



## ČLENSTVO V EÚ A ŠTRUKTÚRA ZAHRANIČNÉHO OBCHODU: ČO BY MOHOL POVEDAŤ PRÍPAD BULHARSKA

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### EU MEMBERSHIP AND FOREIGN TRADE STRUCTURE: WHAT THE CASE OF BULGARIA COULD SAY

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Článok je určený na skúmanie dynamiky zahraničného obchodu Bulharska v období rokov 2010 – 2019. Cieľové obdobie umožňuje overiť hypotézu, či členstvo v Európskej únii mení geografickú štruktúru obchodných vzťahov. Empirická analýza je založená na analýze obchodných trendov a regresnej analýze. Výsledky použitých metód neposkytujú dôkaz o preorientovaní zahraničnoobchodných tokov spôsobené členstvom v Európskej únii. Zahraničný obchod sa neotočil smerom k členským štátom Európskej únie, ktorý by mohol nahradiť obchod s partnermi z tretích nečlenských krajín.  
Kľúčové slová: dovoz, vývoz, členské štáty Európskej únie, nečlenské krajiny, regresná analýza

This paper is intended to study the dynamics of the foreign trade of Bulgaria for the period 2010-2019. The period enables verifying the hypothesis that the European union membership changes the structure of trade partners. The empirical analysis is based on both – trend analysis and regression methodology. The outputs of both methodologies applied do not give evidence for reorientation of foreign trade flows caused by the European union membership. The foreign trade has not turned towards the European union members replacing the trade with partners from third non-member countries.

Key words: import, export, EU member states, third non-member countries, regression analysis  
JEL: F15, F41

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## 1 INTRODUCTION

Nowadays, the concept of economic autarky is considered as utopist idea. The ambitions for achieving autarky by strong totalitarian and overpopulated states were causes for large wars in the past few centuries (Mises 1944). In recent days, these ambitions are left on the dung-hill of history. Today, the governments have recognized the benefits from free international trade and strive to relax the barriers for such a trade. They understand that worldwide free trade is as possible as achieving autarky (Mises 1944). In terms of worldwide free trade no country will need running wars for territory to assure economic well-being for its population. For these reasons, they establish multilateral trade unions and associations to encourage the free trade among the membering countries.

After the World War II, the European governments recognized that sharing economic future would allow them to avoid new big wars on the old continent. In the early years after this war, they embarked establishing the largest democratic project of economic integration in entire human history. This common integrational initiative is based on the efforts to encourage free trade. The governments pointed four key directions of freedom to relax the barriers for free relations of citizens and businesses across the European countries. Since its establishment, the European Union has shown the idea for achieving economic autarky in international isolation is less attractive than doing business and buying goods from abroad. Therefore, economic integration and common free trade have a bigger potential to provide nations with good living standards than each great war run in the name of utopist causes and promises.

The European integrational project could be accepted as the most successful political and economic union based on democracy, free trade, labour mobility and economic integration. However, economic integration could have disadvantages such as trade diversion and the erosion of national sovereignty (Investopedia 2019). With no restrictions and barriers, the trade among the union's members could replace the trade with third countries. Some unions have exactly this purpose as main reason for their establishing. It does not inevitably mean the consumers' interests are endangered. It rather means better competition among producers and removing the low-cost advantage of producers from third countries as well as preventing price dumping.

All these positive effects from common free trade are not restricted mainly to countries with strong economies. These effects could be internalized by countries with of economies of every size. Entering an economic union makes a country have an open economy regardless of its size. The European union contains membering countries with large as well as small-sized economies that have equal opportunities to enjoy beneficial common trade. It is quite advantageous to the countries with small economies which obtain access to a huge market that exceeds many times their own populations.

Bulgaria is a typical example for a country with a small economy having access to the common European market. Bulgaria has been a member of the European Union for more than a decade. The positive effects from the membership could be seen in all aspects of economic performance. Moreover, the country has a small open emerging-market economy that implies still weak domestic business that cannot produce all the goods for satisfying the consumers' needs. In other point of view, the low-income level and small domestic market have a reducing effect on the possibilities of local business for growth and domestic market expansion. In these conditions, the domestic producers will seek export expansion for making higher profits and keeping growth of their businesses. All these things will make the impacts of the membership in trade union to be more visible and catalyzing for the development of domestic economy. Along with everything, the increase in trade openness and common trade are expected to amplify business cycle similarity between an individual country and the rest of countries in trade union that is a proxy for deepening of economic integration (Todorov – Patonov 2012, p. 14; Frankel – Rose 1998; Rose 2000).

Considering all these assumptions, the purpose of this paper is to study the relation between the trade of Bulgaria with the EU member states and the trade with third non-member countries. Imports and exports are considered as proxies for international trade. The empirical study is based on both methodologies – trend analysis and regression analysis. The quantitative data on which the estimating procedures will be run has quarterly frequency and includes all the trimesters from 2010 to the first quarter of 2019. The database of the National Statistical Institute of Bulgaria is a source of data. The following sections of this paper shed light on the literature on this topic of interest, the dynamics and structure of Bulgaria's foreign trade, the econometric methods adopted and the results of their application on the time-series of the foreign trade proxies. The last section concludes.

## **2 LITERATURE OVERVIEW**

The developments of the import and export of a small open economy such as Bulgaria's ones are mainly in the focus of the studies of domestic researchers. Along with this, there are many positive economic analyses run by official governmental agencies as well as statistical notes on this topic specified by the national statistical office, central bank, and sectoral ministries. Most of those sources are accessible to domestic readers because they have not been written or translated in English.

There also are studies and comments prepared by analysts of large financial groups. Thus an empirical study on the dynamics of the imports and exports of Bulgaria was prepared by a research team at the ING company (2017). The researchers studied the trade partners of Bulgaria and found a sustainable tendency of growth in the importance of the Euro area members as foreign trade partners. They also found

growing importance of the imports from Russia due to increased demand for crude oil and raw materials.

Boshnakova and Todorov (2017) found that Bulgaria's agricultural and food imports from the United States continues to resemble the profile of the US exports to the other EU member countries. It is mostly apparent in the segments of intermediate and consumer-oriented products. In this sense, a short statistical note by the Bulgarian Ministry of agriculture and foods provides an indicative picture for the tendencies and structure of the foreign trade of agricultural products. There are increases in the trade turnovers of Bulgaria with both – the EU members and third non-member countries in 2017 with respect to 2016. The trade with the EU increases with 5,7 percent that is far more than the growth of the trade with third countries – 1,2 percent (Bulgarian Ministry of Agriculture and Foods 2018, p. 2). There are significant increases in the trade with the Balkan countries and the Arabic countries as well.

Domestic researchers also pay attention to the structure of the foreign trade of Bulgaria. In this respect, Tsanev (2016) found a fivefold increase in the volume of the imports for two decades. This rapid growth is due to the imports of consumer and capital goods.

Another empirical study found 'the faint growth of GDP in 2010 and 2011 was due to the positive development of net exports' (Todorov 2012, p. 50). In particular, the rapid growth of the net exports of goods and services started in these years as part of the overall process of economic recovery in Bulgaria after the Global financial and economic crisis of 2008. As implied, net export is positive difference between the amounts of exports and imports in a country for a certain year.

The study of Slaveva (2010) on the imports and exports of Bulgaria since the very beginning of the democratic transition concludes that the product structure of foreign trade is determined by the state of the national economy rather than other exogenous factors such as the EU membership. In similar sense, Velinova (2006) concludes about the general increases in the exports and imports before the EU membership. She explains it with the general improvement of the economic conditions and growth in this period that entails imports from and exports to both – the EU member states and third non-member countries.

Stoevsky (2009) takes into account the autoregressive effects in econometric forecasting of the developments of the imports. He found the nominal growth rate of domestic demand and the exchange rate EUR/USD have an exaggerative effect on the imports in the years before the Global crisis of 2008. He also explains 'the nominal depreciation of the BGN (EUR) against the USD is associated with larger nominal value of imports due to the low price elasticity of the USD-invoiced imported goods (energy resources)'. Thus 'even when the quantity of imported goods declines due to

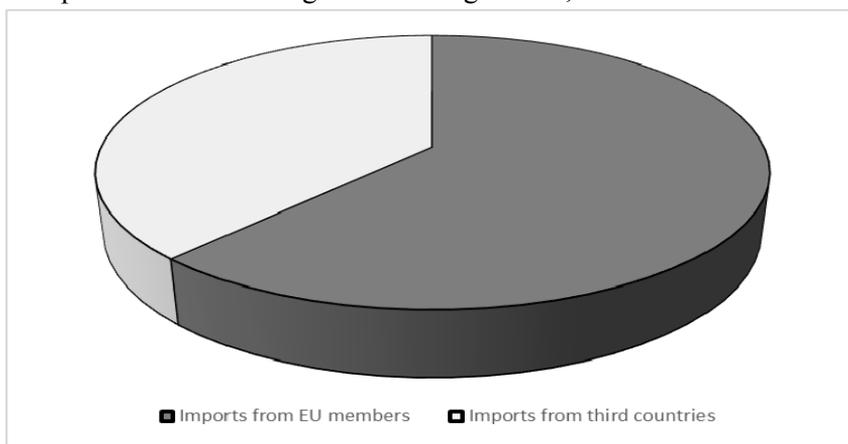
the higher imported prices (in domestic currency), the price effect dominates in the nominal amount and the overall effect is positive' (Stoevsky 2009, p. 22-23).

### 3 DYNAMICS AND STRUCTURE OF BULGARIA'S FOREIGN TRADE

Statistical reviews rank Bulgaria as the 65<sup>th</sup> largest export economy in the world and the 41<sup>st</sup> most complex economy according to the Economic Complexity Index (Atlas Media 2018). In addition, maximum detailed statistical data on the developments of the foreign trade of Bulgaria could be found on the database of the World Integrated Trade Solution. There has been announced that 'Bulgaria exports of goods and services as percentage of GDP is 67.37% and imports of goods and services as percentage of GDP is 63.71%' (WITS 2019).

Other sources highlight that Bulgaria's foreign trade is normally plagued by its deficit. Over long periods of time, imports are higher than exports, which does not help Bulgaria collect foreign currency as much as it will like to (Economy Watch, 2010). These permanent trade deficits could be seen on the figures below that describe the dynamics and structure of Bulgaria's imports and exports in trade partners' perspective.

Figure 1: Import structure of Bulgaria in average terms, 2010-2019



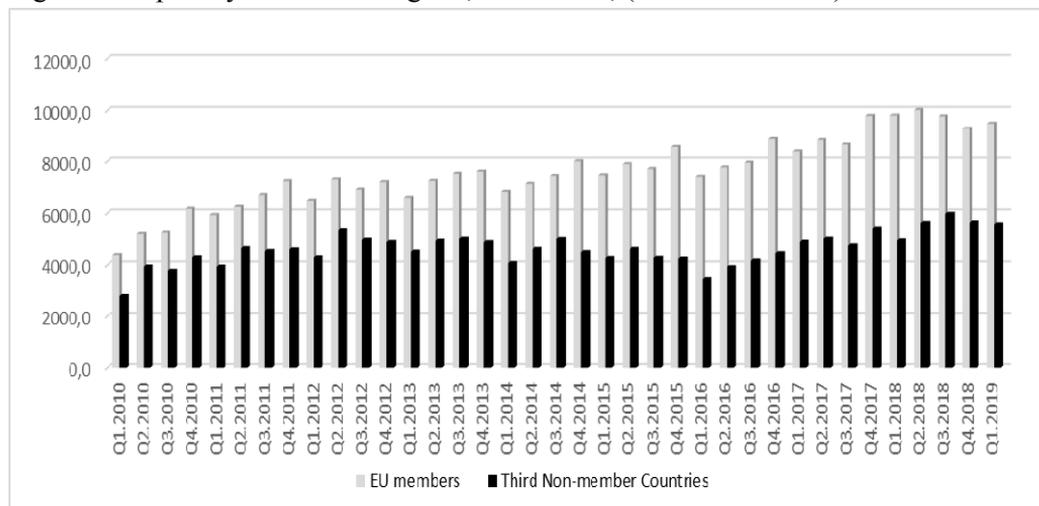
Source: National Statistical Institute of Bulgaria

The structures of the imports and exports of Bulgaria as well as their dynamics are depicted on the following figures. The statistical data used have a quarterly character. The period of interest includes observations for the period 2010-2019. The data on fourth trimester of 2018 have a preliminary character. The observations for the amounts of both – the exports and the imports of Bulgaria in first trimester of 2019 are based on non-linear forecasts.

The structure of the imports of Bulgaria with respect to trade partners is depicted on Figure 1. The amounts of the imports from the EU members and non-member countries are taken in average terms for the period of interest. As we can see, the business in the EU members is a main importer of goods and services in Bulgaria. The ratio of the *Imports from the EU members* versus the *Imports from third countries* is 1,62. This structure seems to be a direct result of the European integration of the country and the absence of trade and customs barriers for importing goods and services to domestic market. Along with this, it could be explained by the increased income level for the period of interest and higher purchasing power of the households in Bulgaria that would rather buying more expensive goods and services with better quality. For example, the EU's share of total agricultural imports of Bulgaria is 78 percent in 2017 (Bulgarian Ministry of Agriculture and Foods 2018, p. 2).

The dynamics of the imports of Bulgaria are visualized on Figure 2. As seen, the goods imported from both – the EU members and third non-member countries are in a gradual process of increasing. This long-term process has intervals of time with a more rapid growth. The quarters of 2010 and 2011 are of such kind. The higher speed of growth could be explained by the end of the Global economic crisis and the general recovery of the economy of Bulgaria. Though too weak, this recovery entails a general improvement in the households' purchasing power whose growth is disproportionately quickened anew in 2017. The last quickening of the growth of the imports is partly due to the positive perspectives for economic development in the following few years. Thus, the positive economic expectations encourage the households to relax their spending and save smaller parts of their income.

Figure 2: Import dynamics of Bulgaria, 2010-2019, (millions of BGN)

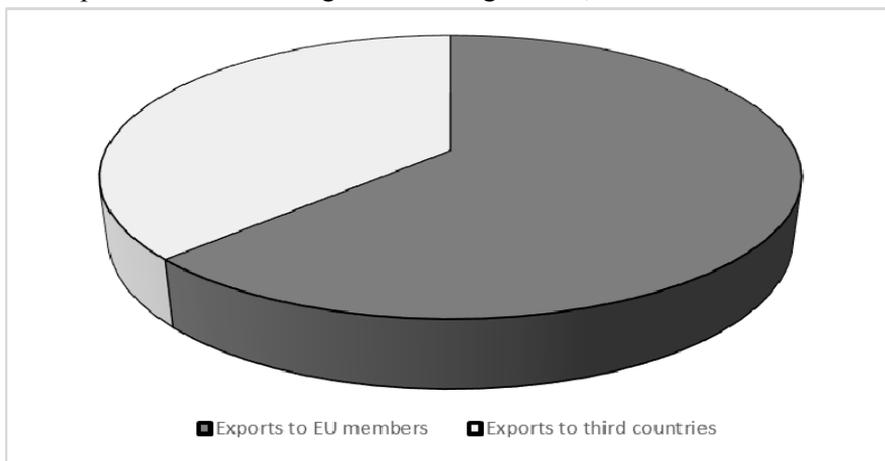


Source: National Statistical Institute of Bulgaria

As long as the total amounts of the goods and services imported from non-member countries remains relatively unchanged over the period of interest, the imports from EU members seem to be sustainably growing over the same period of time. As implied above, it is indicative for the integration of Bulgaria's economy to the common EU market. As seen, there is an overall increase in the total amount of the imports but, what is more important, this increase is not due to replacing of non-member trade partnerships with the EU member's ones. It implies the trade integration and widening have been intensified through newly established trade relations that is a positive indication for the structure of Bulgaria's foreign trade and higher purchasing power of the households in the country.

The structure of the exports of Bulgaria does not seemingly differ from the structure of the imports of the country. The EU member states are main export markets for the business in Bulgaria. The poorest country in the European Union has a small domestic market that makes its domestic firms look abroad for new market opportunities for their goods and services. The specialization of Bulgaria's economy in developing low-cost and labor-intensive industries facilitates easier selling their cheap output to European consumers.

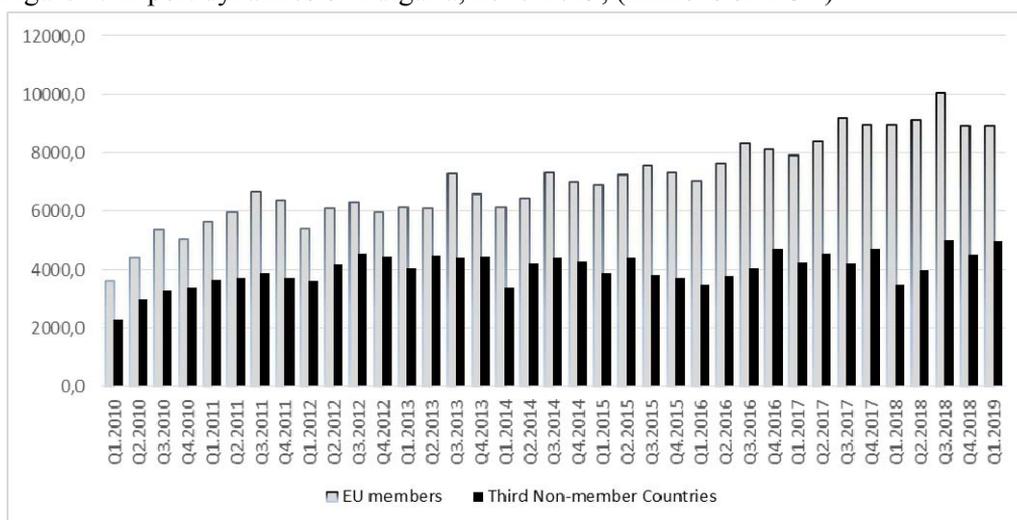
Figure 3: Export structure of Bulgaria in average terms, 2010-2019



Source: National Statistical Institute of Bulgaria

It could be seen by the ratio of the *Exports to the EU* versus the *Exports to third countries* that amounts up to 1,68. It is indicative that the EU's share of the total agricultural exports from Bulgaria is 65,3 percent in 2017 (Bulgarian Ministry of Agriculture and Foods 2018, p. 2).

Figure 4: Export dynamics of Bulgaria, 2010-2019, (millions of BGN)



Source: National Statistical Institute of Bulgaria

The dynamics of the exports of Bulgaria do not seem to be far more different than these of the imports. Seen on Figure 4, the total amount of the goods and services exported is sustainably growing from the beginning toward the end of the period of interest. Despite the slight increase in the exports in the first half of period, the third-countries' trade partners have kept relatively unchanged their importance for the Bulgarian business over the period. It shows that trade integration and export expansion to the common market has not influenced negatively the exports of Bulgaria's producers to third non-member countries.

There is, however, a visible upward tendency in the developments of the exports to the EU member countries. And what is more, the trade balance with the EU members is positive in the last few quarters. Bulgaria's economy seems to have capacity the exports to the EU members to outstrip the imports from the same group of countries in long-run perspective. The last positive indication could provide the economy of Bulgaria with a reliable base for maintaining long-term growth and increasing of national income and wealth.

#### 4 QUANTITATIVE METHODOLOGY

The impact of the integration to the common EU market on the trade relationships with the rest of the world is main focus of the quantitative analysis via econometric procedures. The methodology specified for this purpose is based on regression analysis. The econometric estimations will be run on two pairs of variables. The first pair includes the variables - imports from the EU member states and imports from third non-member countries. Second pair of variables is consisted of the exports

to the EU member countries and exports to third non-member countries. The regression model whose parameters will quantify the relations of interest has the following simple specification:

$$Y_i = c + b_1 X_i + \varepsilon \quad (1)$$

where  $Y_i$  is the imports/exports from/to third non-member countries, and  $X_i$  is the imports/exports from/to the EU members. The constant is marked with  $c$ . The coefficient of regression is marked with  $b_1$ . The symbol  $\varepsilon$  indicates the error term.

The Ordinary Least Squares (OLS) method is adopted as an estimating technique. The applicability of this method for estimation of the parameters of simple linear regression model could be verified by the descriptive statistics of the variables of interest. The descriptive statistics measures shed light on the specifics of the empirical distribution of the variables studied. The kind of empirical distribution could suggest the existence of non-linear relationships among variables if regressed. It also determines the choice of procedure for estimating the coefficients of regression as well as the correlation coefficients if separately estimated. Therefore, the estimation of the empirical distribution of each variable will be run as a starting point of the following quantitative analysis.

After estimating the empirical distribution of each variable, the expectations about non-linear relations in regression model should be checked via specific econometric tests. Ramsey's RESET procedure (Ramsey 1969) is a generalized test for specification errors such as omitted variables, incorrect functional form, and correlations between independent variables and the residuals. Omitted variables are implied by the restrictive specification of regression model. Therefore, the test will be applied to the time-series of this study for obtaining indications about non-linear relations. In essence, this procedure will search for structural breaks in the traditional simple linear specification of the model in terms of time-series data.

After getting implications about non-linear relationships, a set of functional forms of regression curve will be tested for the best fitting. The hypotheses that will be tested include the following regression curve's forms: linear, logarithmic, inverse, quadratic, cubic, and exponential one. Although all the test procedures will be run via E-Views, the functional form of regression curve will be tested via SPSS-19.

For getting a more detailed picture of the relations of interest, coefficients of correlation and bilateral causal relations will be estimated as well. Along with its own importance, the correlations could give implications for multicollinearity that has no strong distortionary effect on regression results (Ramanathan 1995, p. 309-328). The procedure of Pearson correlation is adopted for the purpose of this study.

The Pairwise Granger Causality Test (Granger 1969) is also adopted for estimating bilateral causal links between the variables of interest. Its outputs will prove whether the regression evidence has been supported by Granger causal relationships. The possibility for studying the lag structure of the relationships seems to be the most significant advantage of this test. It could be useful in finding out the time synchronization of influences and transmissions of mutual effects between the quantitative variables of each couple.

As pointed above, quantitative data is derived from the database of the National Statistical Institute of Bulgaria. It includes all the quarters in the period 2010-2018 as well as the first quarter of 2019. The observations for this trimester are based on non-linear forecasts.

## 5 EMPIRICAL RESULTS

The descriptive statistics of the first couple of variables could be seen in Table 1. The variable of *Imports from the EU members* has an empirical distribution that is close to coincide with the normal symmetric bell-shaped distribution. Full coincidence of the empirical distribution with the normal symmetric one is an exclusion rather than a rule in societal systems such as economy in which are widely spread the deviations from the ideal bell-shaped distribution. The skewness of this variable is not far from the advisable values. Along with this, the kurtosis is slightly below the recommendable values of this measure. The test of Jarque-Bera doesn't confirm any statistically significant deviation from normal distribution.

Table 1: Descriptive Statistics of the Variables of Imports and Exports

	<i>Imports from the EU members</i>	<i>Imports from third countries</i>	<i>Exports to the EU members</i>	<i>Exports to third countries</i>
Mean	7592.953	4617.832	7046.022	4032.785
Median	7453.000	4620.200	7005.500	4059.200
Maximum	10022.80	5974.900	10043.00	5029.600
Minimum	4384.000	2810.700	3634.100	2298.900
Standard Deviation	1353.468	642.3614	1453.306	571.1984
Skewness	-0.106067	-0.301822	-0.026365	-0.693208
Kurtosis	2.723075	3.509961	2.586066	3.706360
Jarque-Bera	0.187602	0.962687	0.268438	3.732520
Probability	0.910464	0.617952	0.874399	0.154701
Sum	280939.2	170859.8	260702.8	149213.0
Sum Sq. Deviations	65947552	14854615	76035528	11745633
Observations	37	37	37	37

Source: Author's calculations; National Statistical Institute of Bulgaria

The variable of *Imports from third countries* doesn't seem to have an empirical distribution which is close to the normal symmetric distribution. The skewness and

kurtosis of this variable exceed significantly the advisable values that is an indication for an excess distribution with a fat tail. It would cause a weak non-linear relationship in regressions of this variable. Leftward skewness is another important feature of the empirical distribution of both the imports variables. It is more visible in the statistics of the *Imports from third countries*. Nevertheless, the test of Jarque-Bera doesn't confirm any statistically significant deviation from normal distribution. All these descriptive measures indicate unsustainable and ambiguous tendencies in the dynamics of the imports from third countries that would be a possible reason for further non-linearity assumptions.

Table 2 presents the output of the RESET procedure that has been run on the base of simple linear regression. It gives significant empirical evidence for the break in the traditional simple linear functional form of the relationship between these variables. The non-linearity hypothesis is confirmed at a low threshold of error probability. It is in full accordance with the implications by the descriptive statistics measures of each of these variables. It indicates a relationship that is not very sustainable and predictable in the course of the period of studying.

The estimates on the functional form and the parameters of regression relation between *Imports from the EU members* and *Imports from third non-member countries* are presented in Table 3. As pointed above, hypotheses have been tested for linear, logarithmic, inverse, quadratic, cubic, and exponential functional form. Inverse functional form fits the regression curve in the best way. The simple regression using this functional form seems to have the highest explanatory power (*R-squared*) and adequacy (*F-test*). This functional form implies a weak and often unclear non-linear relationship. Inverse form would mean a negative relation between both variables that has been neutralized by the negative sign of the regression coefficient. At least, the net regression relation is positive but too weak.

Table 2: Imports from the EU members and third countries – Ramsey RESET Test

<b>Omitted Variables: Powers of fitted values from 2 to 3</b>				
	Value	df	Probability	
F-statistic	4.338643	(2, 33)	0.0212	
Likelihood ratio	8.637603	2	0.0133	
<b>F-test summary:</b>				
	Sum of Sq.	df	Mean Squares	
Test SSR	1469868.	2	734934.2	
Restricted SSR	7059825.	35	201709.3	
Unrestricted SSR	5589956.	33	169392.6	
Unrestricted SSR	5589956.	33	169392.6	
<b>LR test summary:</b>				
	Value	df		
Restricted LogL	-277.4425	35		
Unrestricted LogL	-273.1237	33		

Source: Author's calculations, National Statistical Institute of Bulgaria

Table 3: Imports from the EU members and third non-member countries – Model Summary and Parameter Estimates

<b>Equation</b>	<b>Model Summary</b>					<b>Parameter Estimates</b>			
	<b>R Sq.</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>Sig.</b>	<b>Constant</b>	<b>b1</b>	<b>b2</b>	<b>b3</b>
Linear	0,525	38,644	1	35	0,000	2007,393	0,344		
Logarithm	0,530	39,933	1	35	0,000	-17716,284	2504,229		
Inverse	0,533	39,507	1	35	0,000	6949,199	-17107392,75		
Quadratic	0,527	18,948	2	34	0,000	1284,013	0,542	-1,320E-5	
Cubic	0,527	18,948	2	34	0,000	1284,013	0,542	-1,320E-5	0,000
Exponential	0,513	36,842	1	35	0,000	2535,793	7,762E-5		

Source: Author's calculations, National Statistical Institute of Bulgaria

The regression relationship is consisted with the positive coefficient of correlation between the *Imports from the EU members* and *Imports from third non-member countries*. The coefficient is statistically significant at zero level of error probability. As seen in Table 4, Pearson correlation exceeds 0.5 which means a relatively dense relation. It means the dynamics of both the variables are synchronized to a considerable extent. This relation also proves that the general trends of the imports in Bulgaria are determined or just influenced by the general macroeconomic factors running the developments of the total economy in the period studied.

Table 4: Imports from the EU members and third non-member countries – Correlations

		<i>Imports from the EU members</i>	<i>Imports from third countries</i>
<i>Imports from the EU members</i>	Pearson Correlation	1,000	0,581**
	Sig. (1-tailed)		0,000
	N	37	37
<i>Imports from third countries</i>	Pearson Correlation	0,581**	1,000
	Sig. (1-tailed)	0,000	
	N	37	37

Source: Author's calculations; National Statistical Institute of Bulgaria

Note: \*\* Correlation is significant at the 0.01 level (1-tailed).

The outputs of the Granger causality tests are put in Table 5. The lag structure is thus chosen to cover a full year. No statistically significant relation if one lag is included into estimation. If we consider the mutual impacts two quarters earlier, we can reject the null hypothesis in one direction – from *Imports from third countries* towards *Imports from the EU members*. This estimate implies the most intensive link is found when the springtime months considered. Nevertheless, the regression relation found therefore is not supported by Granger causal link.

If we include three lags, there are no causal relations in both directions again. The null hypothesis is confirmed from *Imports from third countries* towards *Imports from the EU members*. However, this is gradually losing its significance that disappears in terms of estimation including four lags. As a whole, there are statistically significant Granger causal links in one direction only – from *Imports from third countries* towards *Imports from the EU members*. The regression relation found remains with no support by Granger causal link at every lag. This state of the estimates shows weak and ambiguous causal influences that not appear in a steady way across the quarters of year. It is fully consistent with the non-linear form of the regression curve that fits the relation.

The generalized interpretation of these empirical results would be a complex task. In terms of imports, reorientation of international trade of Bulgaria could not be confirmed. Being a EU member, Bulgaria keeps and even increases its attractiveness as a market for non-member producers. On other hand, the better income level achieved during the period of membership leads to higher levels of consumption whose significant part is satisfied by goods imported from third non-member countries. It would be sufficient to point out that raw oil and many oil derivatives as well as natural gas are completely imported from Russia which is a non-member country.

Table 5: Imports from the EU members and third non-member countries – Pairwise Granger Causality Tests

<b>Lags: 1; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Imports from third countries</i> does not Granger Cause <i>Imports from the EU members</i>	36	0.51989	0.4760
<i>Imports from the EU members</i> does not Granger Cause <i>Imports from third countries</i>		0.87882	0.3553
<b>Lags: 2; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Imports from third countries</i> does not Granger Cause <i>Imports from the EU members</i>	35	4.78441	0.0157
<i>Imports from the EU members</i> does not Granger Cause <i>Imports from third countries</i>		0.91737	0.4105
<b>Lags: 3; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Imports from third countries</i> does not Granger Cause <i>Imports from the EU members</i>	34	3.15814	0.0408
<i>Imports from the EU members</i> does not Granger Cause <i>Imports from third countries</i>		2.08387	0.1258
<b>Lags: 4; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Imports from third countries</i> does not Granger Cause <i>Imports from the EU members</i>	33	1.88955	0.1450
<i>Imports from the EU members</i> does not Granger Cause <i>Imports from third countries</i>		1.10605	0.3766

Source: Author's calculations; National Statistical Institute of Bulgaria

The econometric procedures above specified have been applied on the proxies for export outflows of Bulgaria's business. As seen in Table 1, the variable of *Exports to the EU members* has better descriptive parameters than the *Exports to third countries*.

Both the variables have leftward skewness that means longer left tails of the bell-shaped graphs of their empirical distributions. However, the skewness of the variable of *Exports to the EU members* does not exceed the recommendable threshold. Exceeding value of skewness is strongly appeared in the descriptive parameters of the variable of *Exports to third countries* whose kurtosis is visibly over the recommendable value as well. This state could be accepted as typical for variables whose dynamics have a general upward trend but this tendency is unsustainable and there are lots of wide fluctuations in the values across the observations studied. The test of Jarque-Bera on both the variables doesn't give any confirmation of the hypothesis for statistically significant deviation from normal distribution. In particular, all these statistic measures could be causes for weak and unsustainable non-linear relations in regressing these variables.

Table 6: Exports to the EU members and third countries – Ramsey RESET Test

<b>Omitted Variables: Powers of fitted values from 2 to 3</b>				
	Value	df	Probability	
F-statistic	5.289233	(2, 33)	0.0102	
Likelihood ratio	10.28806	2	0.0058	
<b>F-test summary:</b>				
	Sum of Sq.	df	Mean Squares	
Test SSR	1604870.	2	802435.2	
Restricted SSR	6611336.	35	188895.3	
Unrestricted SSR	5006465.	33	151711.1	
Unrestricted SSR	5006465.	33	151711.1	
<b>LR test summary:</b>				
	Value	df		
Restricted LogL	-276.2282	35		
Unrestricted LogL	-271.0842	33		

Source: Author's calculations; National Statistical Institute of Bulgaria

The outputs of the RESET procedure are presented in Table 6. According to the expectations inspired by the descriptive statistics, the non-linearity hypothesis is confirmed at a low level of error probability. These results are in full accordance with the rapid growth of the exports of Bulgarian goods to the EU members and the relatively unsustainable trend in the developments of the exports to non-member countries.

Table 7 presents the estimates on the regression relation between the exports to the EU members and the exports to third non-member countries. Cubic functional form is the best fit for regression curve. As evident, the explanatory power of this simple regression has the highest value among the estimates. The coefficients at each degree have different signs and it means there are values of the exports to the EU members that have positive and negative effects on the exports to third countries. Nevertheless, the total effect seems to be positive.

This state of the relation could be understood as caused by generally synchronized dynamics of both the variables (See more Figure 4). There is a general improvement of the competitive position of the Bulgarian business with respect to the common market of the EU over the period of interest. This improvement has an indirect positive effect on the expansion to new markets outside the European Union. This expansion is also facilitated by the lower exchange rate of the common currency after 2014. However, the increase in the income level and labor costs of the Bulgarian producers prevents higher increases in the products exported to third countries over the period. Excluding the USA, the emerging-market economies are main export destinations for the exports of Bulgaria. Still slightly increased exports to such low-income level countries would be considered as a proof for an improving competitive

position of the Bulgarian exports due to low exchange rate, higher labour productivity, better quality and value added, etc.

Table 7: Exports to the EU members and third non-member countries - Model Summary and Parameter Estimates

<i>Equation</i>	<i>Model Summary</i>					<i>Parameter Estimates</i>			
	<i>R Sq.</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>Sig.</i>	<i>Constant</i>	<i>b1</i>	<i>b2</i>	<i>b3</i>
Linear	0,437	27,181	1	35	0,000	2201,836	0,260		
Logarithm	0,492	33,847	1	35	0,000	-12214,003	1838,263		
Inverse	0,534	40,057	1	35	0,000	5795,082	-11855585,281		
Quadratic	0,519	18,361	2	34	0,000	-751,220	1,137	-6,240E-5	
Cubic	0,574	14,807	3	33	0,000	-8447,766	4,840	-0,001	2,786E-8
Exponential	0,442	27,719	1	35	0,000	2426,585	7,055E-5		

Source: Author’s calculations; National Statistical Institute of Bulgaria

This general implication could be suggested by the rest of estimates as well. Even though there have been estimated functional forms that are not the best fit for the curve of relation, the outputs suggest a positive regression relationship between the exports to the EU common market and the exports to third non-member countries. These implications however are valid in terms of a lower share of the dependent variable deviations explained.

The general positive relation between the exports variables of interest is also implied by Pearson correlation coefficients reported in Table 9. The relation here is stronger than that one between both kinds of imports (See Table 4). It could be explained by the fact that the exports to both the destination contains goods with a higher value added than the imports of raw resources and cheap agricultural production from Russia, Ukraine, Turkey, Serbia and FYR Macedonia for example.

Table 8: Exports to EU members and third non-member countries – Correlations

		<i>Exports to the EU members</i>	<i>Exports to third countries</i>
<i>Exports to the EU members</i>	Pearson Correlation	1,000	0,664**
	Sig. (1-tailed)		0,000
	N	32	32
<i>Exports to third countries</i>	Pearson Correlation	0,664**	1,000
	Sig. (1-tailed)	0,000	
	N	37	37

Source: Author’s calculations; National Statistical Institute of Bulgaria

Note: \*\* – correlation is significant at the 0.01 level (1-tailed).

The pairwise Granger causality test disclosure an interesting picture about the relation between the exports of Bulgaria to both the destinations of interest. There are causal links from the *Exports to third countries* towards the *Exports to the EU members* at first, third and fourth lags. Along with these links confirmed, there are significant causal links from the *Exports to the EU members* towards the *Exports to third countries* in the quarters of second half of year. As a whole, the Granger causal relationships confirmed here are more clearly expressed than those of the imports. While the needs of the Bulgarian consumers are limited, those of the consumers worldwide could be unlimited and the business in a country could export how much is able to produce and sell.

Table 9: Exports to the EU members and third non-member countries – Pairwise Granger Causality Tests

<b>Lags: 1; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Exports to third countries</i> does not Granger Cause <i>Exports to the EU members</i>	36	3.33918	0.0767
<i>Exports to the EU members</i> does not Granger Cause <i>Exports to third countries</i>		1.48315	0.2319
<b>Lags: 2; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Exports to third countries</i> does not Granger Cause <i>Exports to the EU members</i>	35	1.17655	0.3222
<i>Exports to the EU members</i> does not Granger Cause <i>Exports to third countries</i>		2.19057	0.1294
<b>Lags: 3; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Exports to third countries</i> does not Granger Cause <i>Exports to the EU members</i>	34	3.34281	0.0339
<i>Exports to the EU members</i> does not Granger Cause <i>Exports to third countries</i>		2.33229	0.0965
<b>Lags: 4; Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
<i>Exports to third countries</i> does not Granger Cause <i>Exports to the EU members</i>	33	3.67739	0.0179
<i>Exports to the EU members</i> does not Granger Cause <i>Exports to third countries</i>		2.49981	0.0693

Source: Author’s calculations; National Statistical Institute of Bulgaria

The interpretation of all the estimates above is not in favor of trade reorientation in exports’ point of view. It is commonplace, the membership in trade union facilitates common trade among the members. Despite the membership, our international trade keeps its positions on non-member countries’ markets. What is more, the EU membership does not prevent the growth of the exports to third countries and, in the same time, the interests of the Bulgarian exporters enjoy better protection.

## 6 CONCLUSIONS

As a whole, Bulgaria has a small open economy. The openness of economy is visible on the figures that depict the structure and dynamics of the imports and exports for the period of studying. The business and consumers in the European Union have prior importance for the development of the foreign trade of Bulgaria. The goods and services sold to and bought from the EU member countries exceed manifold those exported to and imported from non-member countries. What is more, the imports from and exports to the EU members have significantly increased over the period while the imports from and exports to third non-member countries have remained their importance relatively unchanged. In this sense, the trend analysis has not given evidence for reorientation of our international trade as a result of the EU membership.

No evidence in favour of replacing of trade partners from third countries with European ones has been obtained from the econometric estimates. Adversely, the increase in the imports from and exports to EU members have entailed increases in the imports from and exports to third countries that are due to a higher income level and a better competitive position has been achieved in the period of interest.

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