

# Catching-up opportunities for East Central Europe in the era of global value chains<sup>1</sup>

*Magdolna Sass*<sup>2</sup>

**ABSTRACT:** Global value chains (GVCs) have been proliferating in the world economy to involve more and more countries and industries, thus combining the comparative advantages of the participating countries. It is therefore increasingly difficult to determine how a country participates in international production. New databases, which try to trace the impact of GVCs, come to the fore. Based on these statistics, the participation of the East Central European countries, and among them Hungary is completely different from what traditional statistics show. These countries are specialised mainly in labour intensive production phases. Their geographic position, inherited capacities and skills, as well as their international economic integration explain that specialisation. GVCs shape the international environment, which deeply influences the framework conditions for the economic growth and catching-up of less developed economies. Post-crisis changes point to new factors and developments, which may change the GVCs future and thus provide challenges for countries, deeply involved in GVCs, such as the East Central European countries.

**KEYWORDS:** global value chains, crisis, East Central Europe, upgrading

**JEL Codes:** F12, F23, F63

## Introduction

Global value chains (GVCs), in which the different stages of the production processes are located across different locations, have proliferated at unprecedented speed in certain industries and sectors in the world economy. They influence developments in international production, trade and investments to a greater and greater extent. Furthermore, they create a different from the previous environment for less developed countries for their catching-up efforts. This article is aimed at presenting this development and calling attention to the changes in the catching-up opportunities

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<sup>2</sup> Magdolna Sass, BGE (associate professor) and MTA KRTK (senior researcher), sass.magdolna@krtk.mta.hu

of the countries of Central and Eastern Europe, among them Hungary, in this new environment. The article relies on the results of the international literature in order to describe and illustrate the process in question.

The article is organised as follows. First, the definitions and the theoretical background are presented. The next chapter deals with the main facts and trends in the world economy in the area of global value chains. This part is followed by a section, which underlines the main aspects from the point of view of catching-up. Then we turn our attention to East Central Europe and try to present the main findings of research concerning GVCs and delineate changing directions after the crisis. The last part concludes and contains consequences for economic policy.

### **Definitions, theoretical background, factors**

Scholars have different approaches to describe and analyse how firms organise their activities, increasingly internationally. Basically, the same phenomenon of fragmenting or cutting up the production process and locating the various activities to different locations (where they can be carried out the most efficiently or at lower costs) induced scholars to introduce concepts such as the global commodity chain, global production networks and global value chains. These describe the same phenomenon, with different analytical approaches and emphasis (for a comprehensive review of the GVC literature see e.g. Hernandez–Pedersen, 2017). We here rely on the concept of global value chains (GVCs). The value chain approach relies on the concept that the various entities, which participate in production, may be connected to each other and they create a value, which can be a source of competitive advantage (Gereffi–Lee, 2012). When the value chain becomes international, embracing locations in many countries or global, embracing locations in various continents, they can be described as global value chains (Giroud–Mirza, 2015). There are various definitions in the literature. According to The Duke University’s Global Value Chain Initiative:

*“The value chain describes the full range of activities that firms and workers do to bring a product/good or service from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer.” ... “A value chain can be contained within a single geographic location or even a single firm (think about a fruit that is grown, packaged, sold and consumed within*

*one country). A global value chain is divided among multiple firms and geographic spaces.”<sup>3</sup>*

There are various other concepts introduced in the literature in connection with GVCs. GVCs can be simple or complex based on the number of border crossings: in simple GVCs value added crosses borders only once during the production process, while in complex GVCs, value added crosses borders more than once (Wang et al., 2017). This helps us to differentiate for example “simple” offshoring or outsourcing from production, where a whole network of firms participates. A similar distinction is between “snakes” and “spiders” (Baldwin and Venables, 2013), depending on the sequence of production: in snakes, intermediate goods are sent from country to country until they are transformed into final products. In spiders, there is a network of locations, sending spare parts, components, intermediary goods to the final destination, where these are assembled together. Of course, in real life, rather a mixture of the two types are present.

Another important concept is upgrading, which means increasing value added, moving up the value chain – in the case of a specific location or firm. The literature differentiates between four types of upgrading (product, process, functional and intersectoral) (Humphrey and Schmitz 2002). There is a problem in distinguishing the four upgrading types empirically based on statistical data, but there are case studies of firms, regions or countries, which show upgrading processes and types.

Understandably, there is a difference between those types of participation in GVCs, when a firm or location mainly assembles imported inputs or when it exports intermediates for assembling elsewhere- to put it simply. That is why there is a distinction between a country’s the backward and forward participation in GVCs. Backward participation is the extent to which the country’s exports rely on foreign, imported intermediate inputs, forward participation refers to the share of domestically produced intermediates exported for use in third countries (OECD, 2013).

The theoretical background to GVCs is related to the theories of international trade. As a number of well-known authors have demonstrated it, the assumptions of classical trade theories (especially that countries trade final products; that in an industry, producers are homogenous, and they operate at constant return to scale etc.) are increasingly not fulfilled (Inomata, 2017). Most recently, the “New New (New?) Trade Theory”

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<sup>3</sup> <https://globalvaluechains.org/concept-tools>

emphasizes the role of GVCs, when they describe nowadays' international movements as the movements of or trade in tasks (Grossman–Rossi–Hansberg, 2008). Furthermore, they show the increased fragmentation of production processes (Arndt–Kierzkowski, 2001), the increased trade in intermediates, parts and components (Yeats, 1998), or the second unbundling (Baldwin, 2011), where production is cut and separated into distinct fragments, which are then spread around the globe – just to name a few from the most important concepts. Baldwin (2016) wrote about the denationalisation of comparative advantages, where there is a relocation of manufacturing activities from developed to a few developing countries, mainly China, orchestrated mainly by developed country multinationals and resulting in high growth rates in the second group of countries. According to the same author (Baldwin, 2012), in this new international production, many countries are exporting goods at a higher level of sophistication, than what would be possible based on their mix of factors of production.

In these new circumstances, where countries trade in products, which are either not final, and thus are exported for further processing in another country/countries or are only partly produced by the exporter country, it is increasingly difficult to determine, using classical trade data, how a country participates in international production. Realising that, international organisations-initiated projects for compiling new trade datasets, which are “designed to better inform policy makers by providing new insights into the commercial relations between nations.”<sup>4</sup> Relying on these new databases gives understandably more realistic results in describing the participation of various countries and country groups in international production of goods and services. When presenting the main trends in GVCs, we rely mainly on calculations, which are based on these new data.

### **Facts and trends**

Analyses based on traditional and new databases delineate the following trends concerning GVCs:

- There had been a dynamic proliferation of GVCs in the world economy until the crisis (World Bank Group et al, 2017; OECD, 2017); since the

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<sup>4</sup> <http://www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm>

crisis, data indicate a stagnation in the spread of GVCs until 2014 and the decrease in the relative shares of simple and complex GVCs at the expense of pure domestic production and traditional trade production (World Bank Group et al., 2017).

- There are more and more industries, or rather activities and more and more countries affected by GVCs (UNCTAD, 2013; World Bank Group et al., 2017).
- However, differences are significant in the levels of participation of the various countries in GVCs (Kowalski et al., 2015) and in industry or activity coverage (OECD, 2013).
- Overall, value chains are more regional than global, industry characteristics, product differences and the level of liberalisation of trade influence whether a value chain embraces regions in one continent (thus it is regional) or many continents (thus it is global) (Rugman et al., 2009; Estevadeordal et al., 2013).
- Thus, instead of GVCs, we can rather talk about interlinked and intertwined regional value chains in the world economy with three main hubs: the US, Asia/China and Europe/Germany (Baldwin, 2012; Diakantoni et al., 2017).
- This regionalism is especially true for Europe and the European Union. Germany emerges as the most “networked” hub (Diakantoni et al., 2017), where intraregional value chains were the strongest in both 1995 and 2011 and are much stronger than extraregional value chains (based on the foreign value-added content of gross exports as percent of total value added in exports) compared to Asia, Latin America or US-Canada (World Bank Group et al., 2017).
- The new foreign trade datasets offer a clearer picture compared to traditional trade data, about how a country participates in international production: for example, there are differences between RCA based on classical and new (VA) data (OECD, 2013).

### **What are the main factors promoting the proliferation of GVCs?**

The most important factor is understandably technology developments. First of all, the developments in technology have brought new, more complex goods on the market and enabled the fragmentation of the production

process and the separation of the different parts of the production process from each other. Furthermore, it is development in technology, especially ICT, which enabled firms to organise and coordinate production, in which various, even faraway locations participate (OECD, WTO, World Bank, 2014). On the other hand, technology developments made it possible to transport intermediates at lower costs to the next location, where the production process continues. (Hummels, 2007)

Thus, technology developments enable the fragmentation, separation, organisation of the production process and transportation of related intermediates or final products, involving faraway geographic regions as well. Another factor helping the spread of GVCs is the liberalisation and facilitation of foreign trade, as intermediates cross borders at least once in international value chains. Trade liberalisation can take many forms: multilateral, regional; „distant-regional” (where countries participating in a so-called regional trade agreement are far away from each other, even on different continents) or other forms of liberalisation of foreign trade, where special “constructions” (for example outward processing trade) act as substitutes for trade liberalisation (OECD, 2013). Furthermore, the deeper economic integration of countries has contributed to a great extent to the spread of GVCs – the European Union is a good example, as we saw above, in this case, very deep integration goes together with a regional organisation of production, involving member countries of the integration.

Globalisation contributed to the spread of GVCs in other ways as well: the globalisation of demand, and increased competition between companies due to globalisation induces firms to seek lower costs and/or higher efficiency to increase or at least to maintain their competitiveness. However, according to the empirical data presented by Veugelers (2013), the number of GVC lead firms is not very high, but they are the larger ones, which drive among others value added creation.

### **What factors determine how a country or an industry is affected by GVCs?**

The new databases provide information on the basis of which we can determine the main factors, which influence the extent to which countries participate in GVCs. (See e.g. OECD, 2015.) Among these, the most important are:

- Distance to the three production hubs, listed above – distant countries (mainly geographically, but in a wide sense (culture, institutions etc.) as well) have lower chances (due to high trade costs) of getting involved in GVCs.
- The level of development of those elements of the economy, which play an important role in influencing trade costs and relative wage costs (e.g. level of infrastructure, human capital, technology etc.).
- Similarly, participation in (regional) integrations and the level of the liberalisation of trade (especially with the three production hubs) is important.

Factors differ for backward and forward participation in GVCs. According to OECD (2015), especially for backward integration, structural and policy characteristics of the economies in question matter (for forward integration as well, but to a lesser extent).

As for industries: as it was already emphasized: technical-technology developments are of prime importance, as these determine how the various activities and production processes in an industry can be fragmented and separated geographically from each other. That is why in electronics, automotive or garments, GVCs are more present, but they increasingly involve activities in other manufacturing industries, and more recently even in services (for example business services) (UNCTAD, 2013). Furthermore, as it was mentioned, the level of liberalisation of trade in the goods involved matter (even “quasi-liberalisation” constructions, which enable lower cost trading in intermediates, such as outward processing trade or special economic zones).

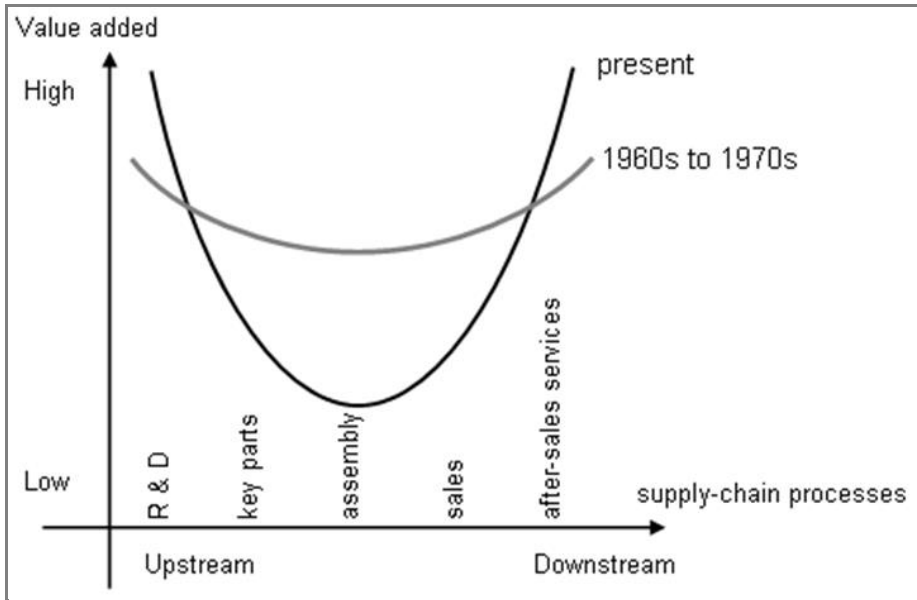
These factors explain why GVCs affect countries or locations and industries differently.

### **The importance of GVCs for catching-up countries**

As it was already mentioned, more and more countries, among them emerging economies and developing countries have increasingly been involved in the various international value chains. Furthermore, traditionally, lead firms in international value chains are usually multinationals of developed countries, and they carry out the activities, which add high value to the production process, such as R&D, design, marketing, distribution etc. On the other hand, activities adding lower values to the production process are realised by emerging and developing economy

firms, many of them affiliates or subsidiaries of the former multinationals, and a few of them independent companies. Figure 1 shows the so-called smile-curve, which tries to capture and present graphically the differences in value added alongside the GVC. Thus, it is important from the point of view of evaluating the place and location of the various activities in a GVC and thus to compare how the locations, where the various activities of the GVC are carried out contribute to the totality of the process in GVCs. As we saw, the lead firms, usually multinational companies from developed countries, concentrate on and thus retain in their home countries higher value activities, while the low-value added assembling activities are usually relocated to lower wage developing or emerging economies.

The relocation of certain processes is realised through offshoring (to own subsidiaries or affiliates) and offshore outsourcing (to independent companies abroad) (Contractor et al., 2010). As it is apparent from *Figure 1*, compared to the sixties-seventies, the smile curve has been smiling more and more as time passes. This means that differences in value-added have become much larger between the “bottom” activities (assembling, manufacturing), carried out usually in developing and emerging economies and the “top” activities at the two sides of the smile curve (R&D, design, manufacturing of high-value parts, sales, distribution, after-sale services).



*Figure 1: Smile-curve: smiling more and more?*

Source: Kwan, 2004

However, more recently, numerous firms originating from emerging or developing economies, organised and established their international value chains, which actually was one reason behind their quick emergence in the international arena (Ramamurti, Singh, 2009; Peng, 2012 for Chinese multinationals). Even a few CEE multinationals are on the way to join this “club”, as there is evidence of relocation of labour-intensive activities to lower wage countries (e.g. Sass, 2015 in the CEE electronics industry). However, developed country lead firms are still much more numerous than emerging lead multinationals in GVCs.

On the basis of the above described processes, authors call the attention to a new division of production, in which headquarter economies and factory economies participate (Baldwin and Gonzalez, 2013). However, due to the emergence of emerging lead firms from emerging economies, the group of headquarter economies have become relatively more heterogeneous over time.

This special distribution of GVC-related activities among countries at the different level of development is the reason why the development impacts of global value chains are analysed in the theoretical and empirical literature.

There are numerous benefits connected to the proliferation of international value chains in less developed countries: first of all, this makes it easier for both firms and countries to be involved in international trade, without the need to develop a complete industry base (Baldwin, 2011; Kowalski et al., 2015). Furthermore, there is a direct and indirect employment impact (UNCTAD, 2013). Less developed countries usually have a large supply of low- to medium-skilled workers at considerably lower wages compared to developed countries. Providing employment opportunities for them and for those working in ancillary industries and services is another benefit. Additionally, local(ly owned) firms may also benefit from their contacts with the lead firms or other participant firms in value chains. They may increase their productivity, move to higher value activities, get access to large markets etc.

However, these gains are not automatic (OECD, WTO, World Bank, 2014). For example, nowadays, the involvement in international value chains is different from the previous periods: it is more fragile, and provides less independence for the participating less developed firms and countries due to the high sensitivity to wage levels and thus high footlooseness of lead and participating firms. Furthermore, the jobs created in international value chains are in many cases of inferior quality (see e.g. Plank, Staritz, 2013). Furthermore, local(ly-owned) firms have limited possibilities for getting involved and after involvement for upgrading in international value chains. It happens quite often that a country or a firm get stuck at a lower level of value-added. Empirical studies show, that catch-up effects are heterogeneous concerning both companies and countries in OECD global value chains (see e.g. Criscuolo, Timmis, 2017). Furthermore, developed country firms have to deal with increased competition for the ability to control intellectual property rights related to innovation and other areas. Furthermore, it is important to note the barely researched question of ownership and GVC governance, which may matter from the point of view of the development impact of GVCs – given the home country bias of multinational companies, which is well-documented in case studies, but not found to be robust in empirical studies (Resmini, Marzetti, 2016).

Thus the consequences of the proliferation of GVCs for income distribution in the world economy or at the level of a certain country may be problematic, and this affects both developed and developing countries. First, certain groups of workers are negatively affected (e.g. low-skilled workers in developed countries: by losing their jobs and by a downward

pressure on their wages; see e.g. de Medeiros, Trebat, 2014). and second, the number and value-added of jobs is not so important any more, but their quality is what counts (World Bank Group et al., 2017). The scope and manoeuvring room for economic policy is limited, however, it can increase the benefits and reduce the costs of being involved in international value chains. This can be done mainly through investing into the enabling factors (especially in those activities, which first, support the engagement in international value chains, and then, which support and enable the various types of upgrading: education, training, skills improvement etc.). Furthermore, it can help local companies first in getting involved in international value chains, and second, in upgrading. Here however, another problem emerges: the increased use of offshore or quasi offshore jurisdictions for tax avoidance and tax optimisation purposes by GVC-related multinational companies. This leads to a considerable tax base erosion in both headquarter and factory economies, which on one hand reduces their ability to help the groups hurt by the changes, and on the other hand, to spend more on the enabling factors.

### **East-Central Europe and Hungary: participation in GVCs**

The East-Central European countries, and among them Hungary are involved to a great extent mainly in European value chains, especially in certain industries. They are now less involved in traditional labour-intensive industries, such as clothing –apparel, which are already gone except for the high value-added segments (Hunya, Sass, 2014); and more in the various electronics and automotive sub-industries. Countries differ in their specialisation in sub-industries. Empirical studies show that the export growth of Central and Eastern European countries relies to a great extent on imported inputs (OECD, 2017) and the high share of intermediates in the exports and imports of the Czech Republic, Hungary and Poland (World Bank Group et al., 2017). New datasets show how spectacularly increased electronics and automotive exports of these countries are related to GVC activities. They also underline the dominance of backward (as opposed to forward) integration of these countries into GVCs (OECD, 2013).

These countries participate especially in regional value chains, led first of all by German (World Bank Group et al., 2017) and Western Eu-

ropean multinationals, and thus they play an important role in maintaining/improving the international competitiveness of these MNCs (see e.g. Rahman, Zhao, 2013). The countries in question carry out mainly activities, which can be characterised by lower value-added, positioned at the bottom of the smile curve. However, there had been traces and signs of upgrading – at least before the crisis (Sass, Szalavetz, 2013; Demeter, Szász, 2016; Sass, 2015 in electronics). The related income transfer remained limited (Szalavetz, 2017), i.e. in spite of carrying out activities, which add higher value to the product, the local subsidiaries of multinational companies could not get a higher slice from the total value of the output. Furthermore, there was only a limited number of local firms, which could benefit in terms of becoming part of the value chain (see e.g. Pavlínek, 2015 for the automotive industry or the meta-analysis of Iwasaki and Tokunaga, 2017). Similarly, only a very limited number of CEE companies could become lead firms of international value chains (which can be proxied by the low number of multinational companies in the “GVC-affected” industries, see e.g. Sass, 2015 for electronics).

This high GVC (or rather regional value chains) involvement can be explained by the geographical position of these countries, i.e. being close to one of the “GVC-hubs”, Germany. Their inherited capacities (relatively cheap, low-to-mid-skilled labour) and their membership in a deep economic integration all contributed to their high involvement in mainly European value chains.

### **New developments after the crisis?**

After the crisis, the above listed GVC-promoting factors are still strong (or de novo strong): on one hand, technical-technological developments enabled further fragmentation of the production processes and induced further decreases in various GVC-related costs (such as ICT-costs, transportation costs etc.). While trade liberalisation has not gone further at the world economy level, there is an increased number of regional trade agreements. These are less and less regional (concluded between countries or country groups, which are geographically far away from each other – see UNCTAD (2015), which shows the increased geographical distance among the members of preferential trade agreements; and contain more and more elements important from the point of view of facilitating GVC-

related foreign trade. For example, Ruta (2017) showed, how the landscape of preferential trade agreements has changed with the dominance of agreements covering more and more policy areas. UNCTAD (2015) presented how the “depth” of the preferential trade agreements increased. Furthermore, there are new countries (and new companies) involved in GVC-related trade.

However, there are also new factors, which have come to the fore and may affect the proliferation of global and regional value chains negatively. First of all, wages increased considerably in the so-called factory countries (De Backer, Flaig, 2017). Transportation risks are also larger in certain areas, for example in Asia due to political tensions. Certain offshoring and relocation failures or increased economic nationalism may induce firms to relocate activities back to their home countries, which were previously offshored to faraway locations. And most importantly, technological advancements in the areas of digitalisation, robotisation and automation, or Industrie 4.0 in short, may induce fundamental changes in the global and regional organisation of production processes, and thus change to a great extent GVC-related offshoring and outsourcing of activities. Thus, the need to relocate activities to locations with cheaper labour force may become less relevant. There may be a reshoring (to home economies of multinationals) and backshoring (closer to the home economies of multinationals) process induced by these changes.

Some traces of this new era can already be seen in the world economy and in Europe as well. As for the world economy, World Bank Group et al. (2017) showed that the crisis basically halted the further spread of GVCs, both simple and complex ones and there has been an increase in pure domestic production and especially in traditional trade production. In Europe, as we saw, there had increasingly been established a German „headquarter economy” and East-Central European „factory economy” up till the crisis. Also, this process came to a halt, according to World Bank Group et al. (2017). Comparing foreign value added embedded in bilateral manufactured exports in 2005, 2011 and 2015, the increased “hub”-role of Germany disappeared between 2011 and 2015. The 2015 network of European production based on this measure seems to be much more similar to that in 2005 than in 2011. Another sign of the increased impact of the Industrie 4.0 can be traced in the case of the electronics industry (Sass, 2015). That may be the explanation why there is halt in the relocation

process of capacities to lower-wage member countries, which was prevalent until the crisis. Furthermore, there is a clear divergence among the “old” EU Member States in terms of the size of the electronics capacities they host. Certain high wage old members (e.g. Germany, Italy, Sweden) increased their shares in total EU electronics output and value added, mainly at the expense of other “old” EU-members (e.g. the UK or Ireland). Thus, the new focus of analysis may be the identification and explanation of these new processes and their consequences for GVCs.

### **Conclusion**

This short essay paper showed the proliferation of GVCs, or rather regional and global value chains in the world economy. Up until the crisis, they grew at a high pace and embraced more and more countries and industries. While the benefits of GVC-involvement for catch-up countries are not automatic, they can still provide an impetus for growth and development of less developed countries and the benefits can be “helped” to occur through economic policy measures.

The East Central European countries are deeply involved mainly in European, regional value chains. The spectacular growth of their electronics and automotive exports is clearly related to their GVC-involvement. Through this they contribute strongly to the improvement or maintenance of the competitiveness of Western European (mainly German) multinational companies. The development impacts of GVCs are rarely analysed in these countries. There are some signs of upgrading at the local subsidiaries of multinational companies, with no related income transfer. The impact on local firms remained limited. The experience of these countries may illustrate that GVCs provide opportunities for catching-up, but it is easy to be stuck at a lower level of value added. Economic policy and ownership may matter...

The article emphasized the changes present in the post-crisis environment, where new developments may reduce considerably the role of GVCs and regional value chains. Industry 4.0 may render it less important to relocate labour-intensive production processes to lower-wage countries, which may initiate a new reorganisation of international production.

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