



TOPICAL RESEARCH AND HIGHLIGHTS

BULGARIA'S POSITION IN THE GLOBAL VALUE CHAINS

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BULGARIAN NATIONAL BANK

Bulgaria's Position in the Global Value Chains

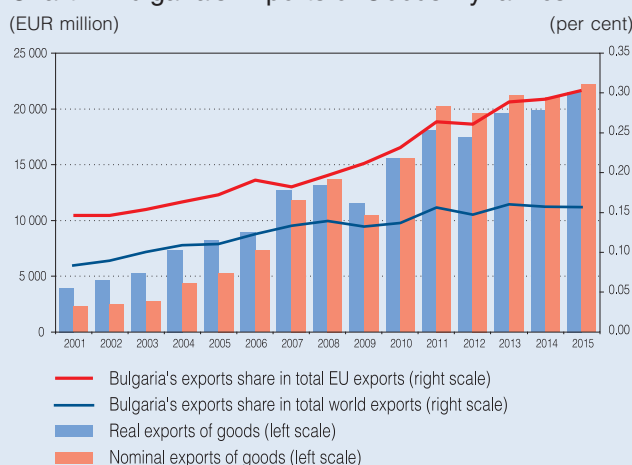
The interest in countries' participation in global value chains (GVCs) is enhanced by the increasing fragmentation of production processes and the increasing movement of intermediate products across countries in the context of high degree of globalisation. The global value chains (GVCs) involve all the activities that firms engage in, at home or abroad, to bring a product to the market, from conception to final use¹. GVCs encompass the entire process required to convert raw materials, labour and capital into intermediate products and final goods. With the expansion of the GVCs countries tend to specialise in specific business functions such as assembly operations, logistics or research rather than in specific industries. The complexity of GVCs varies depending on the product's characteristics and the expenses related to the fragmentation of the production process into stages across different countries. Each country has a certain degree of participation in GVCs as it uses imported goods as inputs in its exports and part of the country's exported goods are used as inputs in third countries.

The active participation in GVCs helps enhance productivity and competitiveness, as it allows for specialization in those parts of the production chain in which a given country or a firm is most effective. Furthermore, the participation in GVCs is a factor facilitating the integration and sustainability of a country's exports and is the main channel for technology and knowledge transfer.

This analysis examines Bulgaria's position in GVCs, taking into account the strong performance of exports between 2000 and 2015 and the increase of the country's market share in world trade and EU trade (see Chart 1). For this purpose, data on the production and distribution of value added based on international supply and use tables (SUTs) have been used (OECD Global Value Chains Indicators database² and OECD TiVA database³). Bulgaria is compared to a reference group that covers several types of economies, according to the different specialisation in GVCs. The reference group chosen consists of the other new EU Member States,⁴ Bulgaria's key trading partners and at the same time a sample of developed economies (EU), natural resource exporters (Russia), large developed economies (the US), large developing economies (China) and technologically advanced economies with limited natural resources (Japan).

The main indicator that shows the level of a country's integration in the GVCs is the participation in GVCs index. The participation in GVCs index measures the share of the imported (foreign) value added incorporated in a country's exports (backward participation) and the domestic value added of the country incorporated in the exports of the other countries as a share of the total exports of this country (forward participation)⁵. The higher each of these components, the higher the participation and integration of the country in GVCs. Using this index we can identify the degree of Bulgaria's par-

Chart 1: Bulgaria's Exports of Goods Dynamics



Sources: NSI, Eurostat, AMECO, own calculations.

¹ OECD (2013) 'Interconnected Economies: Benefiting from Global Value Chains', Report, p. 8.

² Available observations for 1995, 2000, 2005, 2008, 2009.

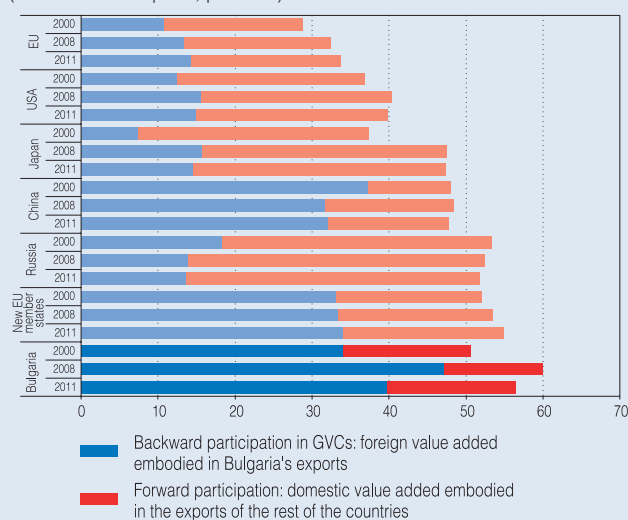
³ Available observations for 1995, 2000, 2005, 2008, 2009, 2010, 2011.

⁴ This group comprises the countries from Central and Eastern Europe which joined the EU after 2004: the Czech Republic, Estonia, Croatia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia. These countries have been chosen for the comparative analysis due to their similar economic and historical development to that of Bulgaria.

⁵ Koopman, R. et al. (2010) 'Give credit where credit is due: Tracing value added in global production chains', NBER Working Paper Series 16426.

Chart 2: Participation in GVCs across Countries

(share of total exports; per cent)



Sources: OECD TiVA Database October 2015, own calculations.

participation in GVCs as importer of foreign products used as inputs for exports and exporter of products used as inputs in other countries' exports.

The general GVC participation index for Bulgaria is higher than that of the other countries in the reference group (Chart 2) which is due mainly to the high degree of Bulgaria's backward participation. Being a small open economy Bulgaria uses more foreign products as inputs in its exports than big economies such as the US and the EU. The large dependency on foreign inputs of the Bulgarian participation is even more evident when comparing it with a natural resource exporter such as Russia Bulgaria's increased backward participation is likely to prove favourable for the country. Studies show that an increase in foreign value added leads to a subsequent increase in the value added created in Bulgaria⁶ and that foreign value added in exports is a

major channel of productivity increases through knowledge and technological transfers⁷.

Bulgaria's GVC participation index,⁸ both in terms of intensity and structure of participation (dominant backward participation), is close to that of the new EU Member States.

In the 2000–2008 period all countries in the chosen reference group recorded an increase in their GVC participation except Russia. This is a sign of an enhanced vertical specialisation of production.⁹ Bulgaria saw the most pronounced increase in GVC participation and this could be associated with Bulgaria's EU pre-accession period and the deepening of Bulgaria's participation in EU GVCs.

Although the global financial crisis resulted in delayed GVC integration, the average GVC participation values in Chart 2 point to signs of recovery in 2011. Bulgaria's GVC participation in 2011 is less pronounced compared to that in 2008. Nevertheless, an increase in Bulgaria's forward participation is observed, showing that Bulgaria is becoming increasingly integrated as a country exporting products involved in other countries' exports (Bulgaria's participation with regard to the added value generated in the country is increasing). In 2011 Bulgaria still had the highest GVC participation index as compared to the rest of the countries in the reference group which shows the high degree of its integration in GVCs.

An industrial breakdown of the participation index shows that Bulgaria is mostly active in GVCs in the processing sectors of the manufacturing industry and mainly as an importer of foreign intermediate products (backward participation). By 2011 basic metals, chemical products and machinery and equipment had established themselves as the sectors with the highest participation index for Bulgaria. Although Bulgaria's participation in GVCs in these sectors is determined by the share of foreign value added in the country's total exports, the indicator shows an increase in Bulgaria's forward participation compared to 2008. This is evidence that Bulgaria is moving towards integration in supply chains in technology intensive sectors with higher value-added production.

To determine the way in which a country is integrated in GVCs and the potential benefits of its participation therein, it is necessary to examine the degree of fragmentation of the GVCs in which this coun-

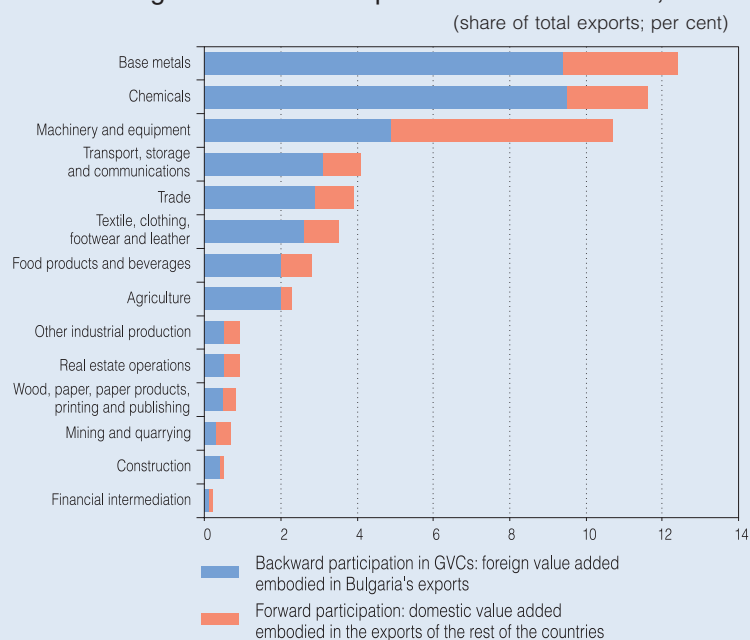
⁶ IMF (2013) 'Multi-Country Report', IMF Country Report No. 13/263.

⁷ Van der Marel E. (2015) 'Positioning on the Global Value Chain Map: Where do u want to be?' ECIPE Occasional Paper No. 01/2015.

⁸ To be referred to as the average for the new EU Member States.

⁹ Di Mauro, F., Plamper, H., Stehrer, R. (2013) 'Global Value Chains: A Case for Europe to Cheer up', Competency Policy Brief, ECB p. 3.

Chart 3: Bulgaria's GVC Participation across Industries, 2011



Sources: OECD TIVA Database October 2015, own calculations.

try participates. The OECD indicator of the length of GVC shows the number of production stages in the chains in which a country participates necessary for a good or service to reach final consumption. Two parts can be distinguished in the length of GVC indicator: a domestic one, where the intermediate products for the production of final goods or services are produced on the domestic market and an international one, where the intermediate products are produced on the foreign market.¹⁰ The index takes its lowest value of 1 when no intermediate products are used for the production of final goods and services or when all produced goods and services reach directly to the final consumer. The higher the index value, the greater the fragmentation of the production chains in which the country participates, and in case of

more than one production stage the index registers values greater than 1.

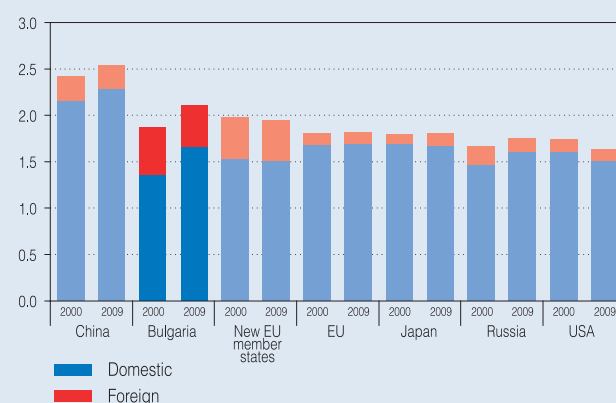
The average length of global value chains in which Bulgaria participates is one of the highest in the reference group which relates to the fact that Bulgaria has a high GVC participation rate especially in sectors with highly fragmented production. The indicator shows that both in Bulgaria and in the rest of the countries from the chosen reference group intermediate products with which each of the countries participates are produced mainly on the domestic market (dominant domestic part of GVCs). At the same time, Bulgaria and the new EU Member States are the countries with the highest foreign share of GVCs as they have limited ability to maintain a large number of stages in the GVCs unlike large economies such as the US and Japan.

The relative importance of intermediate products manufactured on the external market for the participation of Bulgaria in GVCs can be explained by Bulgaria's increased backward participation in GVCs.

The index values in Chart 4 show that the average length (fragmentation) of the chains in which Bulgaria participates had increased in the period 2000–2009 as opposed to that of economies such as the US and Japan. This significant increase in the index for Bulgaria is the result of the growing importance of industrial production for the country's exports, as this sector is characterised by high fragmentation of the production processes.

The position of a country in GVCs could be determined based on whether the country produces raw materials used in the beginning or at the end of the production process. This could be established

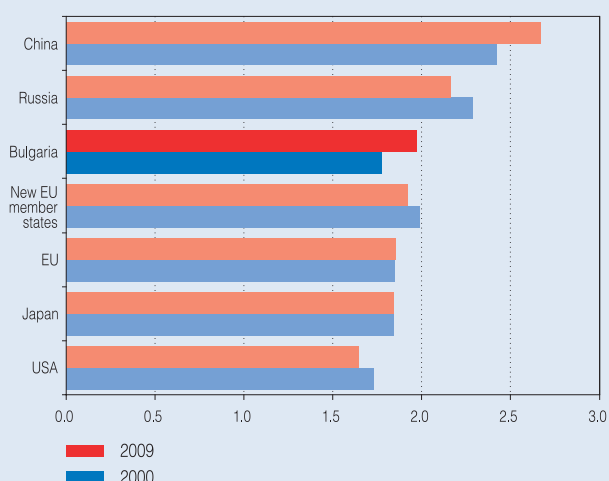
Chart 4: Average Length of GVCs



Sources: OECD Global Value Chains Indicators database, own calculations.

¹⁰ Fally, T. (2012). 'Production Staging: Measurement and Facts, University of Colorado – Boulder, May.

Chart 5: Distance to Final Demand

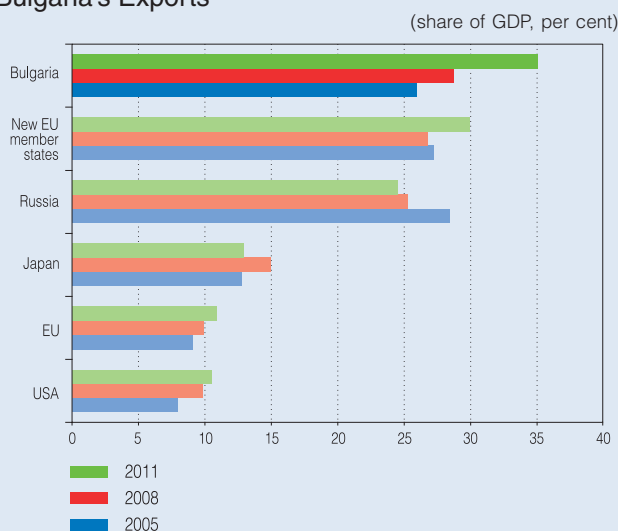


Sources: OECD Global Value Chains Indicators database, own calculations.

countries in this group which have higher values of this index are China and Russia. This can be attributed to China's specialisation in processing and assembly operations and to Russia's role as the main exporter of natural resources used at the beginning of the production processes.

The low share of the domestic value added in Bulgaria's exports compared to the foreign value added together with the relatively high remoteness from the final consumer pose the question of whether Bulgaria manages to obtain sufficient economic benefits of its active participation in GVCs. The ratio of domestic value added in exports to the gross domestic product of the country suggests that the economic benefits for Bulgaria should be more significant than for the other countries in the

Chart 6: Domestic Value Added Embodied in Bulgaria's Exports



Sources: OECD TiVA Database October 2015, NSI, own calculations.

by using an index showing the distance to final demand¹¹. The said index measures the number of production stages left before the goods and services reach the final consumer and is indicative of the production specialisation of individual countries. Upstream countries which specialise in the production of raw materials are at the beginning of the chain and have high values of the distance to final demand index. Downstream countries are closer to final consumers and are characterised by lower values of this index.

The distance to final demand index shows that Bulgaria, similarly to the new EU Member States, has a high degree of remoteness to final consumption. This indicated that Bulgaria specialises largely in the production of resources used at the beginning of the GVCs compared to most of the countries in the reference group. The only other

reference group as this ratio was highest in Bulgaria (see Chart 6). This can be explained by the relative importance of external trade for each country: domestic value added in exports for Bulgaria is relatively small, but the volume of exports relative to the size of the economy is larger than that of the rest of the countries in the group. As a result, domestic value added in exports to GDP ratio for Bulgaria is higher regardless of the lower domestic to foreign value added ratio.

The significant increase in the ratio of domestic value added in exports to GDP in Bulgaria observed between 2005 and 2011 (see Chart 6) coincides with a period of increased participation in GVCs and rising export volume. Therefore, it can be concluded that increased exports resulting from Bulgaria's deeper integration in GVCs have stimulated the generation of domestic value added, which in turn has boosted investment and demand for labour.

¹¹ Antràs, P., D. Chor, T. Fally and R. Hillberry (2012). 'Measuring the Upstreamness of Production and Trade Flows', American Economic Review, Vol. 102, No. 3, pp. 412–16; Fally, T. (2012). 'Production Staging: Measurement and Facts', University of Colorado – Boulder.

THE SCULPTURAL COMPOSITION BY KIRIL SHIVAROV DEPICTING HERMES AND DEMETER ON THE SOUTHERN FAÇADE OF THE BULGARIAN NATIONAL BANK BUILDING IS USED IN COVER DESIGN.