

AN EVALUATION OF BILATERAL TRADE BETWEEN TURKEY AND BALKANS: BASED ON GRAVITY TRADE MODEL AND LINDER HYPOTHESIS 241

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Abstract

2008 crisis had crucial impact on economic indicators of the countries. In this paper, we are going to evaluate the influence of the crisis on bilateral trade relations between Balkan countries and Turkey. Broadly speaking; in the first stage, export, import volumes and trade deficits and surpluses between Turkey and 11 Balkan countries is analyzed in comparative perspective. In second stage, theoretical background of the study is going to be based on the Tinbergen's Gravity Model that is regarded as workhorse of the empirical international trade literature. Obviously, just depending on economic magnitude and distance in order to explain the trade relations between Turkey and the other Balkan countries can give misleading results; to prevent this case; control variables like religion, existence of trade agreement and Eurovision Song Contest voting scores as cultural proxy is added to the regression model. In this respect, paper not only takes into account the supply side determinants of the trade but also considers the effects of demand side by taking Linder Hypothesis as reference point for the time span of 2004 through 2011. To sum, paper aims to test the explicative power of sociological concept homophily -geographical, cultural and preferential (similarities in demand structure) closeness- for the trade of Turkey with Balkan countries.

Keywords: *Export. Import. Gravity model. Linder Hypothesis. Balkan countries.*

Introduction

Since 2008 crisis stroke most sectors of the world economy, vast amount of studies that deals with the impacts of the crisis-called Late Great Depression²⁴²- on various economic indicators has been given. As the global economy sinking into the mire, many economists forced to analyze the occurrences -in other words causes and consequences- based upon different indicators like mortgage credits, current account deficit, oil prices, and exchange rates (Mulligan & Threinen, 2008; Mian, Sufi & Trebbi, 2008; Mizen, 2008). By utilizing from the variables listed above, gamut of 2008 crisis' underlying causes addressed in published studies, however;

241 The title of the paper is updated. In IBAC 2012 conference book the title was "2008 Crisis and Its Makings on Bilateral Trade between Turkey and Balkans: Gravity Model Approach"

242 "Late Great Depression" terminology is used by Yale University Professor Robert, Shiller in his speech to CNBC Monday to stand for 2008 crisis. (<http://www.cnbc.com/id/47200513>)

this paper focuses on not the causes of the turmoil but rather aims to reveal the impact of crisis on international trade statistics of specific set of countries-namely Balkan Countries-with Turkey.

Relatively higher growth rate in world trade volume vis à vis growth in world GDP for the last 4 decades -shown in Figure 1 and in Figure 2- provides enough motivation to search for statistically significant and explicative factors of bilateral trade relations of the countries. Turkey as the 18th largest economy of the world with 25 % exports to GDP ratio and 15, 5 % imports to GDP ratio has European Union²⁴³ as the main trading partner.²⁴⁴ However, international trade statistics shown in Figure 5 exhibits sharp decline in 2008 for export and total trade amount for all the Balkan countries included in sample with Turkey.

Every issue in economics has supply and demand sides. International trade theory is not an exception to it. From the beginning of the international trade literature, Absolute Advantage Model (Adam Smith Model); Comparative Advantage Model (David Ricardo Model)²⁴⁵ and Heckscher-Ohlin Model (Factor Endowments Theory)²⁴⁶ tried to explain the international trade relations by depending on supply side determinants, in other words, those models only took into account cost structure and were blind to demand side.(Sen,2010) After Heckscher-Ohlin Model's empirical validity is violated by Wassily Leontief's input-output model for US data, at last, new trade theories began to deal with demand tier of trade as well. Most prominent figure in the literature that advocates the demand side and tries to propose possible solution to the Leontief Paradox was Stockholm School of Economics professor Staffan Burenstam Linder who posited:

“The more similar the demand structure of the two countries the more intensive potentially is the trade between these two countries.” in his doctoral thesis.

The purpose of the paper is to use Linder Hypothesis to test the feasibility of trade Between Balkan States and Turkey by taking Linder's “overlapping demand” as reference point. But, just depending on demand structure leads us to fail the main criticism we directed to one-sided Classical Trade Theories which only focuses on supply conditions. That's why together with Linder Hypothesis, Tinbergen's gravity

243 4 of European Union member states take place in our sample.- Bulgaria, Greece, Romania, Slovenia-

244 42% of Turkey's total trade, takes place with EU.(Figure 4)

245 Absolute and Comparative Advantage models take only labor as factor of production. Comparative advantage model of Ricardo was highly criticized for not fitting the data. Despite being mathematically correct, model does not empirically justified because of implying complete specialization in equilibrium. Costinot & Donaldson (2012) put effort to come up with a new evidence for justification of compatibility of the model with real world data by using the scientists who specialized in agricultural crop faring under range of possible growing conditions.

246 Heckscher Ohlin Model's empirical validity was tested by Wassily Leontief for US data. According to theorem, U.S as the most capital abundant country of the world is expected to export capital intensive goods and import labor intensive goods. However, Leontief's input-output modeling to test the H-O model came up with results contradicting to model's expectations.

model approach -that relates bilateral trade with economic factors at the flow's origin and flow's destination together with geographical distance- to international trade is plugged into analysis to stand for supply side determinants. In this respect, we can say that paper targets to address three different homophily²⁴⁷ that are geographic homophily cultural homophily and similarities in demand for 11 Balkan States shown in Figure 6 with Turkey for the years from 2004 and 2011.

Geographic homophily depends on the idea that geographically close nations tend to be more involved in trade relations with each other. (Verbrugge, 1983; Wellman, 1996) To test geographic homophily we utilize from the gravity model, reminiscent of the law of gravity in physics, pioneered by Tinbergen (1961) which claims that trade between two countries can be formulated as follows:

$$TF_{ij} = (GDP_i, GDP_j, D^{-1}_{ij}) \quad (1)$$

TF_{ij} : Trade flow between country i and country j

GDP_i : GDP magnitude of country i.

GDP_j : GDP magnitude of country j.

D^{-1}_{ij} : Geographical Distance between country i and country j.

In this formulation, economic sizes of the countries are expected to be positively related and geographical distance is expected to be inversely related with trade flows. Gravity Model that bases on Newton's Law of Gravitation was applied to different concepts like movement of people (migration), spread of information as well as international trade between countries. Especially, it is used for evaluating the ex-ante and ex-post implications of Regional Trade Areas (RTA)(Krugman,1991; Porojan,2000;Carillo and Li,2002 and Roberts,2004)

Cultural proximity relates to the sharing of a common identity, to the feeling of belonging to the same group, and to the degree of affinity between two countries. (Felbermayr & Toubal, 2010; p.279)

In order to account for the degree of affinity between Balkan States and Turkey annual Pan-European Song contest Eurovision voting scores are used as proxy. The third tier of homophily which is preference similarity represented in regression model with differences in GDP per capita of each country.

The remainder of the article is structured as follows: next section is devoted to introduction of the variables used in empirical formulation and the data gathering processes and model specification. Second part summarizes the findings of the

²⁴⁷ It is the idea in sociology that says socio-cultural proximity between actors draws them together and facilitates tie formation.

regression model and in concluding remarks section possible threats to validity of the model are stated.

Data, Variables And Measurement Issues

In our analysis, we gathered information from several secondary data resources. As dependent variable 2 different foreign trade statistics –ln exports and ln total trade– that are derived from Turkish Statistical Institute is used. (<http://www.turkstat.gov.tr>) First explanatory variable of the gravity model, GDP magnitudes, are collected from Worldbank database; second regressor, distance, represents the geographical distance between capitals of countries and Ankara; .248 I, stand for the similarities in income structure of the countries and derived by taking the ln of difference in GDP per capita. Variable border, is a binary construct and takes value 1 if the country j has a border with Turkey; 0, otherwise. Religion dummy takes value 1 if both of the countries belong to same religious denomination and 0, otherwise.

While calculating cultural proxy variable, following indexing is used: this table says us that if country i gives vote to country j that is above country j’s average score and if country j gives vote to country i that is above country i’s average score then ESC variable takes value 2; if country i votes country j above average and country j votes country i below its average then the value of ESC (Eurovision Song Contest) takes 1, so forth.(Table 1)

$$\ln(\text{exp}_{ijt}) = \alpha + \beta_1 \ln(\text{GDP}_{it} * \text{GDP}_{jt}) + \beta_2 \ln(\text{D}_{ij}) + \beta_3 \ln(\text{I}_{it} * \text{I}_{jt}) + \beta_4 \text{border} + \beta_5 \text{religion} + \beta_6 \text{cultureproxy} + e_{ijt} \quad (2)$$

$$\ln(\text{totaltrade}_{ijt}) = \alpha + \beta_1 \ln(\text{GDP}_{it} * \text{GDP}_{jt}) + \beta_2 \ln(\text{D}_{ij}) + \beta_3 \ln(\text{I}_{it} * \text{I}_{jt}) + \beta_4 \text{border} + \beta_5 \text{religion} + \beta_6 \text{cultureproxy} + e_{ijt} \quad (3)$$

Table 1: Eurovision Song Contest Voting Results Indexing

	Country j		
		Above Average	Below Average
Country i	Above average	2	1
	Below Average	1	0

Empirical Results

For the purpose of the study, we use cross sectional data for particular time period, 2004-2011. Estimated coefficients derived by using Ordinary Least Squares (OLS) method of four different models developed to assess the bilateral trade between 11 Balkan States and Turkey. Initial estimates indicated that using two different

248Googlemaps driving direction is used in calculation of the distance between capitals.

dependent variable-whether we use lnexport or lntotaltrade-make difference. (Table 2)

According to derived results, the estimated coefficients on distance and GDP in all cases are statistically significant at the 1 % level. The results for GDP and border have the expected results. In other words; there is positive relationship between countries' economic masses and trade flow. The direction of the relationship between distances and trade flow is negative. Having border with Turkey and country j has statistically insignificant but positive impact on export and total trade. As the income per capita differences between country i and country j increases, it leads decline in the volume of export and total trade. So, we can emphasize that Linder's detection of

“The more similar the demand structure of the two countries the more intensive potentially is the trade between these two countries.” hold for the trade relation of Balkan States and Turkey for the period we analyzed. Even the sign of the cultural proxy represented by ESC index indicates to positive relationship, yet; it is statistically insignificant.

Table 2: Gravity Model for 11 Balkan Countries and Turkey

VARIABLES	(1) lnexportsto	(2) lntotaltrade	(3) lnexportsto	(4) lntotaltrade
Lndistance	-2.594*** (0.346)	-3.093*** (0.369)	-3.696*** (0.481)	-4.274*** (0.504)
Lngdpigdpj	0.608*** (0.0482)	0.714*** (0.0513)	0.649*** (0.0481)	0.732*** (0.0504)
Border			0.204 (0.180)	0.213 (0.188)
Ingdppercapitadifference			-0.378*** (0.0924)	-0.489*** (0.0968)
Religion			0.674*** (0.163)	0.521*** (0.171)
ESC index			0.00237 (0.0773)	0.0404 (0.0810)
Constant	23.20*** (2.944)	24.50*** (3.135)	31.27*** (3.906)	34.04*** (4.095)

Observations	82	82	78	78
R-squared	0.755	0.790	0.836	0.864

Note: The dependent variable is \ln export for the models 1 and 2 and it shows the \ln of export volume from Turkey to country j ; \ln totaltrade for the models 3 and 4 and it shows the \ln of total trade (export+import) between Turkey and country j , in US dollars,. Numbers in parentheses are standard errors. *** indicates statistical significance at the 1%, ** at the 5% and * 10% level. Estimates are obtained from OLS on pooled data.

Concluding Remarks

The ultimate goal of the study was grounding on gravity model and Linder hypothesis to estimate the bilateral trade relation between Balkan States and Turkey for the years from 2004 to 2011. Derived results indicate that the geographical homophily- that is represented with the distance between the countries' capitals-, preferential homophily that stands for similarity in demand structures of the states- that is represented with the difference in GDP per capita of the countries-are at work and contributes to our understanding of the trade formation between Balkan States and Turkey.

This study only deals with the existing panorama of the trade relation and has no comment on potentiality as regards to Turkey's trade with Balkans. By using estimated coefficients potential total trade and export numbers can be calculated and compared to actual statistics to evaluate whether Turkey under-trading or over-trading with the sample of Balkan countries we dealt with.

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Appendix

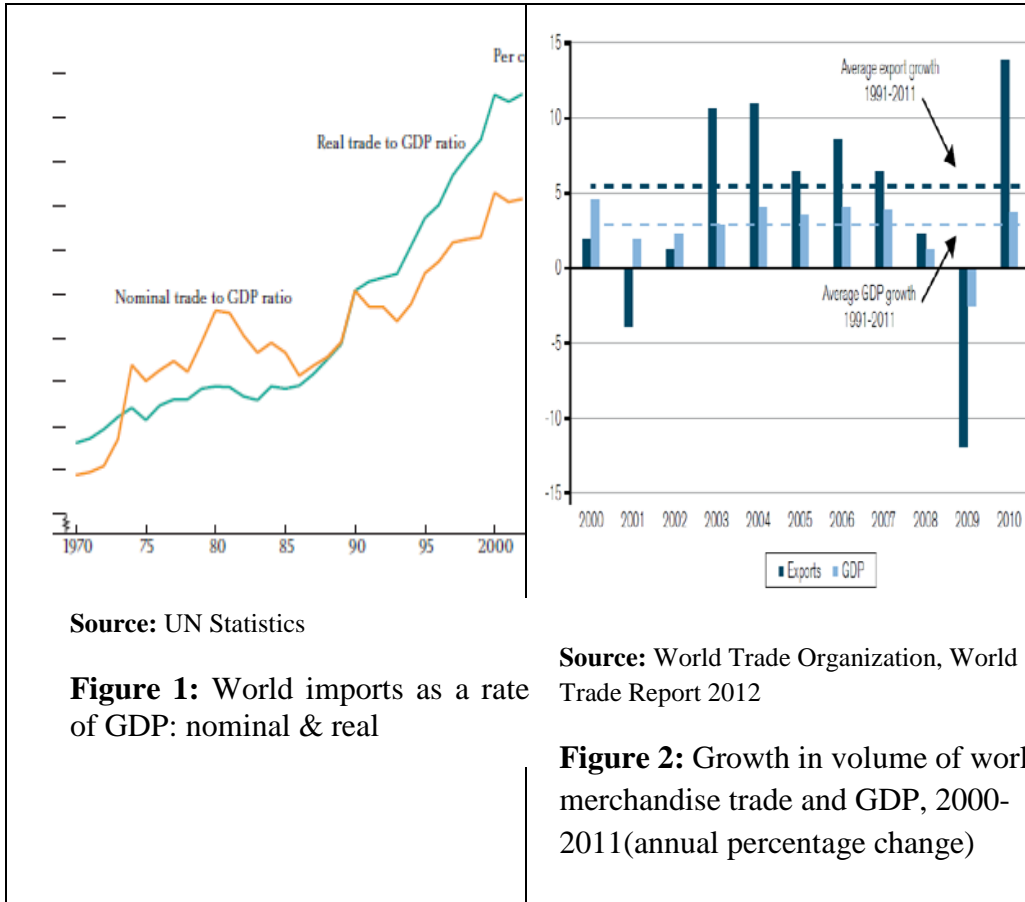


Figure 3: Turkish Economy’s Main Economic Indicators

TURKEY			
MAIN ECONOMIC INDICATORS			
Surface Area:	783,6 1000 sq km **	* : IMF (World Economic Outlook) *** : IMF (DoTS & WEO)	
Population:	72,2 Millions of inhabitants - 2011 (estimates after 2010) *	** : World Bank (World Development Indicators)	
Current GDP:	548,2 Billions of euros - 2011 (estimates after 2010) *	**** : Trade-to-GDP ratio = (Exports + Imports) / GDP	
GDP per capita:	7 597,7 Euros - 2011 (estimates after 2010) *		
Exports-to-GDP ratio:	15,5 % (2010) ***	2008	2009
Imports-to-GDP ratio:	25,0 % (2010) ***	2010	2011
Trade-to-GDP ratio:	40,5 % (2010) ****	0,7	-4,8
		8,9	6,6
		10,4	6,3
		8,6	6,0
		-5,7	-2,3
		-6,6	-10,3

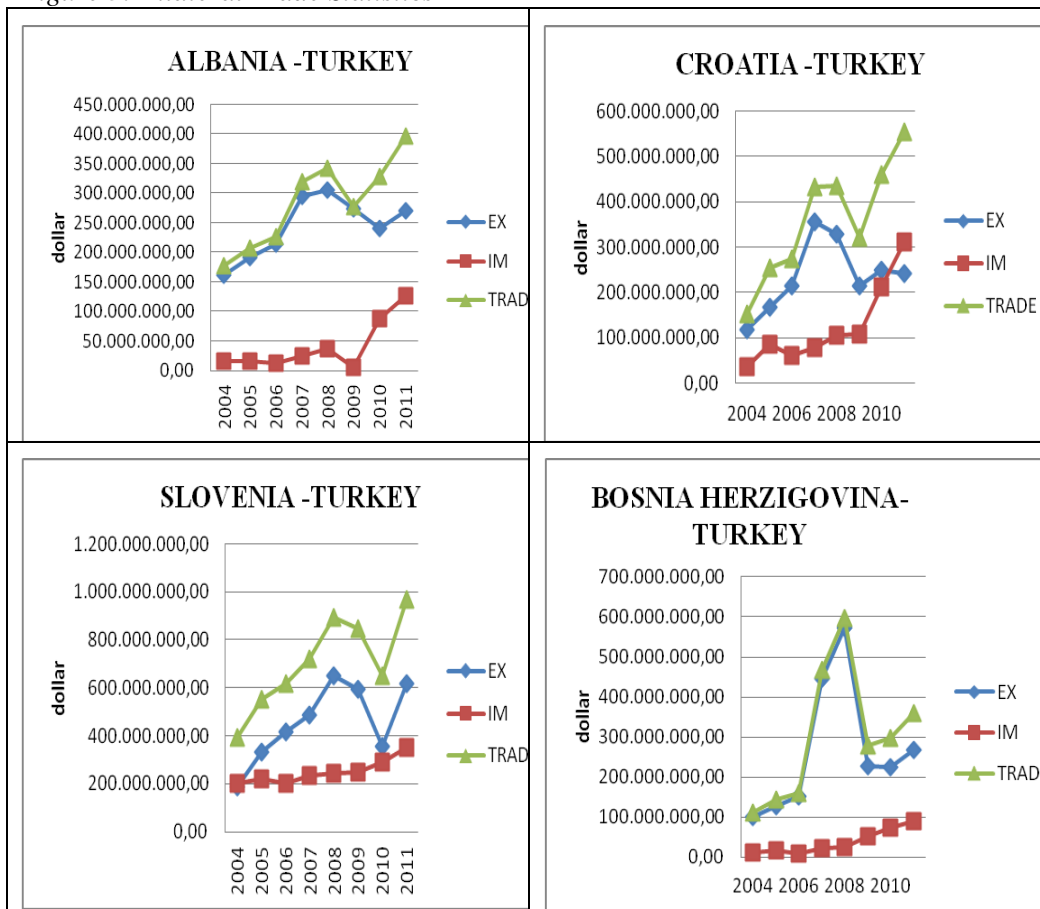
Source: Eurostat

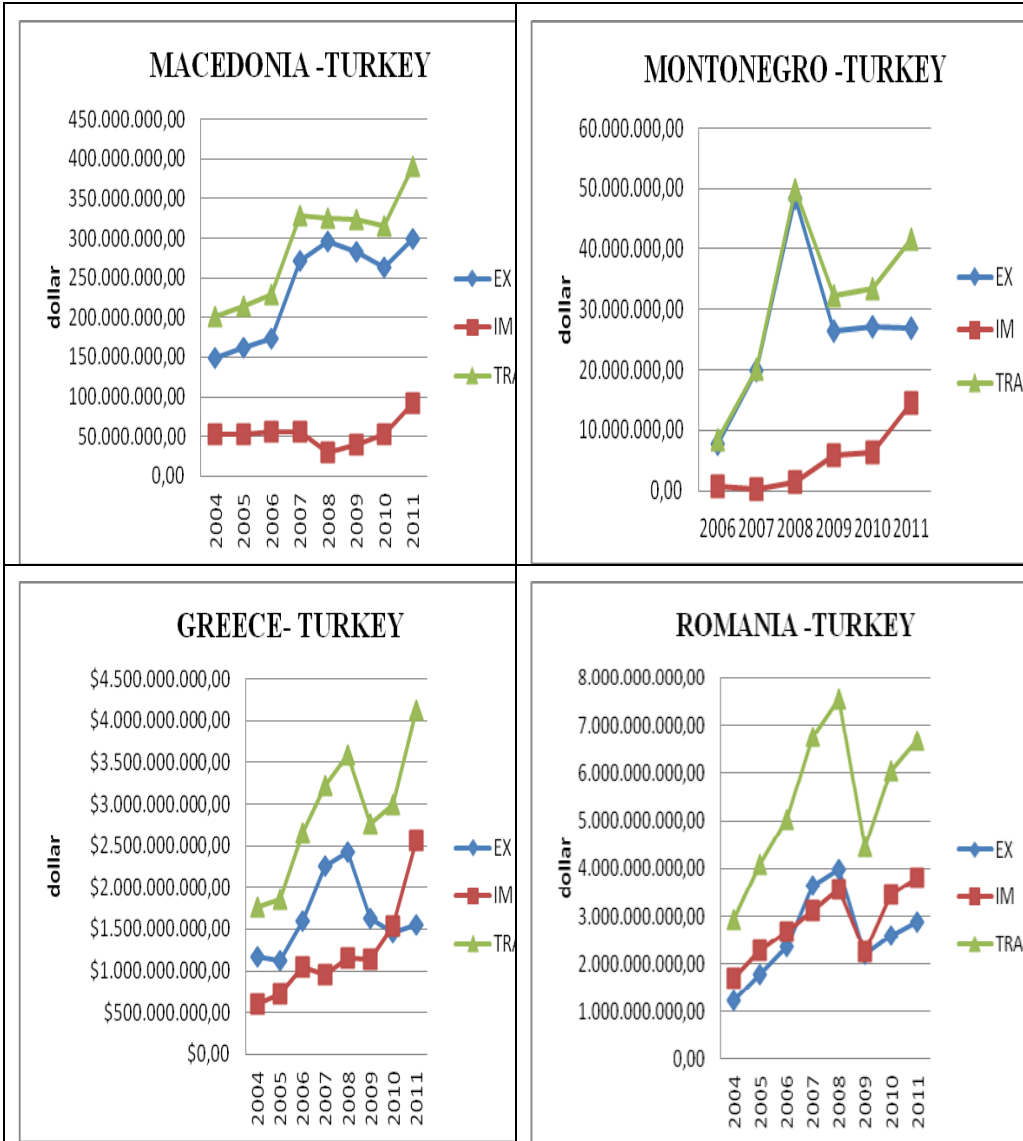
Figure 4: Turkey's Top 10 Export Partners

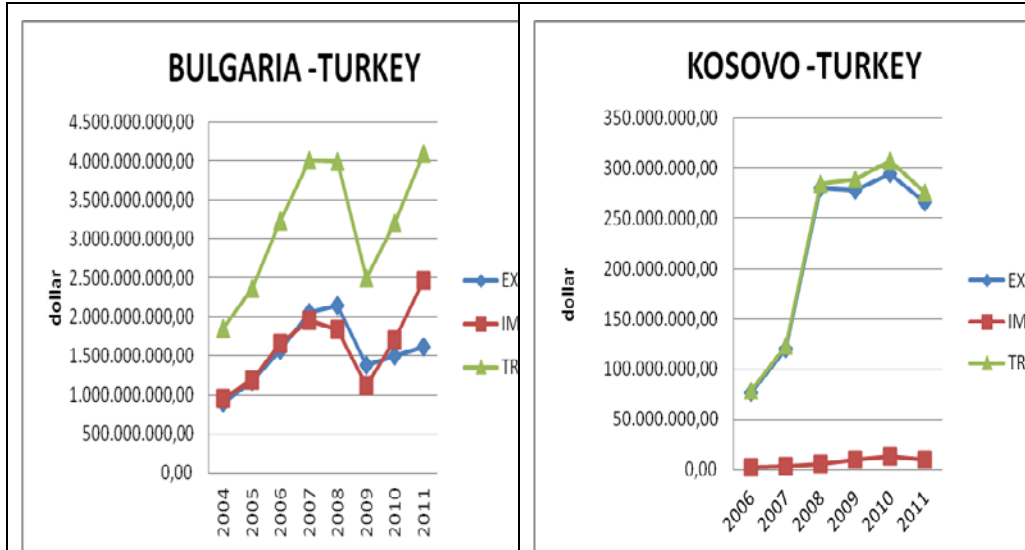
The Major Imports Partners				The Major Export Partners				The Major Trade Partners			
Rk	Partners	Mio euro	%	Rk	Partners	Mio euro	%	Rk	Partners	Mio euro	%
World (all countrie)				World (all countrie)				World (all countrie)			
1	EU27	54 609,7	39,3%	1	EU27	39 754,5	46,3%	1	EU27	94 364,1	42,0%
2	Russia	16 290,8	11,7%	2	Iraq	4 564,0	5,3%	2	Russia	19 788,3	8,8%
3	China	12 999,0	9,4%	3	Russia	3 497,5	4,1%	3	China	14 715,2	6,5%
4	United States	9 338,2	6,7%	4	United States	2 906,2	3,4%	4	United States	12 244,4	5,4%
5	Iran	5 791,1	4,2%	5	United Arab Emirab	2 522,1	2,9%	5	Iran	8 091,5	3,6%
6	South Korea	3 608,9	2,6%	6	Iran	2 300,3	2,7%	6	Iraq	5 586,3	2,5%
7	Ukraine	2 903,5	2,1%	7	China	1 716,2	2,0%	7	Switzerland	3 976,5	1,8%
8	India	2 585,8	1,9%	8	Egypt	1 698,9	2,0%	8	Ukraine	3 853,2	1,7%
9	Japan	2 495,7	1,8%	9	Saudi Arabia	1 683,7	2,0%	9	South Korea	3 838,1	1,7%
10	Switzerland	2 389,3	1,7%	10	Switzerland	1 587,2	1,8%	10	Saudi Arabia	3 529,1	1,6%

Source: Eurostat

Figure 5: Bilateral Trade Statistics







Source: Authors' derivation from the data gathered from TURKSTAT

Figure 6: Countries included in the analysis

.Albania(70)	.Bosnia(93)	.Bulgaria(68)
.Croatia(92)	.Greece(9)	.Kosovo(95)
.Macedonia(96)	.Montenegro(97)	.Romania(66)
.Serbia(98)	.Slovenia(91)	.Turkey

Note: Numbers in parenthesis represents the country codes that take place in foreign trade statistics of Turkish Statistical Institute