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**Franssen, Loe (2015) International value chains : opportunities and challenges for small and developing countries. Fraser of Allander Economic Commentary, 39 (2). pp. 101-111. ISSN 2046-5378 ,**

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# International Value Chains: opportunities and challenges for small and developing countries

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## Abstract

While internationalisation can improve firm performance, it is often only the most productive firms that are able to internationalise (Wagner, 2005, 2012; Melitz, 2003). Recent reductions in transportation costs and trade barriers alongside technological advances have fragmented production into intermediate tasks that can be executed in several countries, creating international value chains (IVCs). These IVCs can act as a stepping stone for less productive firms to tap into international markets, and benefit from learning-by-doing, without taking on all the tasks in the value chain, thereby lowering the entry requirements for internationalisation associated with exports (OECD, 2008). This article examines the opportunities and challenges of IVCs for SMEs in small and developing countries and, in a final section, applies some of these lessons to Scotland.

Key words: SMEs, International Value Chains, upgrading, technology spillovers, internationalisation

## I Introduction

Firms that are integrated in global markets are more productive, pay higher wages and create more jobs (Wagner, 2005, 2012). However, the exact nature of that relationship remains a topic of debate. On the one hand, more productive firms tend to transfer into international markets, as they are the only firms that can afford the associated entry costs, such as transportation, production and marketing (Helpman, Melitz and Yeaple, (2003); Melitz (2003)). On the other hand, there is the hypothesis that internationalisation leads to increased productivity through learning by doing and exposure to increased quality standards, superior technology and greater competition. Despite the significance of SMEs in national economies, research on internationalisation strategies and outcomes mainly focuses on large firms, and the evidence on SMEs is scarce. Therefore, studying the opportunities for SMEs to internationalize is not only relevant but also of immediate policy interest (Giovannetti, Marvasi and Sanfilippo, 2014).

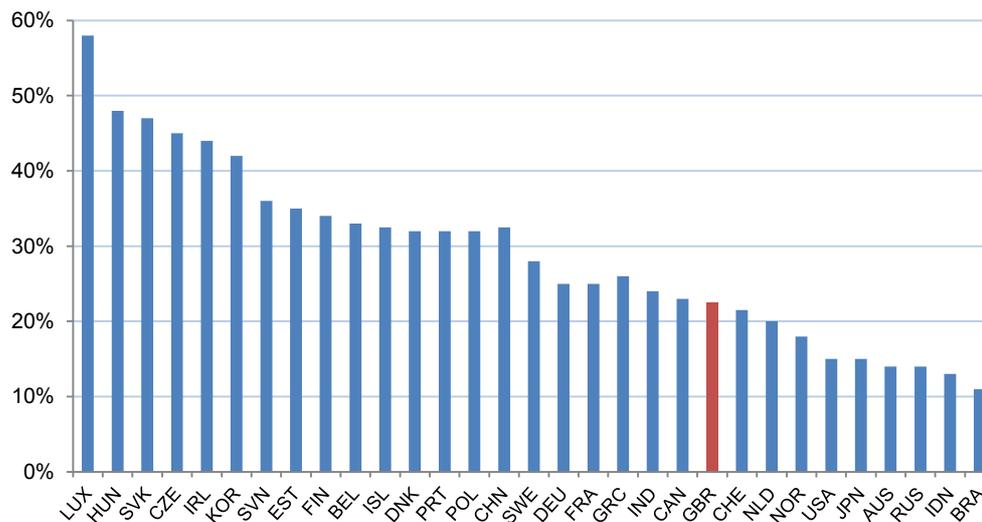
In the spectrum of internationalisation strategies, the recent rise of international value chains (IVCs) provides many interesting opportunities and challenges to firms worldwide. This article provides an overview of recent literature on these opportunities and challenges for SMEs in developing countries of linking into international value chains (IVCs). In short, IVCs can act as a stepping stone for less productive firms to internationalize as well and reap the benefits of “learning by doing”. At the same time, however, IVCs provide a threat that SMEs in developing countries might get stuck in the low value added activities of IVCs, such as purely assembly activities. A critical factor in this is the power structure within the IVC between the global buyer and the local supplier. This relationship determines the extent and type of spillovers a local SME can attain via the chain. This power structure, in turn, depends on the level of competitiveness of the SME, with more competitive and productive firms having a stronger

bargaining power allowing them to achieve a higher share of the IVCs' value added. This article discusses IVCs in further detail, examining the opportunities and challenges for SMEs in developing countries, while a final section focuses on the implications for Scottish SMEs.

## II What are international value chains?

While the terminology can differ widely<sup>1</sup>, international value chains have existed for some time. The concept of a value chain has been introduced notably by Michael Porter (1985) and can be described as the full range of activities and processes that are needed to bring a product from conception through the intermediary stage of production to delivery to final consumers and final disposal after use (Kaplinsky and Morris, 2001). Recent technological advances and reductions in trade costs, however, have made it possible to fragment production into individual tasks, allowing firms to specialize in parts of a supply chain. Once fragmentation occurs across national borders, this specialisation can stimulate firms' internationalisation and lead to the creation of international value chains (IVCs) that can be regional or global. As result of this fragmentation, trade in intermediate, as opposed to final, goods has increased significantly over the past two decades, and is estimated to account for two-thirds of all trade (Johnson & Noguera, 2012).

**Figure 1 Share of foreign value added in gross exports per country, 2011**



Source: OECD-WTO (2015)

Another common way of measuring a country's engagement in IVCs is by looking at the share of foreign value added that is exported. Dating back to Hummels, Ishii and Yi (2001), this measurement is known as vertical specialisation (VS). Using this method, Figure 1 shows the engagement of various countries in international value chains, with the UK being indicated in red.

<sup>1</sup> Throughout the literature, various terms have been used to describe the same phenomenon, the most important being fragmentation (Deardoff, 2001) (Arndt & Kierzkowski, 2001, p. 2), international fragmentation of production (Helg and Tajoli, 2004; and Yamashita, 2010), outsourcing (Feenstra, 2010) (Egger & Stehrer, 2003), trade in tasks (Grossman and Rossi-Hansberg, 2006), offshoring, processing trade (Görg, 2000) and most recently, global value chains (OECD, 2013a) or International value chains (ITC, 2015).

From Figure 1, we can see that smaller economies such as Luxemburg, Slovakia and Ireland tend to source relatively more inputs for use in IVCs than do larger economies. This indicates that participation in IVCs is related to an economy's size, openness and proximity to trading partners in participating countries. Specific data on Scotland are not available but the UK share of foreign value added in gross exports at 23% and has been steadily increasing since 2005 (OECD-WTO, 2015).

The impact of international value chains is now so significant that a number of economists argue that globalisation has entered a new paradigm (Baldwin, 2006, p.1), offering opportunities and challenges for SMEs that can have wider impacts on host countries' development paths. Indeed, a recent WTO-OECD survey (2013b) demonstrated that lack of integration of low-income countries into international value chains is a major obstacle to their development. Engaging in IVCs allows firms to specialize and play to their strengths, more so than in purely domestic markets, and can help increase their productivity, wages and employment, as well as be a stepping stone to more advanced modes of internationalisation (e.g. direct exporting or FDI, facilitated by decreasing the entry and search costs of internationalisation). A recent study, for example, on the experience of African SMEs engaging in regional and international value chains found that this expanded their markets, improved their productivity, and helped them attain financial stability (Wamalwa and McCormick, 2015).

### **III International Value Chains: opportunities for SMEs**

The potential advantages to SMEs of international value chains (IVCs) are numerous, with some authors writing of a 'laundry list of benefits' (Park, Nayyar and Low, 2013). At the macro level, there are opportunities to create jobs, increase income, improve working conditions (Shingal, 2015) and diversify production and exports (WTO, 2014). At the micro level, IVCs can help increase access to finance, shorten lead times, reduce operational disruptions, cut inventory, improve quality and customer service, speed innovation and reduce risk (Arend and Wisner, 2005; Fawcett et al., 2009; Vaaland and Heide, 2007). While the link between exporting and increased economic performance is well-established, the fact is that importing also can spur such gains, something that is less well known or appreciated. Traditionally, under a mercantilist view, imports are seen as substituting for domestic production and so are viewed as adversely affecting SMEs. However, when importing intermediate goods, there are considerable benefits for SMEs. Indeed, a recent OECD paper (2013b) on IVCs has shown that success in international markets today depends as much on the capacity to import world-class inputs as on the capacity to export them.

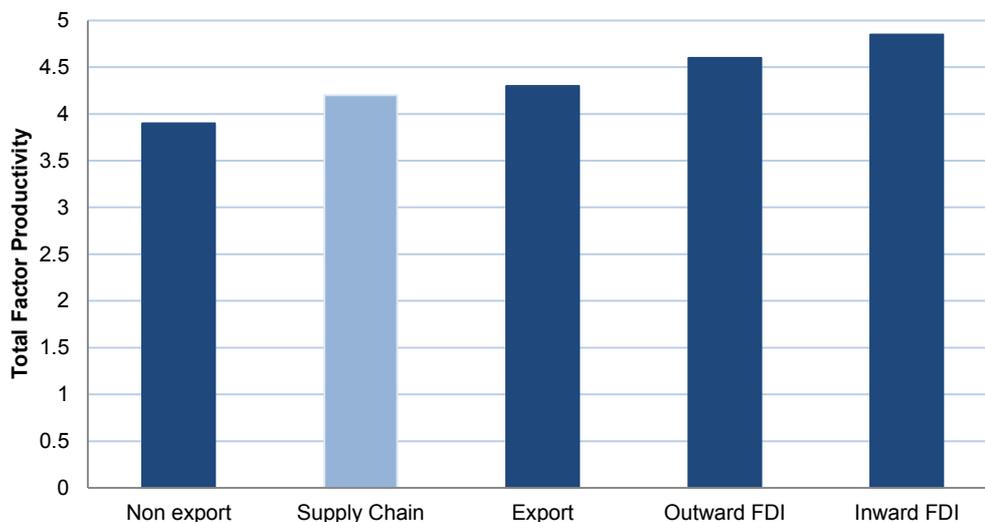
For firms that sell only in the domestic market, importing intermediate goods for further processing offers one way to engage with international value chains. This can act as a stepping-stone for more advanced forms of internationalisation by breaking down the fixed costs, such as regulatory compliance, and the costs of searching to identify profitable markets and reliable partners (Giovannetti et al., 2014). There is also evidence that participation in production chains, both local and international, increases the chances that SMEs will begin exporting. A recent study of over 7,500 Italian SMEs, for example, indicated that even small and less productive firms involved in production chains could take advantage of reduced costs of entry and economies of scale to enhance their probability of becoming exporters (Giovannetti et

al., 2014). For firms employing 1–9, 10–49 and 50–249 persons, the probability of being an exporter increased by 98%, 34% and 34%, respectively, when the firms were part of an international supply chain.

International supply chains can assist SMEs by establishing well-defined contractual arrangements with other companies in the chain, which may facilitate access to cheaper or higher quality intermediate inputs. In addition, being part of a supply chain may be the preferred strategy when capital and research and development intensity are relatively low, as such inputs are more likely to be controlled by downstream firms improving their capacity to internationalize. In this way, SMEs can tap into international markets without taking on all the tasks in the value chain, thereby lowering the entry requirements for internationalisation associated with exports (OECD, 2008).

Firms that engage in IVCs have a productivity level between that of purely domestic firms and exporters, indicating again that smaller, less productive firms may use IVCs to help them internationalize (Figure 2). Larger firms on the other hand, might internationalize regardless of supply chain integration due to different structural characteristics (Giovannetti et al, 2014; OECD, 2008).

**Figure 2 Average total factor productivity (TFP) of Italian SMEs (2009-2011), by mode of internationalisation**



Source: Giovannetti, Marvasi and Sanfilippo (2014)

Even for firms that already export, research increasingly shows that importing intermediate goods can increase the effectiveness of exports (Freund and Jaud, 2015). There is empirical evidence at firm level that importing intermediate goods improves the quality (Freund and Jaud, 2015; Bas, 2012) and quantity (Feng, Li and Swenson, 2012) of exports and therefore magnifies its effect on productivity. There is even evidence that importing intermediate goods increases firm productivity more than exporting does (Amiti and Konings, 2007; Goldberg et al., 2015). For example, Amiti and Konings (2007) found that while a 10 percentage point fall in output tariffs increased Indonesian firms' productivity by about 1%, an equivalent fall in input tariffs led to a 3% productivity gain for all firms and an 11% productivity gain for importing

firms. In the Middle East and North Africa (MENA) region, Cruz and Bussolo (2015, p.1) found that "firms that are relatively more exposed to input tariffs perform better in those sectors with the largest input tariff reduction with better access to markets, higher probability to survive when exporting new products in those sectors and higher export value growth". In Tunisia, for instance, firms that engage in international trade are more productive, more profitable and create more jobs than firms that do not engage in any form of trade (Baghdadi, 2015).

IVCs have another advantage, especially for firms in developing countries: their capacity to act as a channel for technology diffusion, which can stimulate innovation (Pietrobelli and Raballotti, 2011). This can happen in various ways. First, if a firm engages with IVCs by exporting intermediate goods, it must satisfy the chain's requirements regarding product quality, delivery time, process efficiency etc. – as well as potential environmental, labour and social standards (Pietrobelli and Raballotti, 2011). These demands may require SMEs to upgrade their production or delivery methods, as well as their actual product, for which they need to acquire foreign technology via licensing arrangements. For this reason, Humphrey and Schmitz (2002) conclude that for SMEs engaging in IVCs is especially good to encourage product and process upgrading. Second, importing intermediate goods can lead to a direct (in)/diffusion of technology if the imports are technologically superior. This, in turn, can stimulate improvements in human capital if the imports require training. For small LDC firms especially, participation in value chains is crucial to obtain information about the type and quality of products and technologies required by global markets and to gain access to those markets (Pietrobelli, 2008). Leaders in the chain have a key role in transferring knowledge to their suppliers. Multinationals or other large integrated industrial enterprises are central in controlling the production system (Gereffi, 1994). Foreign firms typically make their technologies widely available to their local suppliers to avoid delays in the delivery process (Blalock and Gertler, 2008). For instance, Volvo provides its suppliers in Brazil, China, India and Mexico with technological assistance to improve their operations (Ivarsson and Alvstam, 2005). In Chinese Taipei, local manufacturers in the computer industry benefit strongly from an intensive collaboration with IBM, including through training of local engineers (Kishimoto, 2004). Even without direct support, foreign buyers can stimulate innovation. For example, firms in Chinese Taipei developed a triangle manufacturing system in response to pressure from foreign buyers to reduce delivery times (Gereffi, 1994 and 1999). This system enhanced these firms' capabilities to coordinate, search for and procure external goods and services (Kishimoto, 2004).

#### **IV The challenge for LDC SMEs to not get stuck in low value added activities**

The previous section outlines the advantages of engaging in international value chains, particularly for SMEs. However, it is by no means guaranteed that an SME will be able to reap these benefits. The extent to which SMEs can successfully link to IVCs largely depends on their internal level of competitiveness. Besides such internal issues and the general challenges linked to internationalisation, there is the specific danger that SMEs can get stuck in low value added activities, such as assembly or provision of raw materials. In such instances, firms absorb little, if any, of the profits, technology and extra returns that the value chain generates. While firms in developing countries often enter IVCs via such activities, due to their comparative advantage of low wages, it is important that firms subsequently upgrade to activities of higher value added. For example, an assessment of the gains created along a

typical value chain for jeans, beginning with the harvesting of raw materials and initial manufacturing in China and ending with the selling of the jeans in Europe, shows that of the total \$50 dollar cost of each pair of jeans produced, only \$3.20 remains in China (Ruffier, 2008).

There are several reasons why firms may be unable to upgrade to higher value added activities. Some of these may be external to the firm, such as regulatory and infrastructural problems or limited access to finance. Others may be internal to the firm, such as being unable to meet increased quality or delivery standards. Internal factors are closely tied to a firm's existing level of competitiveness, which to a large extent determines its ability to benefit from internationalisation. A more IVC-specific factor, however, has to do with the governance of the value chain, where power asymmetries between buyers and sellers determine much of the gains SMEs can hope to realize.

## **V Value chain governance**

Global firms may prevent SMEs from functional upgrades, if this threatens their core activities, such as marketing, research and development or sales. Therefore, large firms are crucial in determining the ability of SMEs to upgrade. Large firms are responsible for the inter-firm division of labour, and hence for the capacities of particular participants to upgrade their activities (Kaplinsky and Morris, 2001). Chain leaders coordinate and govern the IVC. Healthy, stable profits depend fundamentally on the power relationships within the chain. Lead firms often hold considerable bargaining power, which is based on three key factors (Gereffi, Humphrey and Sturgeon, 2005): capabilities of the supplier base; degree to which a job can be codified; and, complexity of the job. If a job can be relatively easily codified and is not too complex – often the case for standard manufacturing and assembly – a supplier can be easily replaced. Hence, such suppliers have reduced bargaining power. A further factor is the cost to suppliers of switching to another buyer, which effectively can lock them into a single buyer. For the mobile phone IVC, intense competition has driven out most lead firms, with Apple and Samsung dominating the market (Lee and Gereffi, 2013). Sturgeon and Memedovic (2011) identify an additional dynamic: the ability of lead firms to play suppliers off against one another in the selection and placement of orders.

From an economic perspective, such power dynamics may lead to lower economic growth and greater volatility, as firms with low margins find it hard to increase their productivity and are especially sensitive to outside economic shocks, such as environmental disasters or financial crises. In addition, persistently low wages among the poorest will inhibit them from increasing their productivity by investing in their own skills and education. From a development perspective this is especially troubling, as aid programmes such as Aid for Trade are often targeted at firms lower down the value chain, which tend to employ economically vulnerable people (Mayer and Milberg, 2013). For this reason, value chain governance is of critical importance in determining the potential direct and indirect economic development benefits from technology spillovers, especially in Less Developed Countries (LDCs).

## **VI International Value Chains: opportunities for Scotland?**

Many of the lessons for SMEs in developing countries can be applied, in part, to Scotland. The Scottish government recognizes the importance of international value chains to its economy. Namely, in its

Economic Strategy (Scottish government, 2015) internationalisation is identified as one of the 4 key priorities to help increase Scotland's competitiveness and tackle inequality. This idea is based, amongst others, on firm level evidence for the UK manufacturing and services sectors during 1996-2004 by Harris and Li (2007) who found evidence of both the self-selection bias, i.e. the fact that only more productive firms tend to internationalize, as well as the learning by exporting hypothesis, i.e. that exporting makes firms more productive. More specifically, Harris (2010) found that learning-by-exporting increased the productivity of Scottish firms by between 16-18 %.

Many of the lessons described in this article can also be applied to the Scottish oil and gas, and electricity value chain. In their paper, Raines, Turok and Brown (2001) firstly found that domestic links between Scottish SMEs and locally-based foreign subsidiaries can facilitate the internationalisation of Scottish SME suppliers. SMEs in both industries indicated that existing links with international companies and supply chains had been critical in them gaining initial export experience and market diversification. In comparing the two chains, Raines et al. (2001, p.975) found that Scottish suppliers in the oil and gas sector tended to be engaged in higher value-added activities, were more likely to engage in product innovation and tended to exhibit stronger technology spillovers than did Scottish suppliers in the electronics industry. This can partly be explained by the distinctive nature of the two value chains. In oil and gas, Scotland benefited from its supply location which the industry exploited by setting up localized procurement arrangements, personal networking and incentives for investors to progress from dependent, foreign-plant supply relationships to more independent contractors. In the electronics sector on the other hand, Scotland's competitive advantage lay in more basic factors such as low-cost labour, access to the EU market and government incentives. Because of this, local suppliers in the electronics sector sought to engage in lower value added activities such as the manufacture of basic parts and turnkey supply services. Because of the nature of these activities, there is naturally less scope for technology spillovers. Besides this, Raines et al also point to the stronger relationships between global buyers and local suppliers in the oil and gas sector that enable them to upgrade. They include by stating that the more intensive the linkage with the domestic market, the more likely linkages will help support suppliers to internationalize.

This point is also a key feature in the Scottish Economic Strategy (Scottish government, 2015) which notes that in order to ensure long term benefits from inward investment, such as spillover effects, supply chains need to be linked with the domestic economy. Such spillover effects can occur via competition or demonstration effects, labour mobility, and via forward and backward linkages throughout the chain. Harris and Li (2014), for example, find that foreign owned manufacturing firms can have a positive spillover effect on the productivity of UK-owned manufacturing firms not engaged in overseas investment. Scotland's Economic Strategy sets the aim to look at particular areas of the Scottish economy where supply chain linkages could be strengthened further and to explore options to better exploit these linkages and ensure that local businesses – and the wider Scottish economy - benefit.

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- Last month (October, 2015), the International Trade Centre (ITC) published its flagship report titled "SME Competitiveness Outlook 2015: Connect, Compete and Change for Inclusive Growth". This article is based on chapter 4 of that report, which was written by the same author. See <http://www.intracen.org/SMEOutlook/> for the full report.*

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