The Position and Potential of Developing Country Suppliers in Global Value Chains: A Review of the Literature

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Abstract

Global value chain (GVC) theory emerged as an attempt to understand the construction of new globally-dispersed patterns of production in the latter part of the 20th century. In highlighting the role of lead firms, both manufacturing and non-manufacturing companies, and their outsourcing strategies in creating new global linkages, it characterized suppliers as predominantly passive agents in the face of the oligopoly power of lead firms and their ability to shape industry architectures to their advantage. This period of globalization had specific characteristics which facilitated the subordination of suppliers in developing countries to global lead firms, but the rapid growth of developing and emerging markets, the growth of the domestic markets in these countries, and the acquisition of capabilities by suppliers in these markets has opened up new globalization dynamics. This paper considers the implications of these changes for upgrading, the role of suppliers in innovation and the potential for developing and emerging market businesses to capture more of the benefits from globalization.

Keywords: global value chains, suppliers, upgrading, outsourcing, lead firms

1 Introduction

The purpose of this project is to provide a better understanding of the role of suppliers in the global economy and to improve the analysis of suppliers within global value chain (GVC) theory. The issue of "suppliers", or more generally firms incorporated into the value chains of lead firms that have hitherto mostly originated from industrialised (high-income) countries, is quite central to some key issues about globalisation in the late 20th and early 21st centuries. Developing a more convincing model about the role of suppliers in global value chains is not just a theoretical exercise, although improving the theory is a desirable goal in itself. It also matters for policy interventions to improve the positions

of developing countries within global value chains and to maximise the gains from both international trade and production for the domestic market.

The consequences of incorporation into GVCs and the prospects for sustainable growth in wages and profits following incorporation are central to the development issues that motivate many GVC researchers. Furthermore, the widespread interest of international organisations and national development agencies[1] in the GVC approach to globalisation and trade makes this issue central the policy level. As is noted by Kaplinsky, GVC theory has clear implications for development strategy:

> "Value chain analysis is crucial to this joined-up policy support because it enables governments to focus on the dynamics of rent, on the pervasive and complex nature of support which is required to build institutions and on managing the integration of individual sectors (and of the whole economy) into the global economy in a manner which provides for sustainable and equitable income growth" (Kaplinsky, 2000: 142).

Nevertheless, in theoretical terms — most notably in terms of discussions about governance and upgrading — suppliers are a largely neglected category in GVC analysis. Gereffi *et al.* (2005) discussed in some detail the capacity of lead firms (global buyers) to shape value chains, but little about suppliers, whose capacity to exercise agency is largely ignored. This passage on governance provides an example of such thinking:

> "Governance is about defining the terms of chain membership, incorporating/excluding other actors accordingly and allocating to them value-adding activities that lead agents do not wish to perform. 'Rules and conditions of participation' are the key operational mechanisms of governance" (Ponte and Gibbon, 2005: 3).

Four aspects of this commonly-expressed approach to governance are worth noting:

[1] These include national agencies such as USAID, whose very useful value chain wiki has morphed into "market links" (https://www.marketlinks.org/using-value-chain-development-wiki), and the German government agency, GIZ, as well as international agencies such as the ILO, WTO, the Inter-American Development Bank, UNCTAD and UNIDO.

1. Governance is seen as an activity undertaken by lead firms.
2. These lead firms define the terms of chain membership — incorporation/exclusion, etc. In other words, key decisions are in their hands.
3. They allocate to other firms in the chain, which mostly means suppliers, activities that they (the lead firms) "do not wish to perform."
4. There is no discussion in this short quote about how suppliers might be motivated to enter into such chains. In contrast to the literature on supply chain management, the value chain literature does not consider explicitly the issue of incentives. The GVC discussion of supplier motivation is predominantly couched in terms of power, as discussed by Dallas *et al.* (2017).

This approach to the role of lead firms in GVCs may provide insights into how lead firms operate, but in terms of providing an explanation of the prospects for suppliers, or developing country firms more generally, but such a view is, at best, incomplete, and more likely to be fundamentally misleading. First, many suppliers clearly possess the power to exercise agency — in their choice of markets and customers (where, and how many), in taking strategic decisions about capability acquisition, and in repositioning themselves within value chains (Sako and Zylberberg, 2017). Second, while the main focus of much GVC thinking was on newly-integrated developing country suppliers that might lack the knowledge required to supply advanced country markets, there is plenty of evidence of supplier competence in developing countries (Fujita, 2013; Hsieh, 2015). Third, GVC researchers have identified multiple cases of the ability of businesses to learn and acquire competences outside of linkages to developed country lead firms in global value chains. Tewari (1999), for example, has explored how Indian firms used competences acquired in developing products for the high-end domestic market to open up new, developed country export markets. Navas-Alemán (2011) has looked at how businesses develop multiple value chain linkages and are able to apply lessons learnt in one market to other markets.

The IDE research project "The role of suppliers in global value chains" analyses current value chain approaches to suppliers and aims to extend understanding in three areas. First, through a combination of empirical case studies and theoretical reflection, it examines the role of suppliers in improving the performance of value chains. Second, it explores how suppliers can successfully acquire new competences and new functions through the

mobilisation of resources might derived from either inside or outside of the transactional relationships with suppliers and customers in value chains. Third, it seeks to explore the role of supplier agency in changing how suppliers linked to the global economy.

2 Lead firms in the global economy

The global value chain [GVC] approach was developed in the context of late 20th century globalisation, which had two distinctive features. First, it was characterised by the growth of export-oriented manufacturing in developing countries, most notably in the East Asian Tigers and subsequently in China. As can be seen in

Table 1, data from Andreoni and Upadhyaya (2014: 14) on the growth of manufacturing value-added in the industrialised economies was substantially lower than for the emerging industrial economies[2] during the last decade of the 20th century, and in the first decade of the 21st century the gap widened substantially. Furthermore, manufacturing value-added growth in industrialised countries in the first decade of the 21st century was slower than in all of the other three country groupings in **Table 1**. [3]

[2] The WTO categorises as developed countries the 27 members of the European Union, other non-EU Western European countries (Iceland, Lichtenstein Norway and Switzerland), the United States, Canada, Japan, Australia and New Zealand. All other countries fall into the category of "developing and emerging countries" (WTO, 2013: 58). The UNIDO categorisation (used in Table 1) distinguishes between four country groups: (1) industrialised countries, (2) emerging industrial economies, (3) other developing economies and (4) least developed countries. The second group, emerging industrial economies, includes the more industrialised Latin American countries, China, India, Indonesia, South Africa, and some of the poorer EU countries (Upadhyaya, 2013: 17).

[3] Baldwin and Lopez-Gonzalez (2015) show that the countries with annual manufacturing GDP growth between 5 and 10% faster than the global average in the period 1995 to 2007 worth (with the exception of Mozambique) all in Asia, while North and South America and Europe were growing slower than the world average rate.

Table 1 Average annual growth in manufacturing value added (per cent) by country groups, 1990–2000 and 2000–2010

Period Country grouping	1990–2000	2000–2010
Industrialised economies	2.3	1.1
Emerging industrial economies	5.5	7.1
Other developing countries	2.6	4.7
Least developed countries	3.2	6.9
World	2.8	2.6

Source: Andreoni and Upadhyaya (2014: 14).

Baldwin and Lopez-Gonzalez (2015: 1683) attribute the rapid growth in manufacturing outside of the industrialised economies to the growth of what they call "supply chain trade", and more specifically, "North-South production sharing". Developing and emerging countries were incorporated into a new, more globalised division of labour-based not (as in the 19th century) on a division of labour between manufacturing and nonmanufacturing activities, but rather on the slicing up of the value chain and the distribution of tasks. This is the second distinctive feature of globalisation in the latter part of 20th century. Whereas late 19th century globalisation was characterised by rapid increases in transnational commerce based on increasing trade in goods, and in particular the division of labour between manufacturing in Europe and agricultural and mineral production in developing, late 20th century globalisation is characterised by divisions of labour within manufacturing. In particular, firms offshored particular tasks — above all, labour-intensive tasks — to low-wage locations, rather than moving the production of entire products to developing countries.

Researchers from many different strands of thinking have tried to analyse this change and understand both increasing fragmentation and how this fragmented global economy is coordinated. The international business literature refers to "global factories" (Buckley and Strange, 2015), while trade economists have referred to "supply chain trade" (Baldwin and Lopez-Gonzalez, 2015), trade in tasks rather than products (Baldwin and Robert-Nicoud, 2010; Grossman and Rossi-Hansberg, 2008), and "slicing up global value chains" (Timmer *et al.*, 2014). Similarly, global value chain analysis focused on the role

of lead firms (Gereffi *et al.*, 2005; Gibbon *et al.*, 2008). Geographers such as Dicken have also made a distinction between 19th and late 20th century globalisation. As well as pointing to the division of labour between manufacturing in developed countries and the production of raw materials and foodstuffs in peripheral areas of the global economy (which also offered markets for manufactured goods), Dicken argues that there is a qualitative difference between 19th century globalisation characterised by "*shallow integration* manifested largely through arm's-length *trade* in goods and services between independent firms" and 20th century globalisation with its "*deep integration*, organised primarily within the production networks of transnational corporations" (Dicken, 2003: 10-12).

Across these varied disciplines, there are common features about the nature of the current stage of globalisation. First, until recently at least, this was a process seen as being led by dominant firms in the industrialised (OECD) countries. There may be differences in how these dominant firms are characterised. The quote above from Dicken makes explicit reference to the production networks of transnational corporations, and the literature on offshoring by transnational firms gives them a central role in the globalisation process. Other authors, and most notably Gereffi (1995; 1999), have pointed to the role of non-manufacturing firms such as brand-name companies and large retailers, in creating global supply chains. Gereffi refers to them as "manufacturers without factories" (1999: 46). The same idea is taken up in the more recent literature on factoryless goods manufacturing companies (Bernard and Fort, 2015) and "factoryless manufacturing" (Bayard *et al.*, 2015). The point here is that these non-manufacturers have a substantial impact on the way products are produced, packaged and traded. An example would be how food retailers and restaurant chains have had a substantial impact on how food is produced.[4] One consequence of this focus on dominant firms is that it generally leads to a focus on buyers rather than suppliers. This was a clear feature of the GVC literature and the earlier global commodity chain literature, with the latter characterising governance in terms of lead firms in chains (the "producer-driven" versus "buyer-driven" dichotomy). Equally, the supply chain literature has focused on buyers: "The supply chain literature is grounded

[4] For the case of Walmart in China, see Michelson *et al.*, (2018). For examples of the impact of McDonald's on potato producers, see Mateos and Capezio (2001) on Argentina and Schlosser (2001) on the United States.

in the dominant view of procurement and supply management, where buyers are responsible for coordinating and developing their suppliers" (Brito and Miguel, 2017: 62).

Second, these literatures highlight the role of importance of key enterprises in shaping and managing global networks. While GVC analysis generally refers to *lead firm*, but many similar terms are used to describe the same phenomenon, including focal firm (Coe *et al.*, 2004), flagship firm (Rugman and D'Cruz, 1997), hub firm (Jarillo, 1988), network orchestrator (Parkhe and Dhanaraj, 2003), orchestrator (Pitelis and Teece, 2010), joint value orchestrator (Kano, 2018), meta-integrator (Narula, 2014), strategic centre (Lorenzoni and Baden-Fuller, 1995), and strategic nexus (Mudambi and Venzin, 2010). Across these literatures, the issue of control is often exercised. Writers from the international business literature such as Mudambi and Venzin (2010: 1511) explicitly state that they stress "the importance of control rather than ownership" in their analysis of offshoring and outsourcing business models. Similarly, Buckley's analysis of the global factory states that although there has been a radical shift in the location of activities within the global economy, the control or orchestration of these activities remains very firmly within the metropolitan (advanced) countries" (Buckley, 2009: 131). The argument is put even more forcefully in a subsequent article by Enderwick and Buckley:

> "'Global factories' control the entire global supply chain even though they do not own the whole of it. This coordination is largely due to the control of information – not just market intelligence on demand (and future demand), but also on the technical aspects of supply and innovation. The global factory combines central control with network systems to achieve coordination." (Enderwick and Buckley, 2018: 2-3)

Control without ownership is also central to the value chain perspective. Bair emphasises this point: "in the contemporary international economy, dynamics of power and control are not necessarily correlated with traditional patterns of ownership." and big buyers "call the shots for the many firms involved in the buyer-driven commodity chains they control, although they may have no equity relation to the firms actually producing the goods made

on their behalf" (Bair, 2005: 159).[5] They do this by performing some or all of the following tasks: defining product characteristics and production processes, choosing where to produce, distributing tasks along the chain, influencing the distribution of risks and rewards along the chain, and deciding on the inclusion and exclusion of suppliers and forms of performance monitoring (for example, Bair and Palpacuer, 2015: s4; Dolan *et al.*, 1999: 18-21; Ponte and Gibbon, 2005: 3).

Third, the division of labour between developed and developing country businesses is defined by asymmetries in capabilities, value capture and returns to factors of production. Empirically, this is well established. Analysis of particular products, such as the iPod (Linden *et al.*, 2009) and the Barbie doll (Tempest, 1996) indicate that margins and value capture are greater in high-income countries in low-income countries specialising in assembly operations. Detailed results of the returns captured by firms carrying out different operations within the electronics industry show that lead firms and component suppliers earn higher profits than contract manufacturers all original design manufacturers (Shin *et al.*, 2012: 98). Similarly, value chain analysis using world input output data tables shows that intermediate stages of production (typically assembly) have lower value-added rates per unit of output than the early or late stages of value chains (Ye *et al.*, 2015). Finally, Gourevitch *et al.* provide data on the hard disk drive industry that looks at the distribution of employment and total wages paid across different locations. This shows big differences between regions. While Southeast Asia accounts for 44% global employment, the region only accounted for 12.9% of total wages paid. Conversely. The US accounted for 19.3% of employment but 39.5% of total wages (Gourevitch *et al.*, 2000: 308). These differences are partly linked to the type of work performed in different locations. In low-wage locations, the majority of employees are working in assembly operations, while in high-wage locations (Japan, Western Europe and the United States), employees are more involved in manufacturing, fabrication, design, and research and development (Gourevitch *et al.*, 2000: 308).

There are different explanations for the persistence of these differences between countries. One simple explanation draws on the nature of the offshoring and outsourcing processes.

[5] While Bayer refers to "commodity chains" — the term used by Gereffi (1999; 1994) in his pioneering work in the 1990s — Gereffi and other researchers shifted to the term "global value chain" after 2000.

A commonly-used way of presenting transaction cost theory is that the goal is to minimise the sum of production and transaction costs. Therefore, outsourcing is advantageous when the cost advantages of outsourcing are not offset by the increased governance costs of managing the outsourced relationship. Much of the spread of manufacturing activities to developing countries involved shifting labour-intensive activities to low-wage locations, taking the form of offshoring — maintaining vertical integration through setting up subsidiaries in to low-wage locations. In 1961, the US electronics company, Fairchild, relocated transistor assembly to Hong Kong. Parts were supplied from the United States, assembled in Hong Kong and then shipped back to the U.S. market. By taking the labour-intensive assembly stage of manufacture to Hong Kong, Fairchild could beat the Japanese by using labour whose wages were lower than in Japan. The other parts of semiconductor manufacture — chip design, chip fabrication and testing — remained in the United States (Grunwald and Flamm, 1985).

The search for cheap labour was a central part of outsourcing initiatives. For countries looking to attract export-oriented assembly plants, providing a cheap and pliant labour force (alongside good communications and infrastructure, and (in many cases) low taxes) was a central part of investment promotion. Countries across the world advertised their cheap, disciplined, educated and trained (or trainable) labour in the hope of attracting processing plants. Fröbel *et al.* (1980: : 339-64) documented the centrality of claims about labour costs, literacy, skills, and large pools of available labour in the investment promotion literature of the 1970s.[6] This pressure to reduce costs was, itself, a product of globalisation, with the Fairchild case being prompted by competition from Japanese companies in the semiconductor market.

One limitation on combining such offshoring with the outsourcing process is the potential for governance costs to be high. However, the literature also identifies an association between the complexity of the tasks and the level of governance costs. Knowledge intensive activities should be kept in-house, and more simple processes outsourced. Buckley (2009: 135), for example, links outsourcing in the global economy to "products with standard manufacturing interfaces and services with standard processes" that allow

[6] Trade policy also played an important role in these movements, by both investing and host countries. The EU's outward processing traffic (OPT) scheme and the production sharing scheme of the United States facilitated the flow of products to assembly locations on their return onshore.

"a clean interface to be created and a 'fine slicing cut' to be made." It follows, therefore, that a global division of labour prompted by low production and low governance costs would create divisions of labour in the global economy in which businesses in less developed countries are largely confined to low-value activities that are not difficult to perform, but easy to manage by the outsourcing firm. This division of labour is sometimes presented in terms of the "smiling curve" in which high-value activities such as research and development knowledge involved in innovation, together with marketing knowledge associated with branding, after sales, etc., are kept in-house, while low-value standardised manufacturing and services or outsourced (see, for example, Mudambi, 2008: 706-07).

A different explanation is provided by the literature on architectural manipulation (Jacobides and Winter, 2005; Jacobides *et al.*, 2006). This emphasises the way in which lead firms promote the proliferation of suppliers which increases competition and should drive down prices. It is well summarised by Tee and Gawer:

> "The concept of industry architecture (Jacobides *et al.*, 2006) defines the ways in which roles are distributed among interacting firms. Industries have fairly well-established rules about what activities each party undertakes, as well as roles played by industry players. Industry architecture defines both the division of labour between firms and the division of surplus in industries, and provide the "template for both 'who does what' and 'who gets what'" (Tee and Gawer, 2009: 219).

The industry architecture includes levels of concentration at particular points in the value chain, the extent of vertical integration and disintegration in the sector and the way in which interfirm activities are coordinated. The process by which powerful firms, such as lead firms, actively create industry structures that give them competitive advantages is described by Jacobides *et al*. for the cases of Intel and Microsoft:

> "What Intel and Microsoft have done…is to shape the architecture of the PC sector. Through a judicious use of standards, they *facilitate* entry and competition in the complementary assets (anything but their core activities), *without* participating actively in these parts of the value adding process. So the success of Intel and Microsoft can partly be attributed to the creation of *convenient rules of the game* that ensure they will end up with the lion's share of the benefits although their

> activities have been joined with many other parties" (Jacobides *et al.*, 2006: 1209, stress in original).

This literature has not been used to any degree by the GVC literature on governance and upgrading, but it is clearly relevant.

The GVC literature offers two further arguments about the potential limitations on supplier development in countries newly integrated into the global economy. The first relates to the idea of latecomer firms in the global economy, as discussed by Keesing and Lall (1992), and the perception that these latecomers face a "technology gap" (Hobday, 1995) and a "marketing gap" (Schmitz, 2007). Keesing and Lall argue that there are gaps between the requirements of markets in low-income and high-income countries, with the result that when manufacturers first enter into chains supplying high income markets they need to meet requirements that frequently they have not previously experienced. In other words, there is a capability gap between the different markets. Therefore, in the initial stages of globalisation, at least, these firms may find it difficult to take on many tasks involved in exporting and would certainly face challenges if they were to attempt to undertake complex tasks. It follows that in the early stages of developing country export-oriented industrialisation there may be a need for lead firms to make outsourcing possible by investing in the capabilities of suppliers. Such transaction-specific investments might then encourage captive relationship between lead firms and suppliers, and the GVC literature generally identifies captive governance as the least likely relationship to promote supplier upgrading.

The second GVC argument concerns the extent to which lead firms are able to use their market power and gatekeeper power to pursue strategies that have the effect (intended or unintended) of reducing the upgrading opportunities available to suppliers in developing countries. Upgrading can be defined in two ways. At the firm level, Gereffi defines it as "the process by which economic actors – nations, firms and workers – move from low-value to relatively high-value activities in global production networks" (Gereffi, 2005: 171). Similarly, Giuliani *et al*. (2005: 550), define upgrading as "the capacity of a firm to innovate to increase the value added of its products and processes." A second definition focuses more on countries as a whole, and sees upgrading is the process by which developing countries acquire capabilities and undertake more complex tasks in the global economy.

These arguments have policy implications. Within the policy literature on globalisation and value chain development the role of production fragmentation in lowering the costs of entry into global trade is one of the main advantages of GVC development. According to Richard Baldwin, "Global supply chains have transformed the world. They revolutionised development options facing poor nations; now they can join supply chains rather than having to invest decades in building their own" (Baldwin, 2013: 13). But, the long-term benefits of such entries into global trade will depend upon being able to upgrade — to move to performing more complex tasks that sustain higher wages and create more domestic value-added per unit of input.[7] The preceding arguments suggest that there are obstacles in the way of achieving upgrading.

Two counterarguments to this perspective should be considered. In the first place, it would be wrong to assume that outsourcing cannot extend to activities requiring more sophisticated capabilities. On the contrary, exactly the opposite argument can be made, as has been shown by McIvor (2009). Focusing more broadly on the issue of how efficient potential suppliers might be rather than just costs (in other words, the aim of outsourcing is to maximise value net of transaction and production costs), then outsourcing makes the most sense when there is a substantial capability gap between the outsourcing firm and its suppliers. The greater the advantage, the more the governance costs associated with outsourced transaction are offset by the knowledge and efficiency advantages. This explains the profitability of component suppliers, as discussed above by Shin *et al*. They argue that:

> "Component suppliers, particularly suppliers of visual displays, hard drives or key integrated circuits, invest heavily in R&D and pursue high levels of innovation by embodying proprietary knowledge, compared to CMs/ODMs [contract manufacturers or original design manufacturers]. Such capabilities as branding (for lead firms) and R&D (for component suppliers) create entry barriers and help lead firms and component suppliers gain higher profits" (Shin *et al.*, 2012: 99).

[7] This is not the same as arguing that developing countries should try to maximise the local value-added share in any given level of exports.

Such a description might apply to the case of suppliers to Apple, and an extract from the 2012 Apple Inc Annual Report cited by Chan *et al.* (2013: 105) highlights this point:

> "Substantially all of the Company's hardware products are manufactured by outsourcing partners that are located primarily in Asia. A significant concentration of this manufacturing is currently performed by a small number of outsourcing partners, often in single locations. Certain of these outsourcing partners are the sole-sourced suppliers of components and manufacturers for many of the Company's products" (Apple Inc, 2012: 7).

More aggregate data also supports the idea that developing Asian economies have greatly increased their presence in the production of intermediate electronics products. Looking at the global trade in intermediate electronics exports, the developing Asian countries only accounted for 22.8% of this trade in 1991. By 2008, the share of developing Asian countries in the trade originating from the top 15 exporting countries had increased to 58.1% (Sturgeon and Kawakami, 2011: 123)[8].

What is not clear from this, however, is who these outsourcing partners are. One of the characteristics of buyer-supplier relationships in the global economy is the way in which suppliers "follow" their customers to new locations. Therefore, the "outsourcing partners that are located primarily in Asia" mentioned in the preceding quote need not be local companies. Again, firm-level findings indicate why this may not be the case. Work on the offshoring of Japanese manufacturing to Southeast Asia undertaken in the 1990s documented the importance of electronics components exports in Malaysia's overall export trade, and it also showed that one important Japanese company had localised component sourcing, with 55% of supplies coming from the laser itself. However, the value of supplies sourced by Malaysian-owned companies was less than 5% (Wilkinson *et al.*, 2001: 684). Furthermore, it should be noted that components sourced from companies operating within Malaysia may, themselves, include some imported content.

[8] This data examines the share of global exports accounted for by the 15 largest exporters in 2008. These countries accounted for 88.2% of total world intermediates electronics exports in 2008. The shares of these same 15 countries are then calculated for 1991. These would not, therefore, necessarily be the 15 largest exporters in the earlier year.

In the cases studied, some component suppliers sourced the highest-value parts of the products they supplied their Japanese customer(s) from outside Malaysia.

The second counterargument relates to upgrading potential. Even if developing country firms predominately gain entry into value chains through taking on low-value activities where low-wages provide a significant competitive advantage, they might learn from their insertion into value chains, and with the support of local environment might be able to develop their capabilities and take on more sophisticated tasks. Some researchers working within the GVC framework are quite optimistic about the opportunities for learning by developing country suppliers:

> "From a global commodity chains perspective, East Asia's transition from assembly to full-package supply derives in large measure from its ability to establish close linkages with a diverse array of lead firms in buyer-driven chains. Lead firms are the primary source of material inputs, technology transfer, and knowledge in these [East Asian full package supply] organisational networks…Participation in global commodity chains is a necessary step for industrial upgrading because it puts firms and economies on potentially dynamic learning curves…upgrading does not occur to a random set of capital-or skill-intensive industries or activities, but rather to products that are organisationally related through the lead firm in global commodity chains" (Gereffi, 1999: 38-39)

Gereffi adds to this argument by developing an argument around the idea of "organisational succession among…lead firms" (1999: 52). The argument here is that as firms acquire greater capabilities, they can find new buyers that seek these capabilities and, in this way, "move up" the value chain.

Based on his work on contract manufacturing in the electronics industry, Sturgeon has also suggested how the role of such firms has changed as they take on new functions and developed their capabilities:

> "The deverticalisation trend looks very different from the supplier's perspective. To meet the growing demand for full-service outsourcing solutions, suppliers have in many cases had to add entirely new competence areas, increasing the scope of activities while improving quality, delivery and cost performance. I call

> such firms 'turn-key' suppliers because their deep capabilities and independent stance *vis-à-vis* their customers allows them to provide a full-range of services without a great deal of assistance from, or dependence on lead firms." (Sturgeon, 2002: 455)

Sturgeon takes this argument further in another paper (Sturgeon and Lee, 2004) on outsourcing and contract manufacturing that analyses what he refers to as "industry co-evolution" — a process whereby buyers and suppliers evolve together, developing capabilities in parallel as an industry develops. This argues that the result of such co-evolution may be not simply the parallel development of particular buyers with their particular suppliers, but rather strategic outsourcing of groups of lead firms leading to the growth of a "*shared* supplier network, one that can be accessed by the industry as a whole, even by lead firms that compete head-to-head in final product markets (Sturgeon and Lee, 2004: 4, emphasis in original).

Others GVC researchers are less optimistic. One opposing argument expressed in the GVC literature is that lead firms in global value chains actively discourage upgrading by their suppliers unless it is of direct benefit to them. It is generally accepted that process upgrading — the achievement of improvements in efficiency that increase the value derived from any given level of inputs — has direct benefits and will be encouraged, possibly even actively supported, by lead firms. The argument is that where firms get direct benefits from improvements and supplier performance, they may be inclined to invest in suppliers to achieve these gains. There are cases where lead firms do actively support improvements in productivity and quality by suppliers. One example would be food processors whose factory efficiency depends upon quality of their inputs, and numerous cases of food processor investment in supplier capabilities have been documented. However, the fact that buyers may invest in suppliers certainly does not mean that they will always do so, as argued by Humphrey (2006). Whether firms do this will depend, in part, on factors affecting the ability to capture these performance improvements — most notably the continuity of the supply relationship.

In contrast, functional upgrading, whereby firms acquire new functions/activities in the value chain, may be discouraged. A widespread view is that in some situations, at least, lead firms constrain supplier learning and upgrading opportunities in order to prevent their suppliers competing with them. Words such as 'confine' (Pietrobelli and Saliola,

2008: 949), 'hinder' and 'encroach' (Pietrobelli and Staritz, 2018) and 'threat' and 'counterattacks' (Lee *et al.*, 2018) are used to describe how global lead firms respond to the possibility that suppliers will begin to compete with them.[9]

It is quite possible that both of these situations arise, and that outcomes depend as much on the characteristics of the suppliers as it does on the strategies of the buyers. Choksy *et al*. undertook a review of 44 empirical studies on supplier upgrading in GVCs. They divided the suppliers into two groups: disadvantaged suppliers and privileged suppliers. The disadvantaged suppliers suffered from small size, a poor position within the industry and an absence of government support. The privilege suppliers were characterised by greater firm-level resources, larger size and a significant position in the industry, and (possibly) a greater level of government support (Choksy *et al.*, 2017). The authors' analysis of the empirical studies indicated that there was a greater likelihood of privileged suppliers achieving upgrading than disadvantaged ones.

A more fundamentally pessimistic view on this issue is advanced by Sturgeon himself. He argues that the co-evolution that allowed global contract manufacturers to acquire new capabilities and to take on a broader range of tasks for their customers (the big electronics manufacturers and brand names) actually has the effect of shutting down opportunities for developing country businesses. Sturgeon and Lester make this argument by contrasting the optimistic view on upgrading, which is largely derived from the development strategies of the East Asian Tigers in the latter part of the 20th century and what has happened since the turn-of-the-century. Their view of the optimistic model is summarised succinctly as follows:

> "In the conventional supplier-oriented model of economic development, domestic suppliers continuously upgrade their capabilities either by serving the needs of the local affiliates of multinational firms or by supplying lead firms in advanced countries from a distance. In both cases, if the model is extended further, the expectation is that the local firms will leverage their experience by building up design competencies of their own. These design capabilities not only provide new

[9] For a discussion of competition between contract manufacturers and their customers and some of the ways in which suppliers move into branded manufacturing without competing directly against their customers, see Sturgeon and Lee (2004).

> sources of revenue, but eventually enable the firms to develop their own lines of branded products, and perhaps even emerge as direct competitors to advanced economy lead firms. The upgrading process can proceed in stepwise fashion, beginning with simple assembly, where labour is applied to components and designs supplied by foreign buyers; followed by the supply of complete products with locally sourced components manufactured to specifications provided by foreign buyers (the so-called original equipment manufacturing (OEM) relationship); followed by the addition of post-conceptual design services to the manufacturing function, a combination known as original design manufacturing (ODM). Once design competencies are well established, the supplier can begin to conceptualize, develop, and manufacture finished products, first for sale under the brand labels of its customers, and later to be marketed under its own brand name. At that point the local firm becomes what is sometimes referred to as an "original brand manufacturer" (OBM). In this fully-blown version of the supplier-oriented upgrading path, the local firm eventually steps fully out of the supplier role to become a lead firm in its own right" (Sturgeon and Lester, 2004: 39-40).

They argue that these opportunities have now been reduced, or even eliminated, by exactly the changes in buyer-supplier relationships that created opportunities for global contract manufacturers. The argument is that lead firms in global value chains — not just in electronics, but also in automotive, garments, etc. — now organise their global activities on a global scale. This has implications for production, particularly in the automotive industry. If auto assemblers make final products in multiple locations, they need supplier companies that can also operate across these multiple locations.[10] Perhaps more damagingly, the creation of what Sturgeon and Lester called the "the global supply base" requires suppliers to be close enough to the assemblers' headquarters operations to be involved in design activities (Sturgeon and Lester, 2004: 63), and this is particularly problematic for developing country firms. Humphrey's study of follow design and follow sourcing in the automotive industries of Brazil and India showed the consequences of these requirements. The adoption of the strategies by major multinational manufacturers

[10] There are limits to follow sourcing. Economies of scale in newly-developing locations may be insufficient to justify follow sourcing, for example. For a study of the limits to follow sourcing for global auto company integrating its model range across Europe, Brazil and India, see Humphrey and Salerno (2000).

in the 1990s led to a significant "denationalisation" of the auto components industry in Brazil, with hitherto successful local suppliers being taken over by multinational companies (Humphrey, 2000). One leading Brazilian component supplier that had set up assembly operations in Europe and established an operation in Detroit to be close to some of its major customers still came to the conclusion in the 1990s that it would have to sell out to a global competitor. Similarly, the rapidly growing Indian auto industry attracted many multinational component manufacturers to the country.

3 Rethinking supplier possibilities

The literature review provides certain insights into the challenges facing our understanding of the suppliers and development. In particular:

1. There is no doubt that lead firms in GVCs have the power to shape value chains. The impact of lead firm choices was outlined above for the case of auto industry suppliers. Nevertheless, decisions by lead firms (manufacturers or non-manufacturers) can also have positive consequences. When JCPenney decided to source its cheapest microwave ovens from Samsung in Korea in 1979 (Magaziner and Patinkin, 1989) this had consequences for the future development of this important product line, and knock-on effects for its export of consumer durables in general.
2. Lead firms matter, but this is not the same as saying that they determine what happens suppliers developing countries; nor does it demonstrate that suppliers respond passively to whatever lead firms demand of them, or that passivity is an option for them as global markets become more competitive. The Samsung case shows quite clearly that the opportunity to take advantage of JCPenney's decision was only made possible by some years of investment in the development of capability in this field. Equally, businesses may seek opportunities that exist in other markets, or in different product lines that use capabilities similar to the ones they already possess.
3. The potential for supplier development and upgrading within the context of globalisation changes over time. This is the argument put forward by Sturgeon and Lester. There is no reason to suppose that change stopped after 2004.
4. Suppliers will have different potential for upgrading, along the lines suggested by Choksy *et al.* (2017). The key question then becomes what determines presence

or absence of the factors that make upgrading more likely in any particular sector or country.

The remainder of this section will consider some empirical evidence suggesting that supplier agency and supplier upgrading without the need for lead firm support is possible in developing countries, and then discuss the research questions that this generates.

3.1 Cases of supplier upgrading

Theoretical reflection is often spurred on by empirical cases that do not fit in with existing theories. Some recent findings by the project researchers have contributed to this sense of the need for a re-examination of both evidence and theory.

Hsieh's (2015) work on Taiwanese suppliers to Taiwanese bicycle exporters highlights the role of suppliers of materials and manufacturers in enabling "lead firms" such as Giant, and many smaller firms, to innovate in the design of bicycles in ways that enable them to gain a substantial share of global markets for high-end bicycles. Local component manufacturers supply components even for premium models sold on the global market, and they have developed technologies, particularly relating to frame making, that have enabled the lead firms to be competitive in global markets. Hsieh draws on the work of Rosenberg (1963) to explore the importance of clusters of suppliers organised into networks that then provide innovative products to a range of assemblers. While many Taiwanese bicycle manufacturers began life as assemblers for global brands located in high-income countries, the subsequent development does not match that of large parts of the electronics industry in Taiwan, where firms have found it difficult to make the transition to own brand production.

The second example is that of electric two-wheelers (bicycles and scooters) in China, as studied by Humphrey *et al.* (2018). This study began with the promotion by the government of a low-tech electric bicycle industry in China in the 1990s. This built on existing clusters of pedal-powered cycles in China and used simple technologies such as lead-acid batteries to provide products that were affordable to the mass consumption market in China. This sector was typical of the *shanzhai* industries that grew rapidly in China at this time. There was a proliferation of both companies providing components and companies assembling electric two wheelers. Nevertheless, more recently there has

been a shift towards more sophisticated products. In the domestic market this has been promoted, in part, by a government crackdown on polluting industries such as those making lead-acid batteries, and a substantial concentration of the sector. The leading battery producers have invested in in-house research and development and buying specialist overseas companies (Humphrey *et al.*, 2018: 418-19). At the same time, increasing exports to high-income export markets has required Chinese manufacturers to meet both more demanding consumer and regulatory requirements. Some of the components required for this market are made by multinational companies such as Siemens, often produced by facilities in China. However, Chinese-owned companies have also made advances in component manufacture and are building recognition in high-end markets in Europe.

The third example, also from China, is mobile phones. Like the industry globally, the Chinese market has experienced considerable turbulence over the past 25 years. However, in the past five years Chinese-owned firms have increased their share of the global market, producing both lower-priced phones (smartphones and feature phones) that sell well in low income markets such as India and sub-Saharan Africa, and more expensive models that have gained penetration in high income markets. In the latter case, Huawei is now competing directly against Samsung in European markets and producing phones that compete on the basis of technology, quality and functionality. Entry into the high-end smartphone market is facilitated by the modular characteristics of the modern smart phone. Handset manufacturers rely on global producers of many key parts, and this is a feature not only of Chinese companies, but also of Apple and Samsung. Nevertheless, handset manufacturers at the leading edge need system knowledge and understanding of the latest technological possibilities in order to create phones with new functionalities that frequently combine multiple components and both hardware and software.

Clearly, it is always possible to find a small number of cases that, if extrapolated, could be taken to indicate a new trend. There are many examples in the literature on technological capabilities in developing countries that point to particular businesses that are able to sell into high-income, demanding markets. Equally, however, these cases often fail to replicate, remaining exceptions rather than the rule. But the cases discussed above point to a more general issue relating to suppliers and the position of developing country businesses in value chains. Much of the GVC literature has focused, quite rightly, on the expansion of globalised production networks to developing countries and expansion of

manufacturing in those countries. For the reasons discussed above in Section 2, these new entrants to global value chains often performed a limited range of activities located predominantly in the lower-value parts of the chain. But, businesses and countries can learn from their experiences in GVCs. In some cases, this may be achieved through direct links to key buyers, while in other cases the local institutional framework, government policy and inter-firm collaborations also enable firms to acquire new capabilities. As a result, the overall level of capabilities in these countries rises. In addition to this, the domestic markets in a larger, middle-income countries may also provide opportunities for responding to consumer needs and finding local outlets for more sophisticated products.

3.2 Research issues

This literature review identifies a number of issues that can be explored in the second year of this research project. These include:

1. If component manufacturers are important sources of innovation in developing countries, how much does this represent a new development, or is it the case that these manufacturers have always played this role, even though the literature on lead firms in international business and in GVCs has tended to play down or overlook their role? Hsieh's analysis certainly points to the latter possibility, as it draws on much earlier work based on the role of component manufacturers in the United States.
2. What is the role of modularity in opening up opportunities for developing country component manufacturers? On the one hand, modular systems open up the potential for component suppliers to meet the demands of many different customers through the development of common standards across industries. This means they are not dependent on the requirements of any single customer, however large. On the other hand, this trend may facilitate the process of industry concentration and globalised sourcing at the supplier level, so that many developing country manufacturers are unable to compete.
3. If, in a modular system, the suppliers of key modules that are not in themselves final products (for example, core chipsets in mobile phones or batteries for electric two-wheelers), is there a possibility that these key component manufacturers become, themselves, lead firms that shape the downstream assembly sector?

4. To what extent is the potential for developing country assemblers and suppliers to shift away from dependence upon dominant lead firms in the global economy made possible by opportunities available in what might be termed "marginal" markets? In other words, the opportunities for firms to diversify markets and customers requires a focus on smaller final markets, smaller branded companies, etc., that often remain under the radar of GVC researchers.
5. If developing country suppliers are able to acquire new capabilities, does this necessarily translate into value capture?
6. How much does capability acquisition depend upon a sizeable domestic market, and does such a domestic market make a difference through the characteristics of domestic demand, or the way in which domestic market shape the bargaining power of government with respect to technology transfer?

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