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Vertical specialisation or linkage development for agro-commodity value chain upgrading? The case of Malaysian palm oil

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ABSTRACT

Developing countries have an opportunity to create and capture higher value added by participating in global value chains (GVCs). Such potential has spawned recommendations for successive vertical specialisation but the applicability of the strategy in GVCs for agricultural commodities is rarely scrutinised. This paper examines the fundamental question of whether participation and upgrading in agro-commodity value chains conform to vertical specialisation and if not, how and why. The case study on the Malaysian palm oil sector suggests that upgrading is prone to sectoral linkage development and vertical integration at local lead firms. State policies and firm-specific actions since the 1970s drove attainment of capabilities which Malaysia did not possess originally in segments across the value chain for production of more sophisticated goods and services. Unique production characteristics, sectoral dynamics and historical settings of agro-commodity value chains explain the trajectory. The study suggests that vertical specialisation is less applicable across all GVC types than thought, and that development policy and research should delve more into hindrances to linkage development in similar additive value chains.

1. Introduction

Agro-commodity value chains are critical for growth and development in developing countries, which derive over 60% of their total goods export earnings from commodities (UNCTAD, 2015). In recent times, global value chain (GVC) as a new form of industrial organisation has fuelled cautious optimism regarding developing countries' position in the global economy. Given fragmentation of production, international organisations increasingly position vertical specialisation as the high road to GVC upgrading. A country is posited as being involved in a specific stage of production using imported inputs before passing the good, be it intermediate or final, onto another (Hummels et al., 2001). It upgrades thereon by graduating to another stage of production offering better returns.

The proposition surprisingly tends to treat GVCs as the same and does not consider the possibility that vertical specialisation may be less suitable for some. This paper investigates whether vertical specialisation is applicable for participation and upgrading in agro-commodity value chains, using the case of Malaysia's palm oil sector from the 1970s to the present. The case provides empirical and theoretical evidence for linkage development, instead of vertical specialisation. Sectoral linkage development occurs with investment in input-supplying activities (backward or upstream linkages) or in output-using activities (forward or downstream linkages) (Hirschman, 2013). It may take place within a single firm or across multiple firms within the sector. When linkage development takes place intra-firm – a firm expanding its business into different stages along the value chain – it becomes vertical integration. Vertical integration reduces contracting friction from a transaction cost perspective, and may provide scale and scope economies while extending market power (Coase, 1937; Stigler, 1951; Williamson, 1971; Chandler and Hikino, 1994).

From a concentration on oil palm cultivation, Malaysia's palm oil value chain developed strong linkages into downstream processing and manufacturing, research and upstream development, marketing and trading of palm oil products; and moderate linkages into input supplies. The catalyst for this development was state policies that drew investments into the new segments. Over time, sectoral linkage development was reinforced by vertical integration at local lead firms with substantial upstream assets, which have since become home-grown transnational corporations (TNCs).

Section 2 reviews the concepts of upgrading and vertical specialisation. Section 3 explains the methods and data. Section 4 provides a brief overview of the Malaysian palm oil sector. Sections 5 and 6 present the findings on sectoral and firm upgrading, and explore

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considerations from sectoral and firm perspectives which cause agro-commodity value chains to develop linkages rather than specialise during upgrading. The last section concludes the paper with its research and policy implications.

2. Vertical specialisation and value chain taxonomy

Links of value chains are "repositories for rents" arising from factor productivity differentials. Economic upgrading – commonly referred to as 'moving up the value chain' – is defined as "development of capabilities in targeted areas of value accretion, in order to maintain or increase incomes in the face of rising competitive pressures" (Kaplinsky, 2005). Numerous case studies have focused on restructuring of international production networks by lead firms, as well as the extent, nature and determinants of upgrading in products including toys, garments, beverages, computers and automobiles (see, for example, Gereffi (1999), Kishimoto (2003), Nolan (1999), Ruigrok and van Tulder (1995), Sturgeon et al. (2008)).

Five types of upgrading – product, process, functional, channel and intersectoral – have been identified (Humphrey and Schmitz, 2002; Frederick and Staritz, 2012). Process upgrading improves efficiency through reorganised production systems or better technology. Product upgrading shifts production to more sophisticated product lines with increased unit values. Functional upgrading focuses on acquisition of new functions to increase the skill content of activities. Channel upgrading involves diversification to new buyers or geographic and product markets. Intersectoral upgrading signifies a move into a different value chain using old and new competences.

The GVC literature offers little answer on the permutation of upgrading types and how the combination shapes upgrading trajectories over time for a country's economic activity and the firms within. Seminal work from the economic geography and international trade streams provides useful conceptualisation (as well as measurement) of fragmentation of production and vertical specialisation (See, for example, Helpman and Krugman (1985), Feenstra (1998), Baldone et al. (2001), Jones and Kierzkowski (2005)).

Arndt and Kierzkowski (2001) stress that "the international division of labour now matches factor intensities of components with factor abundance of locations". Hummels et al. (2001) argue that global production has become "a vertical trading chain that stretches many countries, with each country specialising in particular stages of a good's production sequence". However, much of the work is highly static in its outlook and hardly addresses long-term upgrading.[2]

Gereffi (1999) remains one of the few that explicitly deal with upgrading trajectories. From the 1960s through the 1990s, East Asian firms progressed from low-cost, labour-intensive assembly through original equipment manufacturing (OEM) and original design manufacturing (ODM) before finally reaching original brand manufacturing (OBM). Later, the firms offshored manufacturing while retaining and deepening skill-intensive functions such as trading and logistics. The trajectory can be described as *successive* vertical specialisation, or one form of vertical specialisation after another.

A familiar refrain in international development these days is that countries should target specific functions and activities in which they have a comparative advantage within a GVC rather than an entire sector. Once inserted into the value chains, they can deepen their capabilities, achieve specialisation and derive benefits from scale. With accumulated capabilities, countries can migrate to processes, products or functions with higher domestic value added, and develop new specialisation. This kind of discourse is encapsulated in a joint statement by the Organisation for Economic Cooperation and Development, World Trade Organisation and United Nations Conference on Trade and Development:

> In a world of GVCs… [governments] can nevertheless encourage firms to join an existing global value chain, which may have low entry barriers and enable firms to realise export success relatively quickly and at low cost. …*rather than being obliged to develop vertically integrated industries (producing both intermediates and final products), firms can become export-competitive by specialising in specific activities and tasks* (emphasis added). For example, China specialised in the assembly of final products in the electronics industry and has become the largest exporter of ICT products; other countries specialised in the assembly of intermediates (e.g. sub-systems for motor vehicles in Mexico), the production of parts and components, or ICT services, e.g. India.
>
> OECD, WTO, & UNCTAD, 2013.

Such characterisation of upgrading escalates the unit of analysis from firms to countries. It also overlooks the fact that the logic of successive vertical specialisation was derived largely from evidence in GVCs for non-resource-based manufactured goods. The prevailing taxonomy of value chains revolves around two dimensions: 'driver' type (buyer-driven versus producer-driven) and governance pattern (arms-length, quasi-hierarchical and intra-firm) (Gereffi, 1994; Gereffi et al., 2005). The taxonomy is useful for highlighting the dynamics between lead firms and their suppliers in upgrading considerations. Yet, it does not consider the inherent sectoral and production differences across value chains.

Kaplinsky and Morris (2015) argue that beyond the conventional taxonomy, value chains can be distinguished between those that are "vertically specialised" and "additive" in nature. In vertically specialised chains, production activities can be undertaken in parallel and processing loss or degradation is minimal, thus increasing possibilities for the various stages of production to be "sliced up" and dispersed geographically. In contrast, additive chains involve sequentially adding value to raw inputs (which make up a large proportion of total value of the final product). Coupled with potentially large processing losses, this feature makes fragmentation and parallel execution of production less feasible (Kaplinsky and Morris, 2015). While GVCs for manufacturing and services become increasingly vertically specialised, resource-based sectors tend to dominate additive chains. The implication is that while successive vertical specialisation is appropriate for upgrading in vertical specialised chains, it is likely that additive chains require a different upgrading pathway.

3. Methods and data

The paper employs a case study design suited to the purpose of GVC research. The GVC framework takes an industry-centric view that highlights the linkages between firms and other economic actors from the local to the global levels of analysis (CGCC, n.d.). The case study uses a mixed-methods approach, combining descriptive statistics on sectoral and firm performance with data gathered from interviews. Data analysis was performed on two levels (sectoral and firm) and is presented as such.

The sectoral data were obtained mainly from the annual *Malaysian Oil Palm Statistics* (from 1980) published by the Malaysian Palm Oil Board (MPOB), and *Oil World Annual* (from 1987) produced by the Hamburg-based ISTA Mielke GmbH. The data on firms were compiled from annual reports published for financial years 2014/2015 by 20 firms with the largest reported palm plantation hectarages, of which all but two are public listed companies in Malaysia.

Semi-structured interviews were subsequently conducted to explore the key issues raised in the descriptive statistics (see Appendix A for questions). Confidentiality was granted to ensure that the subjects were at ease with expressing their opinions. A total of 25 interviewees were

[2] Vertical specialisation can thus be described as a phenomenon where firms slice up production and divide it across different locations abroad (offshoring), with or without ownership links. Parts and components or intermediate goods cross borders to be transformed into final products and more elaborate intermediate goods going back to the same country or ending up in other countries.

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