OPEN STRATEGIC AUTONOMY: CZECHIA'S BACKWARD LINKAGE IN GVC UNDER AN AMBIVALENT CONCEPT

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Abstract

The aim of this article is to determine the position of the Czech Republic in Global Value Chains (GVCs) and to evaluate the impact of the European Union (EU) trade policy based on a new model of the Open Strategic Autonomy for the Czech Republic. For this purpose, the value added method is used, and, namely, Czechia's backward linkage in GVCs is explored. Based on our results, we recommend maintaining the liberal trade policy to third countries and creating strategic alliances with other EU countries that are integrated into GVCs in a similar way to the Czech economy. More than the idea of autonomy and protectionism, trade cooperation based on trade agreements of the EU with third countries is more advantageous for the Czech open economy, namely, for its reinforcing participation in GVCs through forward linkage.

Keywords

Backward Linkage, Forward linkage, Global Value Chains, Open Strategic Autonomy, Value Added Trade

I. Introduction

When the European Commission with its new Commissioners started performing its functions in December 2019, it was obvious that a new trade strategy would also be introduced. However, instead of the previous EU's trade strategies, such as "Global Europe: Competing in the World" or "Trade for All", which were based on the idea of trade liberalisation through the support of multilateralism and developing bilateral trade relations with strategic trade partners, the new trade strategy, which was set out on 18 February 2021 by the Ursula von der Leyen Commission for the coming years, reflects the needs of the European Union (EU) that were born in time of the COVID-19 pandemic. The health crisis showed the vulnerability of global value chains (GVCs) and shortages in strategic industrial branches, such as the production of drugs and medical devices. Thus, the crisis rose to call for more autonomy, particularly in the most sensitive industrial ecosystems. Although the European Commission has supported the idea of open trade in the world all the time, the new trade strategy is based on the model of "Open Strategic Autonomy", which is a mix of different ambivalent measures. On the one hand, the European Commission confirms that GVCs will remain a fundamental growth engine and will be essential for Europe's recovery from the crisis; thus, mutually beneficial bilateral relations will be supported. On the other hand, the European Commission will be assertive against unfair and abusive practises (European Commission, 2021a). Besides the COVID-19 pandemic, the current EU trade policy is also influenced by global uncertainty that is fuelled by political and geo-economic tensions, technological evolution, and the European Green Deal, which is the EU new growth strategy reflecting the transformation towards a climate neutral, environmentally sustainable, resource efficient and resilient economy by 2050 (European Commission, 2021b). Thus, trade policy can help to diversify the sources of supply and to achieve progress in other areas in line with its interests and values.

The Czech Republic, as a member of the European Union, is committed to the EU trade policy and its new trade strategy. In addition, in comparison with Germany, the USA, or China, it is a small open economy. Although the predominant part of the Czech foreign trade is carried out with other EU member states, the Czech economy also participates in GVCs that operate across different countries

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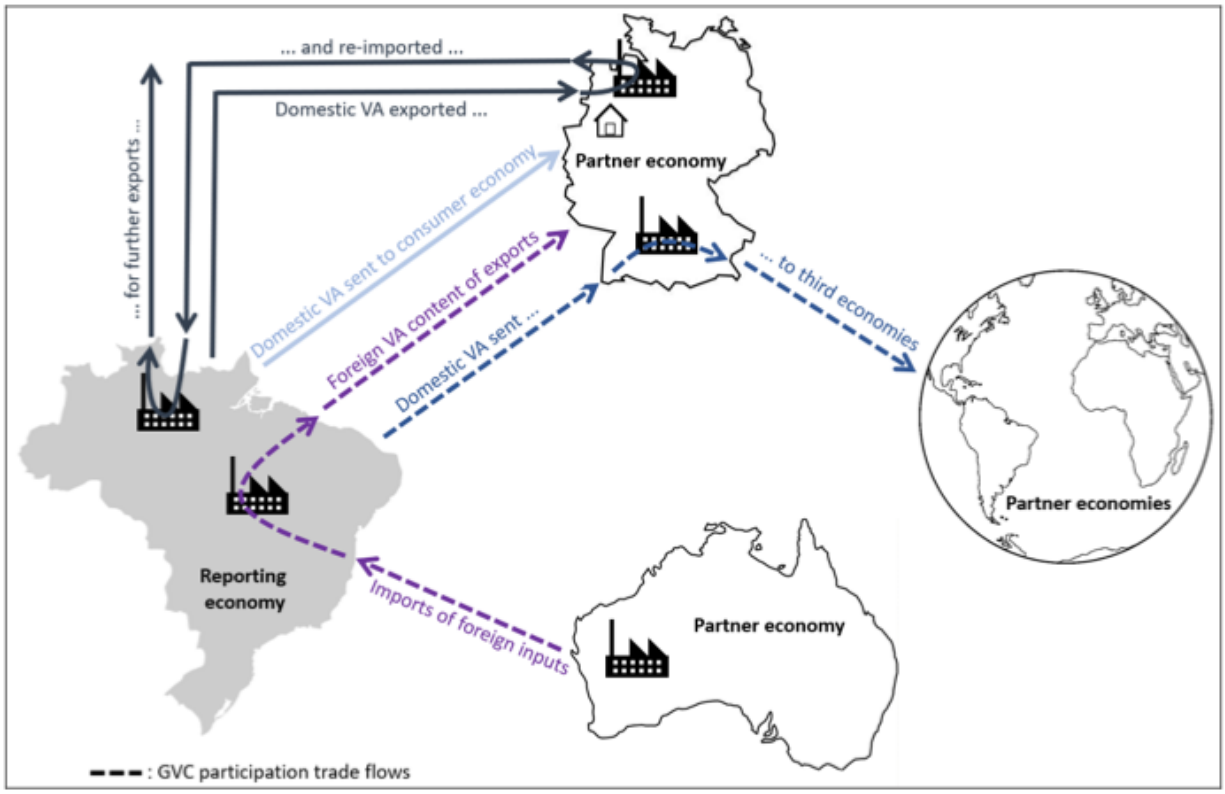
and world regions. However, the interpretation of foreign trade development can also be influenced by different data processing and statistical methods. For example, the Czech Statistical Office records trade flows in two methods, but neither of them deals with a value added concept that is currently highly discussed in the world. Thus, the aim of this article is to determine the position of the Czech Republic in Global Value Chains (GVCs) and to evaluate the impact of the European Union (EU) trade policy based on the new model of Open Strategic Autonomy on the Czech Republic. As the model of the Open Strategy Autonomy was developed by the EU to third countries, the analysis will focus on the main non-EU providers of value added. The intention is to consider what trade policy implications the EU strategy for the Czech Republic could have.

II. Global value chains and trade in value added

Trade liberalisation and a free movement of capital in the world speeded up production that could currently have the label "Made in the World". As Antràs states, *trade flows have changed dramatically in recent decades under different events*, such as the information and communication revolution, a wave of regional trade agreements in various corners of the world, the fall of the Berlin Wall, etc., *which led to the disintegration of production processes across borders, as firms found it more profitable to organize production on a global scale* (WTO, 2017). Thus, the world production is currently structured into global value chains (GVCs) in which firms use parts, components, and services from producers in several countries and in turn sell their output to firms and consumers worldwide. This process of fragmented production is shown in Figure 1.

Figure 1 The value added components of gross exports and GVC trade flows



Source: WTO (2021a)

Countries participate in GVCs in two ways. First, countries import inputs to produce the goods and services they export, i.e., backward GVC participation. Second, they export domestically produced inputs to partners involved in the later stages of production, which is known as forward GVC participation (WTO, 2019a).

Trade flows in GVCs are recorded using the value added (VA) method. The content of gross exports includes the domestic value added and the foreign value added. The domestic value added content of

exports is composed of three elements: domestic VA sent to the consumer economy, domestic VA sent to third economies, and domestic VA reimported in the economy. The foreign VA content of exports corresponds to the value added of inputs that were imported to produce intermediate or final goods (services) to be exported (WTO, 2021b). Then, global trade looks very different when detailed quantitatively in value added terms rather than as gross flows of exports and imports.

Although the international cooperation along the whole production process enables developed countries, emerging market economies, and developing countries to use their comparative advantages and produce gains from trade, the participation in GVCs for economies is different and the gains from participating in GVCs are not the same in the individual countries as well. Developed countries such as the USA, Japan, and United Kingdom and primary commodity exporters such as Norway and Russia enjoy high net gains from GVC participation. On the other hand, Czechia, Slovakia, Hungary, and Ireland have small net gains from GVC participation (IMF, 2019). This means that small open economies usually tend to have higher rates of participation in GVCs, but their gains are lower.

The world financial crisis in 2008-2009 as well as the COVID-19 pandemic also showed the vulnerability of economies that are highly dependent on the supply of goods (intermediates) and services from other countries and regions. Lockdowns and new protectionist measures, which were introduced in many countries, tested supply chains, giving rise to calls for more autonomy. Regardless of the world economic and health crises in the last two decades, GVC trade currently accounted for 60-67 % of the global trade in value added terms, reflecting the importance of the GVC phenomenon (WTO, 2017). GVCs allow countries to specialise in a particular activity and join a global production network (WTO, 2019b).

III. Methodology and data

The aim of this article is to determine the position of the Czech Republic in Global Value Chains and to evaluate the impact of the European Union trade policy based on the new model of the Open Strategic Autonomy for the Czech Republic. Thus, for the purposes of this article, the value added method will be used. This method enables to get a more real picture about the trade flows of goods and services within global production chains. The concept of Value added (TiVA) was developed by the OECD by using annual Inter-Country Input-Output (ICIO) tables. Trade indicators in value added are available in the TiVA database for the period 2005-2015. The last edition of TiVA indicators was in 2018. Although data about value added trade are only available up to 2015, many international organisations (see the WTO, 2017; IMF, 2019; WTO 2021b) and other researchers (for example, Deloitte, 2019) currently utilise the TiVA database as well.

If we assume that the Czech Republic is a small open economy, its export competitiveness is influenced by domestic sources, but also inputs that are supplied by foreign providers. Thus, although the position of the Czech Republic in GVCs will firstly be indicated, the main focus of this article will be to explore the backward linkage of the Czech Republic in global value chains.

The backward linkage (BWP) indicator is calculated for the total value of source and exporting industries. It is estimated as the ratio between the value added contents of imports from source country *p* and the gross exports of exporting country *c*. The BWP indicator is estimated as (OECD, 2019):

$$BWP_{c,p} = \frac{EXGR\_BSCI_{c,p}}{EXGR_c} \times 100 \quad (1)$$

where $EXGR\_BSCI_{c,p}$ is the total value added from country *p* embodied in the total exports of exporting country *c* and $EXGR_c$ is the total gross exports of exporting country *c.* For the purposes of this article, the Czech Republic will represent an exporting country and the foreign value added embodied in its exports will contain data for more than 60 economies that are available in the TiVA database (all OECD Members and some non-OECD Members). Data in the TiVA database are also available for the EU in different forms of aggregation (EU-15, EU-28, EU-13, EU-12, etc.), but they include Great Britain as a member of the EU. As the intention of this article is to show what implications the EU concept of the Open Strategic Autonomy (which is directed to third countries)

for the Czech Republic could have, we will aggregate the data for the individual member states of the EU-27, i.e. without Great Britain.

Besides backward linkage, another measure of GVCs participation is forward linkage. This is the domestic value added in foreign exports. This indicator is also calculated for the total value of source and exporting industries. It is estimated as being the value added contents of exports originated in the source country and embodied in the exports of the exporting country, divided by the gross exports of the source country. The FWP indicator is estimated as (OECD, 2019):

$$FWP_{c,p} = \frac{EXGR\_BSCI_{c,p}}{EXGR_c} \times 100 \quad (2)$$

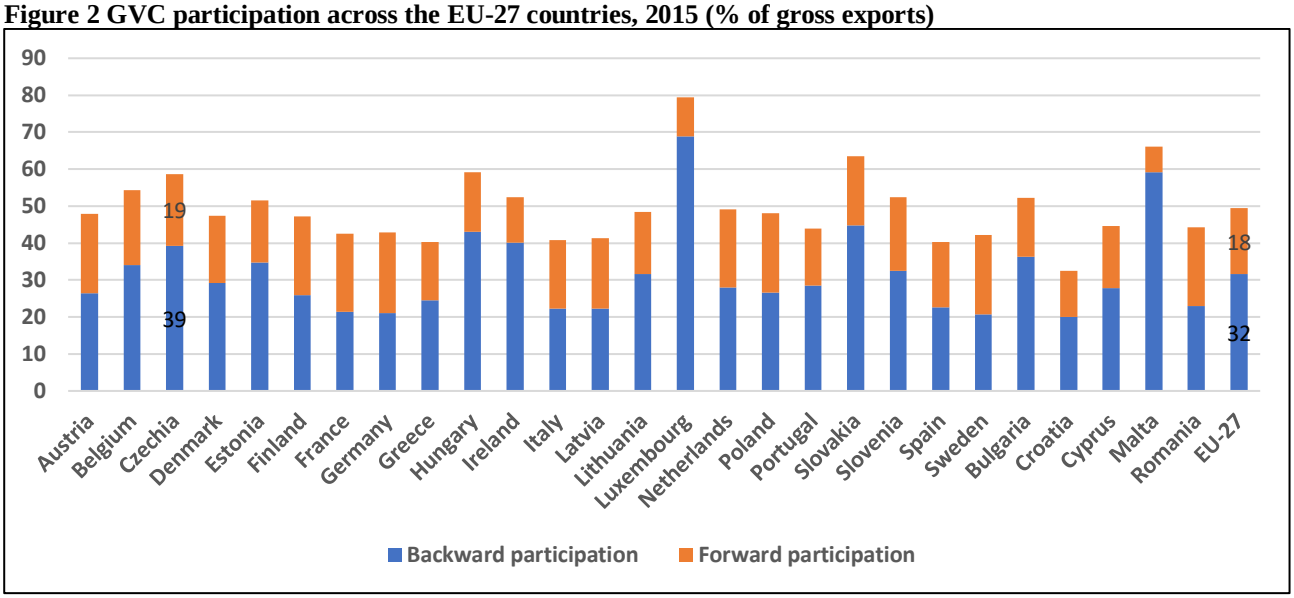
where $EXGR\_BSCI_{c,p}$ is the total value added from country *c* embodied in the exports of country *c* and $EXGR_c$ is the total gross exports of the value added source country *c*. For the purposes of this article, the source country will be Czechia and its domestic value added will be embodied in foreign exports.

The analysis of trade in value added in the Czech Republic will include several parts. Firstly, the participation of the Czech Republic in global value chains through both above-mentioned links will be introduced. Secondly, the net gains from the integration of Czechia into GVCs will be calculated and compared with the EU average. Thirdly, the decomposition of the value added of the Czech gross exports will be carried out and the main providers and sectors of foreign value added will be determined. For determining the structure of the Czech gross exports, the indicator Origin of Value Added in Gross Exports will be used in the TiVA database. This indicator reveals how the value of a country's gross exports of intermediate and final products is an accumulation of value generated by many industries in many countries (OECD, 2019). We will utilise data for 19 aggregate industries from a total of 36 industries that are available in the TiVA database in more detail. Finally, the results of this article will be compared with other papers that were published about Czech trade in value added and the trade policy implications of the Open Strategic Autonomy model for the Czech Republic will be pointed out with respect to the results of this analysis.

IV. Results

The Czech Republic (or Czechia) is highly integrated into GVCs; it is the fifth highest level in the European Union. While in Czechia GVC participation as a percentage of gross exports was almost 59 percent, in the EU this value reached 49 percent. Both forms of GVCs linkage, i.e., backward linkage and forward linkage, are on a higher level in Czechia than the EU's average. The high level of Czech participation in GVCs is especially determined by backward linkage. The share of foreign value added in gross exports in the Czech Republic accounted for more than 39 percent of gross exports in 2015. It points out the fact that the Czech export competitiveness is also determined by foreign providers of inputs. In contrast, forward linkage as the Czech (domestic) value added in foreign exports accounted for 19 percent of the Czech gross exports. The comparison of GVC participation among the EU member states is shown in Figure 2.

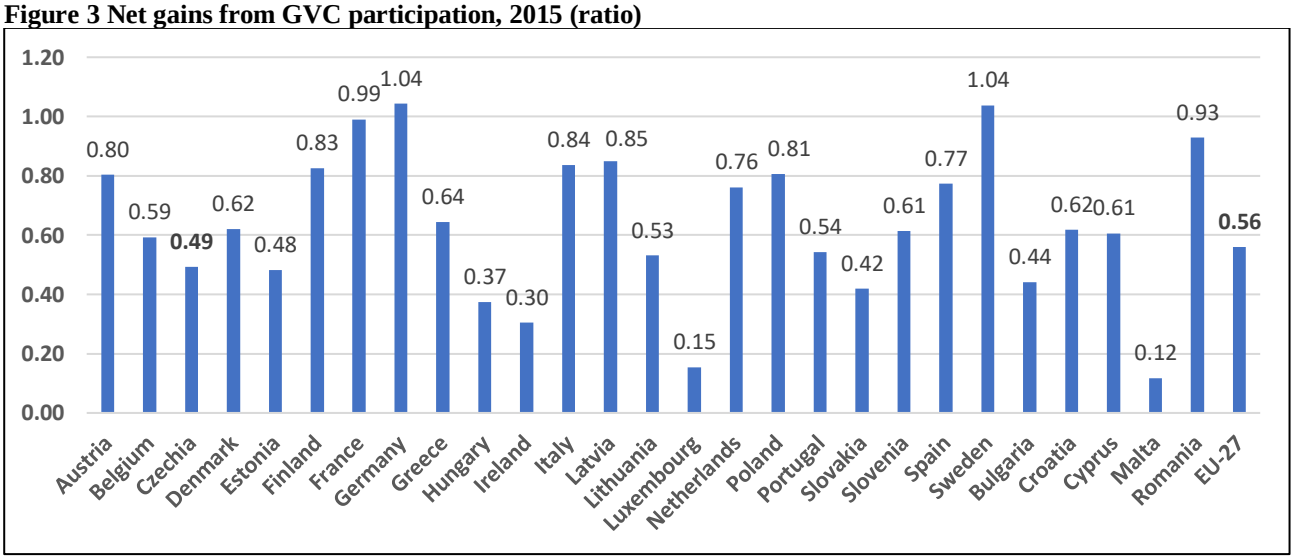
Figure 2 GVC participation across the EU-27 countries, 2015 (% of gross exports)



Source: OECD.Stat (2021)

However, a higher participation in GVCs does not guarantee higher gains. If the net value added means gains, then high gains from GVCs participation indicate a high forward linkage relative to backward linkage. The Czech Republic has a net gain of 0.5, which is the eighth worst result in the EU. Thus, while the GVC participation of the Czech Republic is above the EU average, the net gain from participation in GVCs is below the average of the EU-27 (see Figure 3).

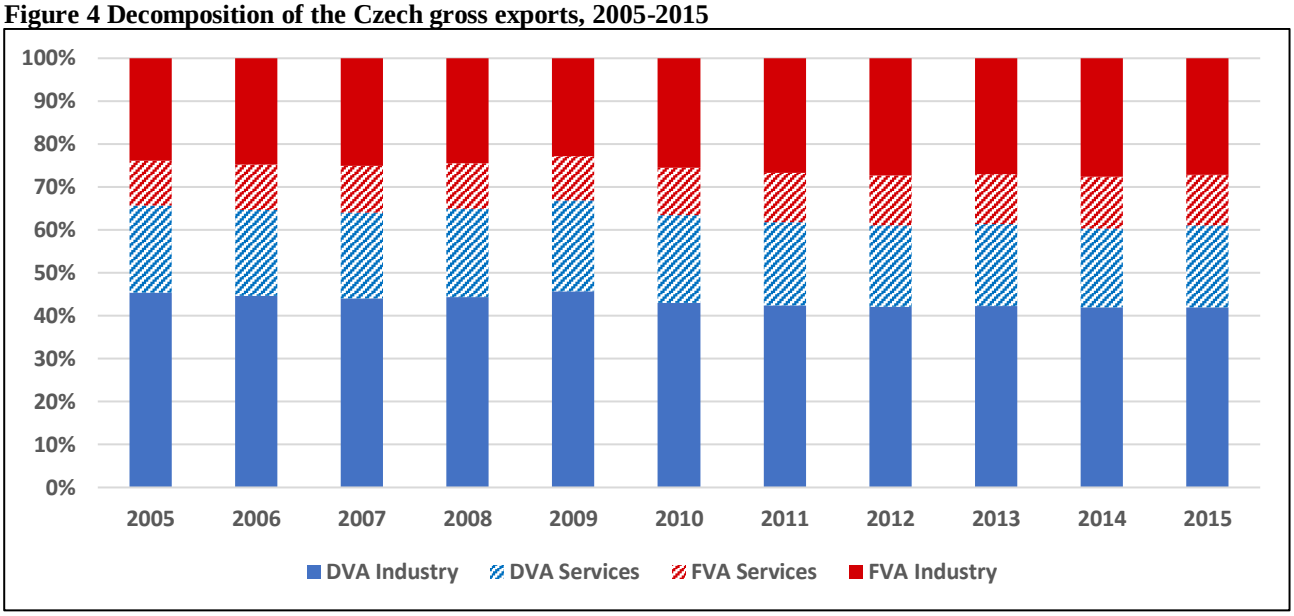
Figure 3 Net gains from GVC participation, 2015 (ratio)



Source: own calculation according to the OECD.Stat (2021)

The decomposition of the Czech gross exports in the period 2005-2015 is shown in Figure 4. While the domestic value added (DVA) represented a higher part of gross exports than foreign value added (FVA) in the monitored period, its share was declining. The decline of domestic value added was higher in industry than in services. In industry, the domestic value added declined from 66 percent in 2005 to 61 percent in 2015. In services, the domestic value added only declined by one percentage point. In addition, industry contributed to gross exports in the Czech Republic more than services, which corresponds with the long Czech industrial tradition.

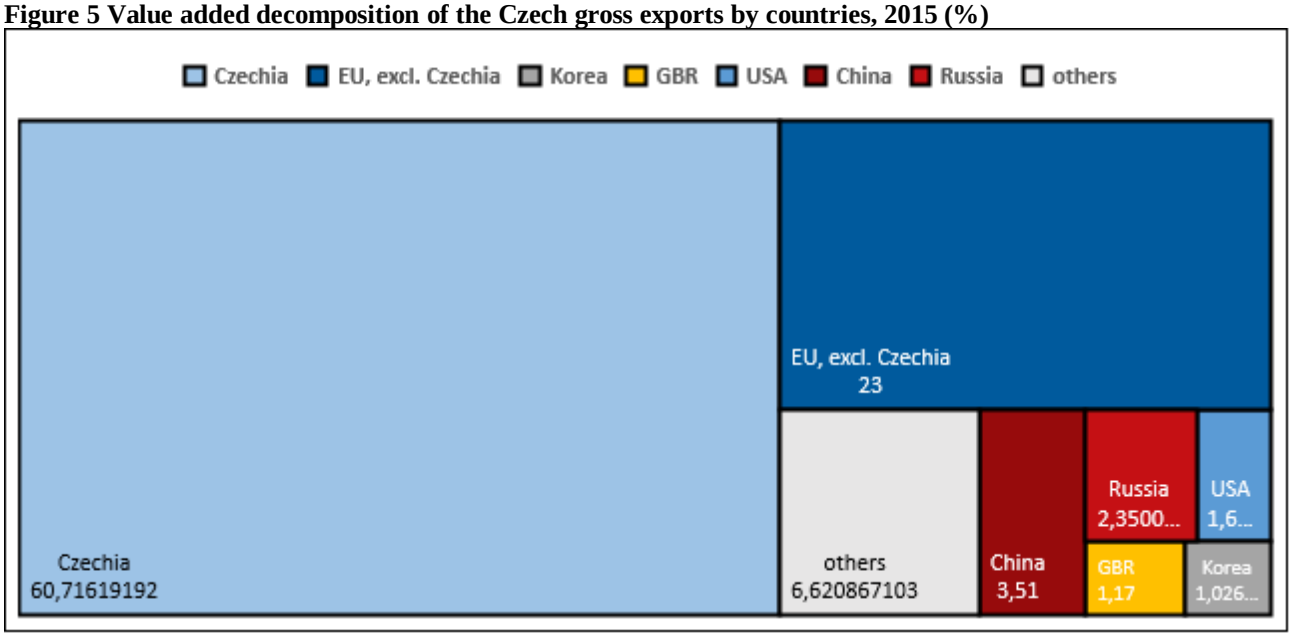
Figure 4 Decomposition of the Czech gross exports, 2005-2015



Source: OECD.Stat (2021)

More than 80 percent of the value of the Czech gross exports were created in the EU internal market. Besides the EU value added, including the Czech domestic value added, the other five non-EU member states accounted for about ten percent of the Czech gross exports in 2015 (see Figure 5). Thus, the main provider of foreign value added was China that contributed to the Czech exports by almost 4 percent. Russia and the United States (USA) individually participated in the Czech gross exports by about 2 percent. The other providers of foreign value added were Great Britain (GBR) and Korea, which shared in the value of gross exports of the Czech Republic by about 1 percent. This decomposition of the foreign value added shows the dependence of the Czech Republic on big countries, namely, China, Russia, and the USA. This confirms the important fact that geographical distance is not the main factor which would influence trade in value added. However, another important fact is that the foreign value added of China, Russia, USA, GBR, and Korea could also embody value added, from upstream production, which may cross the national borders many times.

Figure 5 Value added decomposition of the Czech gross exports by countries, 2015 (%)



Source: own calculation according to the OECD.Stat (2021)

Table 1 enables the comparison of foreign value inputs through the individual economic sectors as well as the comparison of the share of domestic value added with the foreign value added in these

sectors. China is the most often a provider of the value added and its highest value, i.e., almost 11 percent of gross exports in the Czech Republic, was recorded in industrial sectors like computer, electronic and electrical equipment. Russia is the top provider of the value added in the sector mining and quarrying that accounted for almost 29 percent of the Czech gross exports in 2015. The United States has a strong position especially in services, such as being the provider of information services; public administration; information, finance, and other business services. Like the USA, Great Britain also contributed to the value of gross exports in the Czech Republic, most often in the service sector. In contrast to the USA and Great Britain, Korea's inputs were recorded, namely, in industrial sectors, such as transport equipment; manufacturing; computer, electronic and electric equipment, etc. (see Table 1). In terms of domestic value added, except for mining and quarrying, it contributed to the gross exports of the Czech Republic by more than half. The results of the backward linkage analysis show the fact that the structure of the value added is narrowly connected with the comparative advantages of the individual providers, and these are shaped by many other factors, such as foreign direct investment, innovation, population, etc. Thus, the position of a country in GVCs can be changed in time with respect to backward and/or forward linkage.

Table 1 Backward linkage by industries, 2015 (%)

Industry	Share of the top foreign input providers, excluding the EU (%)			DVA CZE (%)
Agriculture, hunting, forestry and fishing	CHN: 4.8	RUS: 0.9	IND: 0.8	71.4
Mining and quarrying	RUS: 28.6	CHN: 4.5	KAZ: 3.6	20.6
Manufacturing	CHN: 4.1	KOR: 1.6	USA: 1.1	62.2
Wood and paper products and printing	CHN: 2.7	USA: 1.4	GBR: 0.7	64.8
Chemicals and non-metallic mineral products	CHN: 3.9	RUS: 1.9	USA: 1.6	53.1
Basic metals and fabricated metal products	CHN: 3.6	RUS: 1.7	KOR: 1.3	58.0
Computer, electronic and electrical equipment	CHN: 10.6	KOR: 2.7	USA: 1.7	61.7
Transport equipment	KOR: 2.5	JPN: 0.9	USA: 0.6	67.3
Total Business Sector Services	CHN: 3.0	USA: 2.5	RUS: 1.9	60.6
Distributive trade, transport, accommodation and food services	CHN: 3.4	RUS: 2.2	USA: 1.4	62.4
Information services	USA: 2.7	GBR: 1.8	CHN: 1.2	71.5
Public admin, education, health, and other personal services	CHN: 1.2	USA: 1.0	GBR: 0.9	72.3
Public admin, defence; education and health	USA: 3.1	CHE: 1.8	KOR: 0.7	75.7
Other social and personal services	CHN: 4.2	GBR: 1.9	RUS: 0.8	64.3
Industry (Mining, Manufactures and Utilities)	CHN: 4.1	RUS: 2.8	KOR: 1.4	59.3
Total Services	CHN: 2.9	USA: 2.4	RUS: 1.8	61.6
Information, finance, real estate and other business services	USA: 3.8	CHN: 2.5	GBR: 2.2	58.3
Total services (incl. construction)	CHN: 2.8	USA: 2.3	RUS: 1.8	61.9
Information industries	CHN: 7.8	USA: 2.8	KOR: 1.9	64.1

Note: GBR-Great Britain, CHE-Switzerland, CHN-China, IND- India, JPN-Japan, KAZ-Kazakhstan, KOR-Korea, RUS-Russia, USA-United States.
Source: own calculation according to the OECD.Stat (2021)

V. Conclusion

The aim of this article has been to determine the position of the Czech Republic in Global Value Chains (GVCs) and to evaluate the impact of the European Union trade policy based on the new model of the Open Strategic Autonomy for the Czech Republic. We assumed that the new EU trade strategy that contains, among other things, the idea of "autonomy" could harm the Czech export competitiveness. The Czech Republic is a small open economy that has become increasingly reliant on export-driven growth over the last three decades. In 2017, the exports to-GDP ratio was nearly

0.8, up from about 0.3 in 1990. Over the same period, the import to-GDP ratio has increased from about 0.3 to 0.7 (IMF, 2019). Thus, GDP growth in Czechia is influenced by its export competitiveness, which is determined, among other things, by imports of inputs such as goods, intermediates, and services.

Instead of the traditional gross method of recording trade flows, we utilised the value added method and some trade indicators for which data are available in the TiVA database. Although the predominant part of the Czech foreign trade is carried out with other member states of the EU, the fact that the EU trade strategy is focused on non-EU member states influenced our analysis, which was only focused on third countries. Firstly, the results of this analysis confirmed the fact that the Czech Republic is highly integrated into GVCs, namely, through backward linkage. This means that in 2015 the foreign value added shared in the Czech gross exports by more than one third. In addition, although the domestic value added shared in the Czech gross exports in industry as well as in the service sector more than the foreign value added in the monitored period, the decline of the domestic value added share was recorded namely in industry. Besides a growing dependency on foreign inputs, Czechia recorded a lower level of net gains from participation in GVCs in comparison with the EU average. The results of our analysis were also confirmed by the conclusions of other reports (Deloitte, 2019; IMF, 2019).

Secondly, Czechia's backward linkage in GVCs, i.e., the share of foreign value in the Czech gross exports, comes from big countries or economies, such as China, Russia, USA, Great Britain, and Korea, which, in total, contributed to about 10 percent of the Czech gross exports. Thus, although the Czech Republic has recorded a large trade deficit with some of them, namely, China and Russia, besides the final consumption in Czechia, the export competitiveness was also supported by these imports.

Thirdly, the highest foreign value added was recorded in industrial sectors such as mining and quarrying. With respect to the fact that a significant part of the foreign value in these industries comes from Russia and China, i.e., from countries with which the Czech Republic has not had good external relations in the last years, it can have a negative impact on the Czech imports as well as exports. Besides these industrial sectors, the import dependency of Czechia is obvious in many other sectors/products that are also the main export items, such as motor vehicles, computer and electronic products and other machinery and equipment, which was also confirmed by the WTO (2021a).

To sum up, in terms of the structure of trade flows, trade in value added gives a similar view on this issue to the traditional method, but the value added method brings more precise data about the volume of bilateral trade. Although the domestic value added and the EU internal market are the most important for the Czech economy, the idea of autonomy and the import substitution policy could damage Czechia with respect to the structure and capacity of its economy. Thus, the creation of strategic alliances with other EU member states such as Slovakia and Hungary can be the right way to enforce the Czech trade interests in the EU negotiations for the creation of a common stance to third countries and signing trade agreements. The existence of GVCs is based on a liberal trade policy and free movement of goods and services. The high level of integration of Czechia into GVCs, thus, determines the Czech interests. The liberal trade policy could also help Czechia to participate in GVCs through forward linkage and, thus, increase its net gains. An assertive trade policy is only needed in those cases in which the EU/Czech interests are damaged by unfair trade practices or the violation of trade agreements by some trade partners. However, trade conflicts usually lead to trade wars and the gains from trade are wasted. Although statistical data confirm that countries which are leading trade exporters in the world, i.e., China, the USA, and the EU, are also the main centres of trade disputes, losses from trade wars are recorded by all participants of GVCs. It is a pity that economic interests are very often influenced by foreign policy decisions. As John F. Kennedy stated: "America needs a strong economy to make America the first nation of the world" (The American Presidency Project, 1960). Although this idea is sixty years old, it is true all the time everywhere in the world.

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