BRIEFING

European Parliament

Global and regional value chains

Opportunities for European SMEs' internationalisation and growth

SUMMARY

International value chains have emerged as the new paradigm for the organisation of production globally. Today, most production processes across the world are vertically fragmented as a result of the increased unbundling of tasks and functions and their sourcing from different geographical locations. The extent to which this expansion in supply-chain trade is global in character (which some describe as the 'Factory World' phenomenon), or is rather based on more intra-regional ties clustered around Europe, Asia and the Americas, is still being debated in the literature.

Notwithstanding their geographical characteristics, international value chains offer increased opportunities for enterprises, by fostering their growth and internationalisation irrespective of their scale and size. To SMEs, they offer a broader range of channels through which they can participate more actively in global markets. By linking with international supply chains, SMEs can take a first step up the ladder, which – through spill-overs and knowledge transfers – can often give them access to assignments of higher added value. With greater interconnectedness, however, comes greater complexity. Not all SMEs are able to take advantage of the opportunities and link with international value chains in an effective way. More importantly, however, for those that do manage to integrate into international production chains, the magnitude and nature of the benefits will critically depend on the SMEs' entry point and position in global production networks and the links they can develop within those networks.

In this Briefing

EPRS | European Parliamentary Research Service

Author: Ioannis Zachariadis
Members' Research Service

PE 635.520 – February 2019

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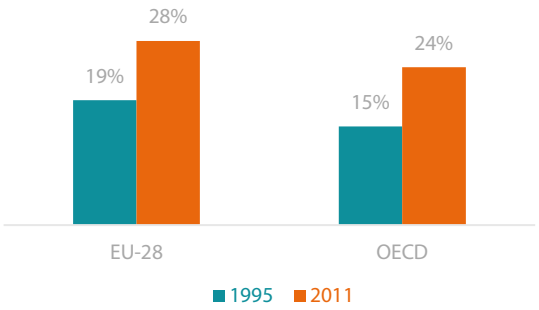
The issue

Value chains have gained considerable prominence in recent decades. Since the mid-1990s, they have become increasingly internationalised, expanding both at regional[1] and global level. This transformation has been clearly visible through the growing degree of penetration of foreign inputs into countries' production and export activity. Across OECD countries, the import content of exports is estimated to have grown from 15 % to 24 % of gross exports between 1995 and 2011, which underscores the increasing importance of cross-border value chain flows in recent decades (see Figure 1 below).

The internationalisation of value chains has gone hand in hand with globalisation. Facilitated by the gradual reduction in trade costs and reduction in trade barriers, the rapid expansion of technological progress and the liberalisation of investment, internationalisation has made today's economies more integrated and interconnected than ever before. International value chains have changed the way production is organised: they have increased specialisation down to the very task level and provoked significant modifications in the relationships between partners along the value chain.

Figure 1 – Import content of exports (% of gross exports), 1995 and 2011



Source: Statistics on trade in value added: Trade in value added, OECD-WTO, 2019.

In general, companies that are part of global or regional value chains tend to display high levels of innovation, greater efficiency and increased productivity. In this context, several studies have concluded that participation in value chains can be beneficial in fostering enterprises' growth and internationalisation irrespective of their scale and size.

Traditionally, international value chains have been driven predominantly by large multinational enterprises, which, in their effort to maximise efficiency through specialisation of their cross-border production and operations, have been breaking down (unbundling) their production tasks. However, this trend has required increasing specialisation in terms of skills, research and development, design and marketing; smaller enterprises, both within and across borders, have also had to go through such specialisation.

This has offered small and medium-sized enterprises (SMEs) new opportunities to integrate into the global economy and become exporters, either directly or indirectly, through domestic larger exporting firms. It has also offered SMEs the prospect of becoming importers of competitively priced foreign intermediate goods and technologies, thereby improving their cost-structure on the input side. Greater integration in global markets has offered SMEs a first step on a ladder that can, through spill-overs and knowledge transfers, often lead them to growth and give them access to higher value added assignments. This can help smaller firms to achieve a deeper skills set (be it technical or managerial), realise efficiency and productivity improvements and eventually scale up to become leaders of value chains in their own right.

However, with greater interconnectedness comes greater complexity. Many SMEs, even in the EU, have difficulties in securing access to international value chains. Participation in international production chains, for those that manage to integrate into them, does not necessarily bring benefits. These depend largely on the nature of inter-firm linkages and a firm's position in global production networks.

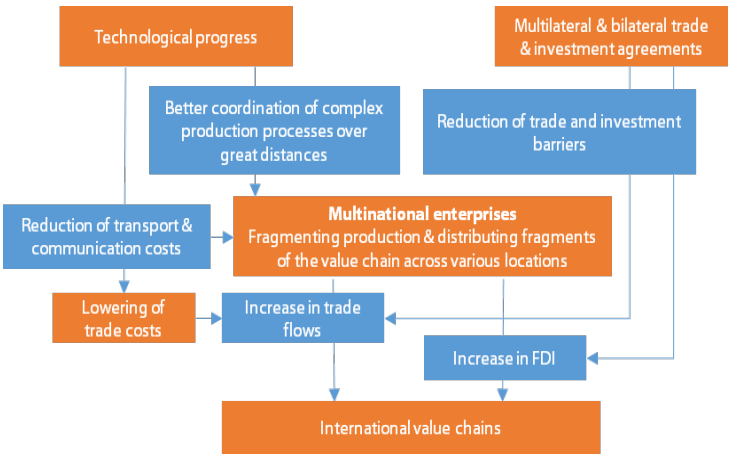
What are value chains?

The phenomenon and its drivers

International value chains refer to the cross-border flows of goods, investment, services, know-how and people associated with international production networks. Over the past few decades, they have emerged as the new paradigm for the organisation of production globally. Today, most production processes across the world are vertically fragmented.[2] Goods and services are produced in separate stages, and production is often located in different countries. The assembly of different parts takes place either sequentially along the supply chain or in a final location.

This change in international production processes is not new, but the intensity with which it shapes the current economic reality has increased significantly in recent years. Moreover, it has coincided with a strong expansion of trade in intermediate goods, especially parts and components. Led mostly by multinational corporations, this shift has had a deep and lasting impact on the world economy and increased economic interdependence between countries dramatically.

Figure 2 – Mapping the drivers



Source: Adapted from M. Fritsch and J. Matthes, Factory Europe and its Ties in Global Value Chains, GED Focus Paper, July 2017.

The drivers behind this shift in production have been extensively analysed in the literature. It is now widely recognised that while previous transformations in trade and industry made it possible to separate production from consumption,[3] it was not until the mid-1980s that the sharp fall in communication and coordination costs revolutionised industrial production, allowing for the spatial unbundling of different stages and tasks that were previously geographically clustered in factories and offices.

Thanks to steady progress in ICT, not only was it possible to decouple consumption from production but also to decouple the processes within production, which allowed to source intermediate inputs, know-how and people from different locations across the globe. This was achieved through complex production networks that could now be monitored and closely coordinated, thereby minimising risks and costs and maximising the scope for efficiency gains.

From the 1990s onwards, additional efforts to remove political and economic barriers to international trade and investment, as well as the creation of the World Trade Organization (WTO), increased the number of countries in the international trading system and further propelled the potential gains from the international fragmentation of production and its integration through cross-border supply chain networks.

Value chains: Global or regional?

Supply-chain trade is widely perceived as global in character. However, there is a growing debate in the literature as to whether this trade is taking place within regions rather than among them.

Baldwin and Lopez-Gonzalez have argued that the emphasis on this global character is largely a misconception, pointing out that the international organisation of production is predominantly regional in scope. While production is fragmented between countries, supply networks are mainly

regionally clustered. As such, most supply-chain trade takes place within 'Factory Asia', 'Factory Europe', and 'Factory North America'. Recent research has also stressed this point, arguing that the intra-regional share of global goods trade has increased by 2.7 % since 2013, with regionalisation being most apparent in global innovation value chains, given their need to closely integrate many suppliers for just-in-time sequencing. Further WTO analysis suggests that there exist clear structures within each region, with hubs leading the supply networks in different geographies. For example, the US, Germany, China and Japan are considered the main hubs in their respective regions.

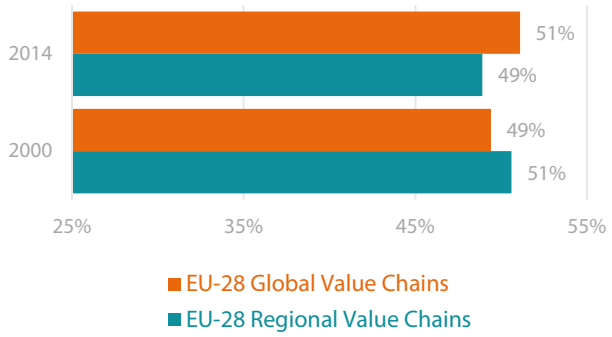
Others in the literature maintain that supply chains remain increasingly global in character. Their studies have focused on value added rather than gross trade flows,[4] thereby avoiding the double counting of products that tend to cross national borders multiple times (e.g. intermediate goods). Based on the results of their studies, such experts point to a transition from regional production systems to what has been termed the 'Factory World', where sourcing of inputs along the supply chain is not limited to regional characteristics.

For example, a research project that traced the value added of a Lenovo ThinkPad indicates that the most expensive inputs along the chain are sourced from a regionally diverse network, including the US, Japan, Europe and Korea. Similarly, out of the total value of the iPod, Apple captures the greatest portion of the value created (36 %), followed by suppliers of major components in Japan (12 %), the US (3 %), South Korea (0.4 %) and Taiwan (2 %).

Further evidence on the EU-28 suggests a more balanced picture. As shown in Figure 3, recent analysis by the WIFO indicates that EU value-chain trade is roughly equally split between regional value chains (i.e. value-chain trade only among EU Member States' producers), and global value-chain trade, (i.e. also including producers from third countries).

The WIFO analysis further points to the fact that global value-chain trade of the EU-28 slightly increased between 2009 and 2014, signalling a trend: Factory Europe is embracing a production cooperation model that is global in scope.

Figure 3 – Regional and global value-chain trade in EU-28, 2000-2014



Source: Drivers and Obstacles to Competitiveness in the EU – The Role of Value Chains and the Single Market, WIFO, December 2017.

Recent trends and developments in value-chain trade

International value chains have been constantly evolving and adapting to new global trends and developments. According to the literature, ongoing and future transformations involve both quantitative and qualitative changes.

The first and most critical change is that trade intensity within value chains appears to be weakening. This is mostly observed in complex and highly traded value chains, but the general trend appears to suggest that international value chains are reaching maturity and the pace of outsourcing observed in the 1990s is becoming difficult to repeat in the future. Critical drivers behind this slowdown are structural changes in China,[5] the unwinding of the commodity price boom that took place from 2003 onwards, and more recently – the slowing down of multilateral trade liberalisation.

At the same time, labour cost considerations – such as where to place production – that were previously central to decisions by multinational enterprises, are giving way to other emerging factors. According to the McKinsey Global Institute, multinational enterprises increasingly place more emphasis on things such as ease of access to skilled labour or natural resources, proximity to

consumers and quality of infrastructure. This may, in part, be due to the gradual wage-cost increase in emerging economies, which is eroding the cost advantage of (certain) economies in labour-intensive activities. It may also be due to an effort by multinational enterprises to respond to changes in global demand by moving from mass production to mass customisation.

Value-chain trade is also changing qualitatively. Services are now assuming a bigger role in value-chain trade. They account for about 37 % of the value that goes into traded manufactured goods. Across OECD countries, between 25 % and 60 % of employment in manufacturing firms is found in service support functions including R&D, engineering, transport, logistics, distribution, marketing, sales, after-sale services, IT, management and back-office support. In this context, the knowledge intensity of value chains is also expanding. This process of 'servicification' suggests that upstream activities, such as R&D and product design, together with downstream activities, such as branding and advertising, are acquiring an ever-increasing share of the value added, while intermediate production of parts and components and the final assembly end up with lower shares.

Moreover, global value chains have often become increasingly complex and extensive, which enhances the risk that a breakdown in one part of the chain could result in detrimental global effects throughout the chain (see box).

According to the OECD, the more firms spread their operations around the globe, the more vulnerable they become to disruption from unexpected events. Increased uncertainties have led companies to try and complement 'just-in-time' with 'just-in-case' strategies, which involves adjusting their supply chains to withstand a variety of shocks.

Looking into the future, OECD analysis suggests that the growing digitalisation of production, coupled with technological advancements, such as artificial intelligence, automation and self-directing transport, may have a strong disruptive impact on international value chains. The intensity of this change remains unclear, but it has been argued to imply a shortening of global value chains, due to the reorientation of global production back towards OECD economies. As activities become increasing automated, re-shoring of production locally could become increasingly attractive.

Box – Value chain vulnerabilities and weakest links

Close monitoring and vigorous management of supply chains are critical success factors for a production company. A change of any element along the chain may have a major impact on total trade costs and the efficiency of production as a whole. Therefore successful companies continuously analyse their production processes and supply chains and adapt them according to changes in the environment.

The vulnerability of global supply chains to the weakest links was depicted in a *Financial Times* article of 29 May 2017: a shortage of Bosch steering systems blocked the production of thousands of BMW cars, further affecting production in numerous sites in Germany, South Africa and China. Bosch said the problem stemmed from a sub-supplier based in Italy, which delivers the housing for the electric steering systems that Bosch then delivers to BMW.

Source: Nieminen, R., Puccio, L., Andre, M., The added value of international trade and impact of trade barriers, EPRS, September 2017.

These ongoing changes have important implications for the role and prospect of different enterprises, particularly smaller ones, in international value chains.

International value chains and SMEs

Value chains as a path to internationalisation

Owing to internal and external barriers posed not only by smaller scale and lower levels of sophistication but also by market failures, leading to more limited access to financing, SMEs often face greater difficulties in internationalising their activities than do larger companies. According to the European Commission's latest SME Performance Review, the majority of European SMEs have a limited stake in international trade. At the same time, SMEs dominate certain international niche

markets, where, acting as key partners to multinational enterprises, they develop new products or provide new services. For example, in 2015, 12 OECD countries' SME merchandise exports in textile, apparel and wood manufacturing represented between 60 % and 70 % of total global trade. Similarly, 70 % of total value added generated by Germany's automotive industry originates from suppliers, the majority of which come from the 'German *Mittelstand*' (SMEs).

Stronger participation in international markets through imports and exports improves SMEs' prospects to scale up their operations and grow. This does not simply happen because they gain direct or indirect access to a larger market: internationalisation creates the right conditions for SMEs to enhance their productivity, while also facilitating the spill-over of technical and managerial know-how and helping accelerate innovation. Internationalisation also facilitates the broadening and deepening of the skills set of enterprises.

International value chains therefore present SMEs with a broader range of opportunities through which they can participate more actively in global markets.

SMEs' entry points into international value chains

SMEs are generally characterised by a greater flexibility in adapting their production and by a higher capacity to customise and differentiate their products. According to OECD analysis, this allows them to respond more rapidly to changing market conditions and increasingly shorter product life cycles, giving them a competitive advantage over larger firms on international markets. However, SMEs are not a homogeneous group. They differ in terms of scale (micro, small or medium-sized), degree of market capitalisation (micro- or mid-cap), maturity and level of sophistication (start-up or scale-up) and growth levels (high-growth and gazelles). Opportunities to internationalise depend on the activities undertaken, as well as on whether SMEs operate in tradable or non-tradable sectors.

International value chains allow SMEs to specialise in specific segments of production. Instead of mastering all of the processes necessary to produce finished goods, SMEs can specialise and thus integrate into segments of global production chains. This integration on the output side can take two main forms. The first relates to direct engagement, whereby SMEs specialise in the production and export of intermediate goods. These would then feed into the production of finished or other intermediate goods in other countries along the supply chain. The second channel on the output side provides for an equally – if not more – important internationalisation trigger. This relates to the indirect export of intermediate goods. By linking upstream to larger firms within their national borders, SMEs can provide specialised inputs and supplies; such a manoeuvre gives them an indirect opportunity to overcome trade-related costs and barriers to internationalisation, and to become exporters *through* larger enterprises.

According to the OECD, direct exporters are more likely to be SMEs that produce high value-added parts and components, or SMEs that are at the forefront of technology. At the same time, SMEs specialising in certain types of services that require face-to-face interaction or have cost-based competitive advantages, would be more likely to participate indirectly, as domestic suppliers to the export sector. As mentioned earlier, the automotive and aerospace industries are useful examples in this regard, with large firms in the leading positions of the supply chain followed by many smaller suppliers that often produce highly specialised and customised parts and components.

SMEs can also realise gains on the input side, by linking to international value chains. By leveraging cheaper foreign inputs and technologies, SMEs can increase their productivity and thereby their domestic sales. A number of studies[6] in this field underscore that in order to stay competitive, firms need to have access to competitively priced and high-quality intermediates. Therefore, improving import operations is becoming increasingly critical for firms (especially smaller ones) to remain competitive, even in the domestic economy.

Opportunities and challenges for SMEs

The above information clearly suggests that international value chains can operate to the benefit of smaller firms. They allow SMEs to specialise in tasks within the chain in which they have expertise, and thereby help them to become internationalised, without necessarily competing along an entire line of activities. Specialisation facilitates direct and indirect export, and gradually opens up channels for the scaling of operations, while linkage with larger firms facilitates the spill-over of technical and managerial know-how and helps to accelerate innovation down the supply chain.

Indeed, OECD analysis suggests that strong links between multinational enterprises and their smaller local suppliers within an international supply chain tend to result in greater diffusion of knowledge and technology sourced from foreign investors. Lead firms are likely to require more and better inputs from local suppliers, offering them in return assistance in the form of know-how, technology-sharing, advance payments, etc. Alternatively, lead firms may even be in a position to provide higher-quality inputs to domestic clients, thereby further reinforcing their productivity. This relationship incentivises local suppliers to improve their methods and upgrade their technology, and perhaps also to diffuse their knowledge to local firms.

Potential gains may cover more aspects as well. Competition between local SMEs may increase and knowledge embodied in labour can be transmitted from foreign to local firms. Multiplier effects created by the SMEs themselves in support of their exporting activity would generate new orders for additional materials and services. This produces trickle-down effects along other supply chains. Finally, as the dynamics within international value chains may evolve, high-growth competitive SMEs may eventually upgrade within the chain or become lead firms in their own right.

Notwithstanding their potential, international value chains also pose significant challenges to SMEs. Gereffi, Humphrey, and Sturgeon have highlighted the importance of things such as the balance and distribution of power within the chain and the flow of knowledge between lead firms, their affiliates and other suppliers. Depending on the kind of ownership over the technology and the level of competitive dynamics in the different segments of the chain, the balance of power and knowledge may range between different value chains. Power and knowledge can be highly concentrated in the lead firm, but can also be shared between lead firms and suppliers. Each model will have different implications for the ability of smaller firms to capture value across the chain.

Moreover, multinational enterprises often set strict requirements with regard to product standards and quality. While these can be beneficial for the upgrading of SMEs' production, they can also be harder to overcome for smaller and younger firms; furthermore, the market failures constraining the development of such firms differ from those faced by large firms. Specifically, lack of access to credit and insufficient scale to support the costs of adequate R&D and training of personnel, as well as lack of lobbying power can significantly constrain smaller firms' capacity to meet the product standards set by larger lead firms.

Digitalisation, knowledge intensity and value chains for SMEs

Looking into the future, as emphasised earlier, both the rapid changes in technology and automation and the growing emphasis on knowledge intensity are likely to have a major impact on international value chains, with important implications for SMEs. As the cost and performance of digital infrastructure improve, the opening for businesses of any size to participate and compete with bigger players in global markets, previously not attainable to them, is increasingly becoming a reality.

This is particularly the case for digital manufacturing. With the dramatic expansion of computing power, ensuing capabilities have allowed for a physical decoupling of research from engineering and engineering from manufacturing. As emphasised by the World Economic Forum, this decoupling effectively means that research can be conducted in one place, engineering in another,

and manufacturing in a third, with many suppliers collaborating in different processes, all in different global locations, and with all participants linked by digital technology infrastructure.

An interesting example in this context is 3D printing technologies. Although still too costly to be widely used, and with its commercial viability under debate by some, 3D printing could have major implications for smaller enterprises globally. Scale is expected to matter less for 3D printers than for other new manufacturing technologies. As demand for customised, quickly delivered goods expands, this could lead to geographically dispersed small-scale manufacturing activity (also referred to as micro-manufacturing), whereby even small businesses can access international designs and print them locally. Effectively, this would mean substituting trade in goods with trade in services, as enterprises of varying sizes would pay for licence fees and royalties for designs.

As already stressed, digitalisation of production could also be changing the geography and extent of value chains. Increased automation is enabling some leading firms, albeit in small measure, to re-shore historically labour-intensive manufacturing activities back to high-income economies and closer to the final consumers. As emphasised by the World Bank, two well-known recent examples of this are Philips shavers in the Netherlands and Adidas training shoes in Germany. Whether this will also lead to shorter and more regionally clustered value chains, remains to be seen.

The expansion of e-commerce marketplaces further offers SMEs first-hand exposure to millions of customers globally. For instance, Amazon hosts over two million third-party sellers, while some 10 million small businesses have become merchants through Alibaba. Moreover, research by Lendle et al. found that 85 % of business sellers on eBay were engaged in cross-border sales in 2010.

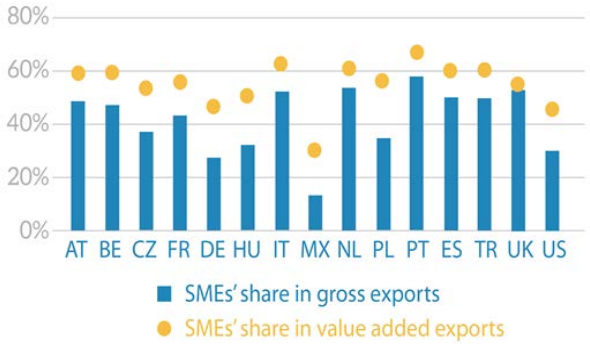
These rapidly emerging trends, where small businesses are able to reach beyond a local consumer base, are giving rise to the phenomenon of micro-multinationals: small and micro-enterprises capable of complementing their traditionally locally focused retail skills with the latest technologies, which allows them to access global markets at much lower entry barriers.

EU SMEs' integration into global and regional value chains

The majority of SMEs in the EU-28 do not engage in exporting. This is confirmed by the 2015 special flash Eurobarometer survey, which found that of all European SMEs participating in the survey, almost 44 % had engaged in exports and 52 % in imports, while 32 % had never undertaken any direct international activities. However, as indicated in the latest SME performance review, these non-exporting SMEs may, in fact, be participating in international trade indirectly through global value chains, as domestic suppliers of exporting firms. Recent OECD evidence confirms that SMEs' indirect contribution to exports is several times greater than their direct participation in exports (Figure 4).

Considering the contribution that SMEs make to exports as upstream producers, it appears that in most countries SMEs account for more than half of the total exports of domestic value added (trade in value added). Notably, the effect of including upstream SME suppliers in exports is particularly large in countries such as Germany, Hungary and Poland, where the share of SMEs in direct value-added exports is lower.

Figure 4 – Direct and indirect exports of SMEs in 2009 (as a % of gross exports)



Source: Inclusive global value chains policy options in trade and complementary areas for GVC Integration by SMEs and low-income developing countries, OECD and World Bank Group, 6 October 2015.

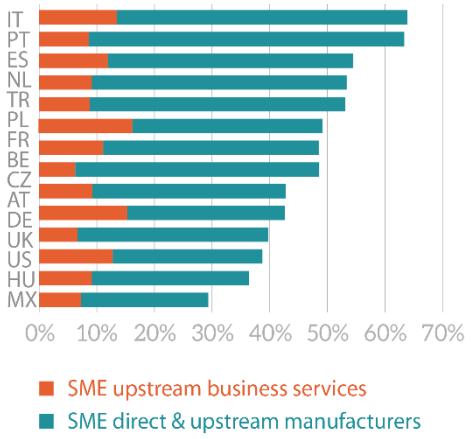
However, significant differences exist at sectoral level. For example, in Hungary despite SMEs' fairly large aggregate contribution to total exports, their share in exports of manufactured goods remained relatively low, even after including upstream inputs (indirect exports). By contrast, a recent survey undertaken by KfW in Germany found that in 2014, more than three-quarters of all German manufacturing companies with 20 to 499 employees exported directly to foreign markets.

Additionally, services play a growing role in global and regional value chains. As mentioned earlier, they create roughly one-third of the value that goes into traded manufactured goods. In the EU, data from Belgium, Germany, Spain, France, Italy and the Netherlands suggest that in 2009, SME provision of upstream business services to manufacturing exports was between 10 % and 20 % (see Figure 5 below).

With regard to the structural characteristics of European value chains, research by Statistics Denmark shows that the importance of indirect exports for SMEs varies by firm size. Data from Denmark, Finland, Norway and Sweden confirm that smaller firms tend to benefit more from foreign markets through indirect exports. For example, independent micro-firms in Sweden exported 5 % of value added directly and 24 % indirectly.

Moreover, SMEs' indirect exports tend to be sold to large firms in some EU Member States and to other SMEs in other EU Member States. A recent study by the OECD and the World Bank found that in Germany, Italy, France, the Czech Republic and Poland, more than 50 % of SME upstream exports were sold to large firms. In Belgium, Portugal, UK, Hungary, the Netherlands, Spain and Austria, the majority of SME upstream exports were sold to other SMEs.

Figure 5 – SMEs' share of total domestic value added of exports, manufacturing, 2009



Source: Inclusive GVC: Policy options in trade and complementary areas for GVC integration by SMEs and low-income developing countries, the OECD and the World Bank Group, 6 October 2015.

The position of the firm along the supply chain matters and so does its scope of specialisation. Based on survey data covering over 25 000 Italian firms in the manufacturing and the services sectors, Giovannetti et al. have found that final-good producers and firms with own-designed proprietary products are likely to gain more from supply chains than upstream firms or subcontractors.

The policy implications of international value chains

Setting the policy scene

Fostering greater SME participation in international value chains forms an integral part of overall efforts to support SMEs' integration into the global economy. Nonetheless, as emphasised by a recent World Bank report, the interlinkages and complexity in global production today, often inherent in global value chains, point to a broader range of policies along three main dimensions. These include *competitiveness*, which combines ease of doing business, rule of law, and the ability to support embedded services in goods including ICT, *capabilities* relating to workers' and firms' capacity to adopt and diffuse new technologies, and *connectedness*, which combines logistics performance and restrictions on trade in manufactured goods and trade in services.

Competitiveness can foster participation in regional and global value chains. As emphasised by the OECD, lifting product market regulations encourages the growth of the most efficient SMEs by levelling the playing field and facilitating participation in global supply networks. However,

according to UNCTAD experts, Nicita and Gourdon, technical barriers to trade continue to affect about 30 % of international trade, with sanitary and phytosanitary measures affecting more than 60 % of agricultural products.

In addition, the increased 'servicification' of global value chains also amplifies the important role of services-related policies. Restrictions on foreign ownership, movement of people and barriers to competition can have a disruptive effect on global value chains. The same is true with regard to barriers in key value-chain sectors, such as telecommunications, transport and logistics, and professional services.

Equally, policies that reinforce digital connectivity through improvements in the quality of the digital infrastructure and a lowering of the costs of access can empower smaller firms to take advantage of the digital trade revolution. In this regard, it will be critical for policy-makers to explore ways to meet key public policy objectives in a way that has the least distorting effect on trade, while at the same time preserving the benefits of a free and open internet.

With regard to capabilities, policy responses can vary significantly. Adapting to new technologies and upgrading production requires skills and organisational capital. Vocational training and lifelong education as well as business coaching are critical in this regard, as are initiatives that support SMEs in attracting talent and appropriate skills to undertake international activity. Numerous successful examples exist in this context, one such being the 'INOV Contacto' programme in Portugal. Capabilities-related interventions can also address information asymmetries, helping SMEs identify business opportunities abroad and to understand foreign product standards and trade procedures.

Connectedness can relate to overcoming both direct and indirect barriers to trade across the value chain. Intermediate inputs often cross borders multiple times, which results in a significant build-up of costs due to tariff accumulation. Equally, burdensome customs procedures can affect the cost of accessing export markets and importing intermediates. These trade costs can affect SMEs disproportionately, given their lower revenue base, as these costs would require larger inventories and working capital; this has a negative impact on SMEs' participation in global value chains.

Policy initatives at the EU level

In line with the foregoing discussion, there exist a wide range of strategic and policy initiatives at EU level that aim to support the internationalisation of European businesses and SMEs in particular. Although these efforts generally tend to address SMEs' overall integration into the global economy, the objective of their greater participation in international value chains has also entered the debate.

At strategic level, in 2011 the Commission communication on 'Small business, big world' proposed a new partnership aiming specifically to help SMEs seize global opportunities and expand their business outside the EU. The communication laid out a series of actions, including strengthening of existing support services for SMEs' internationalisation, streamlining these services to bring them closer to SMEs, and leveraging existing EU external policies and initiatives, including the EU Neighbourhood Policy Instrument and the Instrument for Pre-accession Assistance.

As regards global value chains, the 'Small business, big world' communication also provided for the promotion of clusters and networks for SMEs' internationalisation. By intensifying collaboration in this regard within and beyond Europe, the initiative aimed to facilitate the development of partnerships abroad in order to give SMEs easier access to global value chains and help them develop strategic alliances to expand commercial activities abroad. This initiative gave rise to the current cluster internationalisation programme for SMEs, which is run under the Competitiveness of Enterprises and Small and Medium-sized Enterprises programme, COSME, and has an overall budget of €19 million for the 2014-2020 period. The bulk of this initiative is the 'cluster go international' action, which encourages collaboration with a view to helping European SMEs to contribute to new industrial value chains and take a leading position globally. The programme has also led to the establishment of the European Cluster Collaboration Platform (ECCP), which facilitates cluster cooperation within the EU and helps clusters access international markets.

Beyond clusters, COSME's broader activities aimed at strengthening the competitiveness, sustainability and internationalisation of the Union's enterprises, also have an indirect impact on the promotion of SMEs' integration into global supply chains. For example, the Enterprise Europe Network helps European SMEs find the right partners to innovate and grow internationally. The EU's IPR Helpdesks provide SMEs with advice on intellectual property rights in different regions, including China, south-east Asia and Latin America. Business beyond borders is another initiative aimed at helping EU businesses, in particular SMEs and clusters, to operate internationally, by maximising the benefits of their participation in international fairs and exhibitions.

Fostering SMEs' internationalisation and thereby their participation in global value chains also forms part of efforts under the European structural and investment funds (ESIF), which can finance a whole range of SME internationalisation measures, including support to international activities of clusters and business networks and the creation of cross-European value chains. Moreover, under the Horizon 2020 programme, European businesses can seek support to internationalise through the development of partnerships, such as joint research, and through integration into technology supply chains.

Since the adoption of the 'Small business, big world' communication, a number of additional strategic initiatives seeking to foster competitiveness and internationalisation of European business, especially SMEs, have pursued market integration in the Union further. The single market strategy, launched in 2015, aims to unlock the full potential of the single market. Although global value chains do not feature directly in this effort, they permeate indirectly in a number of different actions, from facilitating cross-border provision of professional services, to helping SMEs and newly started entrepreneurs overcome barriers to grow, and to modernising European standardisation in order to address, among other things, the bundling of goods and services in single packages. Similarly, the digital single market strategy aims to address existing barriers that limit the connectedness of citizens, businesses and governments. Again, supply chains indirectly permeate different actions, from policies to realise the full potential of e-commerce, to improving conditions for digital networks and services to grow.

Looking into the future, EPRS analysis suggests that efforts supporting the digitalisation of European industry will also shift to a higher gear in 2019. To this end, digital innovation hubs will continue to play an important role, but the Commission will increasingly focus on linking them in a pan-European network to improve market intelligence and networking among firms. European standardisation will focus more on new digital technologies, which may also eventually facilitate digital connectivity across European supply chains. Further emphasis on developing mature digital industrial platforms will allow to better bridge the gap between technology building blocks and industrial applications. Digital industrial platforms can expand interconnectedness of production, using data from machines to link with third-party developers and different users. They may therefore ultimately be instrumental in transforming European technology value chains.

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ENDNOTES

1 In the context of this paper, the word 'regional' is used to denote clusters or groupings of national economies and not sub-national geographies. Among others, it may refer to the EU or Europe more generally, as well as to the Americas or Asia.

2 Vertical fragmentation of production involves numerous production plants that operate sequentially in the manufacturing of a particular product.

3 Baldwin (2016) has termed this process the *first unbundling*, which occurred roughly from 1850 to 1914 and from the 1960s onwards, when the costs of moving goods across borders fell significantly, thereby facilitating trade and globalisation. The cost of moving ideas and people, however, decreased to a much lesser extent; this led to income differences between developed and developing nations.

4 Gross trade flows include both the value of intermediate inputs and value added, which can be misleading. For example, an exported good may require significant intermediate inputs from domestic manufacturers, who, in turn, require significant intermediate imports. Therefore, much of the revenue or value-added from selling the good may accrue abroad to reflect purchases of intermediate imports for production, leaving marginal benefits in the exporting economy.

5 China's progressive integration into the world economy throughout the 1990s and its accession to the WTO in 2001 led to a boost to global trade flows via global and regional value chains. However, the post-crisis process of rebalancing from investment to consumption in China appears to have had a negative impact demand for Chinese imports, thereby contributing to the recent slowdown in global trade. (see also: P. Wozniak and M. Galar (2018).

6 See, for example, M. Bas and V. Strauss-Kahn (2015) and A. Vogel and J. Wagner (2010).

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