

COVID-19 Implications on Global Value Chains in Bulgaria and Romania

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Abstract: - New structures formed because of the globalisation of the international economy. Global value chains (GVCs) represent a stage in the development of international production, trade, and investments. The countries of Central and Eastern Europe (CEE) are deeply involved in the European production and trade chains. This involvement stimulated the industrial base modernisation, the creation of new jobs, the expansion of export trade sectors, and foreign direct investment (FDI) attraction. Bulgaria and Romania are part of the European production model because of their inclusion in the European GVCs. Therefore, we have observed a positive effect on their export-oriented and investment policies. The pandemic COVID 19 crisis has a terribly negative effect on domestic and international economic development and growth. Because of the closure of the EU economies, the main European businesses squeezed their production, which reflected not only on the reduction of orders from major trade partners but also on the shrinking of domestic and foreign trade. These adverse effects affect the functioning of GVCs, which are likely to review their current activities and organisation of production. Under these challenging conditions, what will be the consequences for the Bulgarian and the Romanian economies?

Key-Words: European Global value chains (GVCs), European industrial model, Bulgaria and Romania GVC linkages, COVID 19 and implications on economies

JEL Classification: F12, F14, F23

1 Introduction

As new structures formed because of the globalisation of the international economy, global value chains (GVCs) represent a new stage in the development of the international production, trade, and investments. The countries of Central and Eastern Europe (CEE) are deeply involved in European production and trade chains. This involvement stimulated the industrial base modernisation, the creation of new jobs, the expansion of export trade sectors and foreign direct investment (FDI) attraction. Bulgaria and Romania are part of the European production model because of their inclusion in the European GVCs. As a result, we have witnessed a positive effect on their export-oriented and investment policies. The COVID 19 pandemic crisis has a terribly negative effect on domestic and international economic development and growth. Because of the closure of the EU economies, the main European businesses squeezed their production, which reflected on the reduction of orders from major trade counterparties and on shrinking domestic and foreign trade. These adverse effects affect the functioning of GVCs, which are likely to review their current activities and organisation of production. In these conditions, what will be the consequences for the Bulgarian and Romanian economies, which are part of the European industrial model?

2 The role of global value chains in the EU Member States of Central and Eastern Europe (CEE)

2.1 The global value chain structure

International production, trade and investment are increasingly organised within the so-called global value chains, which consist of industries located in different countries or regions. Global value chains are structures that draw on the shared capital of industrial and commercial companies in different parts of the world, benefiting from the comparative advantages of one or another country. Services that are linked to the industrial production are also part of the cross-border flows of goods, know-how, investments, services, and people involved in the production processes. The chain of interconnected production units, located in different parts of

the world, generates added value at each stage of the entire production process, from the intermediate goods to the final item.

The positive effects of GVCs on local economies are generally underlined. GVC penetration helps implement more in-depth reforms in the industries permitting the spread of spill-over positive effects on domestic sectors in terms of implementation of new industrial practices and the creation of new jobs. Production entities, parts of the international production chains, have a positive effect on a country's foreign trade boost and FDI attraction.

Although, GVCs are not a panacea for the host country economic development, as a structure acting according its interests, some high-tech information and technological communication (ICT) equipment is kept in the country of origin. Some secondary activities are established abroad, such as the production of intermediate goods and finished products, which are not of strategic economic and political importance. The external intermediate and final goods industries are as a rule of medium technological intensity and capacity. Very often the final products are re-exported back to the country of origin. In the framework of the GVCs a product can cross two and three borders until the finished item is obtained.

Global value chains are important structures in the world trade and investment process, having an impact on the economic development of the host country. Currently GVCs account for almost 50% of world trade. If GVCs activities rise by 1%, the level of the host country per capita income increases by more than 1%. It is about two times higher than the effect on the host economy during the conventional previous international trade relations.

2.2. The European GVC penetration in Central and Eastern EU countries

Initially, the GVCs from Europe involved production and trade activities at regional level since the networks were located at national level or nearby, in neighbouring countries. However, some special activities were transferred to the United States. According to R. Baldwin and J. Lopez Gonzales (2015), who study the operational activities of GVCs, the notion of international fragmented production is somewhat misleading. According to their research, value chains in the field of trade are mainly regionally positioned.

Later on, European GVCs expanded their outsourcing and offshore operations, investing in Asian economies, mainly in China, and taking advantage of those countries' comparative advantages, such as the developed industrial base, a high-absorption market, a relatively cheaper labour force, and a lack of requirements concerning labour protection and workers' rights.

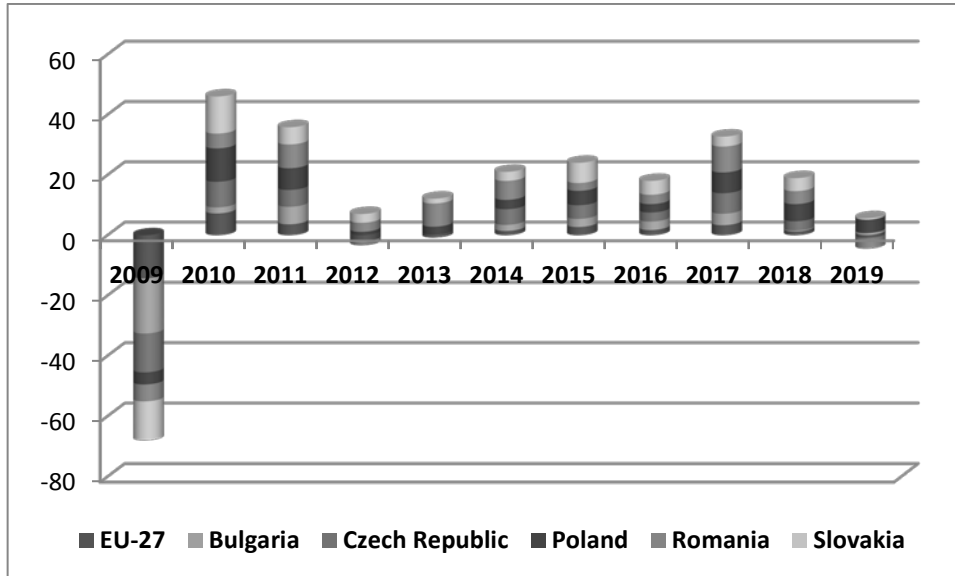
The combining effect of the opening of the Central and Eastern Europe (CEE) economies, their integration into the European Economic Area, the comparative advantages of these destinations, due to their closeness to Western markets, stimulate European GVCs in the sense of developing industrial and trade activities in the region. The comparative advantages of CEE economies are the developed industrial base, the skilled workforce, the similar production and trade traditions, the relatively lower production costs. The geographical proximity of CEE countries to Western Europe was one of the main incentives for GVC investments.

Bulgaria and Romania also became a point of interest for European GVCs, because after the EU integration and the investment risk decreased, the two countries became part of the European production and trade model. The scheme under which GVC capital transfer is carried out in EU CEE is classical – market studies, evaluation of the main FDI attraction factors, assembly of goods, transfer of industrial entities. Initially, low and medium value-added goods were produced (i.e. "average" activities were carried out). Later on, CEE located manufacturing networks fulfilled diversified industrial tasks, in relation with the economic specialisation of CEE countries, and produced higher value-added goods. Investments were made in the upgrading of more complex production chains.

Research and development centres, independent production of goods and more sophisticated activities were developed. Downstream activities, such as marketing, distribution, sales, and after-sales activities, which the international business theory as calls "functional upgrade", are also taking place. Recently, GVCs from China, Japan, and the US have been searching the easiest way to penetrate the vast market of EU countries through the CEE countries.

One of the signs of GVCs inclusion in CEE economies is industrial production growth. Following the global financial crisis (GFC), EU CEE industrial production increased in 2010 and 2017. Poland, Hungary, the Czech Republic, and Romania had the highest share in industrial production in the region. (Fig. 1).

Fig. 1: Industrial production in EU CEE countries annual growth rates 2009-2019*



*Annual rates of change for total industry, main industrial groupings and NACE divisions, calendar adjusted data, EU-27, 2005-2019

Source: Eurostat (2019).

A large share of CEE exports goes through the production chains of the EU-15 developed economies. This is a “hub and spokes” technology model, where the hub is represented the EU-15 and the spokes are the CEE countries (Cieřlik, 2014). In Europe, the hub is represented by the German-Central European Supply Chain (GCESC), which expanded rapidly since the opening of the Central European (CE) economies such as the Czech Republic, Hungary, Poland, and Slovakia. The supply chains acquired great global importance. “Labour cost differentials together with geographical proximity and cultural similarities have led many German firms to shift large parts of their production to CE countries either by directly investing there or by purchasing intermediate inputs from local firms.” (IMF, 2013)

German value chains are particularly active in the automobile industry, where increasing competition in both domestic and foreign markets has triggered a sustained process of outsourcing of manufacturing activities. According to the International Organization of Motor Vehicle Manufacturers (OICA), approximately 19% of European motor vehicle production takes place in CE countries, compared to only 9% in 2004. The opening of a plant of the French company Peugeot, which provides 900 jobs, in Trnava, Slovakia, and of a Volkswagen factory with 7,500 jobs in Bratislava (2010-2011) are an example.

European production chains established in CE are particularly active in innovative technologies (computer and electronics industry, motor vehicles). They are investing in the industrial structure and in information and communication technologies (ICT), which allow for the creation of technology clusters that horizontally, cover industries in different countries and related services. This production chain is a network for industrial production of intermediate goods at each stage of technological production. The CE average productivity in the real sector has improved. Investments in the renovation of the old industrial base increased, as did the professional qualification of workers. Global value chains from Germany and other developed economies are developing productive and trade links with CEE countries in labour-intensive industrial productions such as textiles and clothing and the food industry (e.g. in Bulgaria, Hungary, and Serbia).

3 Bulgaria and Romania and the Global Value Chains

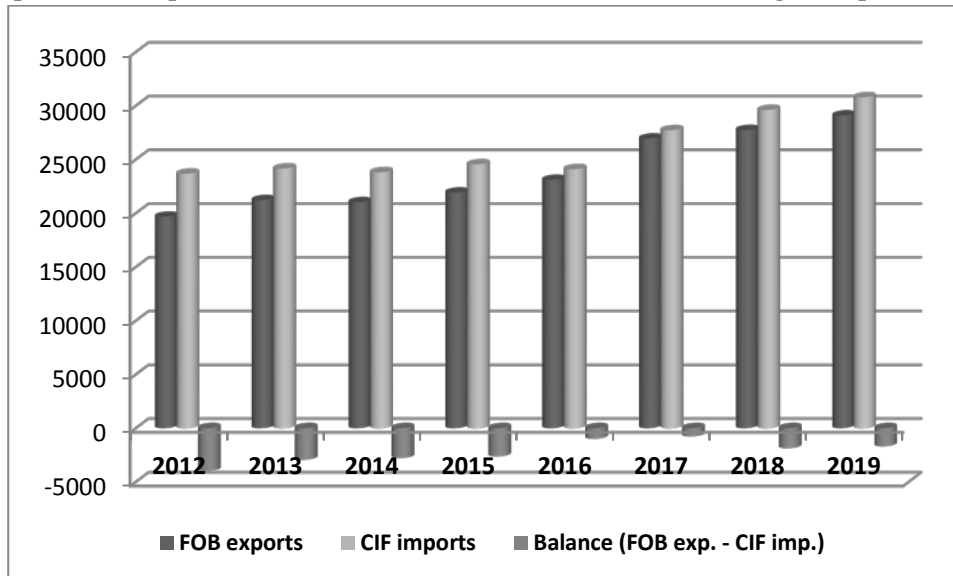
Bulgaria and Romania arise like attractive destinations for European value chains. The main determinants are integration into the European Economic Area, low production costs, diversified economy and specialisation in machine building industry, well-educated and high level of professional qualification of the labour force. The geographical proximity of Bulgaria and Romania to the EU developed economies is important and the risk of doing business is relatively low. At the same time, GVCs encountered restrictions when entering the Bulgarian and Romanian markets. For Bulgaria, limitations are due to bureaucratic obstacles towards start-ups and business creation, the distribution of added value generated by foreign affiliates, the large difference in funding for research and innovation, and the development of higher-tech industries. Similar constraints are encountered in

Romania. In addition to the difficult registration of new industries and companies, as well as the low level of research funding, there are public procurement barriers and the overall entrepreneurial policy in the country needs to be reappraised (European Innovation Scoreboard, 2020).

CEE countries are highly integrated into the Single European Market for goods and services and capital flows. They are dependent on new technological supply of equipment to overcome the information and communication technological gaps. The synchronization of economic activities between the CEE economies and the EU-15 has led to more correlated business cycles in Europe, with a positive effect on production capacity (Yosifov, 2014).

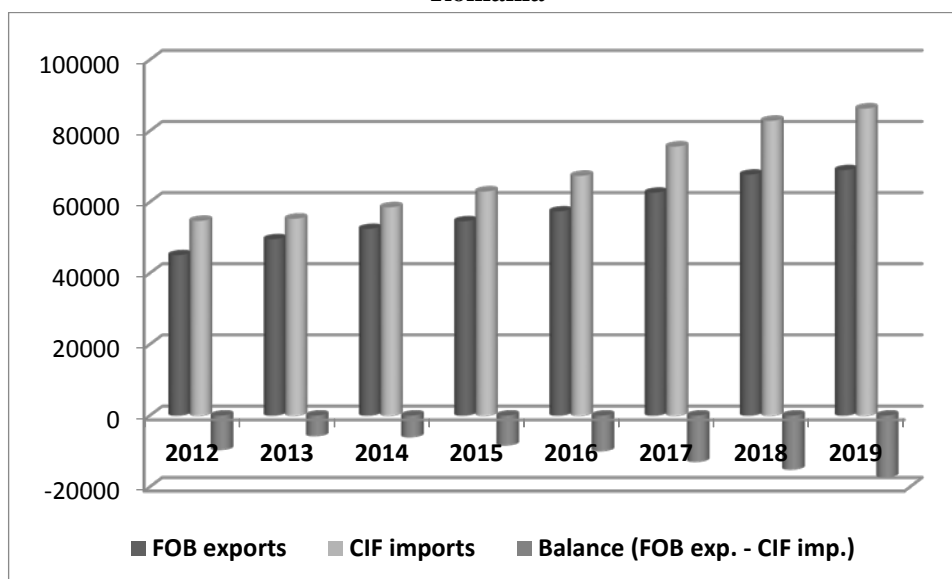
The production and trade activity of GVCs changes the foreign trade structure and increases the volumes of foreign trade flows. Bulgaria's and Romania's trade policy favours the higher integration of the international market of goods and services, mainly within the EU Single Internal Market.

Fig. 2: FOB exports, CIF imports and FOB/CIF balance of international trade in goods operations of Bulgaria



Source: National Statistical Institute of Bulgaria Bulgarian National Bank, data for the consecutive years.

Fig. 3: FOB exports, CIF imports and FOB/CIF balance of international trade in goods operations of Romania



Source: National Statistical Institute of Romania, Romania in figures, Statistical abstract for the years 2011-2020.

https://insse.ro/cms/sites/default/files/field/publicatii/romania_in_figures_0.pdf

After the European debt crisis (2010), exports of goods from Bulgaria and Romania increased, including trade in intermediate goods within the GVC. The reason for that increase was due to the enhanced number of

orders in industry from Western counterparts. Romania's trade balance is higher than Bulgaria's. However, this higher balance is a result of Romania's broader industrial base, which requires increased imports. The improvement of export opportunities for Bulgaria and Romania are an indicator for the development of export-oriented industries into the structural sectors of these economies. The production process in the framework of GVCs contributes to the countries' specialisation of the economy, where the country has comparative advantages and traditional competencies. The acquisition of new knowledge and practices contributes to the enhanced transfer of technology between the foreign European company and the host country. The involvement of Bulgaria and Romania in GVCs has an impact on the improvement of labour productivity amelioration in the real economic sector.

Bulgaria's and Romania's industrial production potential and growth are evident from the added value and the industry employment. Moreover, the number of employed people in non-financial economy are higher than in the EU-28 (before Brexit) and the total value added delivered by the CE countries is even higher (Table 1).

Table 1: Value added, employment and apparent labour productivity in manufacturing in EU CEE countries, 2016 (%)

	Value added (VA) at factor costs % of total non-financial business	Persons employed % of total non-financial business
EU28	26.6	21.4
Bulgaria	28.8	30.4
Romania	28.1	30.4
Czech Republic	39.9	35.3
Hungary	38.5	27.7
Poland	33.1	28.7
Slovakia	36.6	31.4

Source: Based on statistical data provided by Eurostat Database 2016)

Domestic and foreign value added formed by exports and imports are indicators of the production and trade relations of Bulgaria and Romania. Both economies invest more in imported value added in the production of a given product, compared to the Eurozone and EU countries. Local value-added, as part of gross exports is higher for Romania (Table 2).

Table 2: Imports content of exports, as % of gross exports total and Domestic value added in gross exports total in % for 2016 for Romania and Bulgaria

Imports content of exports, % of gross exports total, 2016 (%)	
Romania	21.6
Bulgaria	32.2
Euro area 19	16.4
EU 28	11.6
Domestic value added in gross exports total, 2016(%)	
Romania	78.4
Bulgaria	67.8

Source: WTO data concerning global value chains (2016).

The integration of EU countries in the global production and trade chains is measured by the OECD GVC index. This index evaluates both the share of imported foreign value added in a country's exports (backward linkages chain), and the country's domestic value added in the exports of other countries, as a share of total exports of the country (forward linkages).¹

¹ The level of trade in merchandise and services intermediate products is given by core measures such as foreign value added content of exports (backward linkages) and domestic value added content of partners' exports (forward linkages). Domestic value added sent to the consumer economy corresponds to the domestic value added embodied either in final or intermediate goods or services that are directly consumed by the imported economy. Domestic value added sent to third economies represents the domestic value added contained in intermediate goods or services exported to the partner economy that re-exports them to a third economy embodied in other products. This illustrates the multiple value added exchanges taking place among GVCs and corresponds to the forward GVC participation.

This indicator is divided into two parts; (1) an internal part, where the domestic industry supplies intermediate goods, and (2) an external part, where the intermediate goods are produced abroad. The index has the lowest value of 1 when no intermediate products are used to produce the final product or service, or when all manufactured goods and services reach the end user directly.

Bulgaria and Romania are involved in the production of intermediate goods for industries (part of the production of other goods for export). Some of the goods exported from the country are in turn used as intermediate goods in third countries – the rest of the world –, through the fragmented production process.

Bulgaria participates more significantly in GVCs through its industrial production and mainly as an importer of foreign goods for intermediate consumption (backward the chain). Bulgaria is classified in backward GVC integration (together with Lithuania, Estonia, Slovak Republic, Hungary, Ireland, Denmark, Luxembourg and Malta). These economies are net “receivers” of value added from the rest of the EU countries. The CEE European countries in this group are strongly influenced by the large presence of EU15 transnational companies (TNCs).

As a small open economy, the percentage of imported foreign value added in Bulgaria's exports is higher, both in imports from the EU and from third countries. Value added in intermediate goods contained in the production of goods or services are a significant component of the Bulgaria's gross export. Bulgaria is ordered among the backward linkages countries,, although this classification is not decisive, because each production process has its own characteristics. That is why in some cases, Bulgaria can be classified in the forward linkages group. The higher the value of the index is, the longer the fragmented production process. Small EU open economies with smaller internal resources, such as Bulgaria, have a high value in terms of an average length of the GVCs, meaning that the Bulgarian economy participates in industries characterised by high fragmentation of the production chain. Bulgaria's high index expresses the growing importance of export-oriented industries in the country, part of the fragmented production chain. Bulgaria is involved in this process through the automobile and textile production, the extraction of base metals, chemical products, machine building and equipment. Bulgaria's overall index is higher, mainly due to the country's high level of backward integration and diversified specialisation of the industry.

Being a country with diversified specialisation, Romania is classified in forward GVC integration (as are Germany, Austria, Sweden, France, Finland, the United Kingdom, the Netherlands, and Poland). The countries in in this group are net senders of value added, as well as innovative countries in Europe. Poland and Romania have experienced growth in their innovation indicators. Romania is classified as a country that invests more intrinsic value in gross exports (forward linkages). Romanian production of goods and services consumes less imported intermediate goods, while domestic value added is higher. Romania, as a country producing energy carriers and specialising in the automobile chemical industries and in the processing of raw materials, domestic value added is higher in exports.

Table 3: Bulgaria and Romania integration in GVCs among the 4 groups of the EU economies: Backward & Forward Linkages – All Industries – EU28

		Backward linkages – All industries – EU28						Forward Linkages-All industries-EU28					
		Foreign VA in Exports from world (%)		Foreign VA in exports from other EU28 (%)		Foreign VA in exports from RoW (%)		Domestic VA in world exports (%)		Domestic VA in other EU28 in other EU28 exports (%)		Domestic VA in RoW Exports (%)	
		2015	2015-2005	2015	2015-2005	2015	2015-2005	2015	2015-2005	2015	2015-2005	2015	2015-2005
BI*	Bulgaria	36	4	17	6	19	-2	16	3	11	3	5	0
BI	Denmark	29	3	15	0	14	3	18	-1	11	-1	8	0
BI	Estonia	35	4	20	3	15	2	17	-1	11	-1	5	0
BI	Hungary	43	-1	28	2	15	-3	16	2	12	1	4	1
BI	Ireland	40	5	19	1	21	3	12	0	7	0	5	0
BI	Lithuania	32	2	13	5	19	-2	17	2	12	2	5	0
BI	Slovakia	45	2	25	0	19	1	19	1	16	1	3	0
FI	Austria	27	1	17	-1	10	2	21	2	15	1	6	1
FI	Finland	26	-2	14	0	12	-2	21	1	13	1	8	0
FI	France	21	1	11	0	10	1	21	3	14	2	7	1
FI	Germany	21	2	10	0	11	2	22	1	13	0	8	1
	Netherlands	28	5	12	2	16	3	21	0	14	-1	7	0

	Poland	27	2	15	1	12	1	22	1	17	2	5	0
	Romania	23	-5	15	0	8	-5	21	5	16	5	5	0

Notes: * BI – Backward integration; FI – Forward integration; RoW – rest of the world;

The difference from 2005 to 2015 is expressed in percentage points.

Source: S. Comotti, R. Crescenzi, S. Iammarino, (July 2020) Foreign direct investment, global value chains and regional economic development in Europe, Final Report, European Commission, p. 25.

The Czech Republic is classified in the group of high GVC Integration (like Belgium and Slovenia). These economies with heterogeneous levels of overall economic development have a relatively high integration in EU GVCs in terms of both backward and forward linkages. The internal value added sent to the consumer economy corresponds to the internal value added embodied in final or intermediate goods or services consumed directly by the import economy.

The major industrial producing countries - Germany, France, the Netherlands, and Poland import foreign value added into the local production network. They also produce domestic value added, which accumulates in the countries' exports. This shows the high degree of their GVC integration, diversified industrial production and specialisation. Countries with low GVC integration (Croatia, Cyprus, Greece, Italy, Portugal, Spain and Latvia) are relatively less integrated and more dependent on rest of the world with respect to both backward and forward linkages (Table 3).

Table 4: Summary innovation index of Bulgaria and Romania

	Relative to EU 2019 in 2019	Performance relative to EU 2012 in	
		2012	2019
Bulgaria	45.4	42.3	49.5
Romania	31.6	40.2	34.4

Source: EU European Innovation Scoreboard 2020, Bulgaria, Romania.

Bulgaria and Romania are classified as *modest innovators* and their goal is to enter the group of "moderate innovators". Fast-growing enterprises in innovative sectors, employment impacts, and intellectual assets are the strongest innovation dimensions for Bulgaria. On the other hand, finance support, attractive research systems and innovators are the Bulgarian weakest innovation dimensions. According to the European Innovation Scoreboard, it is difficult for Bulgaria to move towards moderate innovators, despite the positive contribution of the strategy for the identification of thematic areas for economic development of firms, the innovation niches at regional level and the corresponding focus on financial resource.

Bulgaria's performance in 2019 increased compared to that of the EU in 2012. Romania recorded a decrease in the innovation index performance in 2019 compared to EU 2012 level, despite the innovation-friendly environment and the increase of export. Broadband internet penetration and medium and high-tech exports of good are indicators, which are close to EU average. Romania's lowest scores are recorded in terms of innovations by small and medium enterprises (SMEs) with marketing and organisational scope.

The number of patent applications filed with the European Patent Office (EPO) grew by 4.6% reaching a high of 174.317 in 2017 (EPO Annual Report 2018). Transnational corporations from European countries also fuel this growth. Germany is the leading EU member in the patent field, has increased its annual growth rate of number of patent submissions by 2.9% in 2018 (Patent Cooperation Treaty, 2020).

More requests have been made by EU CEE countries for European patents in the last years than traditional innovating EU countries. Romania, Bulgaria, Poland have had increasing numbers of submissions since 2010. The number of patents in 2018 as designed by office and by country of origin for Bulgaria is 4 and 99, and for Romania – 20 and 109. (Patent Cooperation Treaty Yearly, 2020)

4 Impact of the COVID-19 pandemic crisis on GVCs - consequences for Bulgaria and Romania

A significant shock on the organisation, management and operation of production chains has occurred because of the COVID 19 pandemic crisis. The main blow comes from the closure of small and medium-sized enterprises (SME) and of the activities of larger enterprises in various sectors in an attempt to stop the spread of the COVID 19 infection. European value chains producing motor vehicles, pharmaceuticals, computers, electronics located in Bulgaria and Romania severely limited production due to the disruption of supply chains of intermediate goods and services. Material disturbances are looking at a length of one month to 3.7 years Entire industries, apart from those involved in the production of anti-infection products and medicines and health products are facing the challenge of overcoming the decline in production due to the freezing of orders and the

shrinking consumption. On the other hand, the medical equipment industry and drug production are sensibly on the increase. The crisis also did not disrupt inputs in the industries for assembling sophisticated machines, the final production of which is located in developed economies.

EU measures for combatting the fall in industrial production at the national level and for social support for business and workers and other aids are insufficient because funding for companies cannot compensate their normal gains from economic activities.

COVID 19 has a negative impact on GVC activities and it was obvious that there was a need to redefine the concept and the role of GVCs in the international economy. The WTO underlines a fall between 13% and 32% of countries' export, while UNCTAD estimates a FDI contraction of 30% to 40% during 2020 -2021.

The COVID-19 pandemic crisis shows the vulnerability of GVCs as a complex structure and the danger of the global fragmentation of the production process. Even when the infection was concentrated in China, European producers experienced problems in the industries, due to the delay and/or suspension of supplies from China. This led to a restructuring of European production chains, which limited their investments in Asia to a certain extent, in particular in China, and relocated some industrial activities and services back to Europe.

It has become apparent that there are goods and services that cannot be managed on a market basis. Food, health protection and the goods that accompany it, as well as the standard of living, cannot be governed by the will of structures of unknown capital origin, as it was emphasised by French President Emmanuel Macron. His call aimed to preserve the main vital industries at national level to avoid external adverse influences and shocks.

Within the European institutions, politicians are rethinking the reorganisation of economic and industrial activities. This is essential for building sustainable societies that are better able to withstand extreme events, health-related or natural disasters. Rethinking EU policy decisions concerns the structure of GVCs and the dangers arising from the fragmentation of the production process. *This means that the EU should consistently reorient its overall vision and policies to reduce the length and the complexity of GVCs to regionalize part of trade flows and to limit the relocation of businesses to third countries.*

The existence of significant measures to counter the COVID-19 pandemic crisis entails political consensus in Europe and world-wide. There are different economic and geostrategic goals at national and regional level in relation to GVC policies, which will most likely have a negative impact on the growth of international trade.

Depending on the dynamically changing international economic and political environment and in the context of the COVID-19 pandemic crisis, future additional costs will arise, which will limit the internalisation of production and the growth of international trade. Changes in international trade and investments have an impact on GVC expansion and activity, which will change over time. The reorientation of GVC policies towards investments at national and regional level, as it was the case in the early years of GVC expansion, may have impacts for the enlargement of GVC production in Bulgaria and Romania and the enhancement of their industrial and trade capacities.

5. Conclusion

The Covid-19 pandemic crisis led to an unprecedented contraction of the global and regional economy. This calls for a full reconsideration of available public policy options to support and relaunch economic growth and employment in a sustainable and equitable manner in all EU regions, and in Bulgaria and Romania. Coordinated multilevel evidence-based public policies are essential for GVCs and FDI to support recovery. Targeted interventions are crucial to rebuild investor confidence and maintain the ecosystem conditions required for FDI retention.

This is particularly relevant to modest innovators like Bulgaria and Romania, when considering the operationalisation of GVC concepts to guide their network policy at regional level.

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