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LABOR COSTS AND LOCALIZATION IN GLOBAL VALUE CHAINS: COMPARATIVE ANALYSIS AND CONCLUSIONS FOR POLAND

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Abstract: Labor costs in Poland are relatively low in comparison to other European Union (EU) countries. After long period of functioning Poland in closed economy, conditions significantly weakened the level of its competitiveness in the international market. When the boards were opened in 1989, it became clear that cheap work force was one of the most important factors to attract foreign investments. At the same time, globalization and internationalization of production created opportunity for entrepreneurs to establish global value chains. Participation in global value chain (GVC) of Poland can extend international trade and increase gross domestic product (GDP). On the other hand, low wages attract investments in low-technology industries and, moreover, place Poland in the middle of value chains, where semi-products are assembled and new value added is exiguous. The aim of the article is: 1) to present polish participation in global value chain, 2) to analyze how much low labor costs contribute to degree of share in global value chain, and 3) to show how level of labor costs contribute to position in value chain and how does it influence on benefits from participating in GVC. In the article, the quantitative and qualitative assessment of Eurostat (European statistic) and Organisation for Economic Cooperation and Development (OECD) statistics data and research on labor costs carried out in Poland were analyzed. The research tools include a critical analysis of literature and descriptive analytical method. More than 50% of polish exports takes place within the global value chains. Low labor costs attract investors to allocate part of their production in Poland. Nevertheless, great part of export constitutes semi-products that do not create new value added so benefits from participation in GVC are not so considerable as expected. It is desirable to shift Poland toward beginning or the end of value chains, where profits are higher.

Keywords: labor costs, wages, global value chains, value added, value added in trade, Poland.

JEL: F16, F43, J38.

1 Introduction

Relatively low labor costs in Poland, in comparison to other EU countries, are considered as important factor of international competitiveness. In Poland, many researches that usually feature the negative relationship between labor costs and foreign direct investments were carried out: the lower level of unit labor costs (ULCs), the higher level of foreign direct investment (FDI). Low labor costs are also perceived as important element of cost competitiveness. Meanwhile, many researches stress that in the times of high trade internalization and easiness of technology flow, cost competitiveness losses its position in favor of quality competitiveness (Carlin, Glyn, and van Reenen, 2001; Storm and Naastepad, 2014). Moreover, popularization of defragmentation of production process to find the best place to optimize it,

contributing to the creation of global value chains. GVC encompass every stage of goods production or services, starting from conception, through middle stages such as acquiring raw materials, intermediate age of assembly, distribution, service, final assembly, and ending on post-sale service (De Backer and Miroudot, 2015). In contrast to classic trade theories, specialization does not consider specific products but rather tasks, functions. This is called *trade in tasks*. In the aftermath, in the past years, there is noticeable increase in semi-products trade, even greater than final products trade. As a consequence, it is assessed that more than 50% of polish trade is within GVC.

Low labor costs in Poland are commonly regarded to be the main reason of growing participation of polish trade in GVC. The problem is that great share in global value chains does not ensure equally great profits.

The main category that should be taken into attention is value added. Not every stage of production process generates the same value added. Only at the

beginning and at the end of value chain, value added is high. In the middle, value added is the lowest (Fig. 1).

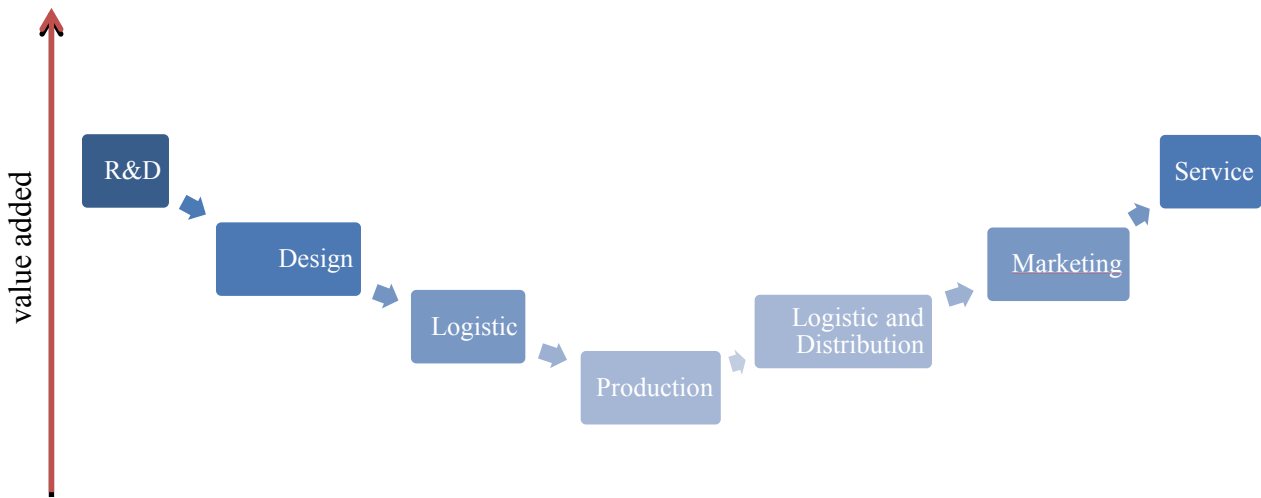


Figure 1. Elements of global value chains via value added
(Source: Own studies based on: Ścigała, 2014)

Countries in which semi-products are assembled (such as Poland) do not create much value added, so the influence on GDP is low. Moreover, export indicators are overestimated, because of high share of imported semi-products. That is why OECD in collaboration with World Trade Organization (WTO) created a database called Trade in Value Added (TiVA), which accommodates those data that influence and have relations in international trade. This article provides analysis of those data to:

- 1) present Polish participation in global value chain;
- 2) analyze how much low labor costs contributes to the degree of share in global value chain;
- 3) show how level of labor costs contributes to position in value chain and how does it influence on benefits from participating in GVC.

Time lag encompasses mainly 2000–2011 because of data availability.

2 Labor costs and value added in Polish export – the structure

Poland has relatively low ULCs (total labor costs per hour worked) in comparison to the EU countries (see

Fig. 2). In 2017, the average annual ULC was 9.2 EUR/hour worked, whereas the average for whole European Union was 24 EUR/hour worked. That is why many researches constitute that it is in favor of attraction of foreign direct investments (Wawrzyniak, 2017; Gryczka, 2018; Pilarska, 2006). But as of the many authors suggested, such connections are especially noticeable in manufacturing sector. Moreover, some analysis showed that besides manufacturing, such connections are statistically insignificant (Ertman, 2017).

The fact is that low labor costs connected with high quality of labor force attract foreign investors. This gave Poland a chance to increase the level of participation in international trade within GVC.

The separate issue is a matter of profits from this participation. Low labor costs attract investors who are looking for cutting costs in the fastest and simplest way. That is why most of Polish participation in GVC is confined to assembling semi-products and shipping them abroad (Kuźniar, 2017). To increase the share in more profitable parts of chain, such as design or post-service, there has to be assured high- or, at least, medium-technology infrastructure.

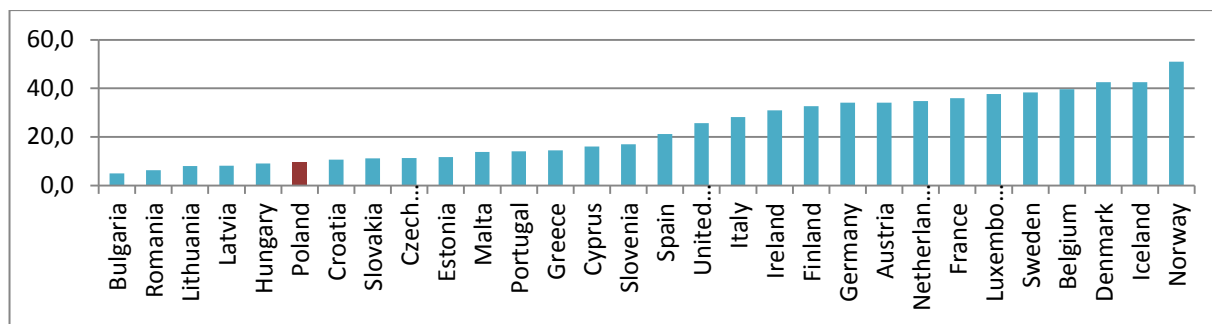


Figure 2. Unit labor costs in the EU countries in 2017 (EUR/hour worked)
(Source: Eurostat, 2018b)

The main indicator of gains from GVC is domestic value added (DVA) in gross exports, because it effectively influences the level of GDP and eliminates the problem of double counting products, which

cross borders twice – once as a semi-product and again as a final product. The changes in the share of domestic and foreign value added (FVA) in exports of Poland are presented in Fig. 3.

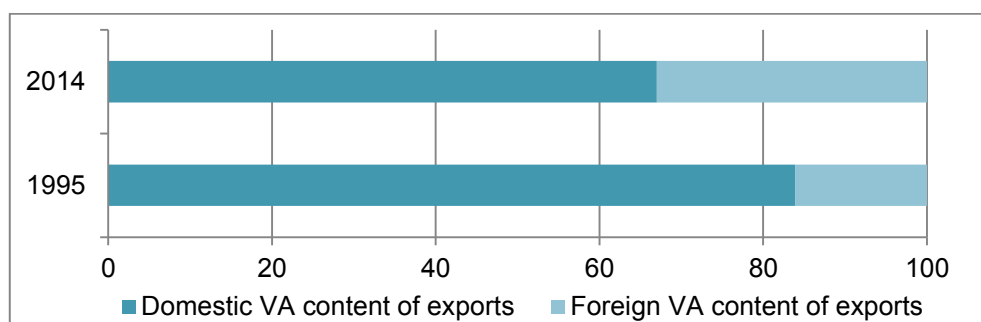


Figure 3. Domestic and foreign value added content of Polish exports in 1995 and 2014
(Source: OECD, 2019)

In a period of 20 years, DVA in Polish exports markedly decreased. In 2014, it constituted hardly more than 60% of total VA. This signals significant increase in import's absorptivity of Polish exports. Simultaneously participation in GVC expands.

If tendency would continue, it might indicate that position of Poland in GVC is going worse. It is obvious that responding to world competitiveness, imports of some semi-products are necessary to ensure high quality of exported goods. Nevertheless, taking into account the size of Polish economy and relatively low level of value added per capita, declining DVA may stand for clear imperfections and anomalies in export structure (Ścigała, 2014).

The model of Poland's participation in global value chain is based on the import of foreign technologies, raw materials, and using them in labor-intensive sectors that generate the lowest value added

(Gołębiowska, 2017). It may be connected with attracting foreign investors to those sectors with low labor costs, which are connected with computation and assembling semi-products.

What is more, these are at most low- or middle-technology goods. Increasing participation in global value chains based only on low labor costs can then be dangerous because of decreasing DVA, perpetuation of low and middle technology, and the risk of transferring investors to other countries with lower cost of production.

Enhancing participation in global value chains should, therefore, be based on supporting those sectors that create the most value added such as research and development (R&D) or service.

In 2015, most of FDI inflows in Poland were located in repair of vehicles and manufacturing sectors, and the difference was dramatic (Fig. 4).

Half of the entities with foreign capital were established in those two sections. At the same time, ULCs in those sectors were under the average of Poland,

at about 6–7 EUR/hour worked. It leads to assumptions that low labor costs attract foreign investors.

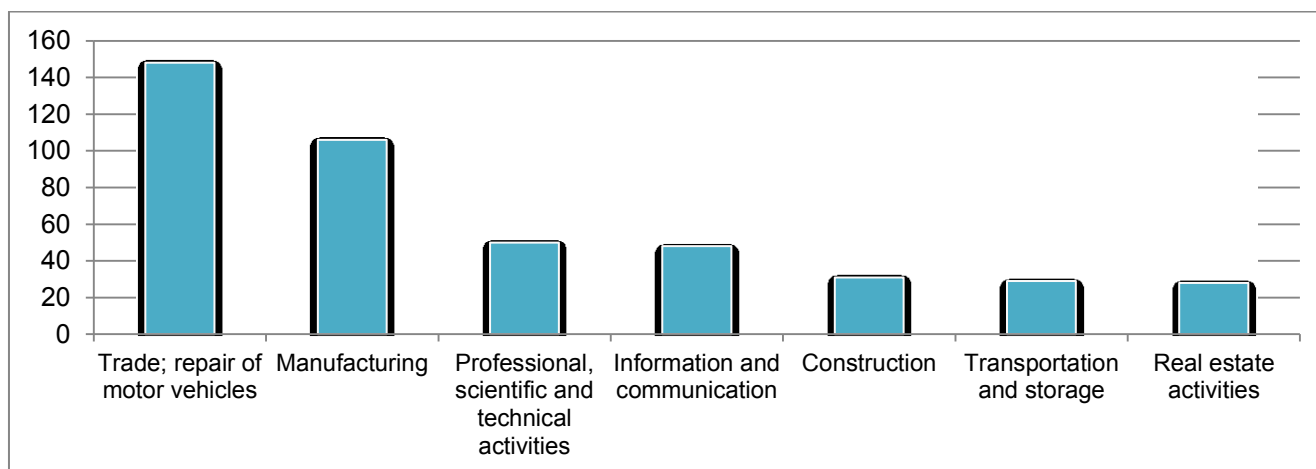


Figure 4. Entities with foreign capital established in 2015 by NACE (*fr.* Nomenclature statistique des Activités économiques dans la Communauté Européenne) sections
(Source: GUS, 2016)

Nevertheless, those same sectors are characterized by high share of FVA in gross export (Table 1). That means, Poland is in the middle of global value chains and almost half of the exported value added from produced goods belongs to foreign investors. The capital coming from the following three countries constituted half (50.8%) of the foreign capital invested in manufacturing: the Netherlands, Germa-

ny, and Luxembourg. With regard to trade and repair of motor vehicles, more than 50% of the capital came from two countries: Germany and the Netherlands. More than 90% of foreign capital came from the EU member states. Poland has built a reputation as a regional production hub for automotive parts and accessories.

Table 1. Unit labor costs and foreign value added in gross export in the sectors with greatest number of FDI entities in 2014
(Source: OECD, 2018; Eurostat, 2018b)

Sectors	ULC	Percentage share of foreign VA in gross export
Wholesale and retail trade	6.6	0.13
Motor vehicles, trailers, and semi-trailers	6.6	0.49
Manufacturing	7.4	0.37

The structure of polish export in matrix of technology sophistication in comparison to other EU countries is disappointing. The average of the EU share of high-technology products in gross export is 17.8% (Fig. 5).

Poland, with 8.5% in 2017, is below the median of the European countries. The economies with the highest index are Ireland, Malta, the Netherlands, and France.

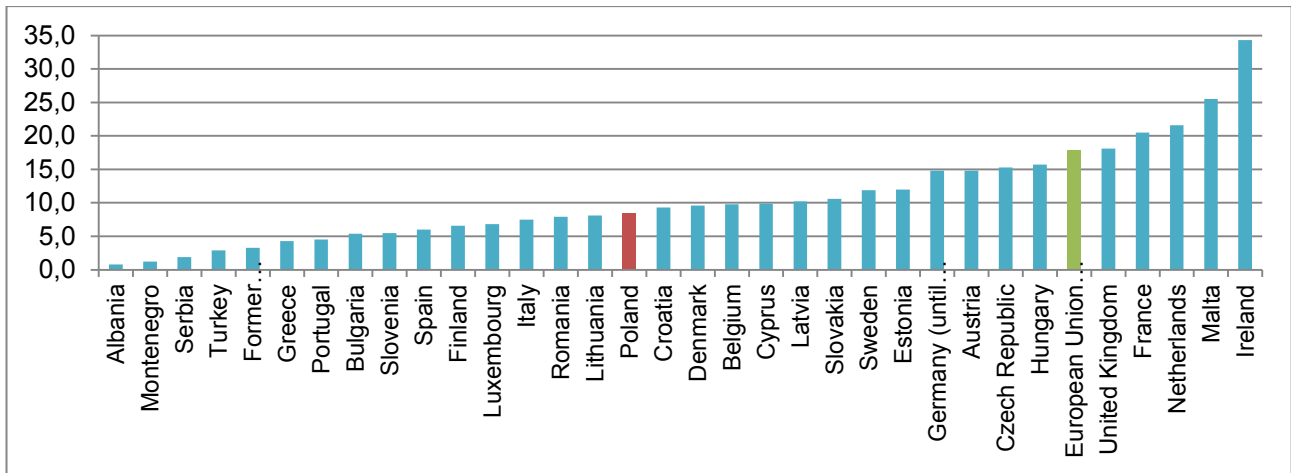


Figure 5. High-technology exports – Exports of high technology products as a share of total exports (SITC Rev. 4) in the EU countries (Source: Eurostat, 2018a)

The positive aspect is that in a period of 10 years, the share of high-technology products in Polish exports is almost doubled. On the other side, so did the share of high-technology products in Polish imports. What is more, the import of high-technology goods still exceeds the export significantly. This is strictly linked with the position of Poland in the middle of GVC. Poland imports high-technology semi-

products, sets them up, and exports to other countries that distribute them further. As a result, Polish value added and profits are dissatisfying. Higher export of goods, including higher export of high-technology products, does not indicate higher gains from participating in GVC. On the opposite are countries that export more than the imported high-technology products, such as Germany (Fig. 6).

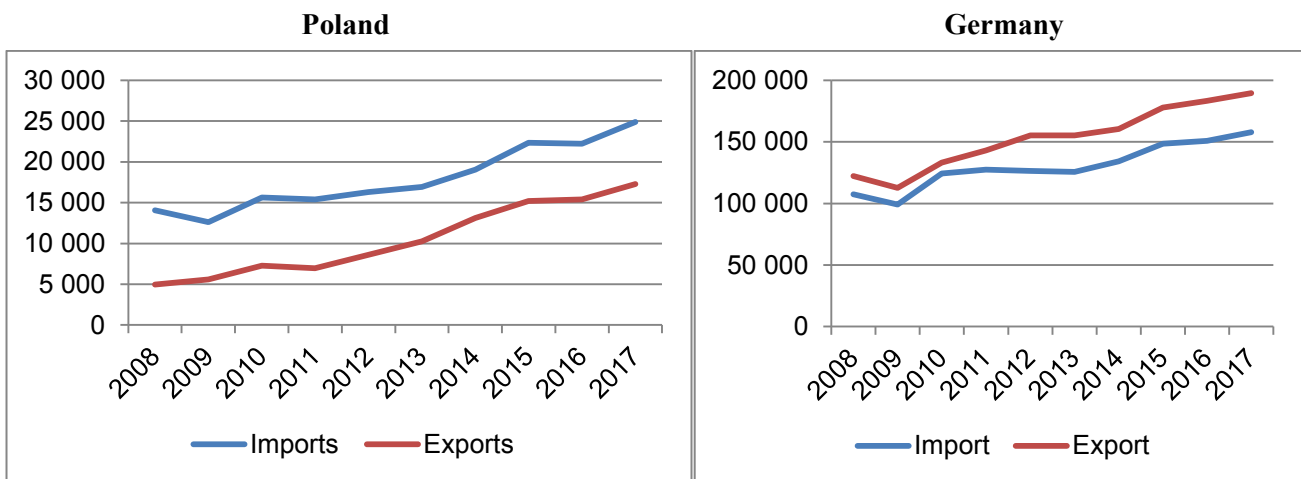


Figure 6. Dynamic of import and export of high-technology products as a share of gross export in Poland and Germany in 2008–2017 (million EUR) (Source: Own study based on: Eurostat, 2018a)

Germany, despite high level of ULCs (34 EUR/hour worked), is actively involved in trade within global value chain. The difference is that the participation of Germany in GVC pertain to beginning or the end

of value chain where activity run on research and development, designing or marketing (Mashayekhi, 2016), and produced value added is very high.

3 Relative labor costs and profits from participation in global value chain

To assess the level of participation in global value chain, two indicators should be taken into consideration. First one is FVA embodied in exports, which informs about the share of semi-products imports in exports of semi- or final products. That presents backward participation in GVC.

The other one shows which part of DVA constitutes other countries exports, which are at the lowest stages of chain. This is the so-called DVA embodied in foreign exports, which pictures forward participation in chain. The sum of these two represents the index of participation in GVC of a country. Therefore, it is possible to see which part of country's export is a part of multi-stage international trade. Fig. 7 presents the EU countries' index of participation in GVC in 2011.

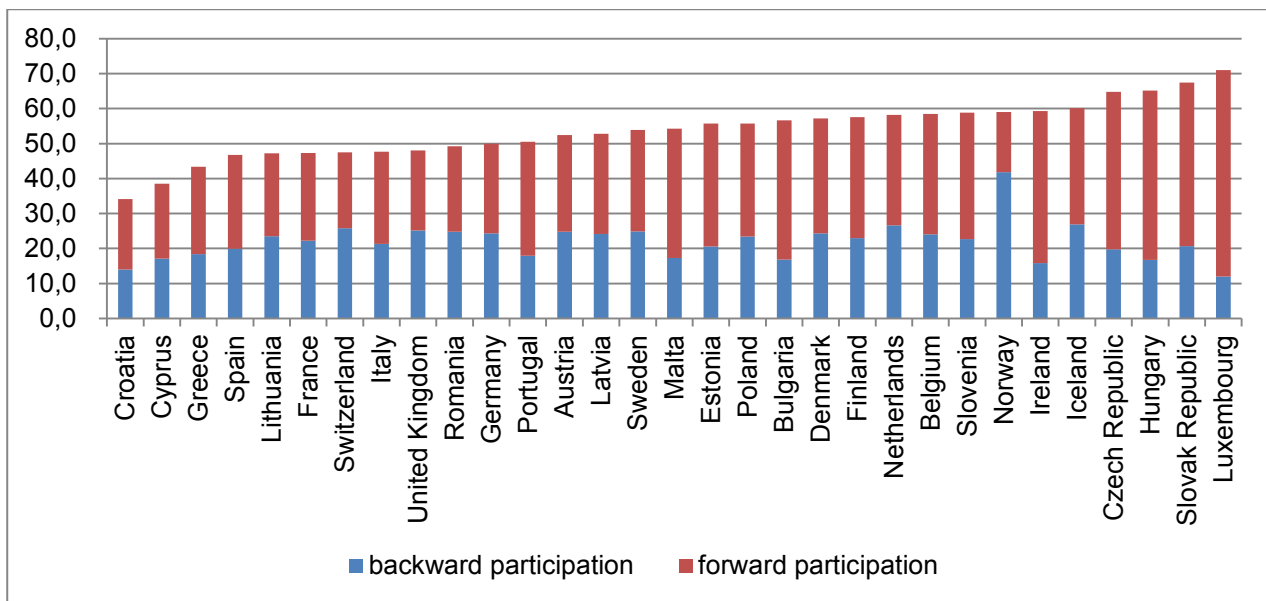


Figure 7. Index of participation of the EU countries in GVC in 2011 (percentage)
(Source: OECD, 2018)

Changes in this index in time indicate that participation of the EU countries in global value chain is still growing. The only country that has decreased international trade within GVC in the analyzed period was Croatia. The highest level of participation was demonstrated by Luxemburg, Slovakia, Hungary, and the Czech Republic. Poland's share in trade within GVC is up and close to the EU average. But the analysis of index dynamic and its components lead to wider conclusions.

The percentage of change in backward and forward participation through years (Fig. 8) can show the countries tendency to the nature of participation in international trade. Growing share of backward participation above forward indicate on moving

country to the stages of chain where value added is lower. If forward linkages grow more rapidly, it means that country is moving toward areas characteristic for developed countries, with high level of technology.

If a country's participation in value chain is based mainly on low labor costs than there ought to be seen dynamic growth in imports of semi-products and if there is an adequate increase in the share of exports of a country, it is backward participation. If there is no simultaneous growth in forward connections, then this kind of arrangement is not favorable. Such country deepens its position in the middle of value chain, where produced DVA is minor.

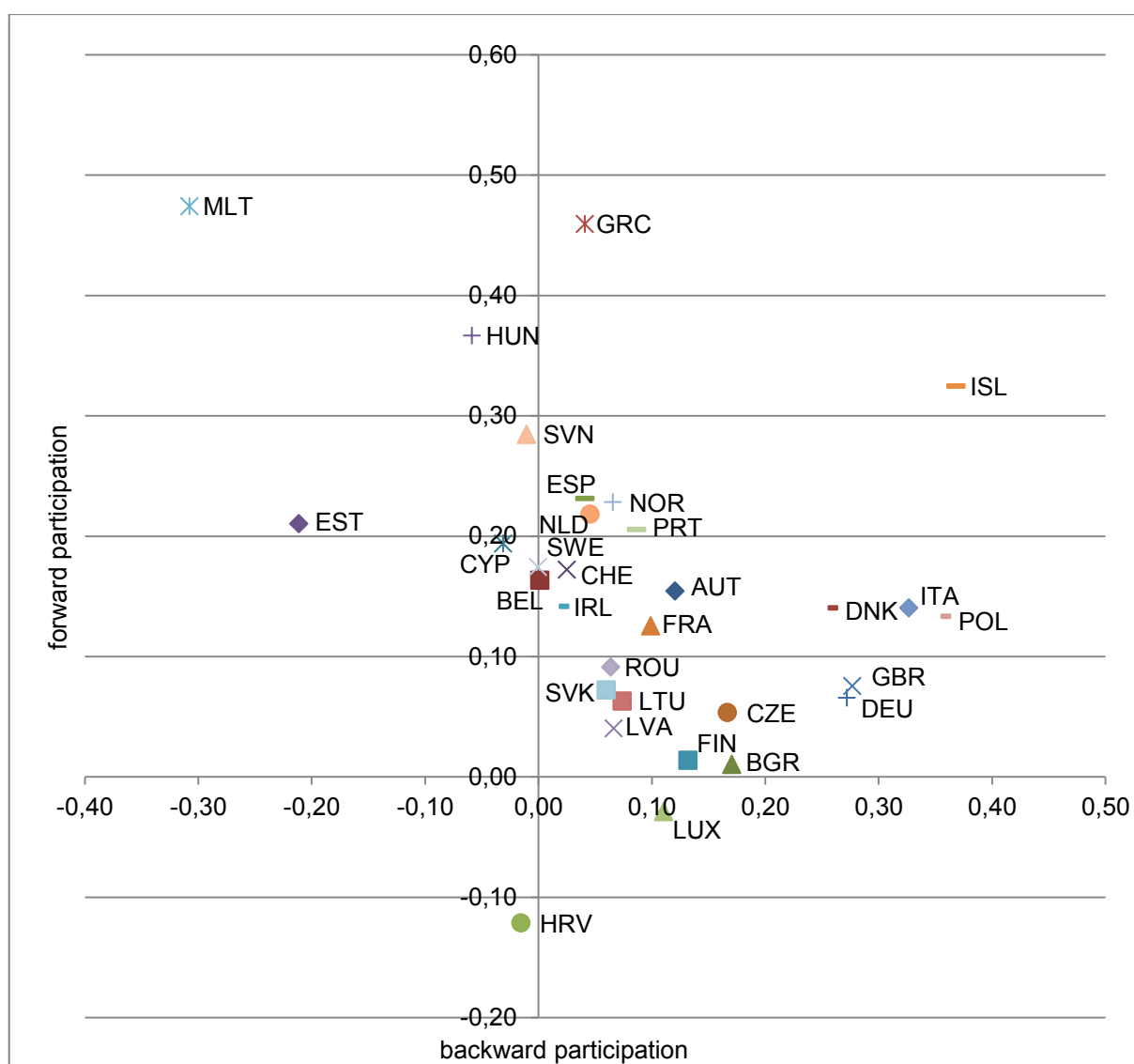


Figure 8. Dynamic of participation index in GVC of the EU countries from 2000 to 2011 (in percent points)

(Source: Own studies based on: OECD, 2018)

Countries with biggest growth in backward participation are Iceland, Poland, and Italy. There are also the EU members that registered a decrease in FVA: Malta, Estonia, Cyprus, Slovenia, and Hungary. Countries where forward participation has grown significantly are Malta, Greece, Hungary, and Slovenia.

In 2000–2011, Polish trade is characterized by a strong growth in backward participation (36.0%) and small increase in forward participation (13.0%). It means that Poland is relatively more attractive as a place to process semi-products than as a producer and exporter of homemade semi-products as a part of more complex goods, which could be further ex-

ported. Low relative labor costs contribute to such situation. This disadvantageous tendency could be corrected by capturing more valuable parts of global chains (marketing, distribution, projection, etc.). In the middle of GVC (production stage), which has dominant meaning in Poland, value added is relatively low.

Comparing the Polish situation with that of other EU countries with the lowest rate of ULCs, some assumptions can be made: low labor costs deepen the tendency to growth in backward than forward participation. Similar situation exists in Bulgaria, Lithuania, Latvia, and the Czech Republic but not at such scale (see Table 2).

Table 2. Changes in participation in GVC in the EU countries with the lowest labor costs in percent point (p.p.)
(Source: Own study based on: OECD, 2018)

Countries with the lowest ULC	Change (p.p.) from 2000 to 2011		ULC in 2011 (EUR/hour worked)
	Backward participation	Forward participation	
BGR: Bulgaria	0.17	0.01	3.4
ROU: Romania	0.06	0.09	4.1
LTU: Lithuania	0.07	0.06	5.9
LVA: Latvia	0.07	0.04	6.0
HUN: Hungary	-0.06	0.37	7.4
POL: Poland	0.36	0.13	7.9
EST: Estonia	-0.21	0.21	8.6
SVK: Slovak Republic	0.06	0.07	8.9
HRV: Croatia	-0.02	-0.12	9.5
CZE: Czech Republic	0.17	0.05	10.0

There are two exceptions where forward participation has grown significantly, that is, Hungary and Estonia. The difference seems to arise from the kind of exported goods. In 2011, the average share of high-technology products in gross exports in countries with low labor costs was 6.0%, whereas it was

20.9% in Hungary and 14.8% in Estonia (Eurostat, 2018). That means that specialization in advanced-technology production could shift position of a country from the lower value added stages to those that create the most.

Table 3. Changes in participation in GVC in the EU countries with the highest labor costs
(Source: Own study based on: OECD, 2019)

Countries with the highest ULC	Percentage change from 2000 to 2011		ULC in 2011 (EUR/hour worked)
	Backward participation	Forward participation	
FRA: France	0.10	0.13	34.3
SWE: Sweden	0.00	0.17	37.3
BEL: Belgium	0.00	0.16	38.0
DNK: Denmark	0.26	0.14	39.4
NOR: Norway	0.07	0.23	56.4

An analysis of countries with the highest ULCs in Europe revealed that most of them have greater increase in forward participation, with one exception – Denmark. Countries with relative high labor costs are developed countries that are technologically advanced. This gives them prevalence in share at the

upward stages of global value chain. Generally, as countries grow richer and wages rise, the comparative advantage in labor-intensive manufacturing is eroded, and the focus shifts to high value-added products or to other manufactured products with lower labor intensity.

Labor costs are also related with productivity. Countries with low labor costs are tend to also present low relative productivity. The average GDP per hour worked for EU countries in 2016 was 47.6 USD (OECD, Level of GDP per capita and productivity, 2018). Countries with the lowest labor costs at that time were Poland, 29.1 USD; Lithuania, 29.9 USD; Estonia, 30.3 USD; Hungary, 31.1 USD; Czech Republic, 34.5 USD; and Slovenia, 37.4 USD.

Being confined to niches of low productivity is likely to undermine the move into the higher value added activities that underwrite high incomes (Kaplinsky and Farooki, 2010). Two main means for getting out from lasting in the middle of GVC are distinguished (Gereffi, Humphrey and Sturgeon, 2005):

- progress of competencies, abilities, skills, and technological possibilities of supplier,
- upgrade because of fulfilling functions.

First way can be achieved by modifying production process and by implementing new technologies so productivity would be higher, or by implementing new products or modifying existing ones so the quality of products would be improved. Second way is more difficult. It can be achieved by getting new tasks and responsibilities or by changing the profile of activity or even sector. Important part of moving toward more profitable parts of value chains is the development of intellectual capital, know-how, and knowledge transfer. This has to be assisted by right institutional solutions that guarantee human capital accumulation and free information flow.

4 Conclusions and recommendations

Poland is an active participant of global value chain. The problem is that augmenting the degree of participation in GVC does not guarantee long-term increase in profits. There are some structural issues that narrow down those gains:

- 1) Low labor costs attract FDI connected with sectors where created value added is relatively low, that is mainly manufacturing and assembly line for motor vehicles.
- 2) Domestic value added in Polish gross export is systematically decreasing. This is connected with

increasing the import of semi-products that constitute growing part of Polish gross export.

- 3) Backward participation is growing more dynamically than forward participation. That means that Poland deepens its position in the middle of global value chains, because its main competitiveness factor is not technological advances but low labor costs.
- 4) Share of the high-technology products in gross export is low in comparison to other EU countries but the growth rate is high. We rather do not know if it will stop while it reaches the EU average or will be still increasing. Specialization in low- or medium-technology products is the characteristic for countries with relative low labor costs. Moving up toward global value chain needs some more sophisticated and technologically advanced production process.

Polish enterprises have a strong and growing level of connection with global value chain. Low labor costs are one of the factors that enabled Poland to increase its participation in international trade. Nevertheless, place, which is the middle of value chain, in which Poland is located is dissatisfying because of the low value added and minoring domestic (VA) in gross export. To move toward more profitable stages of GVC, Poland ought to change its international competitiveness strategy based on low labor costs, shift production to more technology advanced sectors, invest in technology and information infrastructure, and develop service sector connected with already existing international production base located in Poland.

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