

# **AN EMPIRICAL INVESTIGATION OF THE GREEK-BALKAN BILATERAL TRADE**

**DIONYSIOS CHIONIS AND PANAGIOTIS LIARGOVAS**

*Department of Economics, University of Thessaly, Greece*

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 estimates parameters to a gravity equation of Greece and the Balkan countries estimating the trade which would have been prevailed between Greece and the selected 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.

## **Introduction**

At the beginning of their transformation process, all transition economies in Eastern Europe faced a dramatic decline in both exports and imports as well as a geographical reorientation of trade to developed market economies, mainly to the European Union. The product composition of trade among former CMEA members and the composition of trade with the West has also altered substantially, particularly with regard to fuels, machinery and chemicals. Albeit these common characteristics, all transition economies have not experienced the same depth of trade integration with the West and particularly with the European Union. This is true in the case of trade between the Balkan countries and Greece.

Given its proximity as well as historical and cultural links, the Balkan 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 close 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, economic, social and related issues. Their industries urgently need modern technologies, better management, higher efficiency, substantive reduction of production costs and more flexibility so that in the future their goods can successfully compete in international markets.

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 beneficial.

The purpose of this study is to make an analysis of Greek-Balkan Trade and then estimate the normal or potential volume of trade between Greece and the South Eastern European (SEE) countries, which can then be compared to observed trade flows. Similar methodologies have been applied in several

studies to analyze the potential for trade expansion between CEECs and the EU as a whole.<sup>1</sup> Country-specific studies have been carried out for Germany, Spain and Ireland. The approach has not, however, been applied specifically to trade between the examined countries and Greece.<sup>2</sup>

The next section of the paper analyzes the current state of trade integration between Greece and the Balkans, while section 2 reviews the main initiatives for regional and trade integration in Balkan countries. 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.

## The Current State of Trade Integration

Trade integration between Greece and the other Balkan countries might manifest itself in numerous ways, including rising growth rates of exports and imports and rising shares in total Greek trade.

Table 1 presents evidence as regards total exports and imports of Greece to and from the Balkan countries over the period 1990-99. Table 2 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 both exports and imports of EU to and from the Balkan countries during the period 1991-98 (Table 3).

*Table 1. Greek-Balkan countries trade (in millions drachmas)*

a. exports of Greece to:	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Romania	9.395,7	15.458,5	20.479,0	20.471,8	22.652,1	41.781,5	42.043,7	48.186,8	59.828,5	65.251,4
Bulgaria	8.395,8	16.000,8	31.880,4	69.530,7	100.222,5	103.618,3	75.573,2	87.412,4	130.430,4	125.207,6
Albania	2.824,8	2.225,9	7.869,4	28.957,7	51.724,4	60.502,6	78.210,8	68.771,3	57.299,4	67.504,7
FYROM			3.005,5	32.011,6	3.435,8	9.970,0	56.093,0	74.552,4	79.364,8	129.555,1
Yugoslavia	28.538,0	29.148,5	12.813,4							
Slovenia			414,1	2.406,4	1.787,4	10.325,0	2.995,4	5.131,6	6.636,3	6.686,8
Croatia			226,5	1.856,1	2.291,7	3.195,5	3.315,5	7.478,3	5.502,5	7.857,8
Turkey	18.195,0	19.195,0	25.430,0	34.029,2	33.499,8	51.223,5	85.357,2	119.021,1	102.004,8	102.221,1
Bosnia-Herzegovina			796,3	3.516,6	120,3	56,3	327,8	1.342,2	1.859,8	4.078,2
Serbia-Montenegro					0,0	5.051,2	40.617,4	55.282,4	55.169,4	34.608,3
Total Balkan	67.349,3	82.028,7	102.914,6	192.780,1	215.734,0	285.723,9	384.534,0	466.978,5	498.095,9	542.971,0
Total Greek exports	1.267.506,0	1.579.967,0	1.880.763,0	1.933.422,0	2.288.289,0	2.540.891,0	2.855.837,0	3.044.640,0	2.679.582,5	3.212.362,9
b. imports of Greece from:	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Romania	11.411,6	16.797,4	13.338,7	15.068,8	22.614,5	31.098,0	34.767,7	55.977,3	58.092,0	63.700,4
Bulgaria	17.299,6	28.396,0	32.674,5	45.453,3	77.069,0	112.084,3	89.725,3	114.567,4	116.569,7	106.444,2
Albania	1.947,0	2.164,6	3.454,4	3.538,0	8.564,5	8.687,3	8.887,3	10.043,7	10.918,6	11.545,2
FYROM			1.177,0	6.665,9	1.154,1	3.397,9	9.467,9	16.568,6	17.712,7	18.115,4
Yugoslavia	43.827,0	41.243,2	12.529,3							
Slovenia			423,8	3.134,5	5.096,0	6.921,8	6.394,5	6.560,0	7.418,9	6.783,6
Croatia			1.051,2	3.927,6	3.423,0	3.287,0	2.539,1	1.804,5	3.475,5	9.341,3
Turkey	22.893,4	30.579,6	27.997,4	31.771,7	41.397,0	48.581,9	56.053,8	81.338,7	109.128,1	111.395,6
Bosnia-Herzegovina			551,6	7.065,9	469,4	282,5	118,5	241,2	767,0	1.087,6
Serbia-Montenegro						251,6	18.658,6	36.472,0	28.422,1	18.325,7
Total Balkan	97.378,6	119.180,8	93.197,9	116.625,7	159.787,5	214.592,3	226.612,7	323.573,4	352.504,6	346.739,0
Total Greek imports	3.137.524,0	3.921.522,0	4.484.059,0	5.050.531,0	5.206.797,0	5.908.368,0	6.905.019,0	7.433.230,0	7.612.026,7	8.687.058,7

Source: National Statistical Service of Greece (NSSG)

<sup>1</sup> See Hamilton and Winters (1992), Baldwin (1994), Winters and Wang (1994), Faini and Portes (1995) and Vittas and Mauro (1997).

<sup>2</sup> See Schumacher (1997), and Martin and Gual (1994).

Table 2. 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%
Balkan	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%
Balkan	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.

The information in these tables confirms that the SEE 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 28%. It far outweighs the average growth rates of total Greek exports of around 11% as well as the average growth rate of EU exports to the SEE countries of around 13%. 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%. They accelerate faster compared to the average growth rate of total Greek imports of around 12%. For the EU as a whole the average increase in imports from the SEE countries was only 8% on average over the period 1991-98. However, it far outweighed the average growth of total EU imports of around 5% over the same period.

The significant contribution of the increase in exports to total Greek-SEE trade is reflected in the exports-to-imports ratio (Table 4). For Greek-SEE trade this ratio has increased from 69.2% in 1990 to 156.6% in 1999 turning a trade deficit with the SEE countries into a trade surplus, whereas for the EU-Balkans trade it increased from 110.9% in 1991 to 132.4% in 1998, increasing its trade surplus with the SEE countries. The Balkan trade accounts for 7.5% of total Greek trade, dominated by the share of exports (16.9%) in 1999. For the EU-SEE trade the corresponding shares are around 2%.

Table 3. 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%
Balkan	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%
Balkan	-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 4. 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%

Source: NSSG

A difference between Greece and the EU in their trade with the Balkan countries concerns the geographical distribution of trade. As seen in Table 5 Bulgaria and most recently FYR Macedonia are Greece's most important export partners among the SEE countries. Turkey and Albania follow next. Thus, in 1999 Bulgaria, FYR Macedonia, Turkey and Albania absorbed more than 78% of total Greek exports to the SEE countries. Bulgaria, Turkey and Romania are Greece's most important suppliers. In 1999 those three countries supplied a share of around 81% of Greek imports. For the EU on the other



hand, FYR Macedonia and Albania are not as important trading partners as in the case of Greece. As seen in Table 6 the most important destinations of EU exports are Turkey, Slovenia and Romania with a share of more than 76% in total EU exports to the SEE countries in 1998.<sup>3</sup> These countries are also the most important suppliers for the EU as a whole. In 1998 they supplied a share of around 80% of EU imports from the Balkan region. The above suggest that there is a clear dichotomy between Greece and the EU in their trade with the Balkans.

*Table 5. Significance of individual Balkan countries in total Greek-Balkan trade*

Greek exports to:	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Romania	14.0%	18.8%	19.9%	10.6%	10.5%	14.6%	10.9%	10.3%	12.0%	12.0%
Bulgaria	12.5%	19.5%	31.0%	36.1%	46.5%	36.3%	19.7%	18.7%	26.2%	23.1%
Albania	4.2%	2.7%	7.6%	15.0%	24.0%	21.2%	20.3%	14.7%	11.5%	12.4%
FYROM			2.9%	16.6%	1.6%	3.5%	14.6%	16.0%	15.9%	23.9%
Yugoslavia	42.4%	35.5%	12.5%							
Slovenia			0.4%	1.2%	0.8%	3.6%	0.8%	1.1%	1.3%	1.2%
Croatia			0.2%	1.0%	1.1%	1.1%	0.9%	1.6%	1.1%	1.4%
Turkey	27.0%	23.4%	24.7%	17.7%	15.5%	17.9%	22.2%	25.5%	20.5%	18.8%
Bosnia-Herzegovina			0.8%	1.8%	0.1%	0.0%	0.1%	0.2%	0.4%	0.8%
Serbia-Montenegro					0.0%	1.8%	10.6%	11.8%	11.1%	6.4%
Balkans	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Greek imports from:	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Romania	11.7%	14.1%	14.3%	12.9%	14.2%	14.5%	15.3%	17.3%	16.5%	18.4%
Bulgaria	17.8%	23.8%	35.1%	39.0%	48.2%	52.2%	39.6%	35.4%	33.1%	30.7%
Albania	2.0%	1.8%	3.7%	3.0%	5.4%	4.0%	3.9%	3.1%	3.1%	3.3%
FYROM			1.3%	5.7%	0.7%	1.6%	4.2%	5.1%	5.0%	5.2%
Yugoslavia	45.0%	34.6%	13.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Slovenia			0.5%	2.7%	3.2%	3.2%	2.8%	2.0%	2.1%	2.0%
Croatia			1.1%	3.4%	2.1%	1.5%	1.1%	0.6%	1.0%	2.7%
Turkey	23.5%	25.7%	30.0%	27.2%	25.9%	22.6%	24.7%	25.1%	31.0%	32.1%
Bosnia-Herzegovina			0.6%	6.1%	0.3%	0.1%	0.1%	0.1%	0.2%	0.3%
Serbia-Montenegro					0.0%	0.1%	8.2%	11.3%	8.1%	5.3%
Balkans	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: NSSG

So what are the main conclusions of the above analysis?

- The increasing levels of trade integration between Greece and the Balkan countries
- The relatively strong performance of Greek exports as compared to imports. This is also true for the EU exports, but not to the same degree as in the case of Greek exports
- The higher ratio of export to import growth rates characterizing Greece's trade with the SEE compared to EU trade with the SEE
- The larger trade exposure of Greece to the SEE compared to the EU
- The dichotomy of the geographical distribution of trade between Greece-SEE and EU-SEE

<sup>3</sup> Croatia is also important for EU exports, with a share of 10.1%.

Table 6. Significance of individual SEE countries in total EU-Balkan trade

EU exports to:	1991	1992	1993	1994	1995	1996	1997	1998
Romania	7.5%	10.9%	10.8%	12.5%	12.5%	12.4%	11.7%	13.1%
Bulgaria	5.8%	6.7%	6.4%	7.9%	7.0%	4.5%	4.0%	5.3%
Albania	0.9%	1.6%	1.8%	1.9%	1.8%	2.1%	1.0%	1.2%
FYROM	0.0%	0.0%	1.9%	2.8%	2.6%	1.7%	1.3%	1.9%
Yugoslavia	40.0%	34.8%						0.0%
Slovenia			15.6%	19.0%	17.5%	15.0%	14.7%	14.4%
Croatia			9.8%	14.3%	12.6%	10.9%	11.1%	10.1%
Turkey	45.8%	46.0%	53.0%	40.6%	44.8%	49.1%	50.8%	48.6%
Bosnia-Herzegovina			0.4%	0.5%	0.5%	1.4%	1.8%	1.8%
Serbia-Montenegro			0.2%	0.5%	0.6%	2.9%	3.6%	3.6%
Balkans	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EU imports from:	1991	1992	1993	1994	1995	1996	1997	1998
Romania	9.1%	9.5%	11.9%	15.1%	16.0%	16.3%	17.0%	16.9%
Bulgaria	4.8%	5.9%	6.8%	7.7%	8.7%	7.7%	7.9%	7.9%
Albania	0.4%	0.3%	0.5%	0.7%	0.7%	0.9%	0.7%	0.7%
FYROM			1.7%	2.8%	2.6%	1.9%	1.6%	2.0%
Yugoslavia	47.0%	42.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Slovenia			21.1%	20.3%	20.0%	19.2%	17.6%	17.2%
Croatia			11.6%	10.5%	8.9%	7.8%	6.8%	6.5%
Turkey	38.8%	42.0%	46.2%	42.8%	42.8%	44.1%	44.4%	46.4%
Bosnia-Herzegovina			0.2%	0.1%	0.1%	0.3%	0.6%	1.6%
Serbia-Montenegro			0.0%	0.0%	0.1%	1.7%	3.4%	0.8%
Balkans	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Own calculations based on IMF data.

## Initiatives Stimulating Trade, and Regional Integration and Cooperation in SEE

In the 1990s there have been a number of initiatives aiming at the stimulation of trade and regional integration both within the SEE and with the EU. The first group of these initiatives were activated immediately after the dissolution of the socialist system and concerned not only the Balkans, but a larger number of Eastern European countries. Among the most important are the Europe Agreements, the Central European Initiative (CEI), the Central European Free Trade Area (CEFTA), the Black Sea Economic Cooperation (BSEC) and the Trade and Economic Cooperation Agreement (TECA).

A second group was initiated after the end of the war in Bosnia-Herzegovina and concerned mostly the SEE countries. Some of these initiative are the Conference of Good Neighborliness, Stability, Security and Cooperation in SEE (CSEE), the Royaumont process, the Regional Approach of the EU, the South East European Cooperation Initiative (SECI), the Autonomous Trade preferences taken over from the 1980 Trade and Cooperation Agreement with SFR Yugoslavia and the Stability Pact for SEE. Table 7 presents all these initiatives as well as the countries participating in these.

Table 7. Initiatives stimulating trade and regional integration in SEE

Explanations as regards the different types of initiatives are given in the text  
4 means participant. O means Observer

Country	AA (1992)	CEI (1989)	CEFTA (1992)	BSEC (1992)	TECA (1992)	CSEE (1996)	RP (1995)	EU-RA (1996)	SECI (1996)	ATP (1996)	SP (1999)	Total
Albania		4		4	4	4	4	4	4		4	8
Bosnia-Herzegovina		4				O	4	4	4	4		6+O
Bulgaria	4	4	4	4		4	4		4		4	8
Croatia		4				O	4	4	O	4	4	5+O+O
FYR Macedonia		4			4	4	4	4	4		4	7
Romania	4	4	4	4		4	4	4	4			8
Slovenia	4	4	4		4		4		4			6
Yugoslavia						4	4	4		4		4

Source: Uvalic (2000) with some minor modifications

The first Europe Agreements were signed back in 1992. In the meantime such agreements have been signed with ten countries (Poland, Hungary, the Czech Republic, Slovenia and Estonia, Bulgaria, Latvia, Lithuania, Romania, and Slovakia). Bulgaria's and Romania's agreements with the European Union were signed in 1993 and they entered into force in 1995. Both countries were invited to initiate negotiations for full EU membership. Slovenia signed a Europe Agreement in 1996 and it entered into force in February 1992. The most important contribution of the Europe Agreements in the trade field is the establishment of a free trade area among the participating countries. According to the provisions of the Europe Agreements access for EU goods to eastern markets was liberalized more slowly than that for CEEC goods to EU markets. The so called sensitive products (clothing, steel, agriculture) were excluded from the Europe Agreements. In addition to this a number of non-tariff barriers (e.g. public procurement, different product standards) impeded the access of eastern European products to the EU countries.

The Central European Initiative aims at European Integration and thus it supports the member countries that are not yet EU members. Its history goes back to 1989, when the representatives of Austria, Hungary, Italy and Yugoslavia established an initiative for cooperation called Quadragonale. It aimed at developing wide political, technical, economic, scientific and cultural collaboration between the four countries. In 1990 Czechoslovakia joined the Initiative and it was renamed Pentagonale. In 1991 Poland joined the group and it became known as hexagonale. Bosnia and Herzegovina, Croatia and Slovenia joined in 1992 and the initiative became known since then as Central European Initiative. In 1993 Czech and Slovak republics and FYR Macedonia were accepted as members. In the 1996 enlargement, Albania, Belarus, Bulgaria, Romania, Ukraine and Moldova joined the Initiative.

The Central European Free Trade Agreement aims at the elimination of tariffs and duties of the participating countries. It was first signed by Czechoslovakia, Hungary and Poland in 1992. Slovenia joined CEFTA in January 1996, Romania in July 1997 and Bulgaria's agreement entered into force in October 1999. Future members are required to be members of World Trade Organization and to have signed Association Agreement with the European Union.

The Black Sea Economic Cooperation was initiated by Turkey in 1990 and it included initially the four Black Sea countries Turkey, Soviet Union, Bulgaria and Romania. In June 1992 the cooperation got its final form. Members include Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Turkey and Ukraine. Observer status is held by Austria, Egypt, Israel, Italy, Poland, Slovakia, Tunisia, Germany and France. The aim of the BSEC is to create an area of multilateral and bilateral cooperation in commerce, industry, environment, science and technology.

The trade and Economic cooperation Agreement with the EU apply in the case of Albania since 1992 and FYR Macedonia since 1998 giving them limited access (compared to Association Agreements) to the EU markets.

The Conference on Good Neighborliness, Stability, Security and Cooperation in the Balkans was initiated in Sofia in July 1996. The aim is to enhance good-neighborly relations including confidence and security building measure, development of economic cooperation through cross border cooperation. Members include Greece, Bulgaria, FYR Macedonia, Romania, Albania and Turkey. Observer status was held by Bosnia-Herzegovina.

The Royaumont process was initiated in 1995 and includes Greece, Albania, Bosnia-Herzegovina, Bulgaria, Croatia, FYROM, Romania and FR Yugoslavia as participating countries.

The Regional Approach was adopted by the European Union in 1996, as part of the Royaumont process that was initiated for the process of stability and good-neighborliness in Southeastern Europe. It is meant for the countries of western Balkans that did not have cooperation agreements with the EU (Croatia, Bosnia-Herzegovina, FR Yugoslavia) or the existing agreements which will be later replaced with Stabilization and Association Agreements (Albania and FYR Macedonia).

The South East European Cooperation (SECI) was launched in December 1996. This US initiative includes all Balkan countries (except for FR Yugoslavia), Hungary and Moldova. Observer and support status have USA, Italy, Germany, Austria and Switzerland. In addition, international organizations like the European Commission, EBRD, World Bank, EIB, IMF, UN Economic Commission for Europe and International Telecommunication Union participate in the work. Its objective is to encourage economic cooperation among the participating countries.

The Stability pact for South Eastern Europe was adopted in July 1999 as a response to the Kosovo crisis designed to prevent another armed conflict in the region and to bring the region closer to the perspective of full integration into the European structures. The Stability Pact represented a new global approach for Southeastern Europe, away from the strict bilateralism and diversity. It also offered prospects for EU membership for all the countries in the region.

Finally the EU has approved autonomous trade preferences to Bosnia-Herzegovina (1996), Croatia (1996) and FR Yugoslavia (1997, withdrawn in 1998), based on some provisions of the 1980 Trade and Cooperation Agreement concluded in 1980 with former Yugoslavia.

Our data in the previous section showed that in the early 1990s trade between Greece and the Balkans as well as trade between EU and the Balkans have flourished. This might suggest that the large number of initiatives for regional integration in the SEE countries taken in the 1990s has led to some substantial and far reaching results. Furthermore, Greek and EU exports have not been adversely affected by delayed access to the Balkan markets under the terms of the Europe Agreements, and that the Balkans were able to exploit new exporting opportunities in the EU and Greece. This conclusion is however in direct conflict to other conclusions reached for example by Uvalic (2000) and Vittas and Mauro (1997). Full integration of the Balkans into the EU's internal market is therefore poised to generate further growth in trade volumes with Greece. To examine if the above will continue in the future we will construct a gravity model.

## 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 (see *inter alia* Bergstrand (1985), Frankel et al (1995) and most importantly Jackson and Petrakos (2001) who use for the first time a gravity model to estimate trade flows for Balkan countries). This model relates bilateral trade from origin  $i$  to destination  $j$  with economic forces at the flow's origin, economic forces at the trade destination and economic forces either aiding or resisting the flow's movement from origin to destination. The following specification is proposed:

$$(Trade)_{jt} = \gamma^a_{it} \gamma^b_{jt} \gamma^c_{ij} U_t$$

where  $\gamma^a_{it}$  and  $\gamma^b_{jt}$  stand for purchasing power of country of origin and destination respectively and  $\gamma^c_{ij}$  denotes the distance between the two countries.  $U_t$  is an error 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 the 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 'law of one price' or the Purchasing Power Parity model and the significant effects of price changes on the volume of the traded goods. To this end, we incorporate the nominal exchange rate to the standard gravity model.



Attempting to make inferences about the intra-Balkan trade we have to take into consideration the economic and the political environment characterized 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 lastly, make it difficult to estimate on the basis of extrapolation from historical levels the level 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 the trade developments by using as basis the trade patterns among Greece and a reference group of countries which are assumed to exhibit ‘normal’ trade relationships.

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. This sample of countries includes both developed and developing countries. In this way the model avoids producing results which are characteristics solely of trade flows between countries with specific characteristics. The idea behind this method is that the estimated coefficients will manage to incorporate both the effects of favorable trade conditions between EU countries but also the effects of unfavorable trade conditions. 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 estimates parameters to a gravity equation of Greece and the Balkan countries.

## Model Specification and Results

For the purpose of the present work and in accordance with our previous work (Chionis et al. 2000) 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:

$$\begin{aligned}\ln(\text{exports})_t &= a + \beta_1(y_{it}) + \beta_{2t}(y_{GRt}) + \beta_3(D_i) + \beta_4(e_{it}) \\ \ln(\text{trade})_t &= a + \beta_1(y_{it}) + \beta_{2t}(y_{GRt}) + \beta_3(D_i) + \beta_4(e_{it})\end{aligned}$$

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 and  $e_{it}$  denotes the logarithmic transformation of the exchange rate expressed in terms of USD.

We estimate these four cross section equations jointly using the method of Seemingly Unrelated Regression (SUR)<sup>4</sup>. In this way we allow for correlation between the error terms since, for example, the errors for 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 year 1985, 1990, 1995, 1998, while the data of GDP per capita real GDP Per Capita in constant dollars (international prices, base year 1985)<sup>5</sup>. The exchange rate data is taken from International Financial

<sup>4</sup> A similar approach is taken by Wei (1996), Bougheas *et al.* (1999).

<sup>5</sup> We derived similar results by using, instead of real GDP per capita, GDP in dollar terms.

Statistics of IMF various years. Since we take the logarithmic transformation the zeros have been substituted by the number 0.001.

Taking into account the evident heteroscedasticity (using the Bruce Pagan test we can reject the null of no heteroscedasticity at any significance level) we compute regression standard errors and covariance matrix allowing 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 estimate coefficients. But it seems not clear whether one should apply a random effect or a fixed effect in order to derive a unique vector of coefficients. On the other side we should also take into consideration that two of the explanatory variables the distance variable and the per capita GDP of Greece both have one dimension and consequently the panel techniques cannot derive sensible estimators.

Initial estimates indicated that it makes a difference whether we use bilateral exports, imports or trade (the sum of exports and imports) as the dependent variable<sup>6</sup>. We report the results using exports from Greece to third country (Table 8) 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% across the three specifications. Among the three SUR specifications used the smallest statistic used is  $F=27.4$  which significantly exceeds the critical value of  $F(12,60)= 3.5$  at the 1% level.

*Table 8. Gravity model for twenty nine countries and Greece*

	EXPORTS	IMPORTS
Regressors	ESTIMATED COEFFICIENTS	
Constant	0.853	-0.863
	0.225	-0.319
GDPtrade partner	0.438*	0.52*
	2.210	3.35
GDPGreece	0.479*	0.62*
	2.080	3.08
DISTANCE	-0.526*	0.356
	-2.003	1.204
EX-RATE	-0.001	-0.0009
	-0.36	-0.134
$R^2$	0.85	0.96
F-statistic	31.2	30.8
	(0.000)	(0.000)

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

\*denotes statistical significance at 5%

According to the derived results<sup>7</sup> the estimated coefficients on GDP in all cases are significant at the 5% level and have the expected sign<sup>8</sup>. An increase in the GDP of Greece by one unit leads to increased

<sup>6</sup> This idea is further supported by the variance covariance matrix. The estimations are available upon request.

<sup>7</sup> We perform a two-sample test assuming that the means of the estimates represents measures of the means of the true distribution of the estimators and the difference between the means should follow a normal distribution with zero mean and deviation  $(s_1^2/n_1 + s_2^2/n_2)$  where  $s_1$  is the standard error of the coefficient derived from the model i and n is the sample size. According to this test we reject the hypothesis that the coefficients of the explanatory variables of trade, imports and exports are different.

<sup>8</sup> We also attempted to derive the coefficients of the gravity equation by using the cross section data, OLS, at a particular time. There exist two sort of problems related with this proposed method. The first 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.

in Inexports by 0.479 and in Inimports by 0.62. The one unit increase in the GDP of the trade partner results in 0.726 increase of total Intrade, in 0.438 increase of Greek Inexports (imports of other partner) and 0.52 of Greek In-imports (exports from other countries). The coefficients of the GDPs are quite close to those found in other studies as is the coefficient of distance. In 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 rates due to sunk cost. The time lag give rise to the notion of hysteresis (Chionis and MacDonald (2000)).

The variable distance enters significantly into the equation of trade and exports. Finally, the constant is significant only in trade equation. It is also worth to mention the insignificance of distance in the imports regression. A proposed rationalisation is related to the geographical distance of Greece from the main import partners (Japan, USA). According to the statistical data of 1998 approximately 20% of Greek imports comes from destinations being in average 3452 air-miles.

In Tables 9 and 10, 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 been prevailed between Greece and the selected Balkan countries had the latter been fully market oriented economies.

*Table 9. Estimated Potential Imports (in million USD)*

Countries	Estimated	Actual	Actual/Estimated
Romania	250.7	187.3	0.75
Bulgaria	780.9	312.9	0.40
Albania	105.6	34.0	0.31
FYROM	170.5	53.3	0.31
Yugoslavia	204.2	53.9	0.25
Slovenia	45.5	19.9	0.42
Croatia	42.8	27.5	0.63
Turkey	680.7	327.3	0.48
Bosnia-Herzegovina	12.4	3.2	0.25

*Table 10. Estimated Potential Exports (in million USD)*

Countries	Estimated	Actual	Actual/Estimated
Romania	299.5	187.3	0.62
Bulgaria	594.9	313.1	0.52
Albania	302.2	198.5	0.66
FYROM	408.3	381.0	0.93
Yugoslavia	268.5	12.0	0.04
Slovenia	391.4	20.0	0.05
Croatia	465.8	23.1	0.05
Turkey	421.0	300.6	0.71
Bosnia-Herzegovina	241.6	12.0	0.05

It appears that Greece is “under-trading” with all the countries in the reference sample. The ratio of actual over potential exports/imports is around 40% (on average) for both imports and exports. It is also striking that trade with Bulgaria albeit still accounting for the largest share of the Greek-Balkan trade, is below the predicted ‘normal’ level (40% less for imports and 52% less for exports).

## Conclusions

The purpose of this study was to use a gravity model to estimate the normal or potential volume of trade between Greece and the South Eastern European (SEE) 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. We next found that Greek-Balkan trade can be well explained with the use of the gravity approach. Our estimations showed that there is a lot of potentiality as regards Greece's trade with the Balkans. The ratio of actual over potential exports/imports is around 40% (on average) for both imports and exports.

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## Appendix

### Countries Used for the SUR estimations

Argentina, Austria, Belgium+Luxemburg, 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.

### Residuals Correlation Matrix

This is a square table with coveriances on and below the diagonal and correlation above the diagonals

#### Covariance\Correlation Matrix of Export Residuals

	EX98	EX90	EX95	EX98
EX98	2.444	0.098	0.828	0.999
EX90	0.243	2.538	0.248	0.107
EX95	1.849	0.565	2.039	0.830
EX98	2.413	0.263	1.832	2.388

#### Covariance\Correlation Matrix of Imports Residuals

	IM98	IM90	IM95	IM98
IM98	1.928	1.000	1.000	1.000
IM90	1.947	1.966	1.000	1.000
IM95	1.951	1.971	1.975	1.000
IM98	1.955	1.975	1.979	1.984