, good infrastructure, and its strategic location in the ASEAN market, but also relied on strategic policies adopted by the government. As shown in the next paragraphs, alongside investments through state-owned Petronas, several policies, including fiscal incentives and skills development programs, contributed to the successful value addition of Malaysia’s petroleum resources.

Petronas started to move towards downstream activities in 1983 when it set up its first

³² Examples include Bumi Wangsa (a manufacturer of wellhead control panels), FM Plastics Industries (a supplier of tubular tubing rolls), and Proeight (a manufacturer of wellhead seals).

small-scale refinery. By 2012, the largest share of Petronas' revenues (over 40%) came from downstream activities (World Bank, 2013). Petronas also retains some of the value generated in the trading of crude oil through its subsidiary, the Petronas Trading Corporation. Petronas also established the Petronas Chemicals Group (PCG) in the 1980s in order to pursue more high value-added activities following depressed petroleum prices of the 1980s and 1990s (World Bank, 2013). PCG has become the fourth largest petrochemical producer in the world (PCG, 2017). The government has also successfully attracted several MNCs to develop three major petrochemical clusters (including the Pengerang petrochemical complex, which represented USD27 billion in investments) in collaboration with Petronas (MIDA, 2016).³³

In addition to state-led investments, an export tax on crude oil of 25% was introduced in 1993 (before being reduced to 20%) to further encourage local refining of crude oil (Malaysian Government, 1995). Petrochemical production has also been on the list of eligible activities for tax breaks under the Promotion of Investment Act of 1986, alongside twenty other activities.

Value addition in Malaysia's petroleum sector has also relied on the human capital accumulated through Petronas' investments in education and training needed for the technology- and knowledge-intensive petrochemical industry, INSTEP and UTP have indeed offered courses in refinery and petrochemical processes. Petronas funds this university and hires most of its graduates.

Looking ahead, one of the challenges for the Malaysian petrochemical industry remains the volatility of crude oil prices that create uncertainty for investments. The petrochemical industry is characterized by a cyclical nature and needs to overcome sporadic volatilities in feedstock costs (Federation of Malaysian Manufacturers, 2018). Also, even though Malaysia continues to benefit from its strategic location in the ASEAN market and China's large imports of petrochemicals, Malaysian firms will face increasing competition from ASEAN countries that are also progressively developing their own petrochemical industries. Malaysian firms will also face competition from the shale gas revolution, which has resulted in the expansion of petrochemical capacity in the United States (Thayoob, 2018).

7. POLICY MOTIVES FOR RESOURCE-BASED INDUSTRIALIZATION.

It is important to understand and anchor Malaysia's commodity value addition policies in the larger context of the country's political economy since independence to complete this paper's analysis. Indeed, "observing policies alone tells us very little,

³³ Petrochemical activities have considerable externalities for populations and firms in previously underdeveloped regions of Malaysia, due to investments in 'shared' infrastructure (e.g. roads, ports and electricity supply) (Nordas et al., 2003).

not only about how states intervene but perhaps more importantly about *why* they do so [...] In the case of developmental states, thanks to their *will* to build local techno-industrial competitiveness, policymakers intervene in the industrial economy in a very particular way: that is, with long time horizons [and] across a range of “strategic industries [...]” (Thurbon, 2014:74). The design and implementation of value addition policies in Malaysia were anchored in specific historical, institutional, and ideological contexts. This section highlights the role of various factors, including Malaysia’s regime type, characterized by the coexistence of executive dominance and democratic features, the base of the ruling coalition, historical legacies for development planning, and the influence of the East Asian development model.

7.1 Political base of the ruling coalition and commodity price fluctuations.

Some of the conditions that influenced the policy will to pursue value addition differ across the three commodity sectors analyzed in this study. In the petroleum sector, which is capital-intensive, it was a priority for the government to extract more fiscal revenues that could contribute to the government’s treasury to be later re-injected in national development programs. Nevertheless, as noted in section 6.1.2, rather than a short-term approach to maximizing petroleum revenues, Malaysian policymakers had favored long-term transformative investments for vertical integration to enhance the productivity and general health of the sector, which now generates more revenues from downstream value addition than from crude oil extraction. The political dominance of UMNO is of utmost importance in that regard. Indeed, the low threat to the political survival of the ruling party may have contributed to incentivize policymakers to undertake transformative investments for the long-term productivity of the sector rather than the short-term squeezing out of petroleum rents at the expense of value addition.

In contrast to the petroleum sector, the rubber and palm oil sector were labor-intensive and represented the backbone of livelihoods for Malays in rural areas, which were the base for the politically dominant UMNO from the 1950s up until the general election in 2018.³⁴ It was therefore essential for the coalition in power to foster the development of plantations sectors through incentives for the expansion of plantations (at first) before the promotion of linkages to increase value-added and employment. Such explanation is in line with Schulz (2020)’s emphasis on the importance of domestic politics in explaining why governments aim to add value to some commodities and not others (in the context of selected African countries) but differs from its finding that governments fear restricting the export of raw commodities produced by a larger share of the population, as their producers tend to possess significant potential to endanger the political survival of rulers. Perhaps the reason for such divergence lies in Malaysia’s nationalization of primary commodity exploitation activities, which arguably eroded the basis for domestic political resistance to export

³⁴ Over the 20th century, rubber plantation was the largest employer of labour in Malaysia.

taxes and value addition. Such state ownership of commodity exploitation was the result of a particular context marked by ethnic economic restructuring objectives under the NEP. In light of the failure of special share allocations to individual Bumiputera investors, the government created a network of organizations and trust agencies that directly invested into companies and held shares on behalf of Bumiputeras (Rethel 2010).³⁵ This context contributes to explain how the incentives for commodity value addition, productivity gains, and higher returns became aligned across public institutions and Bumiputra communities.³⁶

The timing of value addition policy efforts was also related to commodity price fluctuations. As noted earlier, most progress towards value addition (including the introduction of the first Industrial Master Plan in 1986) took place in the 1980s in a context marked by a recession caused by low commodity prices. Petronas (in the petroleum sector), government-linked companies (in the palm oil sector), and locally-owned private firms (in the rubber sector) had decided to pursue more high value-added activities following depressed raw commodity prices in the 1980s and 1990s. Even though value addition did not fully eradicate the vulnerability to the fluctuations of raw material prices, it allowed for more stability in export revenues in all three sectors. The disproportionate negative impact of commodity price fluctuations on both the ruling coalition's support base and its important source of financing (petroleum revenues) can therefore contribute to explaining the push for commodity value addition in the 1980s.

7.2 Policy planning and executive dominance

It is important to note that resource-based development in Malaysia was not the result of ad hoc and isolated policy interventions, but was guided by methodic government planning, through the five-year Malaysia plans (there are now 11 of them), industrial master plans, and the economic transformation plan (2010), which are overseen by state organizations such as the Economic Planning Unit (EPU). The importance of development planning is justified by Prime Minister Mahathir in the following way:

“Being methodical is the way to achieve success. That is one of the most important lessons we learned from the Europeans, particularly the British. Method involves a series of pre-determined orderly steps and procedures, planned and laid out so as to achieve a certain objective. The country's development was being based on five-year

³⁵ It is in that context that Perbadanan Nasional Berhad (created in 1969) acquired plantation companies from European companies (before their transfer into the portfolio of Permodalan Nasional Berhad).

³⁶ Although state ownership has been a key feature of primary commodity extraction, direct state involvement in downstream activities has varied amongst commodities. Government-linked companies have been actively involved in the petroleum value chain (through Petronas) and palm oil refining (through FELDA and Sime Darby), but have been much less directly involved in rubber-based industries where most champions are privately-owned firms

plans [...] The plans could not be segregated or kept apart from each other, but had to be continuous so that each could coincide with the previous one” (Mahathir, 2007:4).

Although the focus of government plans has evolved over time, it can be argued that economic policy continuity has been facilitated by a political system grounded on coalition-building and “consociationalism” (at least up until the 2018 general elections), beginning with the Alliance and then the Barisan Nasional. There were consequently no radical changes to the development planning and implementation institutions. In addition, the absence of limits to the number of mandates that can be held by the prime minister has allowed Dr. Mahathir to govern for 24 years (between 1981 and 2003 and between 2018 and 2020), thereby enabling significant degrees of policy continuity. As he noted himself during a fieldwork interview, it is difficult to conduct industrial policy within the scope of a four-year mandate:

“The first year, you learn how to do the job, the second year you start planning, but in the third year, you already have to start campaigning for reelection in the fourth year, so you have no time to implement your policies. In that sense, I am grateful to have had 22 consecutive years as Prime Minister.” (Prime Minister Mahathir, Personal communication, April 7th 2017).

The executive dominance may therefore have enhanced the efficacy of the developmental role of the state (Gomez and Jomo, 1999). Nevertheless, there were also shortcomings associated with such political conditions. Studwell (2013) notes that the failure to empower key bureaucrats to act on their own judgment was one of the weaknesses of Prime Minister Mahathir’s industrialization push in Malaysia because Mahathir wanted to convey the strategy, do the due diligence, and cut the deals all on his own, “circumventing the national bureaucracy to an extent that no successful developmental leader in East Asia has” (ibid.:103). It is plausible that the pitfalls associated with the circumvention of national bureaucracy are far more visible in the automotive sector than in resource sectors because the strategy for resource-based development was already underway before Dr. Mahathir took office.

7.3 Regional context, intellectual climate and pragmatism

The regional context and exposure to the East Asian model also had a key influence on economic policymaking in Malaysia. The ‘Look East’ policy implemented by the Mahathir administration from 1981 onwards implied taking Japan and South Korea as economic developmental models (Wad, 1988; Jomo, 1994). Such a model involved what can be considered heterodox policies at a time where the ‘Washington Consensus’ prevailed. The exposure to the East Asian model has undoubtedly influenced the government’s stance towards the conventional economic wisdom from international institutions, at times accepting their advice and at times rejecting it (Goldthorpe, 2015). The Asian financial crisis is a key instance when the Malaysian government did not accept the recommendations from the IMF to devalue the

ringgit and implement economic austerity.³⁷ Malaysia was able to recover from the crisis more rapidly than its neighbors who had followed the IMF prescription.

There were other instances of defiance of conventional wisdom concerning resource-based industries. In the late 1970s, against the advice of international institutions, the Malaysian government began to encourage a shift from crude to refined palm oil exports (Goldthorpe, 2015). Meanwhile, Malaysian authorities had also at times closely followed the recommendation from UNIDO to diversify out of natural rubber into palm oil and to diversify the range of rubber-based goods products in Malaysia. It can be reasonably inferred that such pragmatism towards the policy advice from international institutions has owed to a large extent to the influence of the East Asian model, but was also aided by the particular (above-mentioned) political conditions in which Malaysia's commodity value addition policies were designed and implemented.

8. KEY FINDINGS AND CONCLUDING REMARKS

The Malaysian experience can be used to inform key theoretical debates in development economics as it holds great value for those who want to further understand the political economy of upgrading in commodity value chains, how comparative advantages get acquired, and the role of state interventions.

One thing does not lead to another through market forces alone

The evidence presented in this study contradicts the view that linkages unfold “naturally” around commodity extraction through market forces alone. Malaysia's efforts to promote value addition were met with considerable market barriers that favored the status quo and discouraged domestic value addition. In the palm oil sector, some of these barriers were ‘given’ (such as a small domestic market, lack of technical expertise, long transportation time to the major consumer markets) but other barriers were artificially induced, such as the European trade tariff escalation and the funding by vegetable oil lobbies for campaigns targeting consumers against palm oil, which reflects how power dynamics alongside the value chains can constitute a barrier to upgrading by firms in developing countries.

The Malaysian case is a source of example of state interventions that can help overcome such entry barriers and rebalance asymmetric power relations in commodity value chains, not by creating incentives for lead firms to be more transparent, but by shaping the accumulation of productive capabilities that are necessary for the competitiveness of value addition activities. Indeed, through fiscal incentives and

³⁷ “We survived the currency crisis of 1997/8 because we were unorthodox [...] When people were looking at the West, we decided to look at the East. Now, the great minds of the World Bank and IMF say that Malaysia was right in doing that, but now it is too late for many countries” (Speech by Prime Minister Mahathir, July 16th 2019).

trade protection measures, the government has effectively manipulated market prices to ensure that rents were reinvested in productive value-added activities. As Gomez and Jomo (1999:8) note, a “careful analysis of rents in Malaysia can go a long way to reconciling the apparent paradox (to neoliberals) of state intervention and rapid economic growth”. While state interventions can lead to rent-seeking and capture, rents can contribute to stimulating learning and productivity gains, which has been the case in Malaysia’s resource-based industries, in contrast to the automotive sector.

Getting the prices ‘wrong’ through taxes and regulations may therefore be necessary to stimulate desired commodity value addition processes (Sato 2016). Nevertheless, it is worth noting that the role of the Malaysian government has gone much further than price control mechanisms. Enforcing local value addition without investing in the process of capabilities accumulation in parallel can lead to a costly trade-off between value addition and competitiveness. In the three commodity sectors reviewed, the Malaysian government has adopted a holistic industrial policy approach that has included: (i) capacity development programs to provide new skills required for value addition; (ii) R&D support to accumulate sectoral knowledge; (iii) trade promotion in key export markets; (iv) and quality control to facilitate exports and reduce negative externalities for the sectors’ ‘branding’.

From resource-rich to research-rich?

In contrast to reductionist analyses that attribute Malaysia’s economic development to its unrelated diversification into the E&E sector, this study has shown that Malaysia’s vertical integration towards more value-added and knowledge-intensive activities in resource sectors been a key engine of growth and has generated considerable spillovers, both in direct terms (through increased export revenues and employment) and indirect terms (through the generation of linkages, greater price stability, and accumulation of technological, industrial and marketing capabilities). Those findings are consistent with the insights provided by Perez (2008) on the perspectives for economic development, technological dynamism, and social inclusion in Latin America through resource-based production strategies.³⁸

In the petroleum sector, vertical diversification contributed to the development of new industries (petrochemicals, plastics, synthetic rubber) and strengthened linkages toward existing sectors (automotive and electrics and electronic industries). In the rubber sector, downstream value addition enabled the development of a globally competitive latex industry and the development of linkages toward other domestic industries (such as the automotive industry). In the palm oil sector, value addition has also been pursued through palm oil refining, but further efforts, particularly in terms

³⁸ Those findings are also in line with the argument in Lebdioui et al. (2020) on the possibility of escaping the middle-income trap through the promotion of linkages and technological capabilities around resource-based industries.

of R&D support, are required to enable the emergence of a competitive complex oleochemicals and biodiesel industry.

The influence of domestic ownership on linkage development

The Malaysian resource-based development experience is consistent with the early insights by Amsden (1989) that although foreign investments and MNCs can be important channels to access foreign knowledge, they may tend to interfere with the eventual growth of indigenous technological capabilities. They also appear to confirm the hypothesis by Lee et al. (2018) regarding the importance of separating from foreign-dominated GVCs at middle-income stages. While participation in GVCs has been increasingly prescribed for developing countries to achieve economic growth, many of these countries remain stuck in low-value-added activities, which raises doubts about the effectiveness of GVCs as vehicles for upgrading.

In Malaysia, the desire to process palm oil and natural rubber increased when the industry became domestically-owned. Before then, the largely European-controlled plantation companies preferred to export crude palm oil and did not see many gains in relocating their vegetable oil processing facilities in Malaysia. Besides, in the rubber sector, a large difference in local procurement behavior can be noted between domestic and foreign firms. In the petroleum sector, it is doubtful whether similar value addition results would have been achieved if international corporations had controlled the sector instead of the national oil company, which has led several initiatives to promote production linkages.³⁹

The importance of politics when it comes to commodity value addition

This study has built on the recent scholarship that investigates how political processes influence upgrading in commodity value chains (e.g. Behuria 2020 in the context of Rwanda's coffee sector; Schulz 2020 in the context of several African commodity exporters). More particularly, this study contributes to a better understanding the political economy of commodity value addition by shedding light on factors (such as the state ownership of commodity extraction activities, the relation between the political base of the ruling coalition and commodity sectors, and the nature of the political system) that influence both the ability and desirability to adopt a long-term approach to resource-based development. Understanding the nature of Malaysian politics can indeed go a long way in explaining the government's (quasi-Schumpeterian) emphasis on the need to foster new value-generating activities within commodity value chains rather than statically maximizing profits by appropriating higher rents from existing activities.

³⁹ The case of Petronas should nevertheless not be overgeneralized because there are still many NOCs that are plagued by inefficiencies around the world.

The fact that Malaysia's commodity value addition policies were anchored in a specific political and historical context also raises questions regarding the possible replicability of the Malaysian model in other regions that may share similar economic challenges but that may not share similar political characteristics. Notwithstanding the specific context in which value addition policies were pursued (and replicability concerns), the Malaysian resource-based industrialization experience bears very important academic and policy implications. In this perspective, understanding how developing countries can address the challenge of upgrading in resource value chains by learning more about the role of the state –and industrial policy- remains an important area for research in International Political Economy.

References

- Altman, M. (2003). "Staple Theory And Export-Led Growth: Constructing Differential Growth", *Australian Economic History Review*, 43 (3), 230-255.
- Amsden, A. H. (1989). "Asia Next Giant-How Korea Competes in the World-Economy." *Technology Review*, 92(4): 46-53.
- Augustin, R (2017), "Palm oil board refutes economist's claim on biodiesel", March 29, *Free Malaysia Today*, Retrieved from: <http://www.freemalaysiatoday.com/category/nation/2017/03/29/palm-oil-board-refutes-economists-claim-on-biodiesel/> [Accessed 21 September 2018]
- Azhar A.A (2009). "Presentation of Malaysian Palm Oil Industry", *presented at the Skills and Knowledge for Sustainable Development in Africa: Lessons from Singapore and Other Asian Countries*, 21-27 June, Singapore, retrieved from: http://siteresources.worldbank.org/EDUCATION/Resources/278200-1121703274255/1439264-1242337549970/Malaysian_Palm_Oil_Industry.pdf
- Bair, J. (2005) "Global Capitalism and Commodity Chains: Looking Back, Going Forward", *Competition & Change*, 9(2), 153–80.
- Barrientos, S., Gereffi, G., Rossi, A. (2011) "Economic and social upgrading in global production networks: a new paradigm for a changing world". *International Labour Review*, 150, 319–340.
- Behuria, P. (2020). The domestic political economy of upgrading in global value chains: how politics shapes pathways for upgrading in Rwanda's coffee sector. *Review of International Political Economy*, 27(2), 348-376
- Berger, K. G. (1984). "Technical Barriers to the Palm Oil Trade", in PORIM (ed). *Proceedings of the international seminar on market development for palm oil products*, 23-27 January 1984. Kuala Lumpur: Palm Oil Research Institute of Malaysia.
- Bhagwati, J. N. (1982). Directly unproductive, profit-seeking (DUP) activities. *Journal of Political economy*, 90(5), 988-1002
- Borneo Post (2018). 'Malaysia committed to maintain over 50% natural forest cover'. September 21. Accessible at <https://www.theborneopost.com/2018/09/21/malaysia-committed-to-maintain-over-50-natural-forest-cover/> [accessed 15 May 2020].
- Chandler A.D. (1990) *Scale and Scope: The Dynamics of Industrial Capitalism*, Cambridge, MA : Harvard University Press.
- Chang, H.-J. (1994). *The political economy of industrial policy*. Basingstoke, UK: Macmillan Press.
- Chang, H.-J. (2013). "Comments on Comparative Advantage: The Silver Bullet of Industrial Policy", in J.E. Stiglitz and J.Y. Lin (eds), *The Industrial Policy Revolution: The Role of Government Beyond Ideology*, 39-42, Basingstoke and New York: Palgrave Macmillan.
- CIA (2018) *The World Factbook* Available at: <https://www.cia.gov/library/publications/the-world-factbook/>. [Accessed 27 January 2018].
- Cimoli, M., Dosi, G. & Stiglitz, J. (eds). (2009). *Industrial policy and development: The political economy of capabilities accumulation*, Oxford: Oxford University Press.
- Columbia Center on Sustainable Investment - CCSI (2016b). "Local content in Malaysia", retrieved from: <http://ccsi.columbia.edu/files/2014/03/Local-Content-Malaysia-Petroleum-CCSI-Sept-2016.pdf> [Accessed 17 June 2018].
- Cramer, C. (1999). Can Africa industrialize by processing primary commodities? The case of Mozambican cashew nuts. *World Development*, 27(7), 1247–1266.
- Culpepper, P. D. (2015). Structural power and political science in the post-crisis era. *Business and Politics*, 17(3), 391–409

- Donough C.R. & Chia, C.C. (2005). "Breeding oil palms for high oil yield in IOI Group: 1. First cycle development of OPGL-derived materials" *Conference Paper at the MPOB National Seminar 2005: Seminar II - Advances in Breeding & Clonal Technologies for Super Yielding Planting Materials*, Seri Kembangan, Selangor, Malaysia
- Dunn, C. P. (1978). Economics of Further Processing: Markets, Market Development of Palm Oil Products, Proceedings of a Seminar organised by the International Trade Centre (ITC) UNCTAD/GATT of the United Nations, 27 March- 1 April, Geneva.
- European Parliament (2018). "MPs set ambitious targets for cleaner, more efficient energy use" *Press releases*, January 17, Retrieved from: <http://www.europarl.europa.eu/news/en/press-room/20180112IPR91629/meps-set-ambitious-targets-for-cleaner-more-efficient-energy-use> [Accessed 21 September 2018]
- Evans, P. (1995). *Embedded Autonomy: States and Industrial Transformation*. Princeton, NJ: Princeton University Press.
- Fairfield, T. (2015). *Private wealth and public revenue*. New York, NY: Cambridge University Press
- Federation of Malaysian Manufacturers (2018) *Petrochemical Industry in Malaysia*. Retrieved from: https://www.fmm.org.my/upload/Country_Report_for_Petrochemical.pdf [Accessed 15 July 2019].
- Findlay, R.E (1973), *International trade and development theory*. New York: Columbia University Press.
- Fold, N. & Whitfield, L. (2012). "Developing a palm oil sector: the experiences of Malaysia and Ghana compared". *DIIS Working Paper n.08*. Copenhagen: Danish Institute for International Studies.
- Gale, B. (1981). "Petronas: Malaysia's National Oil Corporation", *Asian Survey*, 21 (11), 1129-1144.
- Gereffi, G. (1994) "The organization of buyer-driven global commodity chains: How U.S. retailers shape overseas production networks", in G. Gereffi, M. Korzeniewicz (eds) *Commodity Chains and Global Capitalism*, 95–122. Westport, CT: Praeger.
- Gereffi, G., Humphrey, J., Sturgeon, T. (2005) "The governance of global value chains". *Review of International Political Economy*, 12, 78–104.
- Gibbon, P., Ponte, S. (2005). *Trading Down: Africa, Value Chains, and the Global Economy*. Philadelphia: Temple University Press.
- Goldthorpe. C.C. (2015). *Rubber Manufacturing in Malaysia: Resource-based Industrialization in Practice*, Singapore: NUS PRESS.
- Gomez, E. T. & Jomo K. S. (1999) *Malaysia's Political Economy*. 2nd Ed. Cambridge: Cambridge University Press.
- Gopal, J. (1999). "Malaysia's Palm Oil Refining Industry: policy, growth, technical change and competitiveness", Jomo K.S., Felker G. and Rasiah R. (eds), *Industrial Technology Development in Malaysia: Industry and Firm Studies*, London: Routledge.
- Gopal, J. (2001). *The Development of Malaysia's Palm Oil Refining Industry: Obstacles, Policy and Performance*. PhD. Thesis, Imperial College, London.
- Haggard, S. (2018). *Developmental States*, Cambridge: Cambridge University Press.
- Hauge, J. (2020) Industrial policy in the era of global value chains: Towards a developmentalist framework drawing on the industrialisation experiences of South Korea and Taiwan. *World Economy*; 00: 1– 23.
- Hirschman, A.O. (1981). *Essays in Trespassing: Economics to Politics and Beyond*, Cambridge: Cambridge University Press.
- Hope, C. J. (2019). *Developmentalism, dependency, and the state: industrial policy and structural transformation in Namibia since 1900*. Doctoral dissertation, University of Cambridge.
- Horner, R. (2017). Beyond facilitator? State roles in global value chains and global production networks. *Geography Compass*, 11(2), 1–13.
- Jesudason, J.V. (1989). *Ethnicity and the Economy: The State, Chinese Business, and Multinationals in*

Malaysia, New York: Oxford University Press.

- Johari A., Nyakuma B.B., Nor S.H., Mat R., Hashim H., Ahmad A., Zakaria Z.Y., Abdullah T.A. (2015). "The Challenges and prospects of palm oil based biodiesel in Malaysia", *Energy*, 81, 255-261
- Johnson, C. (1982). *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975*, Stanford, CA: Stanford University Press.
- Johnson, S., & Mitton, T. (2003). Cronyism and capital controls: evidence from Malaysia. *Journal of financial economics*, 67(2), 351-382
- Jomo, K. S. (Eds.). (1994). *Japan and Malaysian Development: In the Shadow of the Rising Sun*. Routledge.
- Jomo K.S. & Edwards, C. (1993). "Malaysian Industrialisation in Historical Perspective", in *Industrialising Malaysia: Policy, performance, prospects*, Jomo K.S (Ed.), 1993, New York : Routledge, 14-39
- Katz, J., & Pietrobelli, C. (2018). Natural resource based growth, global value chains and domestic capabilities in the mining industry. *Resources Policy*, 58, 11-20.
- Khan, M. (2000). Rent-seeking as Process. In M. Khan & K. Jomo (Eds.), *Rents, Rent-Seeking and Economic Development: Theory and Evidence in Asia* (pp. 70-144). Cambridge: Cambridge University Press
- Khan, M. H. & Jomo K. S. (2000) *Rents, Rent-Seeking and Economic Development* (eds). Cambridge: Cambridge University Press
- Khera, HS, (1976). *The oil palm industry of Malaya: An economic study*, Kuala Lumpur: Penerbit Universiti Malaya.
- Klueh, U.H., Pastor, G., Segura, A. (2009). "Policies to improve the local impact from hydrocarbon extraction: observations on West Africa and possible lessons for Central Asia". *Energy Policy*, 37 (3), 1128–1144.
- Krueger, A. O. (1974). "The Political Economy of the Rent-Seeking Society." *American Economic Review*. June, 64, pp. 291–303
- Lall, S. (2001). "Competitiveness Indices and Developing Countries : An Economic Evaluation of the Global Competitiveness Report", *World Development*, 29 (9), 1501–1502.
- Lebdioui, A. (2019a). "Local Content in Extractive Industries: Evidence and Lessons from Chile's Copper Sector and Malaysia's Petroleum Sector", *The Extractive Industries and Society*, Retrieved from: <https://doi.org/10.1016/j.exis.2019.05.001>
- Lebdioui, A. (2019b). Chile's export diversification since 1960: A free market miracle or mirage? *Development and Change*, 50(6), 1624–1663.
- Lebdioui, A.; Lee, K. and Pietrobelli, C. (2020). "Local-Foreign Technology Interface, Resource-based Development, and Industrial Policy: How Chile and Malaysia are escaping the Middle-Income Trap". *Journal of Technology Transfer*. <https://doi.org/10.1007/s10961-020-09808-3>
- Lee, K., Szapiro, M., & Mao, Z. (2018). "From global value chains (GVC) to innovation systems for local value chains and knowledge creation". *The European Journal of Development Research*, 30(3), 424-441.
- Liau Y-S. (2012) "Condoms, Gloves Provide Lifeline for Malaysian Rubber", *Bloomberg*, November 19, Retrieved from: <https://www.bloomberg.com/news/articles/2012-11-18/condoms-gloves-provide-lifeline-for-malaysian-rubber> [Accessed 17 September 2018].
- Lim, S and Teong, L.K. (2010). "Recent trends, opportunities and challenges of biodiesel in Malaysia: an overview", *Renewable and Sustainable Energy Reviews*, 14(3), 938-954.
- Lin, J., & Chang, H. J. (2009). Should Industrial Policy in developing countries conform to comparative advantage or defy it? A debate between Justin Lin and Ha - Joon Chang. *Development policy review*, 27(5), 483-502
- Loh, S. K., & Choo, Y. M. (2013). "Prospect, challenges and opportunities on biofuels in Malaysia", Pogaku, R., & Sarbatly, R. H. (eds). *Advances in biofuels*, 3-14, Boston, MA: Springer.

- Mackintosh, W. A. (1923). Economic factors in Canadian history. *Canadian Historical Review*, 4(1), 12-25.
- Mahathir M. (2007) "Revisiting Vision 2020: New Challenges for Malaysia", in Nungsari, A.R. and Suryani, S.A. (eds.) *Readings on Development: Malaysia 2057: Uncommon Voices, Common Aspirations*. Kuala Lumpur: Khazanah Nasional.
- Malaysian Rubber Board (2016) "Natural Rubber Statistics", Retrieved from: <http://www.lgm.gov.my/nrstat/nrstats.pdf> [Accessed 18 September 2018]
- Maloney, W. (2002). "Missed Opportunities: Innovation and Resource-Based Growth in Latin America." *Economia*, 3 (1), 111–51.
- Malaysian Government (1995), "Seventh Malaysian Plan 1996-2000", *Economic Planning Unit*, Retrieved from: <http://www.epu.gov.my/en/rmk/seventh-malaysia-plan-1996-2000> [Accessed on 14 July 2017].
- Malaysia Petrochemicals Association (2016), "Country Report Presented to the Asia Petrochemical Industry Conference", *Asia Petrochemical Industry Conference*, Japan, Retrieved from: <http://cpmaindia.com/pdf/apic-country-2017/apic2017-malaysia-report.pdf> [Accessed 14 February 2019]
- Malaysian Rubber Board (2011) "Testing and Calibration", Retrieved from: <http://www.lgm.gov.my/testServices/ProductTest.aspx> [Accessed 22 June 2018]
- Malaysian Rubber Board (2016) "Natural Rubber Statistics", Retrieved from: <http://www.lgm.gov.my/nrstat/nrstats.pdf> [Accessed 18 September 2018]
- Malaysian Rubber Export Promotion Council – MREPC (2018). "Industry Overview", Retrieved from: <http://www.mrepc.com/industry/industry.php> [Accessed 18 September 2018].
- May, C.Y. (2012), "Economic transformation advances oil palm industry", *The American Oil Chemist Society*, September, Retrieved from: <https://www.aocs.org/stay-informed/read-inform/featured-articles/malaysia-economic-transformation-advances-oil-palm-industry-september-2012> [Accessed 17 September 2018].
- MIDA (2008) *Performance of the Manufacturing and Service Sectors*, Retrieved from: http://www.mida.gov.my/home/administrator/system_files/modules/photo/uploads/20140126135224_Report.pdf [Accessed on 19 December 2017].
- MIDA (2016) *Profit From Malaysia's Petrochemical Industry*, Retrieved from: http://www.mida.gov.my/home/administrator/system_files/modules/photo/uploads/20160726143756_Petrochemical_Jun2016v5.pdf [Accessed 27 March 2018]
- MIDA (2017) *Malaysia: Investment in the Manufacturing sector: policies, incentives and facilities*, Kuala Lumpur: Malaysian Investment Development Authority.
- MITI (2006) *Third Industrial Master Plan 2006-2020: Malaysia, towards global competitiveness*, Kuala Lumpur: Ministry of International Trade and Industry.
- MITI (2017), "Chemical and Petrochemical Industry", Retrieved from: http://www.miti.gov.my/miti/resources/1_Chemical_and_Petrochemical_Industry_.pdf [Accessed 27 November 2018]
- Morris, M., Kaplinsky, R., & Kaplan, D. (2012). *One thing leads to another: Promoting Industrialization by Making the Most of the Commodity Boom in Sub-Saharan Africa*. Accessible at <http://tinyurl.com/CommoditiesBook>.
- Nambiappan, B. and Norfadilah, H. (2002) "Counter-Trade: The Malaysian Experience" *Oil Palm Industry Economic Journal*. 2(1), 45-49.
- Nambiappan, B.; Ismail, A., Hashim, N.; Ismail, N. Shahari, D.N.; Nik Idris, Omar. N.; Salleh, K.M. Hassan, N.A.M., Kushairi, A (2018), "Malaysia: 100 Years Of Resilient Palm Oil Economic Performance", *Journal Of Oil Palm Research*, 30 (March), 13-25.
- Naqvi, N. (2019). Renationalizing finance for development: policy space and public economic control in Bolivia. *Review of International Political Economy*, 1-32. DOI: [10.1080/09692290.2019.1696870](https://doi.org/10.1080/09692290.2019.1696870)

- Neilson, J., Pritchard, B., & Yeung, H. W. C. (2014). Global value chains and global production networks in the changing international political economy: An introduction. *Review of International Political Economy*, 21(1), 1-8
- Nem Singh, J. & Ovadia, J.S. (2018) The theory and practice of building developmental states in the Global South, *Third World Quarterly*, 39:6, 1033-1055,
- Nordas, H., Vatne, E. and Heum, P. (2003). *The Upstream Petroleum Industry and Local Industrial Development: A Comparative Study*. Bergen: Institute for Research in Economics and Business Administration.
- Nurkse, R. (1961). "International trade theory and development policy". In *Economic Development for Latin America* (pp. 234-274). Palgrave Macmillan, London.
- O'Hearn, D. (1994) "Innovation and the world system hierarchy: British subjection of the Irish Cotton Industry, 1780-1830". *American Journal of Sociology*, 100, 587–621.
- Ovadia, J. S. (2016). "Local content policies and petro-development in Sub-Saharan Africa: A comparative analysis." *Resources Policy*, 49, 20-30.
- Perez, C. (2008). "A Vision for Latin America: A resource-based strategy for technological dynamism and social inclusion," *Globelics Working Paper Series*, Retrieved from <https://ideas.repec.org/p/aal/glowps/2008-01.html>
- Petronas (2013), "Petronas appoints three new vendors", November 20, Retrieved from: <http://www.petronas.com.my/media-relations/media-releases/Pages/article/PETRONAS-APPOINTS-THREE-NEW-VENDORS.aspx> [Accessed 29 October 2017].
- Petronas, (2017), "Petronas Upstream: Pursuing Value-Driven Growth", Retrieved from: http://www.petronas.com.my/our-business/Upstream/Documents/November%202017_Upstream%20Brochure%20%28compressed%29.pdf [Accessed 29 October 2017].
- Petronas Chemicals Group (2017) "Website of the Petronas Chemicals Group" Retrieved from: <http://www.petronaschemicals.com.my/Pages/default.aspx> [Accessed 29 March 2018].
- Pietrobelli, C. and C. Staritz (2018) "Upgrading, Interactive Learning, and Innovation Systems in Value Chain Interventions", *The European Journal of Development Research* 30(3), 557–74.
- Ponte, S., & Sturgeon, T. (2014). Explaining governance in global value chains: A modular theory-building effort. *Review of International Political Economy*, 21(1), 195–213. doi:10.1080/09692290.2013.809596
- Porritt, J. (2018) 'Palm Oil: the Edible Oil Westerners Love to Hate!' Blog post. February 2nd. <http://www.jonathonporritt.com/palm-oil-the-edible-oil-westerners-love-to-hate/> [Accessed May 2 2020]
- Promotion of Investment Act - PIA (1986) Ministry of Finance of Malaysia, Retrieved from: <http://www.treasury.gov.my/index.php/en/tax/item/1160-promotion-of-investment-act-1986.html> [Accessed 12 April 2018]
- Radetzki, M. (1977). "Where should developing countries' minerals be processed? The country view versus the multinational company view", *World Development*, 5(4), 325-334.
- Rasiah, R. (1995). *Foreign Capital and Industrialization in Malaysia*, Palgrave Macmillan, London.
- Rasiah, R and Shahrin, A (2006). *Development of Palm Oil and Related Products in Malaysia and Indonesia*. University of Malaysia. 1-54.
- Rethel, L. (2010). Financialisation and the Malaysian political economy. *Globalizations*, 7(4), 489-506
- Sato, Y. (2016). "Curse or opportunity? A model of industrial development for natural resource-rich countries on the basis of Southeast Asian Experiences". In Y. Sato & H. Sato (Eds.), *Varieties and alternatives of catching-up*. London: Palgrave Macmillan.
- Sawal, A.H. (2001) "The Malaysian Rubber Industry: Meeting New Challenges and Moving Ahead" in MRPMA, *Industry and Export Directory 2002-2003*. Subang Jaya, Malaysia: MRPMA, 106-14.
- Schulz, N. (2020). The politics of export restrictions: A panel data analysis of African commodity processing industries. *World Development*, 130, 104904

- Schumpeter, J.A. (1943). *Capitalism, Socialism and Democracy*. London: Allen and Unwin
- Selwyn, B. (2015). "Commodity chains, creative destruction and global inequality: a class analysis", *Journal of Economic Geography*, 15(2015), 253–274.
- Siew Yean, T. (2015) "Diversification and industrial policies in Malaysia" in Felipe, J. (Ed.). (2015). *Development and modern industrial policy in practice: issues and country experiences*. 320-345. Edward Elgar Publishing.
- Studwell, J. (2013). *How Asia works: Success and failure in the world's most dynamic region*. New York: Grove Press.
- Tay, C. (2018) "Petronas Launches New Vendor Development Programme", *The Edge Markets*, Retrieved from: <http://www.theedgemarkets.com/article/petronas-launches-new-vendor-development-programme> [Accessed 21 September 2018]
- Thayoo A.M.D. (2018) "Forewords for the Asia Petrochemical Industry Conference", August, 21-28, Kuala Lumpur, Retrieved from: <http://apic2018.org.my/forewords.php> [Accessed 21 September 2018].
- The Star (2009). "Barter Trade to the Rescue", February 17th, accessible at: <https://www.thestar.com.my/business/business-news/2009/02/17/barter-trade-to-the-rescue/#IdWXjyHL3V1jTJZl.99> [Accessed 23 June 2018]
- The Star (2018). "Exports of natural rubber, rubber-based products jump 30%", February 9th, accessible at <https://www.thestar.com.my/business/business-news/2018/02/09/exports-of-natural-rubber-rubberbased-products-jump-30/> [Accessed 29 June 2018]
- Thoburn, J. T. (1977) *Primary Commodity Exports and Economic Development: Theory, Evidence and Case Study of West Malaysia*. London: John Wiley.
- Thurbon, E. (2014). The resurgence of the developmental state: a conceptual defence. *Critique internationale*, (2), 59-75
- Todd, R. M. (1978). Malaysia's Experience in the Export of Processed Palm Oil, Market Development of Palm Oil Products, Proceedings of a Seminar organised by the International Trade Centre (ITC) UNCTAD/GATT, 27 March- 1 April, Geneva.
- Tordo, S. and Anouti, Y. (2013) *Local Content in the Oil and Gas Sector: Case Studies*. Washington, D.C.: The World Bank.
- Tordo, S., Warner, M. Manzano, O.E. and Anouti, Y. (2013). *Local Content Policies in the Oil and Gas Sector*. Washington, DC: World Bank.
- UN COMTRADE (2019). *International Trade Statistics Database*. Available at: <https://comtrade.un.org/> [accessed 23 August 2019].
- UNCTAD (2010). *World Investment Report 2010: The Shift Towards Services*. New York and Geneva: United Nations.
- UNCTAD (2019). *World Investment Report 2019: The Shift Towards Services*. New York and Geneva: United Nations.
- US Department of State (2011), "2011 Investment Climate Statement: Malaysia", *Bureau of Economic, Energy and Business Affairs*, retrieved from: <https://www.state.gov/e/eb/rls/othr/ics/2011/157318.htm> [Accessed 13 June 2017].
- Vicol, M., Neilson, J., Hartatri, D., & Cooper, P. (2018). Upgrading for whom? Relationship coffee, value chain interventions and rural development in Indonesia. *World Development*, 110, 26–37.
- Wad, P (1988) "The Japanization of the Malaysian trade union movement". In: Southall, R (ed.) *The Trade Unions and the New Internationalization of the Third World*. London: Zed Books, 210–229.
- Wad, P. and Govindaraju, V.G.R.C. (2011) "Automotive industry in Malaysia: an assessment of its development", *Int. J. Automotive Technology and Management*, 11(2), 152–171.
- Wade, R. (1990) *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton, NJ: Princeton University Press.

- Werner, M., Bair, J., & Fernández, V. R. (2014). "Linking up to development? Global value chains and the making of a post-Washington Consensus". *Development and Change*, 45(6), 1219-1247.
- Wheelwright, E.L. (1965) *Industrialization in Malaysia*, Melbourne University Press: London.
- World Bank (2013), "Malaysia Economic Monitor: Harnessing Natural Resources" *World Bank Office*, Retrieved from:
http://www.worldbank.org/content/dam/Worldbank/document/EAP/malaysia/Malaysia_Economic_Monitor_June2013.pdf [Accessed 12 March 2019]