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# The Role of EU Accession in Economic Development from the International Trade Perspective

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## Abstract

According to the comprehensive literature on economic development, international trade is believed to be one of the several catalysts of productivity and growth. As being supported by the core empirical findings, internationally active countries are found to be more productive and to record greater growth rates as compared to those that produce only for the domestic market. The European Union (EU) is an important player in international trade, which has largely contributed to the smooth development of the world trade. Due to greater economic efficiency arising from the lower transaction costs, increased specialization, scale economy and competitive pressure, the EU trade liberalization has made an increasingly significant contribution to economic development of its accessing countries. This paper aims to empirically assess the effects of EU accession and trade openness on economic development of latest 13 EU members (Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovenia, Slovak Republic, Romania, Bulgaria and Croatia). Methods used in the analysis are descriptive statistics, correlation and comparative analysis, and benchmarking. The conducted analysis results confirm the fact that country's openness to international trade contributes to enhancement of its economic growth given a positive correlation between international trade (export and import) and economic growth.

**Keywords:** EU Accession, Economic Development, EU countries, International Trade, Transition Economies

**JEL:** F40, F43, F63, O10, O40

## 1. INTRODUCTION

The recent decades have experienced a rapid growth in the world economy. According to the extensive economics literature, this growth has been driven in part by the even faster rise in the international trade. As first pointed out by Smith (1776) and afterwards argued by many prominent scholars of economic theory, international trade plays an important role in the economy of each country, where diminishing the trade barriers can significantly support the efficient allocation of resources and boost the economic growth of a country. The potential gains from the trade openness are significant, especially to those economies associated with technology diffusion and knowledge spillovers (Petkovski et al., 2014).

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From a theoretical perspective, there are sound reasons to believe that there is a strong and positive link between openness and economic growth (Petrakos & Arvanitidis, 2008). Greater opportunities from international trade give a rise to higher productivity and level of output, since with lower barriers to international trade producers and consumers gain better access to specialized products. Lower barriers may also foster international competition forcing businesses to lower their mark-ups and to better exploit returns to scale. Moreover, endogenous growth theories usually emphasize the dynamic gains of increased openness that arise due to the fact that through the international exchange and contacts businesses are able to tap foreign knowledge and ideas, thus being able to speed up their pace of innovation. In addition, these theories take implicitly into account the dynamic gains of trade such as larger foreign direct investment (FDI) flows and better integrated product and capital markets. International trade in goods and services and large inflows of FDI may facilitate the transfer of ideas, modern technologies and business practices contributing in that way to higher productivity, investment and growth (Afonso, 2001). European integration has made the EU the strongest and most competitive single economy in the world, which plays a leading role in international trade and trade negotiations, significantly contributing to the smooth development of the world trade. This is supported by the fact that in 2016, the EU had recorded a share of 14.8% of the total world imports and 15.6% of the total world exports. Moreover, EU-28 GDP represented more than 21% of world GDP. The EU adopts a trade policy that fosters a sustainable and fair trade. In addition, the EU supports developing countries to use trade opportunities to foster economic growth and, implicitly, raise their living standards (Jitary, 2017). Therefore, EU accession process, characterized with a sharp decline in trade barriers, is expected to have a positive impact on the economic growth of all EU member states. EU accession is believed to bring the significant benefits in terms of abolition of import tariffs and more efficient use of resources. Therefore, expanding trade, through improvements in competition policy and specialization, has become a priority, especially for the accessing economies that are traditionally less opened in comparison to EU economies.

Even though numerous studies have shown clearly and expectedly that European integration caused a large expansion of the countries' trade, especially with each other, some still believe that the impact of enlargement for the present EU tends to be limited and that not all such trade is welfare improving (Pelkmans&Casey, 2003). As stated in the European Commission report (2009), single market integration has had a positive impact on member states' economies whose gains are recurring year after year. In the 5 years after accession in 2004, the average GDP growth in the new member states amounted to 5.5%, while growth in the old member states remained at around 2.5%. The strong growth performance enabled the new member states to catch up in terms of GDP per capita for about 40 % of the EU-15 average. The real convergence process in some countries was faster than in others, highlighting the importance of having the appropriate policies in place. Given these figures, as well as the fact that according to the report, nearly 70% of the new member states exports go to the present EU, but only 4% of EU exports currently go to the new member states, the consensus of economists is that the gains are likely to be proportionately much larger for the new EU members.

Accordingly, many in the new member states and also in the candidate countries

hope that EU membership will pave the way towards their economic prosperity, having in mind that, according to their estimates, the earlier entrants have fared pretty well after accession. The empirical results for the accessing countries mostly support this optimism of the accessing countries. EU membership is estimated to increase their trade by roughly 56%. In addition, a one percentage point increase in openness (i.e. the ratio of trade to GDP) is expected to expand their output by about 0.7% in the long run. Combining these two effects, the new EU members can experience on average an increase in their real income of roughly 39% in the long term (Lejour et al.,2006). These results show that EU integration could significantly help in reducing the income gap between new and old member states.

Nevertheless, not everyone has benefited to the same extent from the new trade opportunities. The trade liberalization effects for the individual accessing countries vary widely. To a large extent this variation depends on a country's openness in combination with the intensity of its trade with the EU and on the quality of its institutions. Therefore, the large EU and especially new entrants are facing a challenge. They must be capable of creating an endogenous growth process by investing into physical and human capital and maintain high growth rate even if there are strong pressures of new competition and adjustment. To achieve that, new entrants need more investment leading to further improvement in productivity, skills, and technology transfer; stable legal and economic framework provided by EU membership and assistance from EU funds (World Economic Forum, 2017).

The most recent EU accession rounds that took place in 2004, 2007 and 2013, commonly known as "Central and Eastern European Countries (CEEC)"enlargement, have raised the interest in the growth implications of EU integration. It is thus important to assess whether the accession of CEE transition economies with quite different economy and low income level into the EU has led to short-term and/or long-term positive growth effects for these member states. In this context, this study provides a comparative analysis of the impact of different market openness indicators on the economic benefits of the latest 13 EU members (Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovenia, Slovak Republic, Romania, Bulgaria and Croatia) and their policy creation. The empirical analysis of this study covers 23 years of panel data for the selected economies, spanning the period from 1995 to 2017. In addition, the study reveals the main challenges and prospects of the market convergence process, suggesting that the positive effects of the market openness are conditioned by the level of the initial GDP per capita and other explanatory variables, such as the industrial and technological development of a country. The findings of this paper have allowed obtaining a better understanding of the relation between economic growth and international trade in the context of EU members. Furthermore, they will be significant for the EU candidate countries that should presumably find a solution for the optimal utilization of the benefits of the market liberalization process and achieving sustainable economic growth.

## 2. LITERATURE REVIEW

Although the theoretical literature provides a significant support to the positive association between international trade and economic growth, their relationship is still an open and debatable issue among scholars. The empirical literature on the benefits of trade openness measured using various trade policy indices provides mixed evidence based on different samples of countries.

A range of empirical studies that have investigated this relationship in the context of EU integrations have documented a positive correlation between these two variables, showing that economies being open to trade have higher GDP and grow much faster (Romer, 1990; Barro, 2003). For instance, Baldwin and Seghezza (1996) argue that countries that were members of the European Community during the period 1971-1990 experienced faster total factor productivity (TFP) growth than other European countries, such as those that were part of EFTA. TFP growth is assumed to arise from two sources: domestic (innovation) and international (the ability to adopt and use foreign innovations). The former is a function of the level of human capital while the latter is assumed to be a function of a catching-up period that is longer the poorer the country is. More open and less developed countries rely more on the international channel for TFP growth than other countries. Furthermore, the authors suggest that the EC founding members experienced the highest growth rates. They also argue that European integration affects growth through physical capital formation (integration-induced, investment-led growth) and knowledge creation (integration induced, technology-led growth).

In a study for the EEC-6 countries, Italianer (1994) utilized integration-depicting variables based on the trade flows in the period 1961-1992. The author identified important growth effects of both, regional economic integration as well as of general levels of openness. Within a similar context, Haveman (2001) found that being a free trade area or customs union member and being open in general is both growth-enhancing. Accordingly, Wacziarg and Welch (2003) have shown that in the countries that liberalized their trade regimes after 1950, GDP growth rates rose by an average of 1.5 percentage points compared with the pre-liberalization period. Their investment-to-GDP ratio increased from 1.5 to 2%, while the trade-to-GDP ratio increased by an average of 5%. An influential article by Jeffrey Sachs and Andrew Warner (1995) went so far as to argue that countries that are open to trade experience unconditional convergence to the income levels of the rich countries. Similarly, Ben-David and Kimhi (2000) show that increasing trade openness in new EU members means increasing rate of growth convergence. In addition, the authors provide evidence that increased exports, especially from poorer countries to wealthier ones, are related to an increase in the rate of income convergence between them. They also argue that prior to trade policy liberalization in Europe, there was very little change in trade-to-GDP ratios, whereas after the liberalization a significant increase in trade occurred, with tendency to remain at the new higher level. Dohrn, Milton and Radmacher-Nottelmann, (2001) discuss several implications of the FDI inflows in the EU member economies. The authors argue that FDI brings new technology transfers, skills and governance improvement, which is particularly important for the newly entering members who have experienced a surge in FDI inflows in the 1990s as their accession to the EU became more probable. About one half of those inflows came from present EU members, and half of that level represented FDI inflows from Germany. A positive correlation between economic growth and FDI per capita has been detected. However, the causation direction is still difficult to be confirmed. Baldwin and Seghezza (1996) based their analysis on a growth model which emphasizes the link between trade barriers and the demand for capital. The results showed that domestic trade barriers, as well as foreign barriers tend to decrease investment and consequently have a negative impact on growth.

One aspect of international trade impact over economic growth that was less often considered is imports. In that context, Lee (1995), Humpage (2000) and Afonso (2001) stressed that imports, especially of capital goods, helps the transfer of technology from more developed countries to the least developed ones and encourages the pursuit of new products and production processes, which would foster productivity, competitiveness and promote a faster catch-up from the least developed economies to the leaders. Imports also promote employment, directly and indirectly, and domestic competitiveness as well, that can lead to the reduction of essential production inputs (Shirazi & Manap, 2005).

Finally, some more recent literature also confirms that open economies indeed experienced faster growth (Dava 2012, Alragas et al. 2015 and Keho 2017)). These findings are not surprising since leading international policy makers from the World Bank, IMF, WTO, and OECD put efforts to ensure that the integration into the world economy is the securest road to prosperity. Accordingly, Fetahi-Vehapi et al. (2015) aimed to investigate the impact of trade openness on economic growth in 10 South East European (SEE) countries covering the period 1996-2012. The study examined the relationship amongthe following variables: human capital, gross fixed capital formation, foreign direct investment and labor force. The findings indicate that the positive effects on economic growth are conditioned by the initial income per capita. It was also established that trade openness is more beneficial to countries with higher level of initial per-capita income. Trade openness was also found to favor the countries with higher level of FDI and gross fixed capital formation. Similarly, Malešević-Perović et al. (2014) investigated the correlation between trade openness, financial openness and economic growth. The results confirm that trade openness and financial openness (FDI) have a significant impact on growth and that institutional openness affects the economy via trade indirectly. Simuț et al. (2014) identified a direct correlation and causality between exports, openness and economic growth for 10 East European states, and a long-term and direct influence of some trade determinants on economic growth. In the study examining the impact of foreign trade and investments on growth in Bulgaria in two different periods (1991-1996, 1997-2006), Stattev (2009) verifies the hypothesis that foreign trade is a factor of economic growth and that it acts as one of the major transmission mechanisms transferring effects on economic growth that are generated by the dynamic development of banking financial intermediation. Griesa and Redlin (2012) studied the short-run and long-run dynamics for 158 developed and developing economies, and found evidence pointing to a positive relation between trade openness and economic growth in the long-run, suggesting that in longer term openness is found to be a favorable strategy to promote growth. In the short term, such relation is negative in low-income countries and positive in high-income countries, which implies that low-income countries may not harvest the benefits from international integration process.

Furthermore, some studies argue that trade openness has a positive effect on economic growth under certain conditions. For instance, Bussiere and Fratzscher (2007) based on a sample of 45 industrialized and emerging countries, suggest that trade integration could speed up growth but only in the medium and long term. Nugent (2004), however, believes that enlargement of EU offers very limited economic gains for the original EU-15 at the same time offering proportionately more economic opportunities for the new EU members. This is explained

by the fact that since new EU members are starting from a lower economic base and are geographically smaller than the majority of EU-15 ones, they potentially have much more to obtain from their membership. Nugent (2004) supports this opinion by claiming that the main economic reason for seeking membership in EU has been the success of EU in terms of promoting trade, economic growth and prosperity, which is highly desirable for emerging European economies. Ahmed and Suardi (2009) suggest that trade openness is beneficial in countries with a more diversified export structure, while Fetaki-Vehapi et al. (2015) state that trade openness impacts positively economic growth in countries with higher initial per-capita incomes, higher levels of FDI and gross fixed capital formation. In this context, Petrakos and Arvanitidis (2008) argue that the economic growth determinants do not have the same impact on the advanced and the less advanced countries (or regions). Therefore, the priorities in terms of policy creation should be quite different among countries with a different level of economic development. For the former group, the authors highlight the importance of innovation, knowledge, technology and human capital, whereas for the less developed countries they highlight the role of the socio-political framework, the institutional environment and the amount of FDI. Similarly, by using firm-level data and linking it with country-level reforms, Stankov (2013) argues that economic liberalization affects firms of different size differently. According to the empirical results in the study, if an economy has a larger share of smaller firms, then such an economy benefits from market liberalization much more than an economy with a higher share of large firms. Accordingly, if the two countries go through identical reforms but their firm size distributions are different, the two economies will react differently to the reform. This could bring a reasonable explanation for cross-country differences in the outcomes of similar market-oriented reforms.

The results of other studies, however, argue against existence of significant growth effects related to the membership in the EU. For instance, the study by Landau (1995) found that there had been no statistically significant difference between the growth of EC member and non-member countries in a sample of 17 OECD countries in the period of 1950-1990. This would suggest that there was no long-term growth effect associated with the membership in the EU. Similarly, utilizing the panel data for 23 OECD countries, Vanhoudt (1999) found no positive or negative growth effects for EU members in comparison to non-member OECD states. Brada and Mendez (1988) used an OLS estimation of a pooled data set and found that EU membership positively affects the investment rates of its member states. Yet they did not provide any proof of integration – growth linkage. Badinger (2001) applied time-series analysis as well as static and dynamic data models for EU member states and found no permanent increase in growth rates related to economic integration within the EU. Badinger, however, identified important level effects – without economic integration real per-capita GDP for the EU member states would be lower than recorded. For a panel data of 20 countries in the period 1960-1999, Brodzicki (2003) found no statistically significant effect related to the EU membership. In contrast, the length of membership in the EU and the scale of the EU economy were found to have positive impact on the growth performance of its member states. Similarly, Crespo-Cuaresma (2002) made a specification of a panel data model with fixed effects and found that the length of membership positively affects the growth rates of the member states. The authors further claim that economic integration within

the EU led to asymmetric convergence-stimulating effects.

The general conclusion that could be drawn from this overview of empirical literature is that the results obtained are very mixed and sensitive to the use of different econometric approaches, the choice of data samples and explanatory variables.

## 3. METHODOLOGY AND RESEARCH QUESTIONS

The aim of the research is to analyze the level of international trade, precisely exports and imports of the countries that joined the EU in the last three accession years (2004, 2007 and 2013), as well as to examine the interdependence between their trade openness and economic growth. Therefore, the object of the analysis are the following countries: Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovenia and Slovak Republic that joined the EU in 2004, Bulgaria and Romania in 2007, and Croatia in 2013. The analyzed period covers a 23-year panel which is the period before and after EU accession. The information base of the research are the World Bank data for the analyzed EU countries within the defined period. The methods used in the analysis are descriptive statistics, correlation and comparative analysis and benchmarking.

The purpose of the analysis is to examine the impact of the EU membership on foreign trade by comparing country's exports and imports before and after EU accession. Furthermore, the analysis highlights the importance that foreign trade openness has for a country's economic growth, measured by the interdependence between export and import and per capita GDP. However, it should be taken into consideration that foreign trade as a share in GDP is only one of the factors of economic growth, in addition to trade balance, terms of trade index, value added in exports, etc. Also, a certain contribution to a change in foreign trade has trade with non-EU member countries which is difficult to extract from the available data.

In order to achieve the objective, the paper is based on the following research questions:

1. Has the EU accession changed the flow of international trade in the selected EU countries?

2. Do the analyzed EU countries deviate from the EU average in terms of international trade?

3. To what an extent does the international trade of the analyzed EU members contribute to economic growth, measured by the interdependence between exports and imports, on the one hand and GDP per capita on the other?

## 4. RESULTS AND DISCUSSION

Based on the predetermined research questions, the research results are grouped into three categories:

a) Analysis of the international trade of the selected EU countries in the pre and post EU accession period;

b) Benchmarking analysis of the exports and imports between the analyzed EU member countries and the EU average;

c) Correlation analysis of the international trade and GDP per capita for the selected EU countries and the EU.

### a) Analysis of the international trade of the selected EU countries in the pre and post EU accession period

The EU is the world's biggest trader, accounting for more than 15% of the world's exports and imports. Free trade among its members is one of the EU's founding principles contributing at the same time to the liberalization of world trade.

Given the plenty of benefits that the free movement of people, goods, services and money provides in the EU as the world's

largest single market, it is necessary to examine the potential changes in the country's international trade before and after EU accession. Hence Table 1 provides the data on exports and imports of goods and service as a percentage of GDP for the last thirteen countries that joined the EU, namely Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovenia, Slovak Republic, Romania, Bulgaria and Croatia, as well as for the overall EU.

**Table 1.** *Exports and imports of goods and services (% of GDP) for the selected EU countries, in the period 1995-2017*

| Country | Indicator | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bulgaria | | 51.92 | 58.98 | 50.11 | 43.09 | 43.17 | 36.47 | 35.15 | 33.91 | 34.68 | 41.27 | 42.86 | 47.32 |
| Cyprus | | 66.76 | 70.21 | 69.19 | 68.70 | 66.93 | 69.96 | 68.21 | 62.41 | 57.76 | 56.89 | 55.69 | 53.44 |
| Czech Republic | | 40.40 | 38.32 | 40.46 | 42.21 | 42.92 | 48.19 | 49.03 | 45.12 | 46.91 | 57.34 | 62.18 | 65.19 |
| Estonia | | 67.85 | 61.79 | 71.61 | 74.38 | 70.23 | 61.64 | 61.35 | 58.32 | 57.40 | 61.52 | 65.91 | 63.49 |
| Croatia | | 27.61 | 30.73 | 31.32 | 29.49 | 30.46 | 36.51 | 38.66 | 37.67 | 38.89 | 39.45 | 39.30 | 39.66 |
| Hungary | | 39.15 | 41.85 | 47.87 | 52.85 | 55.52 | 66.68 | 64.73 | 57.97 | 56.25 | 59.54 | 62.55 | 73.98 |
| Lithuania | | 37.14 | 41.94 | 44.97 | 39.12 | 32.41 | 38.55 | 44.04 | 47.34 | 46.17 | 47.35 | 53.84 | 55.62 |
| Latvia | *Exports* | 34.57 | 40.45 | 39.71 | 39.19 | 35.03 | 36.88 | 38.06 | 36.58 | 36.12 | 39.08 | 43.18 | 39.97 |
| Malta | | 122.27 | 114.10 | 110.62 | 110.34 | 112.36 | 119.33 | 108.50 | 111.63 | 107.72 | 103.46 | 104.37 | 123.45 |
| Poland | | 22.96 | 22.09 | 23.36 | 25.98 | 24.12 | 27.23 | 27.23 | 28.76 | 33.39 | 34.26 | 34.61 | 37.86 |
| Romania | | 25.48 | 26.28 | 27.99 | 22.86 | 27.71 | 32.72 | 32.96 | 35.22 | 34.54 | 35.64 | 32.91 | 32.06 |
| Slovak Republic | | 56.68 | 52.29 | 55.07 | 46.66 | 47.48 | 54.07 | 57.79 | 57.48 | 62.19 | 68.71 | 72.05 | 81.03 |
| Slovenia | | 45.61 | 46.19 | 47.59 | 47.54 | 44.15 | 50.01 | 51.75 | 52.16 | 50.90 | 54.97 | 59.58 | 64.70 |
| European Union | | 28.61 | 28.97 | 30.75 | 30.95 | 31.13 | 34.44 | 34.38 | 33.62 | 32.93 | 34.33 | 35.67 | 37.78 |
| Bulgaria | | 49.91 | 45.39 | 37.28 | 36.06 | 47.79 | 41.82 | 44.54 | 41.95 | 44.94 | 52.51 | 57.63 | 64.54 |
| Cyprus | | 67.63 | 70.64 | 70.58 | 66.21 | 64.28 | 67.53 | 63.64 | 61.24 | 56.24 | 57.02 | 56.23 | 56.37 |
| Czech Republic | | 43.50 | 43.18 | 44.61 | 42.48 | 43.34 | 50.04 | 50.28 | 46.40 | 48.11 | 56.53 | 59.83 | 62.45 |
| Estonia | | 75.35 | 72.30 | 82.07 | 84.05 | 74.64 | 64.88 | 65.31 | 65.77 | 65.88 | 69.39 | 71.01 | 73.63 |
| Croatia | | 35.89 | 37.26 | 44.23 | 36.28 | 36.51 | 39.55 | 42.18 | 45.55 | 46.33 | 45.47 | 45.43 | 46.40 |
| Hungary | | 39.12 | 41.34 | 46.88 | 54.36 | 58.21 | 70.31 | 65.96 | 59.98 | 60.18 | 63.45 | 64.80 | 75.07 |
| Lithuania | | 47.77 | 51.23 | 55.04 | 50.53 | 42.40 | 44.73 | 49.51 | 53.02 | 51.96 | 54.38 | 61.07 | 65.88 |
| Latvia | *Imports* | 39.31 | 49.47 | 48.76 | 51.25 | 44.84 | 44.87 | 48.44 | 46.72 | 48.66 | 54.63 | 57.66 | 60.65 |
| Malta | | 131.70 | 123.47 | 115.49 | 112.97 | 114.66 | 126.53 | 110.16 | 107.23 | 106.85 | 104.79 | 106.82 | 126.83 |
| Poland | | 20.72 | 23.38 | 27.11 | 30.68 | 29.90 | 33.56 | 30.85 | 32.17 | 36.05 | 36.95 | 35.67 | 39.93 |
| Romania | | 30.48 | 34.10 | 34.75 | 30.62 | 32.22 | 38.00 | 40.54 | 40.82 | 41.97 | 44.58 | 43.02 | 43.99 |
| Slovak Republic | | 54.55 | 62.94 | 64.47 | 57.27 | 51.88 | 56.63 | 65.82 | 64.71 | 64.09 | 71.45 | 76.63 | 85.00 |
| Slovenia | | 47.86 | 47.44 | 48.73 | 49.23 | 48.48 | 53.67 | 52.79 | 51.17 | 51.21 | 56.41 | 60.22 | 64.74 |
| European Union | | 27.19 | 27.53 | 29.05 | 29.72 | 30.39 | 34.19 | 33.61 | 32.19 | 31.81 | 33.08 | 34.77 | 37.13 |

**Table 1.** *(Continued)*

| Country | Indicator | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bulgaria** | | 52.38 | 52.54 | 42.33 | 50.18 | 59.07 | 60.80 | 64.65 | 65.01 | 64.11 | 63.98 | 66.33 |
| **Cyprus** | | 53.26 | 50.09 | 48.73 | 50.21 | 52.93 | 53.44 | 58.65 | 62.06 | 64.52 | 64.71 | 63.82 |
| **Czech Republic** | | 66.41 | 63.23 | 58.68 | 66.03 | 71.31 | 76.17 | 76.87 | 82.55 | 81.05 | 79.54 | 79.45 |
| **Estonia** | | 63.20 | 66.80 | 60.80 | 75.08 | 86.54 | 85.99 | 84.30 | 82.57 | 78.61 | 78.98 | 78.03 |
| **Croatia** | | 39.00 | 38.48 | 34.52 | 37.63 | 40.32 | 41.52 | 42.80 | 45.31 | 48.23 | 49.01 | 51.26 |
| **Hungary** | | 77.94 | 79.29 | 74.41 | 81.83 | 86.75 | 86.41 | 85.66 | 87.65 | 90.21 | 89.54 | 90.09 |
| **Lithuania** | | 50.36 | 57.14 | 51.94 | 65.34 | 75.00 | 81.62 | 84.06 | 81.10 | 75.84 | 74.45 | 81.31 |
| **Latvia** | ***Exports*** | 38.45 | 39.54 | 42.60 | 53.66 | 57.82 | 61.31 | 60.30 | 60.74 | 60.40 | 60.04 | 60.47 |
| **Malta** | | 129.54 | 148.48 | 147.74 | 153.26 | 160.31 | 165.25 | 157.06 | 148.60 | 139.46 | 136.11 | |
| **Poland** | | 38.56 | 37.86 | 37.18 | 40.06 | 42.56 | 44.44 | 46.32 | 47.59 | 49.52 | 52.26 | 53.39 |
| **Romania** | | 28.42 | 26.25 | 26.55 | 32.56 | 37.05 | 37.46 | 39.75 | 41.19 | 41.01 | 41.33 | 41.44 |
| **Slovak Republic** | | 83.28 | 80.05 | 67.61 | 76.34 | 85.05 | 91.43 | 93.82 | 91.85 | 92.97 | 94.62 | 96.30 |
| **Slovenia** | | 67.60 | 66.11 | 57.24 | 64.29 | 70.37 | 73.12 | 74.52 | 75.81 | 76.99 | 77.65 | 82.21 |
| **European Union** | | 38.39 | 38.97 | 34.75 | 38.45 | 41.11 | 42.31 | 42.43 | 42.79 | 43.36 | 43.16 | 44.64 |
| **Bulgaria** | | 71.21 | 72.30 | 50.61 | 53.03 | 58.69 | 63.97 | 65.06 | 65.96 | 63.96 | 59.67 | 64.80 |
| **Cyprus** | | 58.02 | 62.86 | 54.08 | 57.48 | 55.86 | 54.92 | 56.82 | 60.01 | 63.72 | 65.49 | 67.79 |
| **Czech Republic** | | 63.96 | 61.06 | 54.81 | 62.94 | 67.48 | 71.37 | 71.11 | 76.18 | 75.05 | 72.06 | 72.24 |
| **Estonia** | | 72.07 | 70.73 | 55.84 | 68.72 | 80.81 | 84.44 | 81.49 | 79.74 | 74.60 | 75.12 | 73.55 |
| **Croatia** | | 46.27 | 46.52 | 38.24 | 38.06 | 40.78 | 41.04 | 42.34 | 43.39 | 45.86 | 46.19 | 49.10 |
| **Hungary** | | 77.26 | 78.92 | 70.37 | 76.52 | 80.64 | 79.72 | 78.68 | 81.27 | 81.35 | 79.46 | 82.27 |
| **Lithuania** | | 63.48 | 68.71 | 53.62 | 67.22 | 77.55 | 80.76 | 82.81 | 79.03 | 76.32 | 73.16 | 79.29 |
| **Latvia** | ***Imports*** | 57.47 | 52.46 | 44.22 | 55.13 | 62.79 | 65.76 | 63.85 | 62.19 | 60.91 | 59.15 | 61.80 |
| **Malta** | | 128.97 | 148.72 | 149.24 | 154.17 | 158.07 | 160.61 | 150.79 | 136.69 | 132.40 | 125.41 | |
| **Poland** | | 42.10 | 42.90 | 38.04 | 42.05 | 44.52 | 44.88 | 44.37 | 46.15 | 46.43 | 48.21 | 49.40 |
| **Romania** | | 42.36 | 39.17 | 32.77 | 38.75 | 42.64 | 42.44 | 40.52 | 41.63 | 41.64 | 42.23 | 43.57 |
| **Slovak Republic** | | 84.40 | 82.88 | 69.09 | 77.79 | 85.96 | 87.76 | 89.59 | 88.43 | 91.36 | 91.12 | 92.88 |
| **Slovenia** | | 68.89 | 68.04 | 55.37 | 62.85 | 68.54 | 68.91 | 68.96 | 68.41 | 68.40 | 68.50 | 72.55 |
| **European Union** | | 37.57 | 38.60 | 33.66 | 37.51 | 40.03 | 40.27 | 39.78 | 39.95 | 39.85 | 39.71 | 41.19 |

**Source:** *The World Bank*
**Note:** *The marked years represent the accession date of the selected EU countries*

Figures 1 and 2 graphically illustrate the values of exports and imports as a percentage of GDP from Table 1.

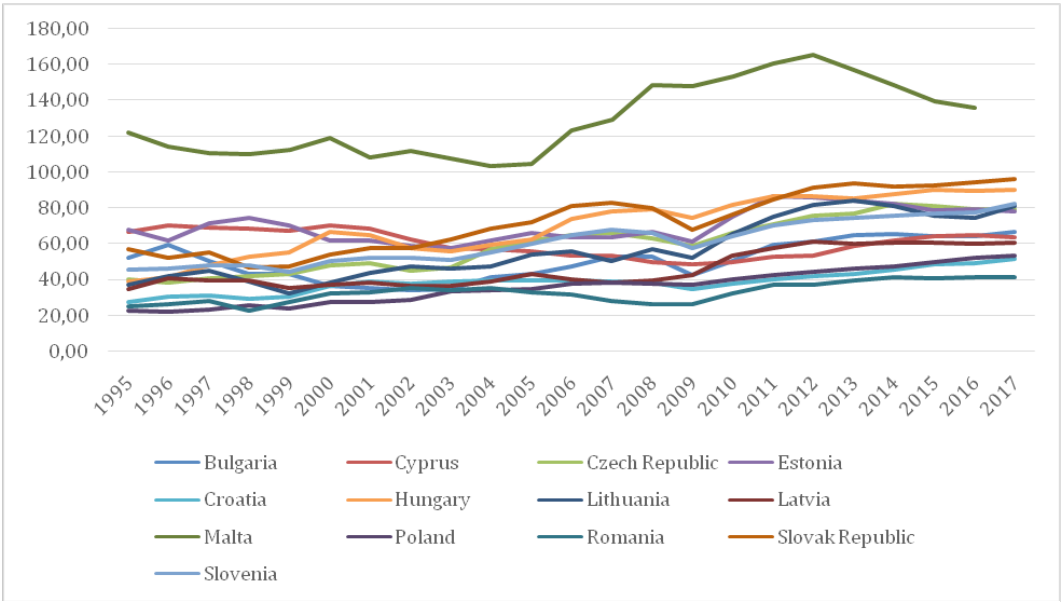


**Fig. 1.** *Exports of goods and services (% of GDP) for the selected EU countries in the period 1995-2017*

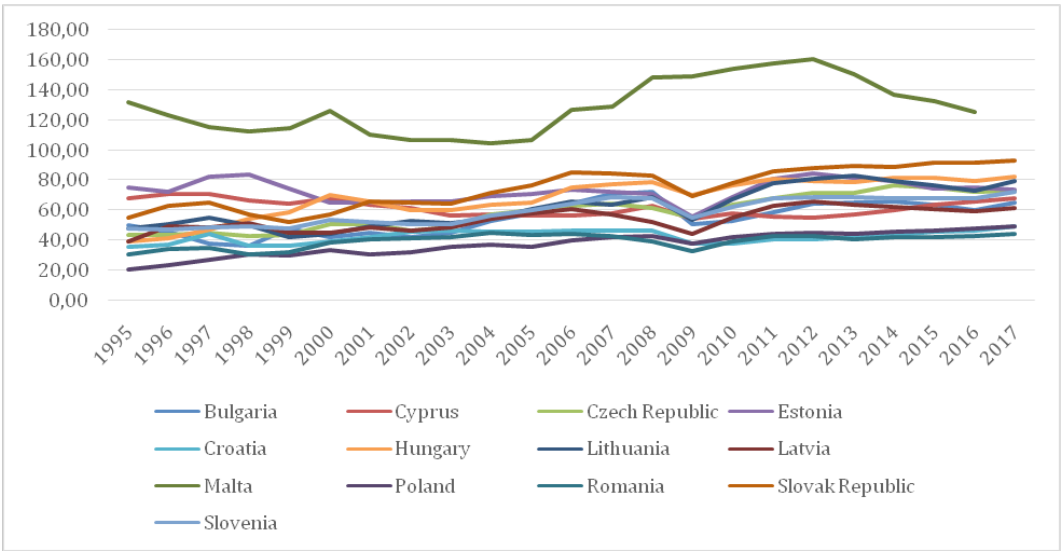


**Fig. 2.** *Imports of goods and services (% of GDP) for the selected EU countries in the period 1995-2017*

Based on Table 1 and Figure 1, in the analyzed 23-year period for 13 EU countries, the significantly higher values of exports are recorded in Malta. After the EU accession in 2004, Malta rapidly began to increase its exports even in the period of global financial crises in 2009. However, the negative trend of exports in Malta occurred in the last five years,

starting in 2012. Among the other 12 analyzed EU countries with similar value of exports, the biggest positive move in exports from 1995 to 2017 is recorded in Hungary, Lithuania, Slovak Republic and Czech Republic. After slight fluctuations and slow growth in the pre-accession period, the value of exports in the 12 analyzed EU countries after the EU accession and global financial crises was recovered with a further mild growth.

As for the import values given in Table 1 and Figure 2, the biggest share of imports in GDP is also recorded in Malta, and in the Slovak Republic and Hungary, among other countries. Putting aside the global financial crises affect, all analyzed EU countries continued to increase slightly the import values after EU accession.

**b) Benchmarking analysis of the exports and imports between the analyzed EU member countries and the EU average**

In order to benchmark the last 13 EU member countries between each other, but also to the EU in accordance with the international trade, Figures 3 and 4 illustrate the data of exports and imports as a percentage of GDP.

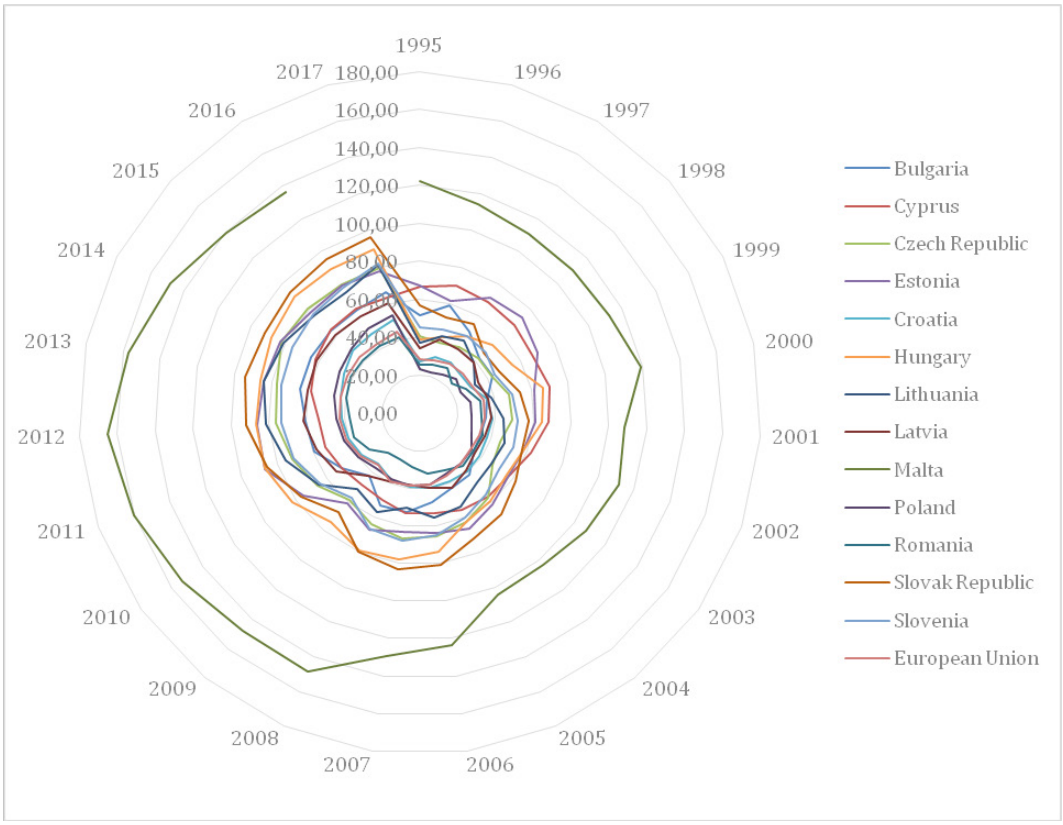


**Figure 3.** *Benchmarking of exports of goods and services (% of GDP) for the group of selected EU countries, in the period 1995-2017*

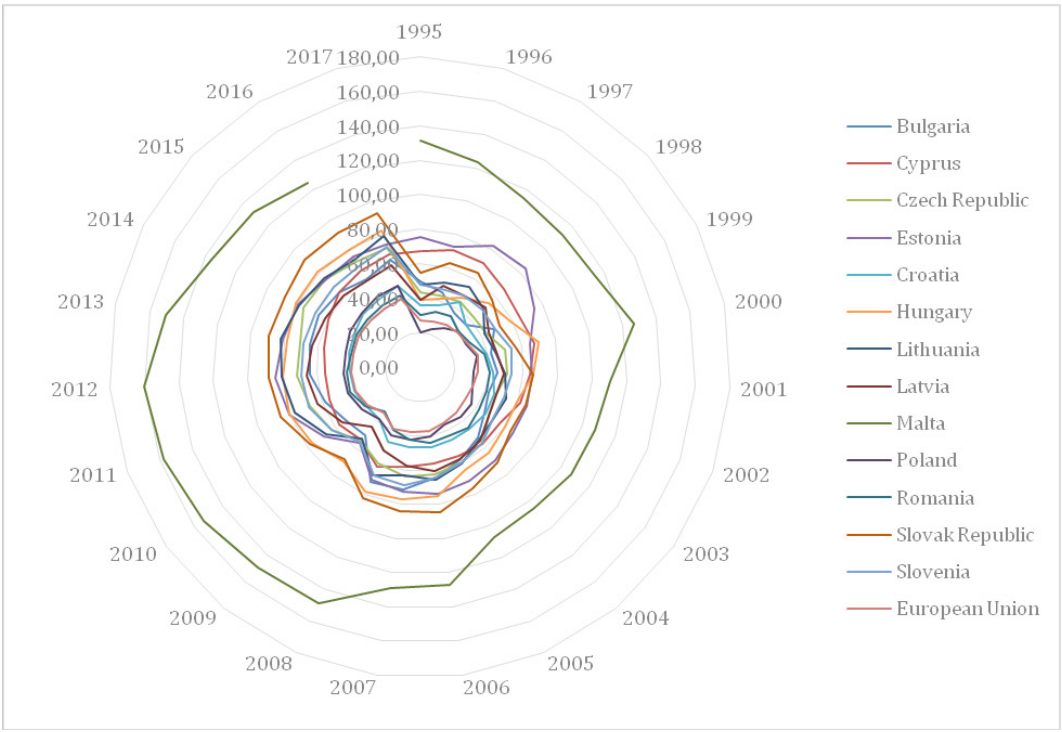


**Figure 4.** *Benchmarking of imports of goods and services (% of GDP) for the group of selected EU countries, in the period 1995-2017*

Based on Figure 3, Malta is a country with the biggest share of exports as a percentage of GDP among the analyzed EU members, and also compared to the EU average. On the other hand, Romania is the only analyzed country with the lower share of export within the GDP in comparison to the EU average.

As for the imports of goods and services as a percentage of GDP, Malta as well shows the highest values compared to other EU countries and the EU average. While all countries examined in the analyzed period have imports as a percentage of GDP higher than the EU average, only Poland at the beginning of the period (1995-2002) shows lower imports as a percentage of GDP than the EU average.

**c) Correlation analysis of the international trade and GDP per capita for the selected EU countries**

Correlation analysis serves to determine the degree of interdependence between different indicators. The most commonly used measure of a linear relationship between indicators is *Pearson's correlation coefficient* (Soldic-Aleksic, 2015):

$$r = \frac{cov_{xz}}{s_x s_y} = \frac{\sum(x_i - \overline{x})(y_i - \overline{y})}{(n-1)s_x s_y}$$

The strength of a correlation is determined by the value of the Pearson's coefficient. Therefore, if Pearson's correlation coefficient stands between 0.10 and 0.29, the correlation is low; if Pearson's correlation coefficient stads between 0.30 and 0.49, the correlation is medium, and for Pearson's correlation coefficient above 0.50, the correlation is high (Soldic-Aleksic, 2015). However, before Pearson's correlation coefficient is applied, the existence of relationship between indicators should be determined based on the

concept of statistical significance. By analogy, this relationship can be positive when a change of one variable follows a change of other variable(s) in the same direction, or it can be negative in the case of variable changes in the opposite directions.

Before the correlation analysis is applied, Table 2 shows the results of descriptive statistics for the international trade (export and import) in the selected EU countries and the European Union, covering the last 23-year period. Accordingly, in the table are shown minimum, maximum and mean values of exports and imports as a % of GDP, as well as a standard deviation, for a selected group of EU countries and specified time frame.

**Table 2.** *Descriptive statistics of the international trade in selected EU countries (1995-2017)*

| Correlation | | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Bulgaria: | Exports (% of GDP) | 33.91 | 66.33 | 50.4483 | 10.82226 |
| | Imports (% of GDP) | 36.06 | 72.30 | 54.5052 | 10.86034 |
| Cyprus: | Exports (% of GDP) | 48.73 | 70.21 | 60.3726 | 7.15547 |
| | Imports (% of GDP) | 54.08 | 70.64 | 61.5070 | 5.31348 |
| Czech Republic: | Exports (% of GDP) | 38.32 | 82.55 | 59.9809 | 15.09194 |
| | Imports (% of GDP) | 42.48 | 76.18 | 58.2178 | 11.65051 |
| Estonia: | Exports (% of GDP) | 57.40 | 86.54 | 70.2778 | 9.39274 |
| | Imports (% of GDP) | 55.84 | 84.44 | 73.1039 | 7.05106 |
| Croatia: | Exports (% of GDP) | 27.61 | 51.26 | 38.6013 | 6.20086 |
| | Imports (% of GDP) | 35.89 | 49.10 | 42.5596 | 4.02622 |
| Hungary: | Exports (% of GDP) | 39.15 | 90.21 | 69.9443 | 16.37647 |
| | Imports (% of GDP) | 39.12 | 82.27 | 68.0922 | 13.26673 |
| Lithuania: | Exports (% of GDP) | 32.41 | 84.06 | 56.8109 | 16.71466 |
| | Imports (% of GDP) | 42.40 | 82.81 | 62.1509 | 12.93666 |
| Latvia: | Exports (% of GDP) | 34.57 | 61.31 | 45.8326 | 10.38038 |
| | Imports (% of GDP) | 39.31 | 65.76 | 53.9561 | 7.49274 |
| Malta: | Exports (% of GDP) | 103.46 | 165.25 | 128.8164 | 20.39243 |
| | Imports (% of GDP) | 104.79 | 160.61 | 128.7532 | 18.15901 |
| Poland: | Exports (% of GDP) | 22.09 | 53.39 | 36.1561 | 9.81262 |
| | Imports (% of GDP) | 20.72 | 49.40 | 37.6530 | 8.04979 |
| Romania: | Exports (% of GDP) | 22.86 | 41.44 | 33.0165 | 5.77966 |
| | Imports (% of GDP) | 30.48 | 44.58 | 39.2526 | 4.47153 |
| Slovak Republic: | Exports (% of GDP) | 46.66 | 96.30 | 72.3835 | 16.87201 |
| | Imports (% of GDP) | 51.88 | 92.88 | 74.6391 | 13.48207 |
| Slovenia: | Exports (% of GDP) | 44.15 | 82.21 | 60.9157 | 12.16128 |
| | Imports (% of GDP) | 47.44 | 72.55 | 59.6248 | 8.88609 |
| European Union: | Exports (% of GDP) | 28.61 | 44.64 | 36.6922 | 5.00713 |
| | Imports (% of GDP) | 27.19 | 41.19 | 35.1643 | 4.48104 |

**Source:** *Prepared by the authors (SPSS Statistics)*

The results in Table 2 show that the minimum share of exports in GDP for the analyzed countries ranges between 22.09 (Poland) and 103.46 (Malta), while minimum share of imports in GDP for the same countries ranges between 20.72 (Poland) and 104.79 (Malta). On the other hand, the maximum share of exports in GDP scores the values from 41.44 (Romania) to 165.25 (Malta), while the maximum share of imports in GDP is between 41.19 (EU) and 160.61 (Malta).

Table 3 illustrates the correlation analysis between international trade and per capita GDP for the analyzed 13 countries in the last 23-year period.

**Table 3.** *Correlation analysis between GDP per capita and export & import for the selected EU countries (1995-2017)*

| Correlation | | Pearson Correlation | Coefficient of determination | *Sig. (2-tailed) |
|---|---|---|---|---|
| Bulgaria: | GDP per capita-Exports | 0.694 | 48.16% | 0.000 |
| | GDP per capita-Imports | 0.817 | 66.75% | 0.000 |
| Cyprus: | GDP per capita-Exports | -0.900 | 81.00% | 0.000 |
| | GDP per capita-Imports | -0.693 | 48.02% | 0.000 |
| Czech Republic: | GDP per capita-Exports | 0.885 | 78.32% | 0.000 |
| | GDP per capita-Imports | 0.876 | 76.74% | 0.000 |
| Estonia: | GDP per capita-Exports | 0.615 | 37.82% | 0.002 |
| | GDP per capita-Imports | 0.197 | 3.88% | 0.368 |
| Croatia: | GDP per capita-Exports | 0.639 | 40.83% | 0.001 |
| | GDP per capita-Imports | 0.393 | 15.44% | 0.063 |
| Hungary: | GDP per capita-Exports | 0.869 | 75.52% | 0.000 |
| | GDP per capita-Imports | 0.856 | 73.27% | 0.000 |
| Lithuania: | GDP per capita-Exports | 0.912 | 83.17% | 0.000 |
| | GDP per capita-Imports | 0.921 | 84.82% | 0.000 |
| Latvia: | GDP per capita-Exports | 0.762 | 58.06% | 0.000 |
| | GDP per capita-Imports | 0.761 | 57.91% | 0.000 |
| Malta: | GDP per capita-Exports | 0.824 | 67.90% | 0.000 |
| | GDP per capita-Imports | 0.677 | 45.83% | 0.001 |
| Poland: | GDP per capita-Exports | 0.913 | 83.36% | 0.000 |
| | GDP per capita-Imports | 0.919 | 84.46% | 0.000 |
| Romania: | GDP per capita-Exports | 0.540 | 29.16% | 0.008 |
| | GDP per capita-Imports | 0.941 | 88.55% | 0.017 |
| Slovak Republic: | GDP per capita-Exports | 0.919 | 84.46% | 0.000 |
| | GDP per capita-Imports | 0.903 | 81.54% | 0.000 |
| Slovenia: | GDP per capita-Exports | 0.842 | 70.89% | 0.000 |
| | GDP per capita-Imports | 0.887 | 78.68% | 0.000 |
| European Union: | GDP per capita-Exports | 0.828 | 68.56% | 0.000 |
| | GDP per capita-Imports | 0.823 | 67.73% | 0.000 |

**Note:** **Correlation is significant at the 0.01 level (2-tailed).*
**Source:** *Prepared by the authors (SPSS Statistics)*

Based on the correlation analysis results provided in the previous table, there is a positive correlation between GDP per capita and international trade in the analyzed EU countries in the period 1995-2017. Accordingly, the increase in the exports and imports of the analyzed countries leads to an increase of GDP per capita as well. The highest correlation is recorded in Lithuania, Poland, Romania and Slovak Republic. While the majority of analyzed countries have a positive high correlation in both exports and imports, Croatia has a positive medium correlation and Estonia a positive low correlation in imports. The only exception is Cyprus which has a negative correlation between imports & exports and GDP per capita in the analyzed period referring to a change in opposite direction between variables. Namely, the increase in exports and imports leads to decrease in per capita GDP in Cyprus and vice versa.

The coefficient of determination, as a squared Pearson's coefficient of correlation $R^2$, can be also used for the purpose of data interpretation (Table 3). Namely, the coefficient of determination shows the common variance of two variables, or how much of the variance of one variable is explained and caused by the variance of the other variable (Soldic-

Aleksic, 2015). Therefore, there is 48.16% of the common variance between GDP per capita and export for Bulgaria, respectively the variance of GDP per capita for Bulgaria is explained and caused by the variance of Bulgaria's export for 48.16%. The same explanation applies for the other data.

## Conclusion

Given the theoretical assumptions and the empirical evidence, it could be concluded that the trade openness of an economy may have a positive impact on economic growth due to lower trade and transaction costs, increased specialization, transfer of technology and knowledge and competitive pressure. The EU integration process that is accompanied with the sharp decline in trade barriers is therefore believed to bring significant benefits to the economic performance and growth rate of assessing countries.

According to the results of performed empirical analysis, the selected 13 EU countries that joined the EU in the last three accession years (2004, 2007 and 2013), supposedly experienced an increase in international trade even before their membership in the European Union as the world's biggest trader and largest single market. However, after the EU accession, the value of their exports and imports continued to grow excluding the years of the global financial crisis. As the latest EU members, these countries show that the share of exports and imports in GDP is higher than the EU average, with some slight exceptions.

The conducted correlation analysis results have, therefore, confirmed the fact that a country's openness to international trade contributes to the enhancement of economic growth. Namely, the results of the correlation analysis have confirmed a positive correlation between international trade (export and import) and economic growth, respectively the increase of exports & imports values increase GDP per capita, and vice versa.

Considering all the above, one can conclude that the EU accession process accompanied with trade liberalization has had a positive impact on the economic development path of transition economies. However, the potential of utilizing such trade liberalization benefits is conditioned by the initial level of their per capita GDP and other explanatory variables such as industrial and technological development of a country.

Moreover, it is worth of mentioning that the conclusions could be subject to the impact of the key limitations of this study. In this regard, future research should address the impact of different market liberalization indicators on the economic growth of the selected EU countries, such as the trade balance, terms of trade index, value added in exports etc. In addition, research could continue and provide a more detailed insight into the foreign trade structure of the accessing countries so that the impact of intra-community trade only on the economic benefits of selected EU members should be determined.

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