

Greece's Trade With The Balkan Countries: Is It Too Little?

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Abstract

In this paper we use a gravity model in order to estimate the magnitude of potential trade flows between Greece and nine Balkan countries. We adopt a two stage approach. At the first stage the coefficients of the gravity model for the implemented trade between Greece and thirty trade partners are estimated by using the method of Seemingly Unrelated Regression (SUR). At the subsequent step, we implement a research exercise by incorporating the estimated parameters to a gravity equation of Greece and the Balkan countries. It appears that Greece is "under-trading" with all the countries in the reference sample. The ratio of actual over potential exports/imports is less than unity in all cases. Under-trading is more pronounced in the case of imports, where the actual value approaches almost two per cent of the potential.

- **JEL Classifications:** F14, F15, F17
- **Key Words:** Gravity Model, Greece, Balkans

I. Introduction

Given its proximity as well as historical and cultural links, the South-East European region represents for Greece an important potential market of great opportunities. At the same time the magnitude of ethnic, political and economic problems that these countries are facing today within both the domestic and the international context, are enormous. This is because the general situation in the Balkan peninsula was very different in 1989 than it is today. In 1989 Bosnia and Herzegovina, Croatia, *FYR* Macedonia, Slovenia and *FR* Yugoslavia were united. Bulgaria and Romania were members of the *CMEA* and Albania was the most closed and isolated economy in Europe. Recent economic upheavals together with the opening of potential new markets have made it difficult for them to achieve a state of steady economic development. The majority of these countries are in a stage of transition towards the establishment of a market economy and the creation of a basis for self-sustained economic and social growth. They have to resolve a wide range of practical, ethnic,¹ economic, social and related issues.

The importance of international trade in the process of transition and its association with economic growth has received increasing attention.² The opening up of Central and East European markets will boost international trade. The magnitude of these forces as well as the net effects for the trade partners are still debatable. Most of the previous literature focuses on the potential for trade expansion between Central and Eastern European Countries and the *EU* as a whole.³ Country-specific studies have been carried out for Germany, Spain, Ireland and Greece.⁴ More specifically, Dimelis and Gatsios (1995) compare the actual trade flows between Greece and 6 CEECs (Albania, Bulgaria, Romania, Hungary, Poland and Czechoslovakia) with the potential ones, which are derived by using the Baldwin's (1994) gravity model over a total of 17 exporting countries and 20 trading partners for the period 1979-88. They find a larger potential for growth of trade of the three CEECs compared to the three Balkan countries. However, their predictions are not underpinned by rigorous analysis. In particular there is still lack of conclusive evidence regarding the trading potential of the

¹See for example the ethnic problems that *FYR* Macedonia is faced recently.

²The existing literature is huge; for an overview see Vamvakidis (1998).

³See Hamilton and Winters (1992), Baldwin (1994), Winters and Wang (1994), Faini and Portes (1995) and Vittas and Mauro (1997).

⁴See Schumacher (1997) for the case of Germany, Martin and Gual (1994) for the case of Spain, Brulhart and Kelly (2000) for the case of Ireland and Dimelis and Gatsios (1995) for the case of Greece.

Balkan region, a region that is very different compared to Central and Eastern Europe. Our work is a contribution to filling this gap.

From the empirical point of view the methodology adopted in this paper offers a way-out to the lack of historical data. By developing a SUR gravity model and by adopting estimates of the parameters on bilateral trade, we differentiate our study from others and we get a better idea of which of the proposed determinants are actually most likely to affect the bilateral trade in this area. In this sense we also make an empirical contribution.

Greece, as member of the European Union represents, for Balkan countries in transition, an important Western partner who can assist them in their transformation process to market based economies. Therefore, economic cooperation and trade integration between Greece and the Balkan countries can be mutually

Table 1. Growth rates of Greek-Balkan trade

Rates of exports	1991	1992	1993	1994	1995	1996	1997	1998	1999	1991-99
Romania	65%	32%	0%	11%	84%	1%	15%	24%	9%	27%
Bulgaria	91%	99%	118%	44%	3%	-27%	16%	49%	-4%	43%
Albania	-21%	254%	268%	79%	17%	29%	-12%	-17%	18%	68%
FYROM			965%	-89%	190%	463%	33%	6%	63%	233%
Yugoslavia	2%	-56%	-100%							-51%
Slovenia			481%	-26%	478%	-71%	71%	29%	1%	138%
Croatia			719%	23%	39%	4%	126%	-26%	43%	133%
Turkey	5%	32%	34%	-2%	53%	67%	39%	-14%	0%	24%
Bosnia-Herzegovina			342%	-97%	-53%	482%	248%	63%	119%	158%
Serbia-Montenegro						704%	36%	0%	-37%	176%
Balkans	22%	25%	87%	12%	32%	35%	21%	7%	9%	28%
Total Greek exports	25%	19%	3%	18%	11%	12%	7%	-12%	20%	11%
Rates of imports	1991	1992	1993	1994	1995	1996	1997	1998	1999	1991-99
Romania	47%	-21%	13%	50%	38%	12%	61%	4%	10%	24%
Bulgaria	64%	15%	39%	70%	45%	-20%	28%	2%	-9%	26%
Albania	11%	60%	2%	142%	1%	2%	13%	9%	6%	27%
FYROM			466%	-83%	194%	179%	75%	7%	2%	120%
Yugoslavia	-6%	-70%	-100%							-59%
Slovenia			640%	63%	36%	-8%	3%	13%	-9%	105%
Croatia			274%	-13%	-4%	-23%	-29%	93%	169%	67%
Turkey	34%	-8%	13%	30%	17%	15%	45%	34%	2%	20%
Bosnia-Herzegovina			1181%	-93%	-40%	-58%	104%	218%	42%	193%
Serbia-Montenegro						7316%	95%	-22%	-36%	1838%
Balkans	22%	-22%	25%	37%	34%	6%	43%	9%	-2%	17%
Total Greek imports	25%	14%	13%	3%	13%	17%	8%	2%	14%	12%

Source: Own calculations using NSSG data.

beneficial.

The next section of the paper presents some patterns of trade between Greece and the Balkans. Section 3 discusses the underlining theory of gravity model, while section 4 proceeds with the model specification and the results. Estimates are produced for the future trade integration between Greece and the Balkans. Finally the last section offers some conclusions.

II. Patterns of Trade between Greece and the Balkans

The first and most important remark regarding trade between Greece and the Balkans has to do with its rapid evolution over time. Table 1 shows the growth rates of both exports and imports of Greece to and from the Balkan countries during the relevant period. For comparison we also present the growth rates of

Table 2. Growth rates of EU-Balkan Trade

Rates of exports	1992	1993	1994	1995	1996	1997	1998	1991-99
Romania	49,8%	10,4%	15,4%	44,0%	15,3%	1,0%	20,4%	22,3%
Bulgaria	18,6%	7,0%	22,1%	27,9%	-25,3%	-4,4%	44,3%	12,9%
Albania	80,4%	21,3%	8,6%	31,7%	35,8%	-46,9%	25,5%	22,3%
FYROM			48,9%	36,0%	-22,3%	-18,2%	52,8%	19,5%
Yugoslavia	-10,1%							-10,1%
Slovenia			21,5%	32,7%	0,3%	4,5%	5,6%	12,9%
Croatia			44,7%	27,9%	0,3%	9,5%	-2,7%	15,9%
Turkey	3,9%	27,9%	-23,7%	59,5%	27,8%	10,8%	2,6%	15,5%
Bosnia-Herzegovina			19,4%	58,9%	218,0%	31,3%	11,0%	67,7%
Serbia-Montenegro			120,9%	70,3%	417,9%	35,5%	5,2%	129,9%
Balkans	3,3%	11,1%	-0,3%	44,4%	16,6%	7,1%	7,3%	12,8%
Total EU exports	5,9%	-8,5%	14,5%	22,1%	2,7%	1,0%	6,7%	6,3%
Rates of imports	1992	1993	1994	1995	1996	1997	1998	1991-99
Romania	4,9%	4,5%	59,7%	34,0%	3,4%	10,4%	12,3%	18,5%
Bulgaria	24,5%	-4,5%	43,1%	41,7%	-9,1%	7,9%	13,4%	16,7%
Albania	-14,9%	29,7%	54,2%	37,2%	27,1%	-14,3%	13,1%	18,9%
FYROM			108,7%	19,1%	-24,7%	-11,1%	37,1%	25,8%
Yugoslavia	-10,3%	-100,0%						-55,2%
Slovenia			20,9%	24,7%	-2,1%	-3,0%	10,0%	10,1%
Croatia			14,1%	6,7%	-10,8%	-8,0%	8,6%	2,1%
Turkey	8,1%	-8,3%	16,6%	26,3%	4,9%	6,8%	17,9%	10,3%
Bosnia-Herzegovina			-55,6%	100,0%	181,3%	105,6%	197,3%	105,7%
Serbia-Montenegro			66,7%	720,0%	1102,4%	108,7%	-73,8%	384,8%
Balkans	-0,2%	-16,6%	25,8%	26,4%	1,8%	6,0%	12,9%	8,0%
Total EU imports	4,2%	-15,1%	13,7%	20,6%	0,9%	2,3%	10,7%	5,3%

Source: IMF, Direction of trade statistics.

Table 3. Greek and EU trade with the Balkan countries

a. Greece-Balkans (million drachmas)							
	X	M	X-M	X/M(%)	RX	RM	R
1990	67.349	97.379	-30.029	69,2%	5,3%	3,1%	3,7%
1991	82.029	119.181	-37.152	68,8%	5,2%	3,0%	3,7%
1992	102.915	93.198	9.717	110,4%	5,5%	2,1%	3,1%
1993	192.780	116.626	76.154	165,3%	10,0%	2,3%	4,4%
1994	215.734	159.788	55.947	135,0%	9,4%	3,1%	5,0%
1995	285.724	214.592	71.132	133,1%	11,2%	3,6%	5,9%
1996	384.534	226.613	157.921	169,7%	13,5%	3,3%	6,3%
1997	466.979	323.573	143.405	144,3%	15,3%	4,4%	7,5%
1998	498.096	352.505	145.591	141,3%	18,6%	4,6%	8,3%
1999	542.971	346.739	196.232	156,6%	16,9%	4,0%	7,5%
b. EU-Balkans (millions US Dollars)							
	X	M	X-M	X/M(%)	SX	SM	S
1991	23.559	21.237	2.322	110,9%	1,6%	1,3%	1,5%
1992	24.334	21.202	3.132	114,8%	1,5%	1,3%	1,4%
1993	27.026	17.692	9.334	152,8%	1,9%	1,3%	1,6%
1994	26.943	22.252	4.691	121,1%	1,6%	1,4%	1,5%
1995	38.893	28.117	10.776	138,3%	1,9%	1,5%	1,7%
1996	45.351	28.632	16.719	158,4%	2,2%	1,5%	1,8%
1997	48.585	30.339	18.246	160,1%	2,3%	1,5%	1,9%
1998	45.330	34.240	11.090	132,4%	2,0%	1,6%	1,8%

X=exports, M=imports, R=share in total Greek trade, S=share in total EU trade.

Source: NSSG.

both exports and imports of *EU* to and from the Balkan countries during the period 1991-98 (Table 2). The information in these tables confirms that the Balkan countries represent an increasingly dynamic export market for Greek products. The average annual growth rate of Greek exports to the Balkan region over the period 1990-99 is 28per cent. It far outweighs the average growth rates of total Greek exports of around 11per cent as well as the average growth rate of *EU* exports to the South and Eastern European (SEE) countries of around 13per cent.⁵ Its importance in the near future is likely to increase as Greek firms, which find it difficult or unprofitable to place their products in the competitive *EU* markets, will find an easy outlet in the Balkans. Imports are also accelerating fast, but not to the same degree as exports. The average growth rate of Greek imports from the Balkans over the period 1990-99 is 17 per cent. They accelerate faster compared

⁵We use the terms "Balkans" and "SEE countries" equivalently.

⁶Croatia is also important for EU exports, with a share of 10.1%.

to the average growth rate of total Greek imports of around 12 per cent. For the *EU* as a whole, the average increase in imports from the Balkan countries was only 8 per cent on average over the period 1991-98. However, it far outweighed the average growth of total *EU* imports of around 5 per cent over the same period.

The significant contribution of the increase in exports to total Greek-Balkan trade is reflected in the exports-to-imports ratio (Table 3). For Greek-Balkan trade this ratio has increased from 69.2 per cent in 1990 to 156.6 per cent in 1999 turning a trade deficit with the Balkan countries into a trade surplus, whereas for the EU-Balkans trade it increased from 110.9 per cent in 1991 to 132.4 per cent in 1998, increasing its trade surplus with the SEE countries.

Trade integration between Greece and the Balkan countries although increasing is still at very low levels. The Balkan trade accounts for 7.5 per cent of total Greek trade, dominated by the share of exports (16.9 per cent) in 1999. For the EU-SEE trade the corresponding shares are around 2 per cent.

III. The Gravity Model

The gravity model has been one of the most popular models in the international trade literature aiming at explaining proportion of bilateral trade flows. Formal theoretical foundations of the gravity model are provided in Anderson (1979), who shows that the gravity models can be derived from expenditure share equations, assuming that commodities are distinguished by place of production; Helpman (1984) and Bergstrand (1985) who demonstrate that the gravity model can be derived from models of trade in differentiated products; and Deardorff (1995), who shows that the gravity model is consistent with the Heckscher-Ohlin model expanded to include transport costs.⁷ In general the model relates bilateral trade from origin i to destination j with economic forces at the flows origin, economic forces at the trade destination and economic forces either aiding or resisting the flows movement from origin to destination. The following specification is proposed:⁸

$$(Trade)_{ijt} = AY_{it}^{\alpha} Y_{jt}^{\beta} \Delta_{ij}^{\gamma} U_t$$

where Y_{it}^{α} and Y_{jt}^{β} stand for purchasing power of country of origin and destination respectively and Δ_{ij}^{γ} denotes the distance between the two countries. U_t is an error

⁷See also Tinbergen (1962).

⁸See also Frankel *et al* (1995).

term and A represents the constant term.

Under this framework an exporting country's income can be interpreted as the country's production capacity, while an importing country's income is the country's purchasing power. The above is the reduced form equation resulted from a general equilibrium model of world trade where consumers are assumed to share a Constant Elasticity of Substitution (*CES*) utility function and producers use an internationally immobile production factor according to a constant elasticity of transformation (*CET*) production function. For the purpose of the present work we also emphasize the effects of relative prices on trade flows. To this end, we incorporate the nominal exchange rate to the standard gravity model. Finally we follow the lines of Linneman (1966), Anderson (1979) Bergstrand (1985), Summary (1989), Wang-Winters (1991), Hamilton-Winers (1992) and Baldwin (1994) and we use aggregate, instead of industry or branch-level, bilateral trade flows.⁹

Attempting to make inferences about the intra-Balkan trade we have to take into consideration the economic and the political environment characterized by the majorities of the Balkan economies. The post-war economic isolation of the Balkan countries, their distorted pricing structures, their recent transition from central planning to a market economy and the structural breaks observed recently, make it difficult to estimate on the basis of extrapolation from historical levels the magnitude of trade which is likely to prevail between Greece and Balkan countries after full economic liberalization. For this reason we attempt to extrapolate information for trade developments by using as a basis the trade patterns among Greece and a reference group of countries which are assumed to exhibit 'normal' trade relationships. Consequently, in order to estimate the trade potential between Greece and the Balkan countries we adopt a two stage approach. At the first stage we estimate the gravity coefficients of the implemented trade among Greece and thirty selective trade partners at various years. This set (see Appendix A) consists mainly of countries from *EU*, Asia, Africa and America and includes both developed and developing countries. This was done in purpose in order to avoid producing results of trade flows between countries with very specific characteristics. The idea behind this method is that the estimated coefficients will manage to incorporate both the effects of favorable trade conditions between

⁹Also, our gravity equation is derived from a two country general equilibrium model. As such it is not suitable to apply our gravity model at the industry or branch level unless we have previously derived production functions and utility functions for branch level.

Greece and developed or *EU* countries but also the effects of unfavorable trade conditions. The inclusion of developed countries only, would not lead to normal results since the cost of trade may be lower due to high levels of infrastructure. Similarly the inclusion of developing countries only, would not reflect normal trade due to the fact that developing country trade is more likely to be affected by various bureaucratic policy distortions.¹⁰ Across this framework the variety of destinations and origins also ensures that the estimated coefficients pictures out both manufactures driven and resources driven trade.

At the subsequent step, we derive the potential trade volumes by applying the coefficient estimates derived by the reference group to these countries whose potential trade flows are of interest. More specifically, we implement a research exercise by incorporating the estimated parameters to a gravity equation of Greece and the Balkan countries.

IV. Model Specification and Results

For the purpose of the present work we use cross section-section data to estimate the trade effects and relationships for a particular time period. By keeping the observations of each time period separately we obtain four equations for each specification as following:

$$\ln(exports)_t = \alpha + \beta_{it}(y_{it}) + \beta_{2t}(y_{GRt}) + \beta_{it}(D_i) + \beta_{it}(e_{it}) + U_{it}$$

$$\ln(imports)_t = \alpha + \beta_{it}(y_{it}) + \beta_{2t}(y_{GRt}) + \beta_{it}(D_i) + \beta_{it}(e_{it}) + U_{it}$$

Where $t=1985,1990,1995,1998$ and y_{it} , y_{GRt} stand for the logarithmic transformation of per capita *GDP* of the trade pattern and per capita *GDP* of Greece respectively. D_i denotes the logarithmic transformation of the miles distance between the capital cities, e_{it} denotes the logarithmic transformation of the

¹⁰By using this heterogeneous country sample we can also avoid using specific dummy variables, e.g. EU dummy variable etc.

¹¹One issue of concern as regards the gravity equation specification is the use of dummy variables. It is true that in many other studies, country or city or regional dummies are introduced to the gravity model to better capture country or city or region specific effects (e.g. Karemera *et al.* (1999), Coe and Hoffmaister (1998) etc). However, we have not used such dummies here for two reasons: first, if we introduce them to the analysis of the present paper, we will not be able to obtain the estimated value of trade for Balkan countries since their country dummies are not known. Second in an effort to provide an alternative specification with the use of an “*EU*” dummy variable which might reflect the case of Bulgaria and Romania when they will become *EU* member states, we did not get significant results.

¹²A similar approach is found in Wei (1996), Bougheas *et al.*(1999).

Table 4. Gravity model for twenty nine countries and Greece

Regressors	ESTIMATED COEFFICIENTS	
	EXPORTS REGRESSION	IMPORTS REGRESSION
Constant	0.853 (0.225)	-0.863 (-0.319)
<i>GDP</i> trade partner	0.438* (2.21)	0.479* (4.2)
<i>GDP</i> Greece	0.479* (2.08)	0.692* (3.74)
DISTANCE	-0.526* (-2.003)	-0.17 (1.94)
EX-RATE	-0.001 (-0.36)	0.04 (1.2)
R ²	0.85	0.96
F-statistic	31.2 (0.000)	30.8 (0.000)

The t-stat in parentheses estimated using heteroscedasticity robust errors.

*denotes statistical significance at 5%

exchange rate expressed in terms of *USD* and U_{it} is the error term.¹¹

We estimate these four cross section equations jointly using the method of Seemingly Unrelated Regression (*SUR*)¹². In this way we allow for correlation between the error terms since, for example, the errors of Greece-Germany may be related with the errors of Greece-France (see in the appendix the correlation coefficients across the *SUR* residuals). Furthermore, in order to improve the efficiency we constrain all coefficients (except the constant term) to be equal across time.

The data of international trade is withdrawn from the Greek National Statistical Service for the years 1985, 1990, 1995,1998. By using four specific years since 1985 we lower the influence of outliers in the time dimension and we avoid the choice of a “wrong” base year.¹³ Therefore the extracted elasticities will better reflect normal Greek trade. Also, the comparative advantage of the estimation method of Seemingly Unrelated Regressions (*SUR*) is related with the ability to combine the relevant information for different time periods.¹⁴ Especially in our

¹³Furthermore, for comparison purposes we also conducted one computation based on four different cross section regressions and then we estimated the potential trade by taking the average of the four coefficients. The derived ratios between actual and potential do not differ very much with the existing ones

¹⁴Since there are no available historical data for the Balkan countries, not even input-output matrices, our proposed method for adopting the estimated parameters is the only remaining method.

case where the coefficient have been constrained to be equal across the four different time periods. The data of *GDP* per capita and real *GDP* per capita in constant dollars (international prices, base year 1985) is withdrawn from the International Financial Statistics of *IMF*¹⁵. The exchange rate data is also taken from the International Financial Statistics of *IMF* at various years. Since we take the logarithmic transformation the zeros have been substituted by the number 0.001.

Taking into account the existence of heteroscedasticity (using the Bruce Pagan test we can reject the null hypothesis of no-heteroscedasticity at any significance level) we compute regression standard errors and covariance matrix allowing thus for heteroscedasticity and serial correlation of the residuals (robust errors).

One can argue that the use of pooled data into a time series and cross sectional framework could derive more sensible estimated coefficients. In this case we should also take into consideration that two of the explanatory variables, the distance variable and the per capita *GDP* of Greece have one dimension and consequently the panel techniques cannot derive sensible estimators.

We report the results using exports from Greece to third country (Table 4) and imports from third country to Greece. In line with other studies we find that the basic gravity model has a high explanatory power given the high values of R^2 for the SUR model. When considering a set of seemingly unrelated regression equations the standard R^2 is an unambiguous measure. One possibility for a measure of a goodness of fit is the R^2 obtained by applying least squares to the whole system (see Judge *et al.* (1985)). The estimated R^2 varies from 85-96 per cent across the three specifications. Among the three *SUR* specifications, the smallest statistic used is $F=27.4$ which significantly exceeds the critical value of $F(12,60)= 3.5$ at the 1 per cent level.

According to the derived results the estimated coefficients on *GDP* in all cases are significant at the 5 per cent level, have the expected sign¹⁶ and are quite close to those found in other studies. An increase in the *GDP* of Greece by one unit leads to an increase in Greek exports by 0.479 and Greek imports by 0.69. With

¹⁵We derived similar results by using, instead of real *GDP* per capita, *GDP* in dollar terms.

¹⁶We also attempted to derive the coefficients of the gravity equation by using the cross section data, *OLS*, at a particular time. There exist two sorts of problems related with this proposed method. The first one is associated with the quality of the estimated coefficients since most of them are statistical insignificant. Constraining the coefficients of the SUR system to be equal across time we gain efficiency. The second problem is associated with the magnitude of each coefficient which differs across the examined periods, creating selection problems. In any case the *OLS* estimations are available from the authors upon request.

the same token, an increase in the *GDP* of the trade partner increases Greek exports by 0.438 and imports by 0.48 respectively. The one unit increase in the *GDP* of the trade partner's results in 0.479 increase of Greek imports while the unit of trade partners *GDP* increases the Greek imports by 0.692. By contrast the derived coefficients for exchange rates are not statistical significant. One potential explanation relates to the irresponsiveness of international trade to the exchange rate fluctuations. The important issue which must be considered in the trade flows-exchange rate relationship is the time needed for trade flows to be adjusted to nominal exchange rate changes due to existence of sunk cost. The variable distance enters significantly only into the exports equation while constant is insignificant in both equations. It is also striking the insignificant value of the distance variable in the imports regression equation. A possible explanation is related to the geographical distance of Greece from the main import partners (Japan, USA). According to the trade data of 1998, approximately 20 per cent of Greek imports come from destinations being in average 3,452 air-miles.

At the next stage we estimate the potential trade flows between Greece and the

Table 5. Estimated Potential Imports (in million USD)

Countries	Actual	Estimated	Actual/Estimated (%)
Romania	187.354	6,662.77	2.8%
Bulgaria	312.936	6,393.52	5.0%
Albania	33.975	2,995.60	1.2%
FYROM	53.281	4,075.71	1.3%
Yugoslavia	53.899	3,144.53	1.7%
Slovenia	19.959	5,624.35	0.3%
Croatia	27.474	5,675.65	0.4%
Turkey	327.340	1,044.80	3.0%
Bosnia-Herzegovina	3.199	2,665.90	0.1%

Table 6. Estimated Potential Exports (in million USD)

Countries	Actual	Estimated	Actual/Estimated (%)
Romania	187.35	299.5	62.0%
Bulgaria	313.07	594.87	52.0%
Albania	198.54	302.24	56.6%
FYROM	381.04	408.35	93.3%
Yugoslavia	11.99	268.48	4.4%
Slovenia	19.67	391.40	5.0%
Croatia	23.11	465.80	4.9%
Turkey	300.60	421.00	7.1%
Bosnia-Herzegovina	11.99	241.62	4.9%

selected Balkan Countries by using the statistically significant parameter-estimates produced by the gravity equation of the trade implemented between Greece and thirty trade partners. In Tables 5 and 6, we compare the trade volumes predicted on the basis of the gravity coefficients with actual flows for 1998 for the reference group. This gives us an indication of trade flows which would have prevailed between Greece and the selected Balkan countries had the latter been fully market oriented economies.

It appears that Greece is “under-trading” with all countries in the reference sample. The ratio of actual over potential exports/imports is less than unity in all cases. Under-trading is more pronounced in the case of imports, where the actual is around 2 per cent of the potential. It is also striking that trade with Bulgaria albeit still accounting for the largest share, is well below the predicted normal level.

V. Conclusions

The purpose of this study was to use a gravity model in order to estimate the normal or potential volume of trade between Greece and the South Eastern European countries, which can then be compared to observed trade flows. A preliminary analysis showed that the current level of trade integration between Greece and the Balkan countries as well as *EU* and the Balkan countries is at relatively low levels. However, Greek exports to the Balkans outperform Greek imports from the Balkans. This is also true for the *EU* exports, but not to the same degree as in the case of Greek exports. By using the method of Seemingly Unrelated Regression, we found that there is a lot of potentiality as regards Greece's trade with the Balkans. The ratio of actual over potential exports/imports is less than unity in all cases. Under-trading is more pronounced in the case of imports, where the actual is on average 2 per cent of the potential. Given the very low levels of Greek imports from the Balkans this result is not surprising.

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Appendix A

A. Countries Used for the SUR estimations

Argentina, Austria, Belgium-Luxembourg, Brazil, Canada, Switzerland, Cyprus, Germany, Denmark, Egypt, Spain, Finland, France, UK, USA, Ireland, Iran, Israel, Italy, Japan, N. Korea, Morocco, Netherlands, Norway, Portugal, Sweden, Tunis, Turkey and USA.

B. Residuals Correlation Matrix

This is a square table with co-variances on and below the diagonal and correlation above the diagonals

Covariance\Correlation Matrix of Export Residuals

	EX98	EX90	EX95	EX98
EX98	2.444191895616	0.0976020578	0.8282898656	0.9986305325
EX90	0.243078762099	2.537702946453	0.2483387653	0.1067524538
EX95	1.849273506889	0.564957866255	2.039399463771	0.8303436721
EX98	2.412631072733	0.262794750327	1.832430271048	2.388013917975

Covariance\Correlation Matrix of Imports Residuals

	IM98	IM90	IM95	IM98
IM98	1.928204617018	0.9998430267	0.9997652287	0.9997429392
IM90	1.946856815740	1.966306710622	0.9999651423	0.9999377992
IM95	1.951196013347	1.970773911233	1.975388973341	0.9999843912
IM98	1.955252884096	1.974861515899	1.979509380498	1.983700308174