The wiiw Balkan Observatory

Working Papers | 126 | November 2017

Engjëll Pere and Eniel Ninka

International Trade in Western Balkan Countries: Analysis Based on the Gravity Model

INTERNATIONAL TRADE IN WESTERN BALKAN COUNTRIES

ANALYSIS BASED ON THE GRAVITY MODEL

Engjëll Pere

Eniel Ninka

International trade in Western Balkan Countries

Analysis based on the Gravity Model

Engjëll Pere

Eniel Ninka

November, 2017

Engjëll Pere[1]
Professor of Economics, European University of Tirana

Eniel Ninka[2]
Senior Statistician, SOGETI Luxembourg
Part of this paper was written when Eniel Ninka was lector of International Economics at the European University of Tirana (UET).

Acknowledgements

This Project was made possible thanks to a grant by National Agency of Scientific Research and Innovation (Agjencia Kombëtare e Kërkimit Shkencor e Inovacionit–AKKSHI, alb.) [3]

The authors would like to thank and acknowledge the contribution made by The Vienna Institute for International Economic Studies (Vienna Institut für Wirschaftsvergleiche–WIIW) for making available their database.

Disclaimer

The views expressed in this paper are those of the authors only and the presence of, or of links to them on UET, SOGETI, WIIW, WB, or AKKSHI websites does not imply that the UET, SOGETI, WIIW, WB, or AKKSHI, or their management endorse or share the views expressed in this paper.

[1] Engjëll Pere (corresponding author): European University of Tirana. Blvd. Gjergj Fishta, 70, 1023 Tirana, Albania. Tel.: +355 4 24 21 806 Ext.: 124, Mob. +355 (0) 68 40 18 267, Web: http://www.uet.edu.al, E-mail: engjell.pere@uet.edu.al
[2] Eniel Ninka: 36, Route de Longwy, 8080 Bertrange, Luxembourg. Web: http://www.sogeti.com E-mail: eniel.ninka@sogeti.lu
[3] Former – Agency for Research, Technology and Information (AKTI, *alb.*).

Abstract

We adopt the gravity model to analyse the international trade relations of Western Balkan (WB) countries and of the WB region as a whole, using WIIW and World Bank data, over a period of 20 years (1995-2014).

Data show a tendency toward better integration of WB countries with the world economy, increased openness of their economies, persistence of their trade deficits, and, for most of them, an improvement of the coverage ratio.

For the region as a whole, the volume of international trade outpaced that of intra-regional trade reaching, in 2014, a difference of nearly 5 times. The main partner for the region remains the European Union, particularly Germany and Italy.

The gravity model of exports of the WB region shows that its exports are positively impacted by the common language and common borders with third countries, by trade with European Union, and large and highly industrialized countries, while distance and region's level of per capita Gross Domestic Product both have a negative impact.

Considering the imports, the model shows that they are positively impacted by existence of common borders and language with the region, and by region's and partner countries' level of economic development, while the distance has again a negative impact.

Keywords: Western Balkans, International trade relations, Gravity model, Economic integration.

JEL classification: C59, F14, F15

Countries included: Albania, Bosnia & Herzegovina; Croatia, Kosovo, Macedonia, Montenegro, Serbia, and the Western Balkan region as a whole.

Preface

This project aims to analyze the foreign trade (exports / imports) of Western Balkan countries, relying mainly on the well-known Gravity Model. In the Western Balkans, seven countries are considered: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Macedonia (FYROM), Montenegro and Serbia. With the exception of Croatia, which is already a member of the EU, all these countries have the fundamental objective of European integration. In this respect, their trade relations with the world economy represent a unique element of the integration of the respective economies with the European economy and beyond. At the same time, these relationships represent a crucial factor of development because, as emphasized by the World Economic Forum in 2015, "in modern times, no country can develop successfully without opening its economy to international trade, investment and free movement of people between countries"[4]

Main Issues

I. Analysis of foreign trade for each of Western Balkan countries.

Analysis of the structure and dynamics of exports and imports according to each country in the Western Balkans. Openness of those economies to world markets. Main partners of each country by export and import volume. The structure of exports and imports by group classification of commodities.

II. Analysis of gravity model for each country in the Western Balkan and for the Balkan region as a whole.

The design of the Gravity Model for the Western Balkan countries. Defining the variables included in the model and the volume of respective economies, the distance between countries, cultural factors, concluding of bilateral and multilateral agreements, language and religious similarities, etc. Building a data base in the form of a panel matrix. Analysis of the correlation between explaining variables and the volume of foreign trade. A study of the effects of special factors included in the model on the volume of exports and imports.

The study of foreign trade relations of the region with other countries. The study of the effects of the factors included in the gravity model on international trade, considering the region as one unit. Analysis of correlations in relations with the European Union

The paper is mainly based upon the databases of the World Bank (WB) and the Vienna Institut für Wirschaftsvergleiche (WIIW).

[4] World Economic Forum – The Global Competitiveness Report 2015 – 2016, p. 15.

Short Table of Content

Table of Contents

List of Tables

List of Graphs

I. Analysis of foreign trade for each Western Balkan countries and for the region as a whole.

After the social and economic transformations at the beginning of the 90's, foreign trade relations in the Western Balkan countries have experienced considerable change as a result of two fundamental and distinct factors. First, besides bringing globalization of the world economy in general, the fall of the Iron Curtain, which had divided countries in Europe into two capitalist and socialist blocks, began the gradual but substantial opening of the Western Balkan countries to the world economy at large. This feature was very significant for a country such as Albania which inherited from the totalitarian regime a completely closed economy, supported by the principle of self-sufficiency, "everything in our own strength". Secondly, before 1990, Western Balkan countries (except Albania), were part of the former Yugoslavia, in which economic co-operation and specialization existed. As a consequence, the separation of these countries during the early 90's , even though preserving some level of relations inherited between former Yugoslav Republics, experienced a gradual weakening of their relations.

In the following analysis, the dynamics and structure of trade relations for the seven Western Balkan countries will be reflected. This analysis will focus on:

- The opening of these economies to the World economy as a whole.
- Volume dynamics of exports and imports as a whole and balance of trade.
- The structure of exports and imports by group of goods.
- The structure of exports and imports with third countries.
- Trade relations between the countries of the Western Balkans region.
- Trade relations with the European Union as a whole and its places of special interest.

The study considers a relatively long period of time of 20 years, from 1995 to 2014, and excludes two countries, Kosovo and Montenegro, which were a part of the Yugoslav Federation and formed independent states during this period, Kosovo in 1999 (de facto in June 1999), while Montenegro in 2006 (after the Referendum of May 21, 2006). For these two countries, the data includes a shorter period of time. In general, in the following text the year we are referring to in the design of some graphs is the year 2014 if it is not provided otherwise in the text.

I.1 Albania

I.1.1 Dynamic of trade volume.

In foreign trade relations among the countries of the Western Balkans region, Albania is distinguished by the fact that it was not part of the former Yugoslavia as other countries in the region were. In addition, it pursued an entirely closed trade policy based on the principle of "all production based solely on domestic resources". Until 1990-1991, the country pursued a foreign trade policy based entirely on the ideological-political criteria of an isolated country aimed at building a dogmatic and conservative socialism. The economic criterion in foreign trade relations was "secondary" which meant that the country had trade relations mainly with the East Bloc countries, which were based largely on the 'clearing' method where goods were traded for other goods. The trade balance was characterized by a considerable deficit, which only grew during the 1980s. The structure of exported goods was dominated by raw minerals (chrome, iron, etc.).

Democratic changes at the beginning of the 90's brought about the opening of the country and a considerable increase in the foreign trade volume. Table I.1.1 reflects the dynamics of export and import volume for the period 1995 – 2014.

A general feature is the considerable growth in volume, both of exports and imports over the period 1995-2014, of 11.8 times and 7.1 times respectively. The trade balance is characterized by a gradual increase in trade deficit (over 2 billion euros in 2014), albeit with a slight improvement in the last 2-3 years. This improvement has led to a gradual increase in the coefficient of export coverage with imports reaching around 46-47%.

A positive trend for the country is the continued opening of the economy to trade with other countries. Thus, despite the considerable growth of GDP in the post-'90 period, it is clear that the opening coefficient (total trade volume to GDP) has increased (over 57%). However, this indicator remains far from the normal levels of developed European countries.

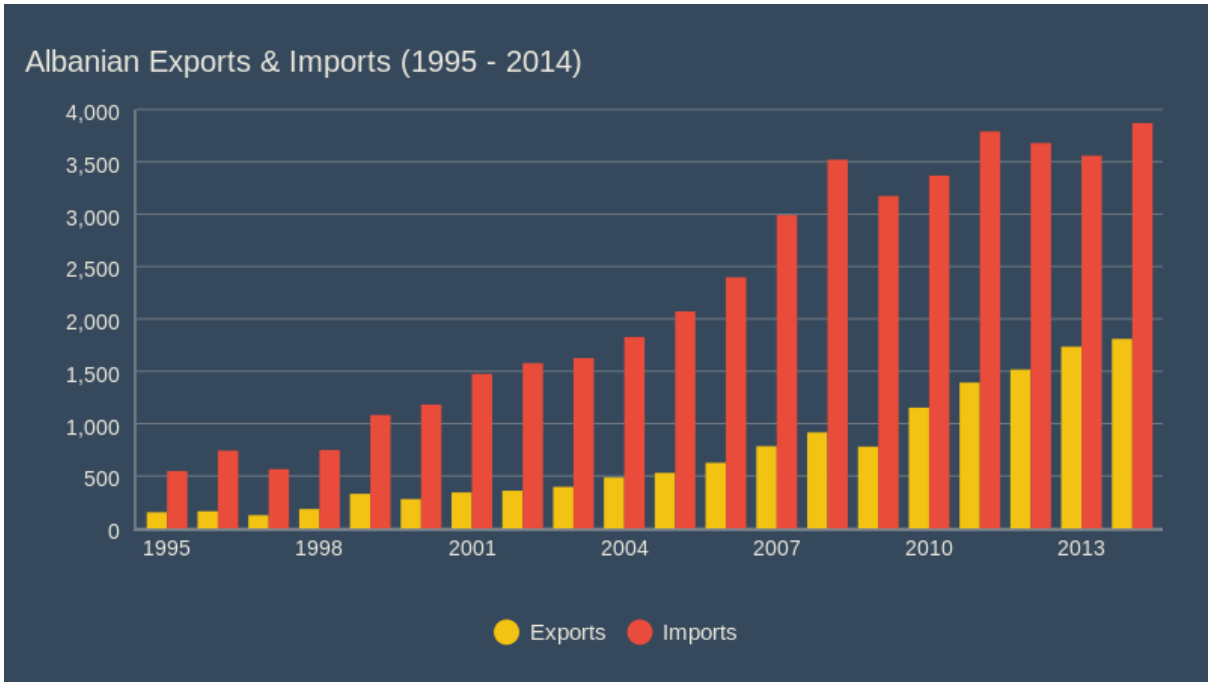
The dynamics of the volume of exports and imports are shown in Graphs I.1.1 and I.1.2. Important to note is the year 2008; the trade deficit up to this year had been rising, but then it gradually reduced, fluctuating around 2 billion euros.

1 Table I.1.1 Albania, volume of international trade, 1995–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
1995	156	552	708	-396	28.3%	36.9%
1996	168	750	918	-581	22.4%	34.7%
1997	125	566	691	-440	22.1%	33.5%
1998	184	748	932	-564	24.6%	38.5%
1999	330	1,085	1,415	-756	30.4%	44.1%
2000	279	1,185	1,464	-906	23.6%	37.1%
2001	343	1,480	1,823	-1,137	23.2%	40.2%
2002	359	1,589	1,948	-1,231	22.6%	41.4%
2003	396	1,643	2,040	-1,247	24.1%	40.4%
2004	487	1,849	2,336	-1,362	26.3%	39.7%
2005	530	2,111	2,641	-1,581	25.1%	40.3%
2006	629	2,430	3,059	-1,802	25.9%	42.7%
2007	786	3,043	3,829	-2,257	25.8%	48.9%
2008	917	3,582	4,499	-2,665	25.6%	51.1%
2009	791	3,247	4,039	-2,456	24.4%	46.6%
2010	1,172	3,467	4,640	-2,295	33.8%	51.6%
2011	1,403	3,877	5,280	-2,473	36.2%	57.0%
2012	1,532	3,801	5,333	-2,269	40.3%	55.6%
2013	1,757	3,689	5,445	-1,932	47.6%	56.6%
2014	1,827	3,945	5,773	-2,118	46.3%	58.0%

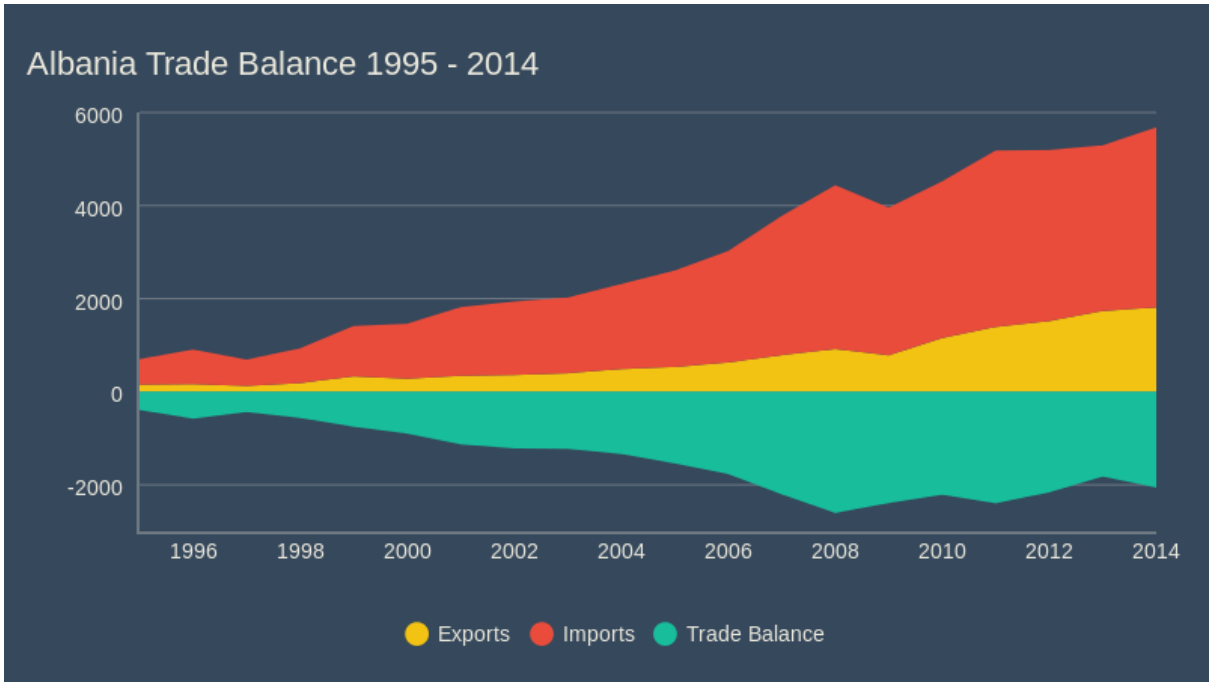
Source: own compilation on wiiw Annual Database 2015 data

1 Graph I.1.1 Albania, international trade in goods, 1995–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

2 Graph I.1.2 Albania, trade balance, 1995–2014 (million Euro)

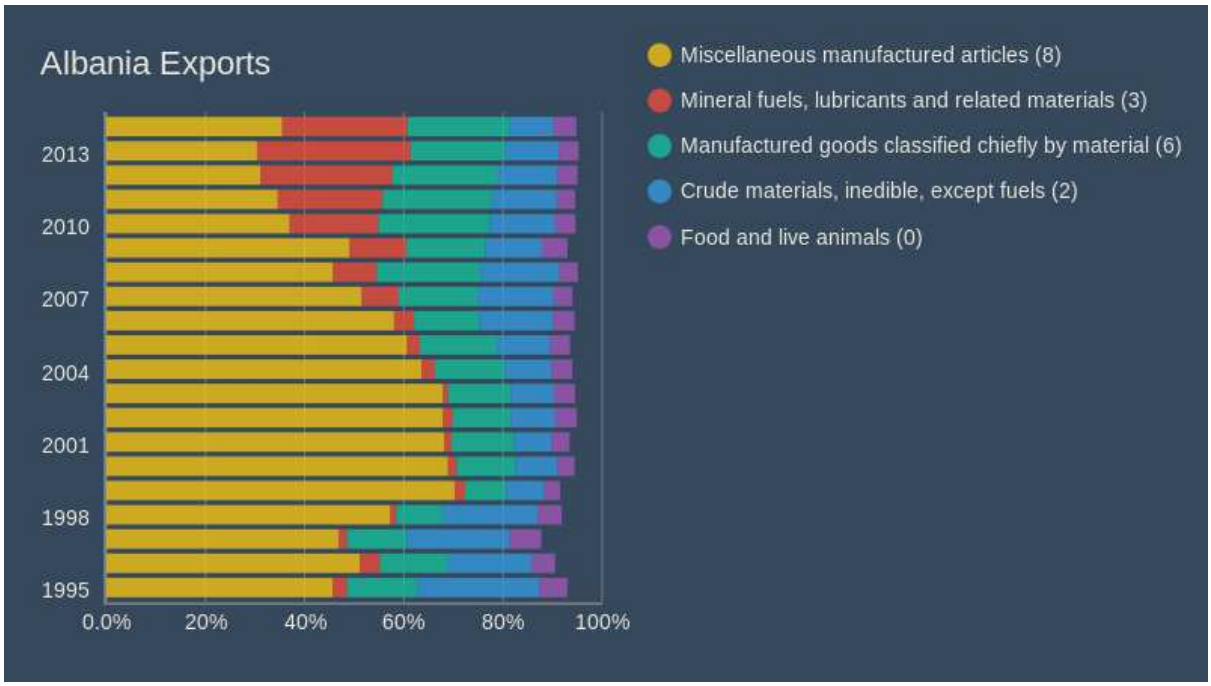


Source: own compilation on wiiw Annual Database 2015 data

I.1.2 Foreign trade by commodity groups.

The structure of Albanian exports for the five main product groups, which account for about 95% of the country's exports, is presented in graph I.1.3. The graph shows that the first place is occupied by manufactured products, which mainly include textile and shoe products produced from materials provided by those who placed the order (fashion industry, 40% in 2014), and exports of minerals, lubricants and mainly energy (35% in 2014). During the period under review, the specific weight of the mineral group has increased, while that of the paints industry and other manufacturing products has decreased. In third place, come construction materials and various metals according to specific weight (about 25% of the total in 2014).

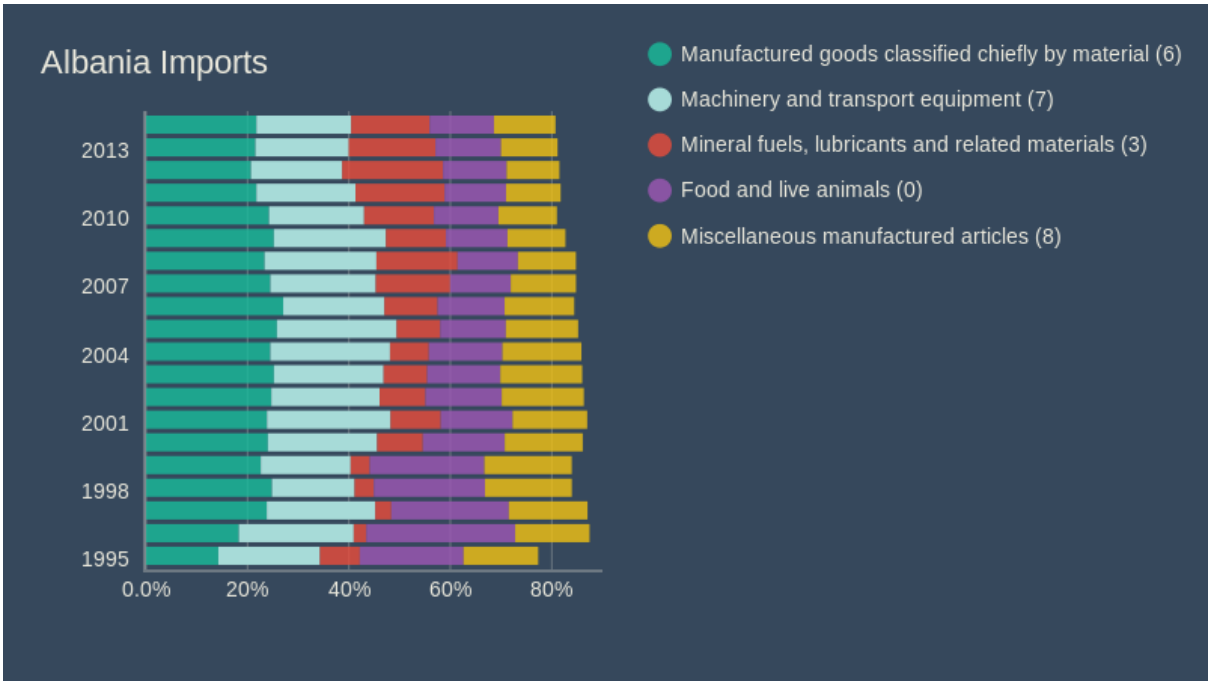
3 Graph I.1.3 Albania, exports by commodities, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

For the five main import products (Graph I.1.4), the largest share is the 6th and 7th group (SITC classification), which mostly include machinery and equipment (about 41% in 2014), then it is the mineral fuels, lubricants and related materials group (about 15% in 2014), followed by food and livestock products, the weight of which after 2000 is seen to have declined (13% in 2014).

4 Graph I.1.4 Albania, imports by commodities, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

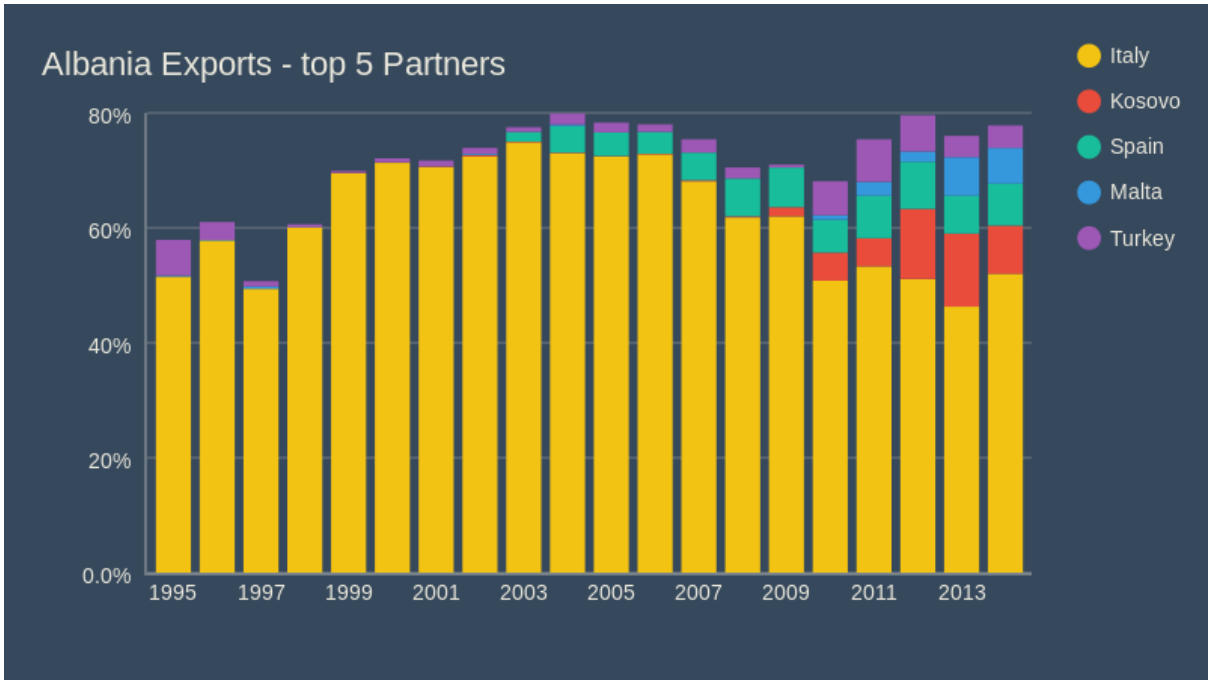
I.1.3 Foreign trade by partners

The main destination of Albania's exports was Italy, which in 2014 accounted for about 52% of all Albanian exports, with specific periods (2003-2006) where exports to this country accounted for up to 75% of the total (Graph I. 1.5). After 2003, Kosovo took a significant share (including about 7.3% in 2014), and after that came Spain (6.3% in 2014), followed by Malta (6.2%) and Turkey (3.9%).

As far as trade with the European Union (EU28) countries is concerned, in exports, Albania's five main partners in 2014 were Italy, Spain, Malta, Greece and Germany (Graph I.1.6). Exports to these countries accounted for about 73% of the total, where Italy also occupies the first position (52%). Thus it can be said that the bulk of exported goods were towards European Union countries, though this share has fallen from about 91% in 2003 (the maximum) to about 60-80% in the period 2007-2014.

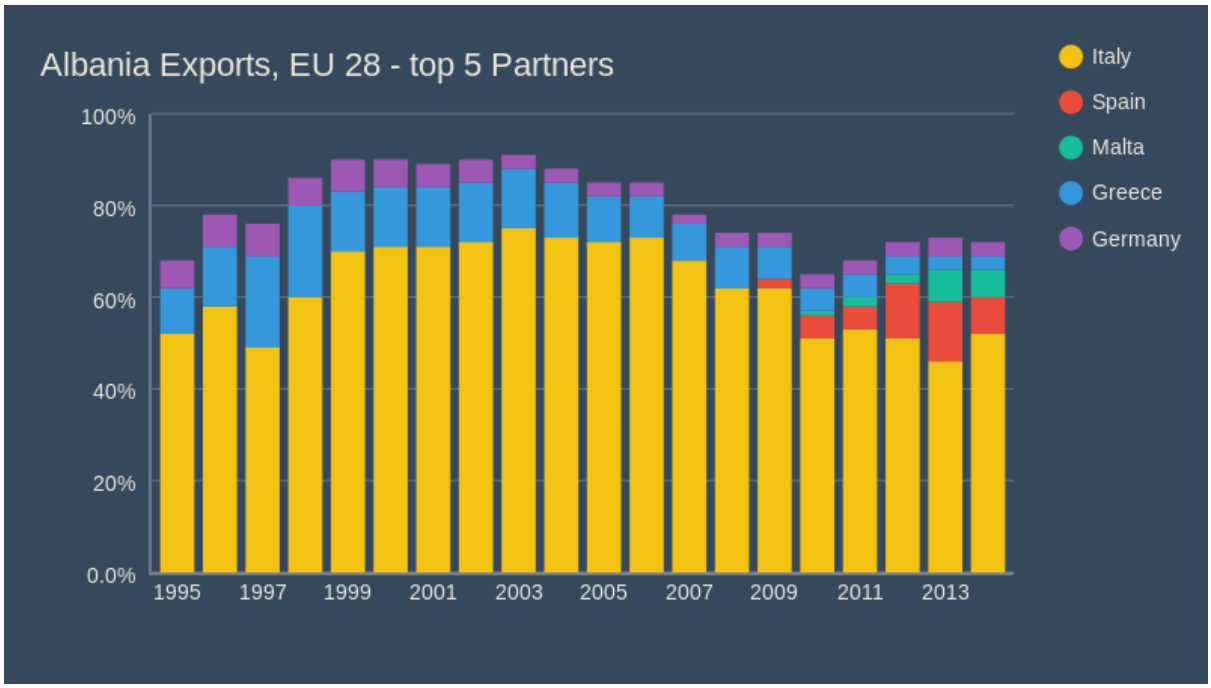
Albania's exports to the Western Balkan countries account for about 11.7% of total exports (2014, chart I.1.6). It should be said that this percentage has been rising but seems to have stabilized after 2009. In the region, Kosovo is the main partner with 7.3%, followed by Macedonia with 2.1%.

5 Graph I.1.5 Albania, exports–top partners, 1995–2014



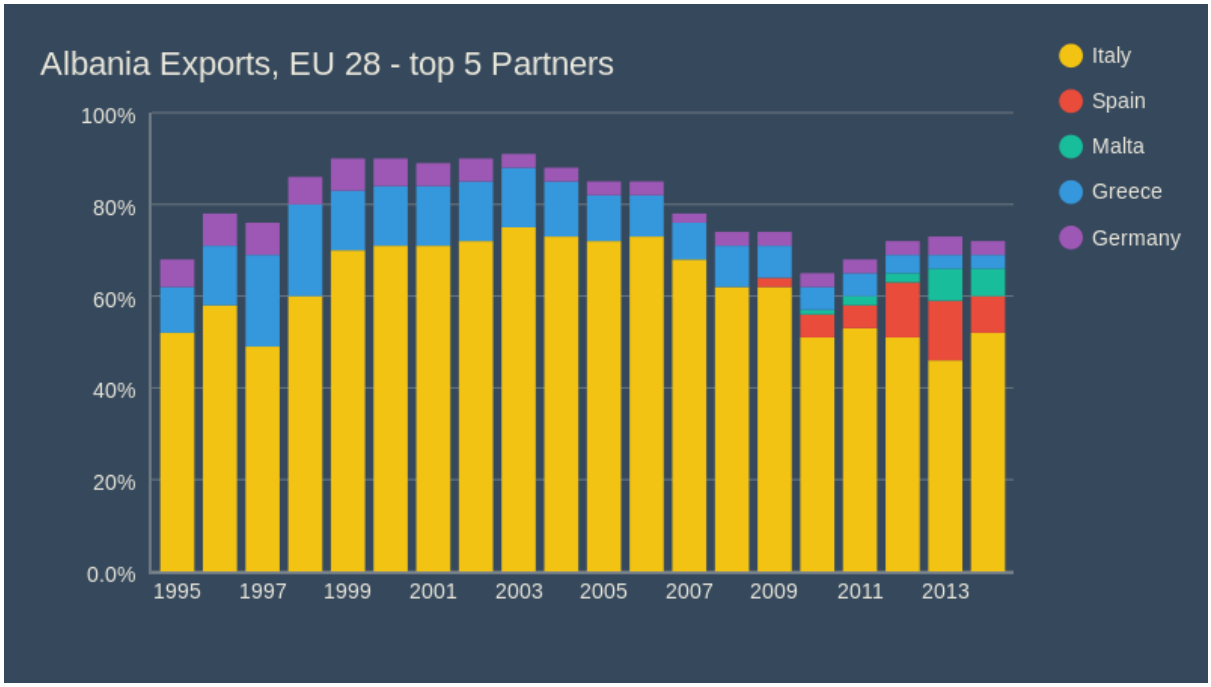
Source: own compilation on wiiw Annual Database 2015 data

6 Graph I.1.6 Albania, exports–top EU-28 partners, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

7 Graph I.1.7 Albania, exports–Western Balkans, 1995–2014



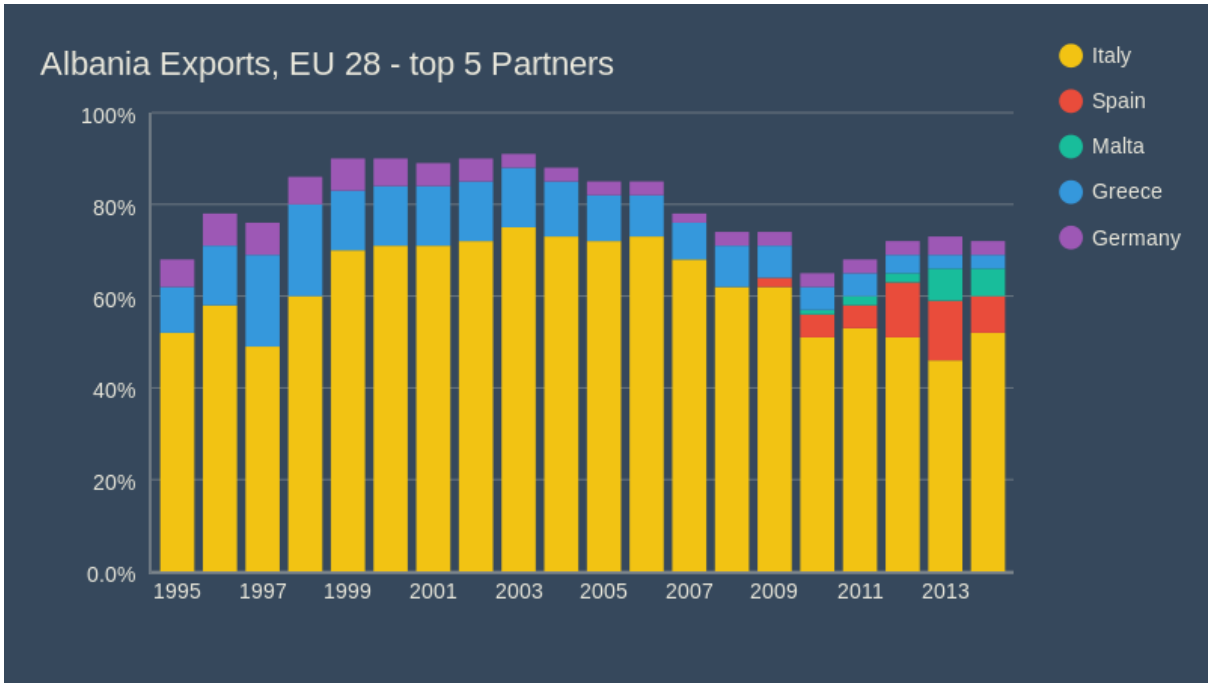
Source: own compilation on wiiw Annual Database 2015 data

Even in the volume of imports, Italy has been Albania's main partner, although its share of the total has decreased from 44% in 1998 to 30% in 2014 (chart I.1.8). The data show Greece's specific weighting as the second most important partner, from 28% in 1998 to 9.4% in 2014. Also, after 2003 the volume of imports increased with China (7.3% in 2014). Among the top five import partners are Turkey and Germany, who each carried an almost constant share (approximately 6-7% and 5-6%).

Graph I.1.9 shows that the volume of Albanian imports from European Union countries (EU 28), although it has occupied the bulk of the total, has fallen from about 78% in 1997-1998 to about 50-53% in the period 2005-2014. The main import partners are Italy (30%), Greece (9%), Germany (6%), France (2%) and Spain (2%).

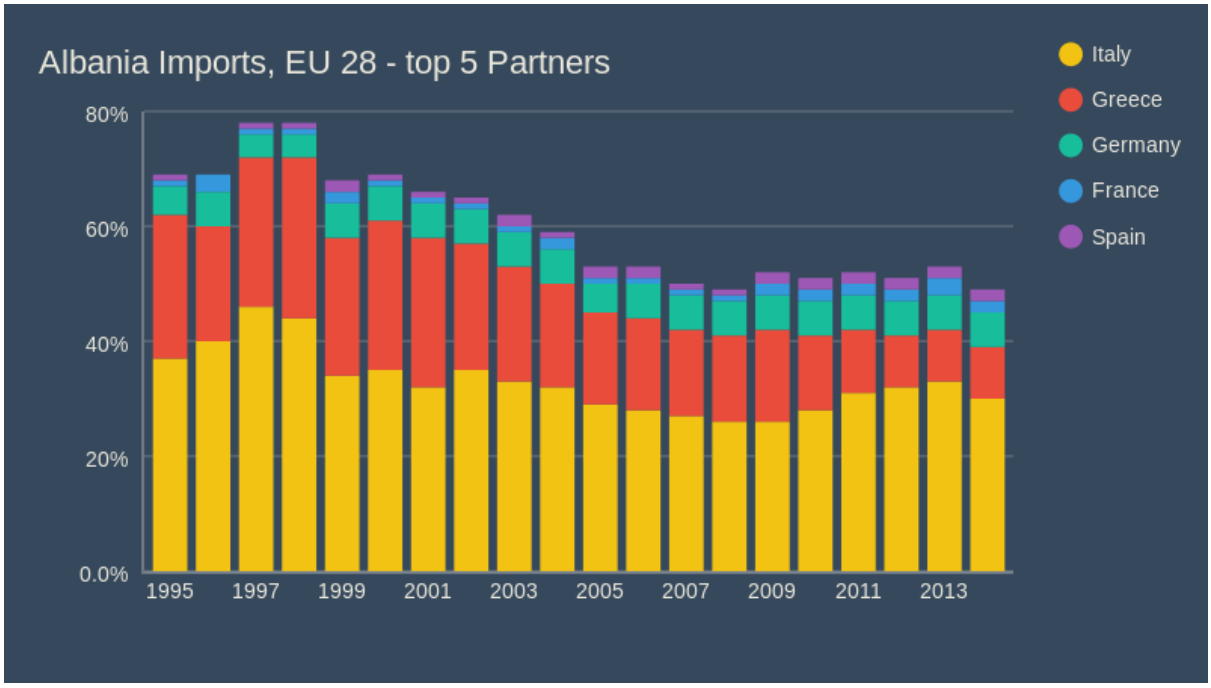
The volume of imports from the region also appears to increase after 2005 (Graph I.1.10). While in the period 1995-2005 the share of imports with the region to the total was on average 3%, after 2005 the average was about 8%. At present (2014), the main partner in imports is Serbia (4.3%) and then Macedonia (1.5%), while other countries have a very small share: Kosovo 1.1%, Croatia 1.1%, Bosnia and Herzegovina 0.6% and Montenegro 0.4%.

8 Graph I.1.8 Albania, imports–top partners, 1995–2014



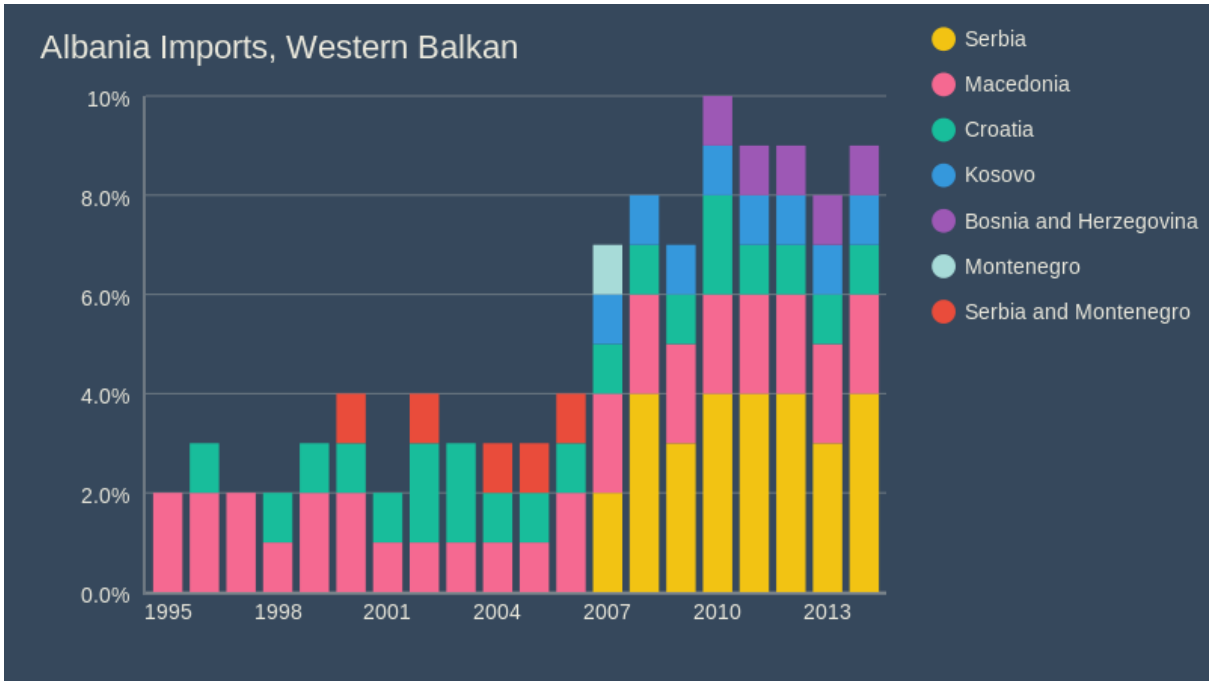
Source: own compilation on wiiw Annual Database 2015 data

9 Graph I.1.9 Albania, imports–top EU-28 partners, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

10 Graph I.1.10 Albania, imports–Western Balkans, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

I.2 Bosnia and Herzegovina

I.2.1 Dynamic of trade volume

Table 1.2.1 presents the main indicators of the development of Bosnia and Herzegovina's trade relations. Key for this country was the opening up of the economy (in fact, the opening index ranges from 70% to 91%). After the peak of 2008, recent years saw a relatively stabilized trade deficit. Also, the export-import coefficient has improved to reach 53.6%.

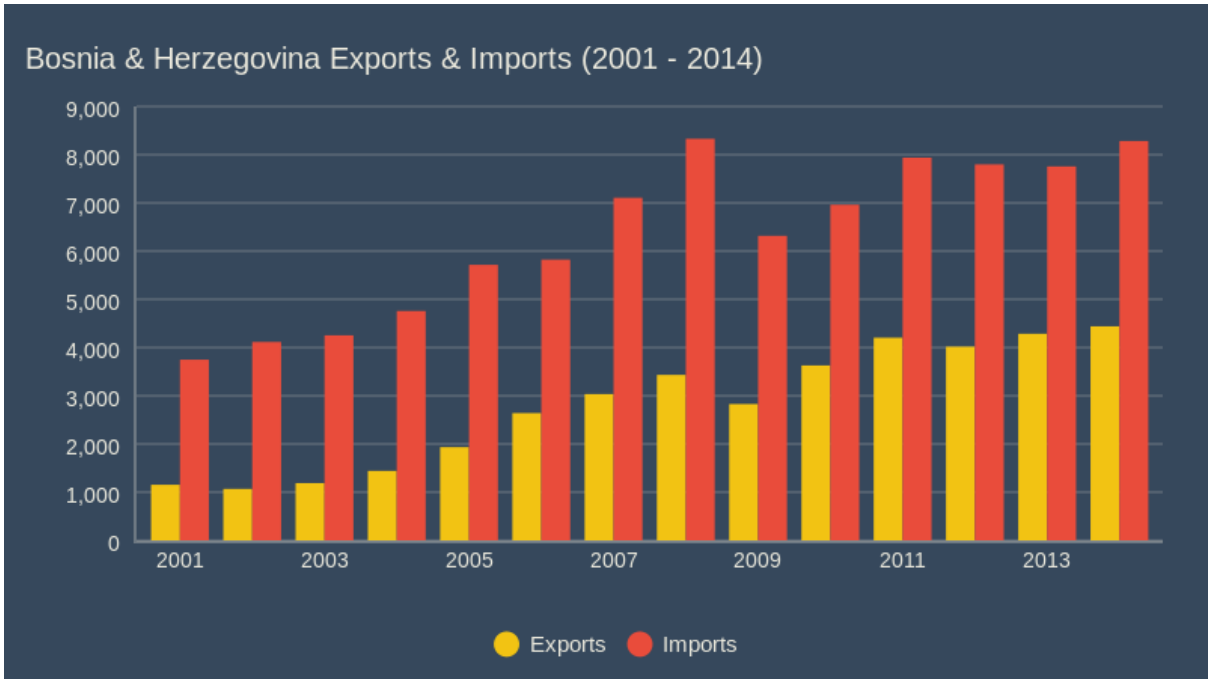
2 Table I.2.1 Bosnia & Herzegovina, volume of international trade, 1998–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
1998	520	2,391	2,911	-1,871	21.7%	70.0%
1999	566	2,555	3,121	-1,990	22.1%	62.6%
2000	1,115	3,452	4,567	-2,338	32.3%	75.6%
2001	1,153	3,748	4,902	-2,595	30.8%	75.6%
2002	1,068	4,115	5,183	-3,046	26.0%	72.5%
2003	1,188	4,253	5,441	-3,066	27.9%	72.3%
2004	1,441	4,758	6,199	-3,317	30.3%	75.8%
2005	1,934	5,715	7,650	-3,781	33.8%	84.8%
2006	2,640	5,823	8,463	-3,183	45.3%	82.5%
2007	3,035	7,106	10,141	-4,071	42.7%	88.0%
2008	3,432	8,330	11,762	-4,899	41.2%	90.2%
2009	2,828	6,317	9,145	-3,489	44.8%	72.2%
2010	3,628	6,962	10,590	-3,334	52.1%	81.7%
2011	4,204	7,938	12,142	-3,734	53.0%	90.6%
2012	4,018	7,799	11,817	-3,781	51.5%	88.2%
2013	4,285	7,756	12,041	-3,472	55.2%	88.1%
2014	4,440	8,283	12,723	-3,843	53.6%	91.3%

Source: own compilation on wiiw Annual Database 2015 data

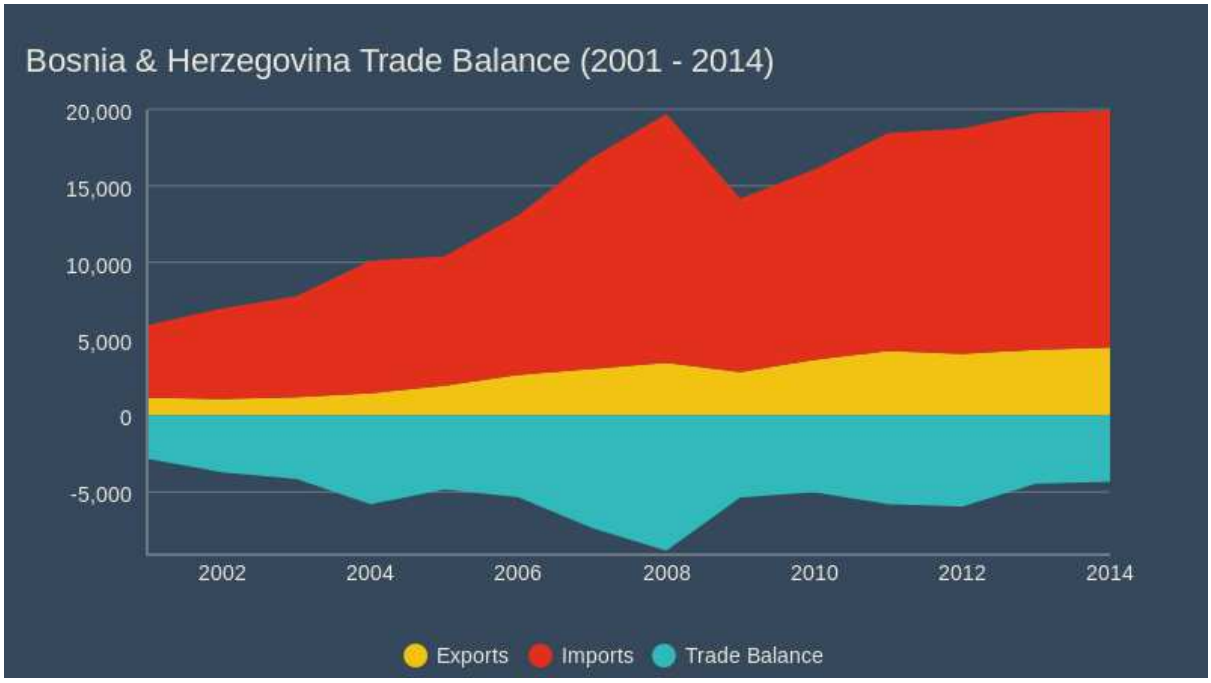
The dynamics of exports and imports as a whole is reflected in graphs I.2.1 and I.2.2. It is seen that the growth of exports and imports has been continuous; at the same time, the trade deficit in absolute terms has remained at about 5-6 billion Euro almost constantly after 2004, with the exception of 2008.

11 Graph I.2.1 Bosnia & Herzegovina, international trade in goods, 2001–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

12 Graph I.2.2 Bosnia & Herzegovina, trade balance, 2001–2014 (million Euro)



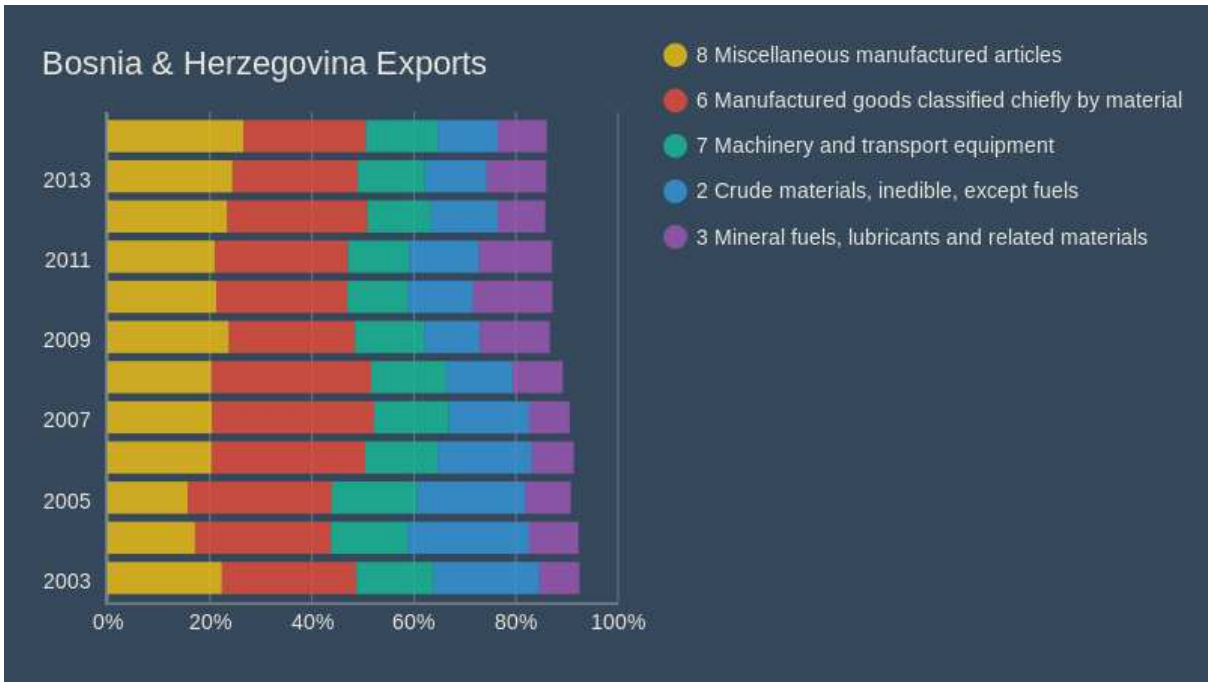
Source: own compilation on wiiw Annual Database 2015 data

I.2.2 Foreign trade by commodity groups

The main volume of exports comes from Manufacturing Products (groups 8 and 6 according to SICT classification), whose weight has been relatively constant at 44-45% of the total (graph I.2.3).

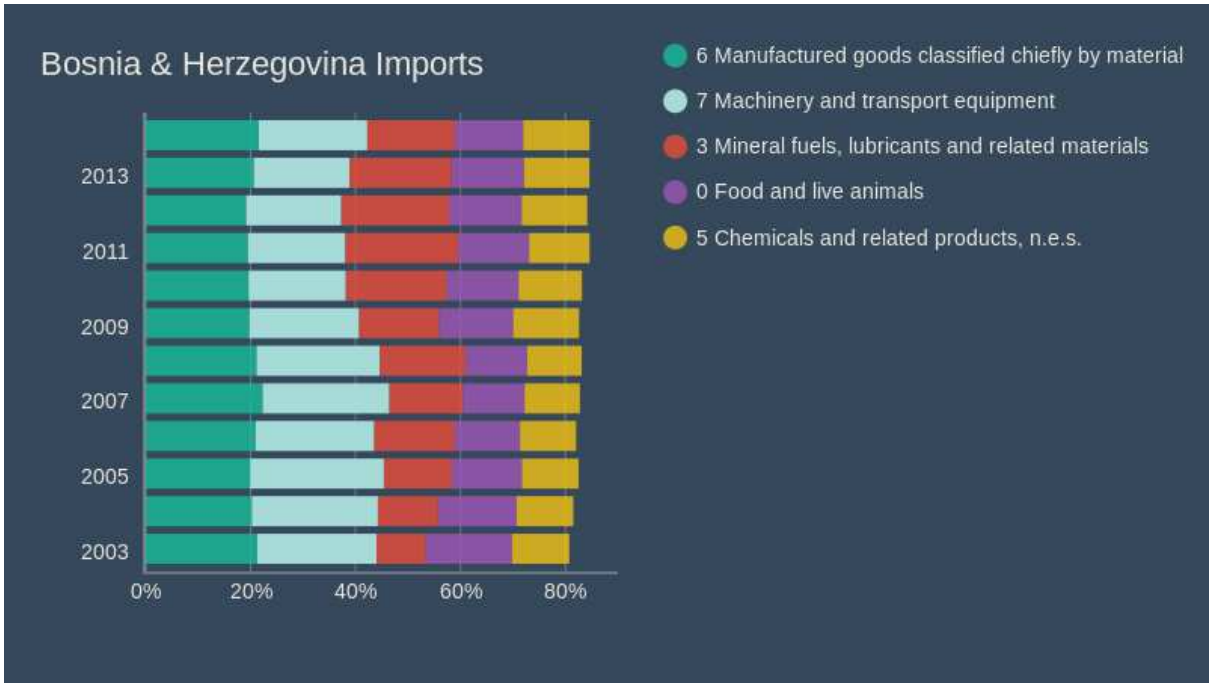
As far as imports are concerned (Graph I.2.4), the main groups are those of Machinery and Equipment, Processed Products, and Fuels and Lubricants. Also included in the five main groups of imported products are Food and Chemical Products.

13 Graph I.2.3 Bosnia & Herzegovina, exports by commodities, 2003–2014



Source: own compilation on wiiw Annual Database 2015 data

14 Graph I.2.4 Bosnia & Herzegovina, imports by commodities, 2003–2014



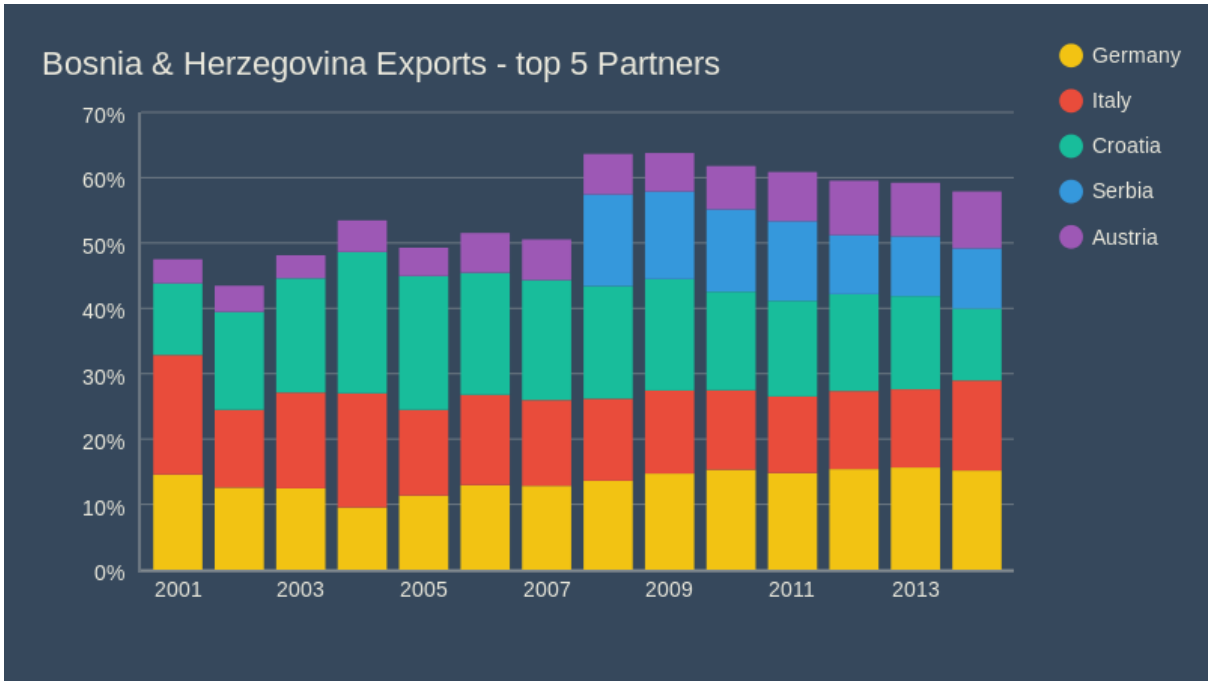
Source: own compilation on wiiw Annual Database 2015 data

I.2.3 Foreign trade by partners

Bosnia and Herzegovina's main export partners were Germany (15.2%), Italy (13.8%), Croatia (11%), Serbia (9.2%) and Austria (8.7%) (Figure 1.2.5, 2014) . Together, these countries account for approximately 60% of the total exports of the country and their overall weight has been constant. As can be seen among the five countries, three are members of the European Union, and two are in the Balkan region. Exports to EU-28 account for about 58% of the total, while those with the Western Balkans countries account for approximately 24%, and this weight has gradually fallen after 2008 (Graphs 1.2.6 and 1.2.7).

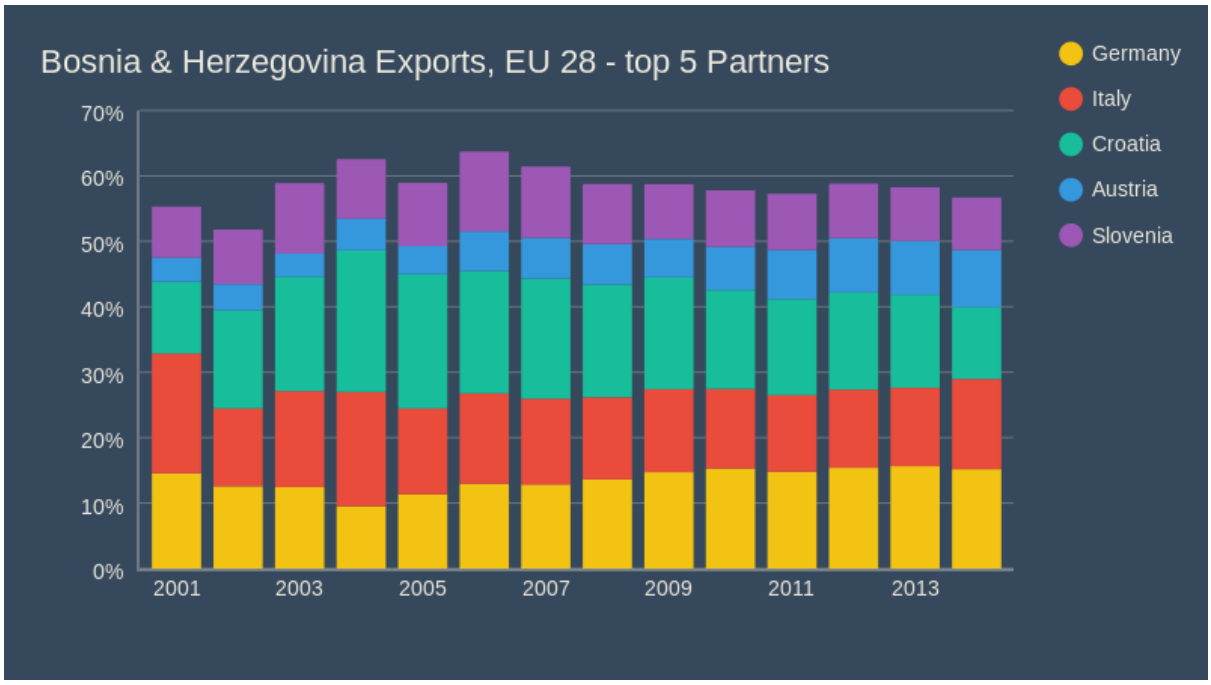
Imports from the top five countries (Graph 1.2.8) account for about 52% of the total, while those of the top five EU-28 countries are about 42%, with a downward trend (Chart I.2.9). In the region, the main exporting countries to Bosnia and Herzegovina are Croatia and Serbia (about 22%), while other countries in the region account for only 2-3% of the total (2014, chart I.2.10).

15 Graph I.2.5 Bosnia & Herzegovina, exports–top partners, 2001–2014



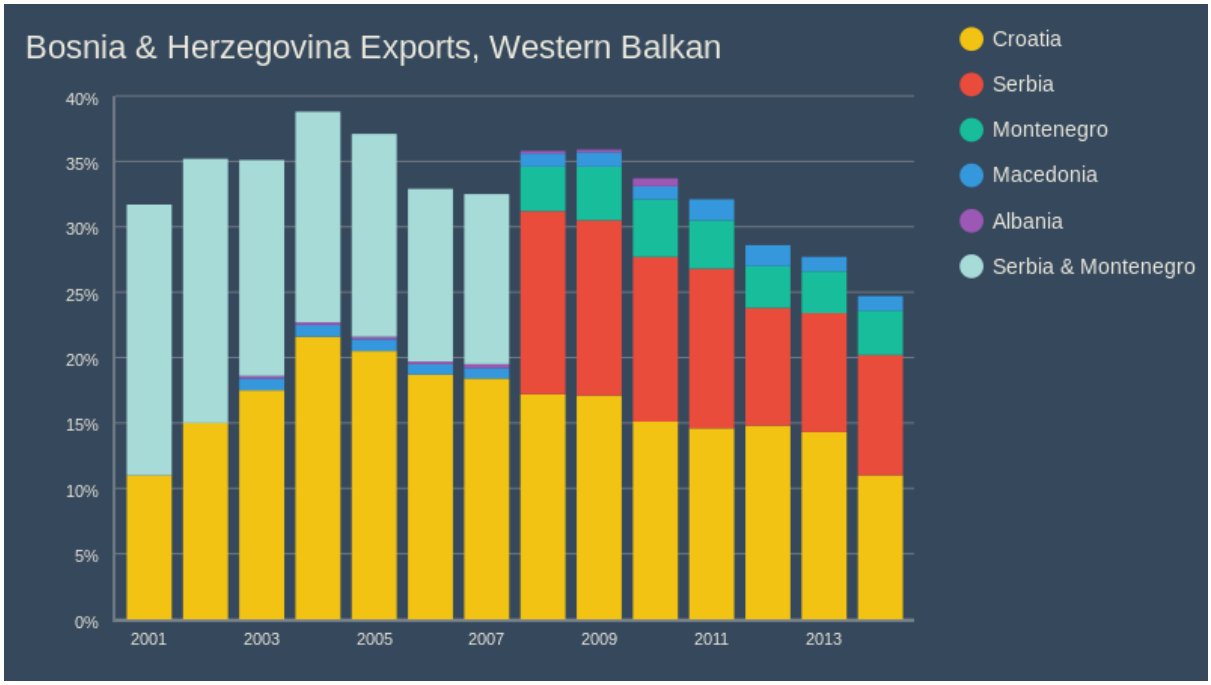
Source: own compilation on wiiw Annual Database 2015 data

16 Graph I.2.6 Bosnia & Herzegovina, exports–top EU-28 partners, 2001–2014



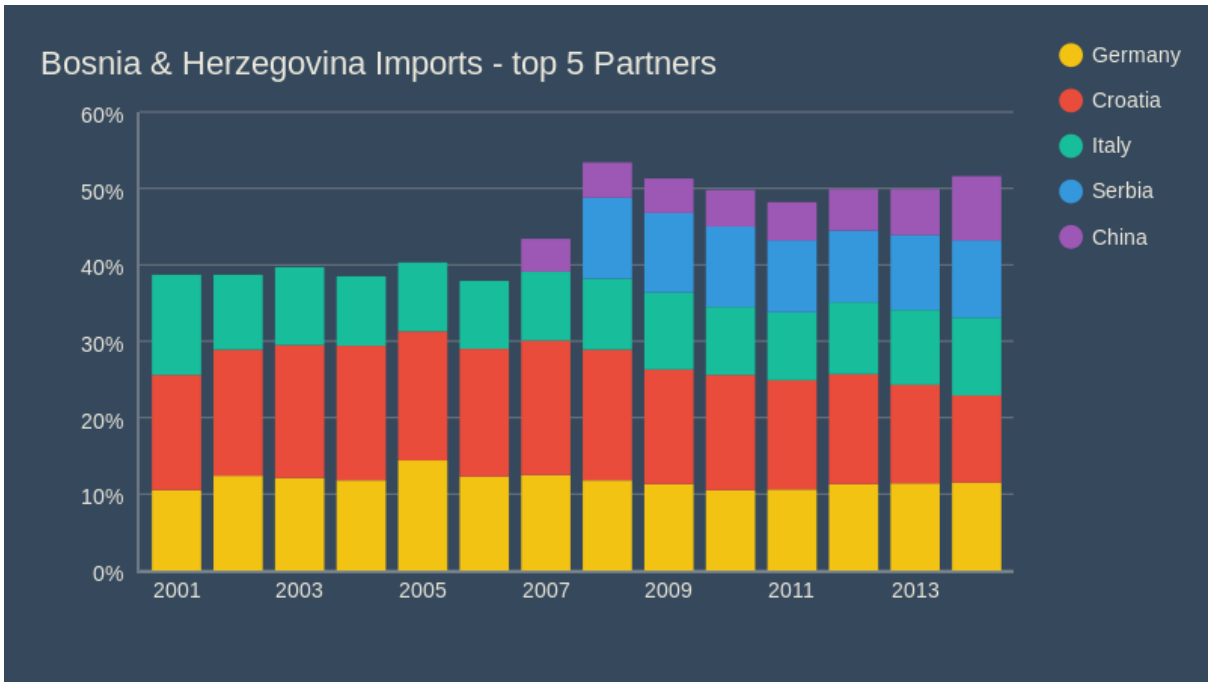
Source: own compilation on wiiw Annual Database 2015 data

17 Graph I.2.7 Bosnia & Herzegovina, exports–Western Balkans, 2001–2014



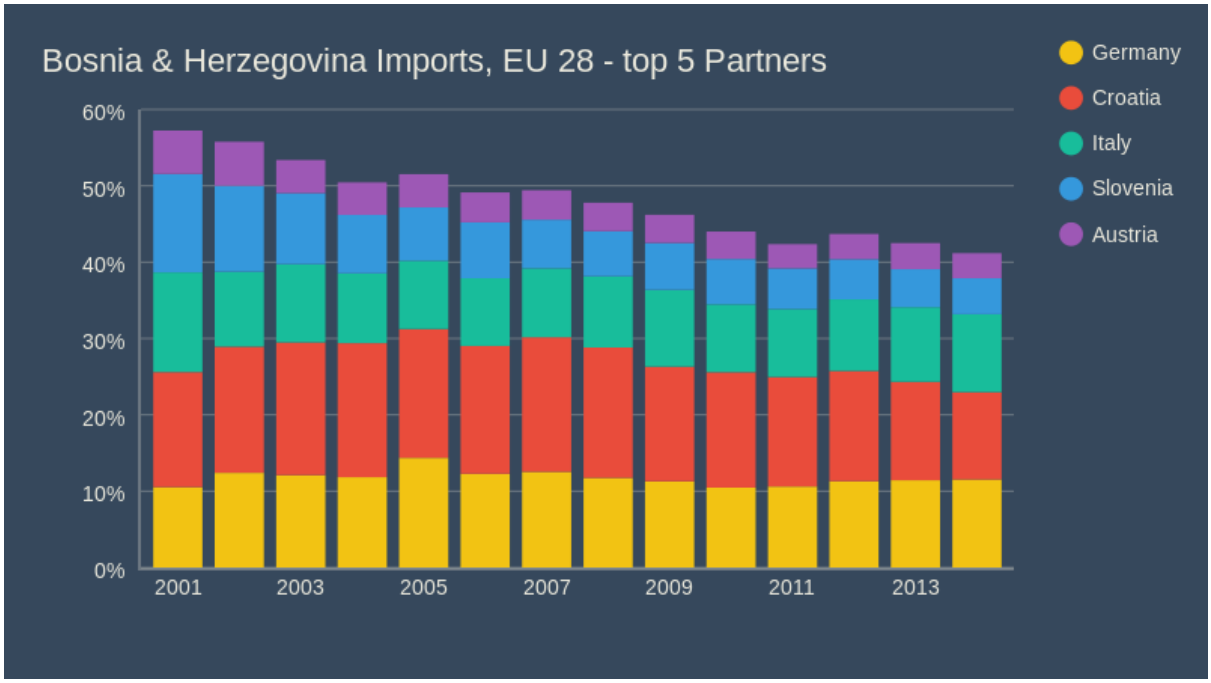
Source: own compilation on wiiw Annual Database 2015 data

18 Graph I.2.8 Bosnia & Herzegovina, imports–top partners, 2001–2014



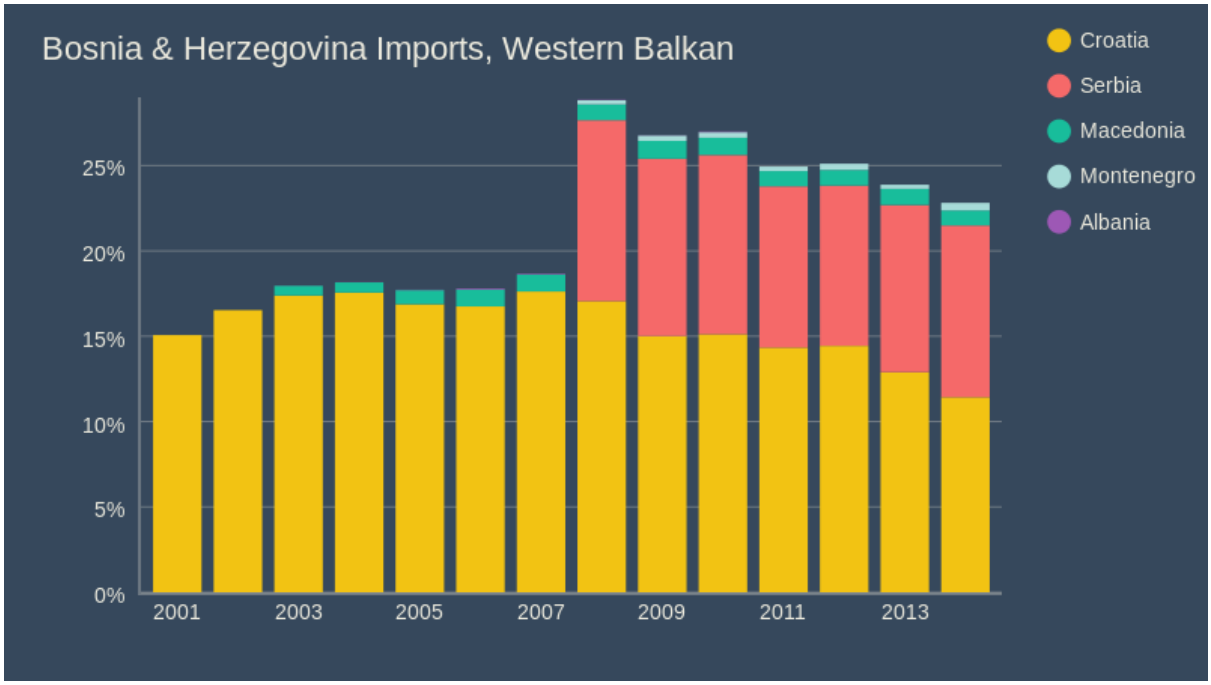
Source: own compilation on wiiw Annual Database 2015 data

19 Graph I.2.9 Bosnia & Herzegovina, imports–top EU-28 partners, 2001–2014



Source: own compilation on wiiw Annual Database 2015 data

20 Graph I.2.10 Bosnia & Herzegovina, imports–Western Balkans (2001–2014)



Source: own compilation on wiiw Annual Database 2015 data

I.3 Croatia

I.3.1 Dynamic of trade volume

Croatia is the largest economy in the region and, unlike other countries, is already a member of the European Union. Table I.3.1 presents the main indicators of foreign trade relations for this country. The trade deficit, which after 2008 has reduced and stabilized between 6 and 7 billion Euros, also appears here. The economy's opening index is also modest at about 64% (2014), but with a positive growth trend.

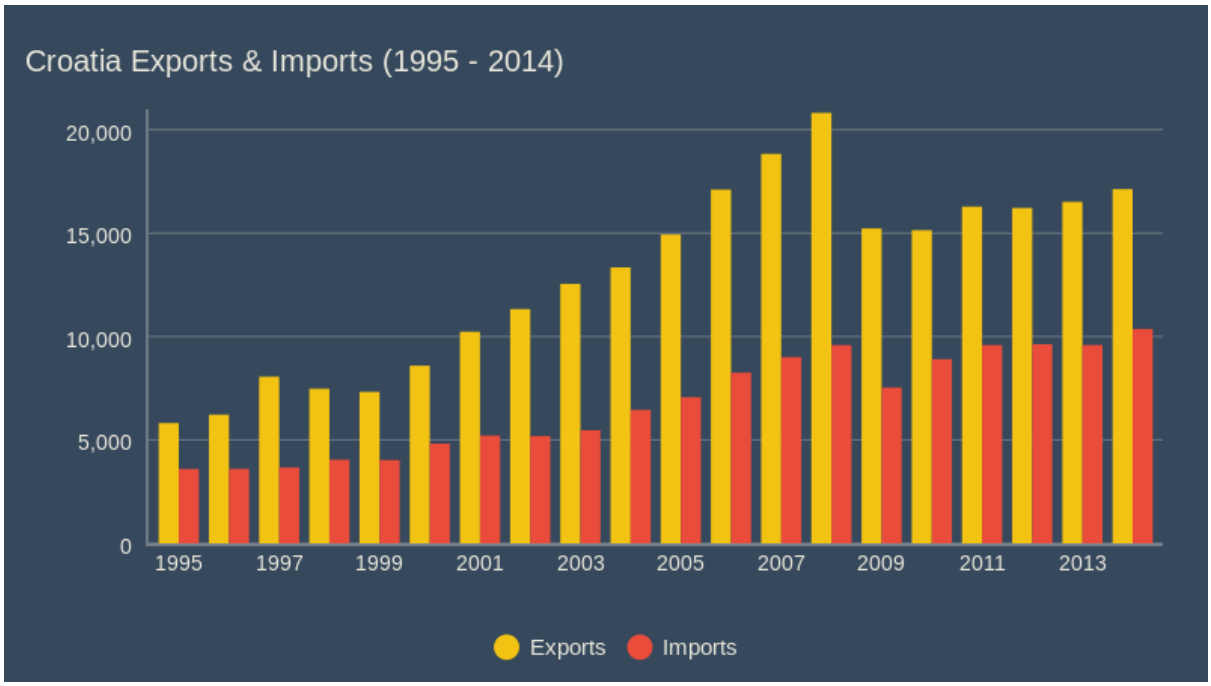
3 Table I.3.1 Croatia, volume of international trade, 1999–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
1995	3,595	5,811	9,406	-2,216	61.9%	54.3%
1996	3,602	6,220	9,821	-2,618	57.9%	51.9%
1997	3,665	8,058	11,724	-4,393	45.5%	55.6%
1998	4,045	7,474	11,519	-3,429	54.1%	50.8%
1999	4,026	7,322	11,348	-3,296	55.0%	51.7%
2000	4,819	8,590	13,408	-3,771	56.1%	56.8%
2001	5,209	10,230	15,439	-5,021	50.9%	59.4%
2002	5,187	11,324	16,512	-6,137	45.8%	57.8%
2003	5,467	12,545	18,012	-7,078	43.6%	58.6%
2004	6,452	13,342	19,794	-6,890	48.4%	59.1%
2005	7,065	14,935	22,000	-7,870	47.3%	60.3%
2006	8,253	17,104	25,357	-8,851	48.3%	63.1%
2007	9,003	18,833	27,836	-9,830	47.8%	63.4%
2008	9,581	20,815	30,396	-11,235	46.0%	63.1%
2009	7,531	15,226	22,757	-7,695	49.5%	50.5%
2010	8,906	15,138	24,044	-6,232	58.8%	53.4%
2011	9,582	16,281	25,863	-6,699	58.9%	57.8%
2012	9,629	16,216	25,844	-6,587	59.4%	58.8%
2013	9,585	16,512	26,097	-6,926	58.1%	60.0%
2014	10,367	17,126	27,493	-6,759	60.5%	63.9%

Source: own compilation on wiiw Annual Database 2015 data

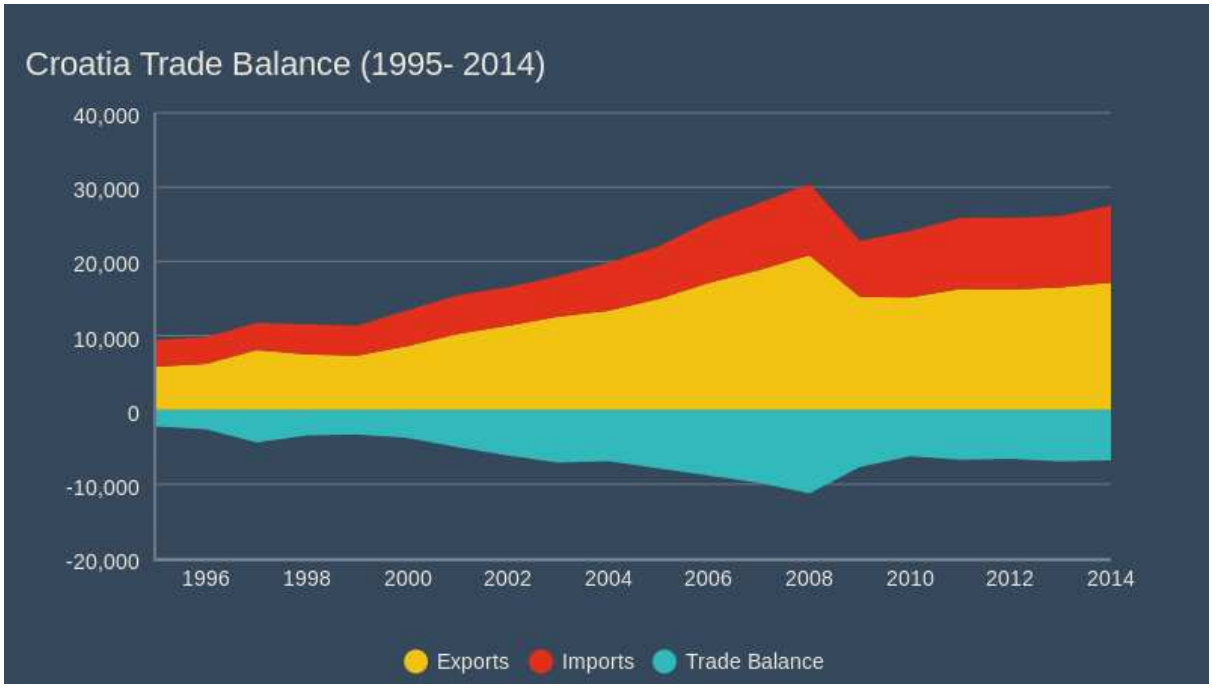
The dynamics of exports and imports as a whole is reflected in graphs I.3.1 and I.3.2. The first graph shows the decline in imports after 2008, one of the main factors of trade deficit reduction (Graph I.3.2).

21 Graph I.3.1 Croatia, international trade in goods, 1995–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

22 Graph I.3.2 Croatia, trade balance, 1995–2014 (million Euro)

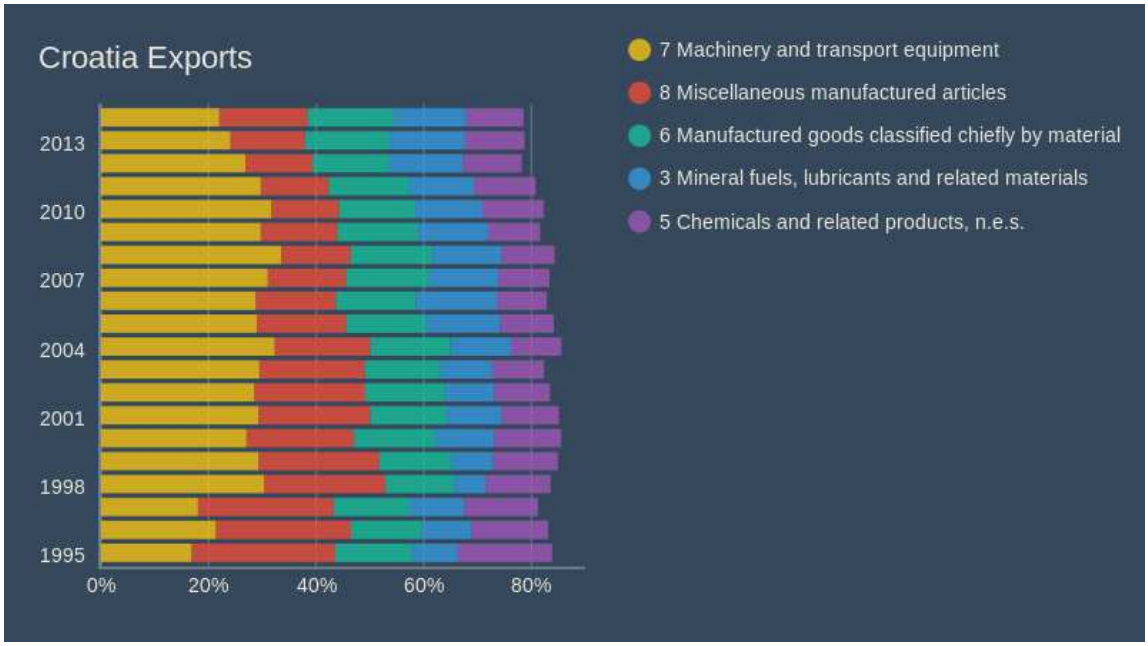


Source: own compilation on wiiw Annual Database 2015 data

I.3.2 External trade by commodity groups

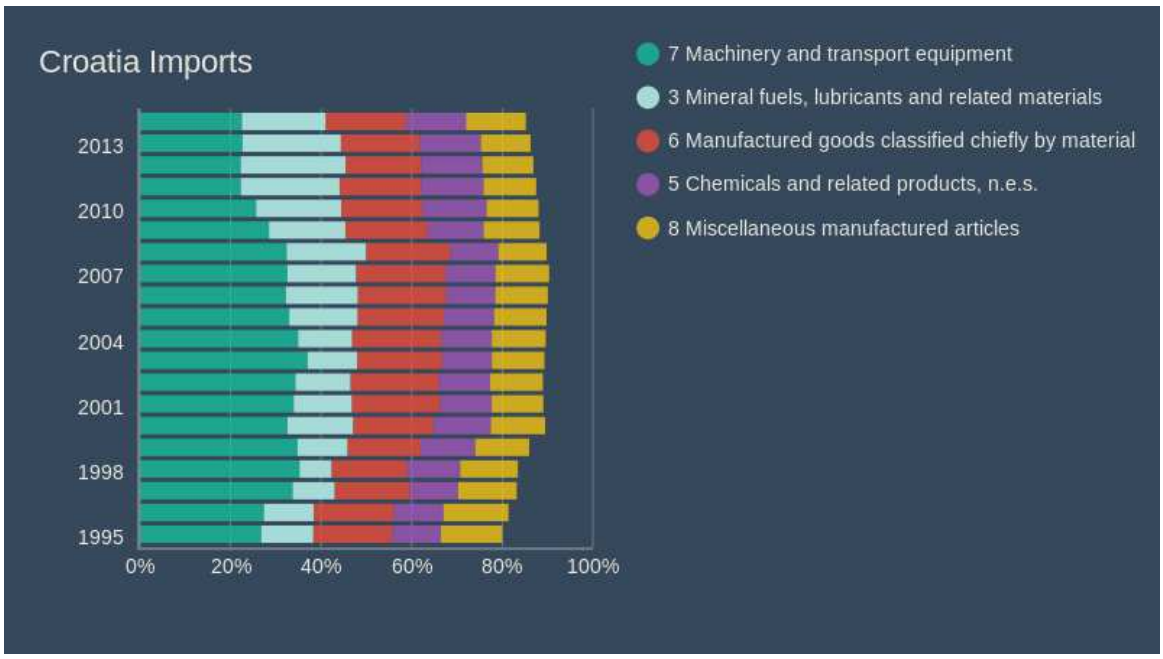
In Graph I.3.3 it is noted that the main products exported from Croatia were those of Machinery and Equipment (group 7), and further down, Processed Manufacturing Products (groups 8 and 6), Fuels and Chemical Products (groups 3 and 5).

23 Graph I.3.3 Croatia, exports by commodities, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

24 Graph I.3.4 Croatia, imports by commodities, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

Even for imports (chart I.3.4), the seventh group is considered the most important. At the same time, a relatively balanced ratio is noticed between specific product groups.

I.3.3 Foreign trade by partners.

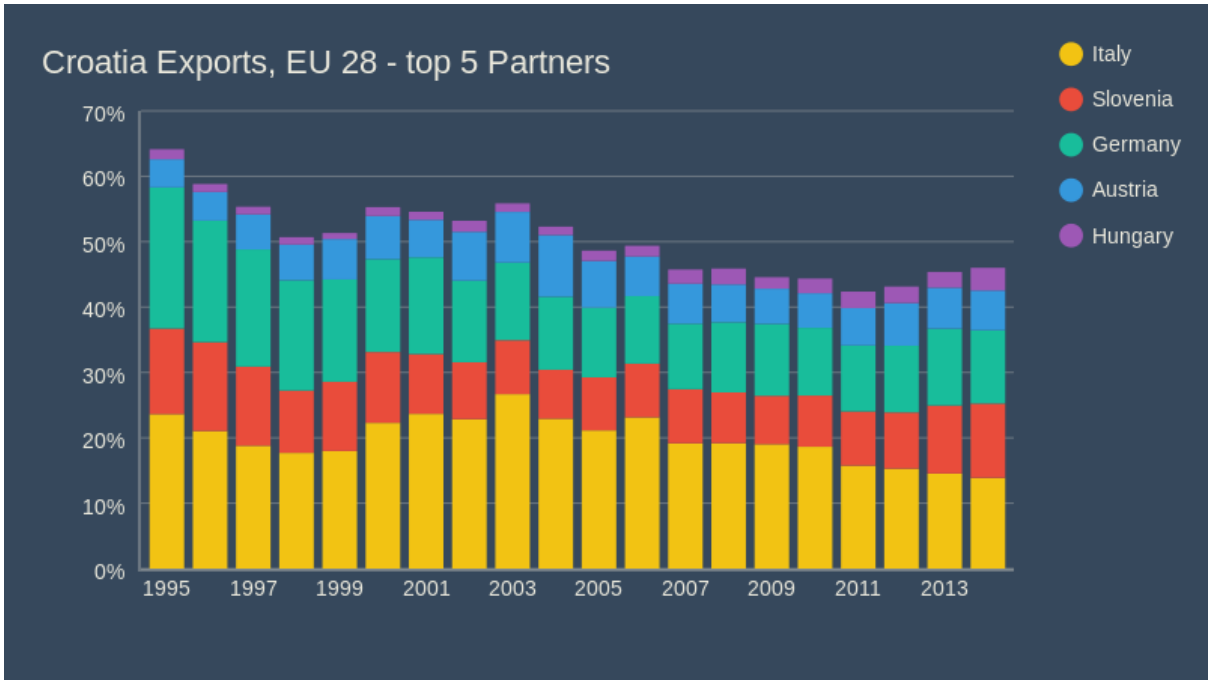
Croatia's main export partners in 2014 were Italy (13.9%), Bosnia and Herzegovina (11.8%), Slovenia (11.4%), Germany (11.2%) and Serbia (6.1%). Together, these countries account for about 55% of exports. As shown in Chart I.3.6, Croatia's main partners are EU countries, which account for over 45% of total exports. As far as Western Balkan countries are concerned (Chart I.3.7), Croatia's main export destinations are Bosnia and Herzegovina and Serbia (together 17%), while other countries reach only 3%.

As far as imports are concerned, Croatia's main partners are shown in Graph 1.3.8. And these are entirely from the EU (the 5 main countries). Graph I.3.10 shows that Croatia not only exports but imports a relatively significant portion from the region, mainly from Bosnia and Herzegovina and Serbia, its main partners in the region, albeit to a small extent (about 4-5%).

25 Graph I.3.5 Croatia, exports–top partners, 1995–2014

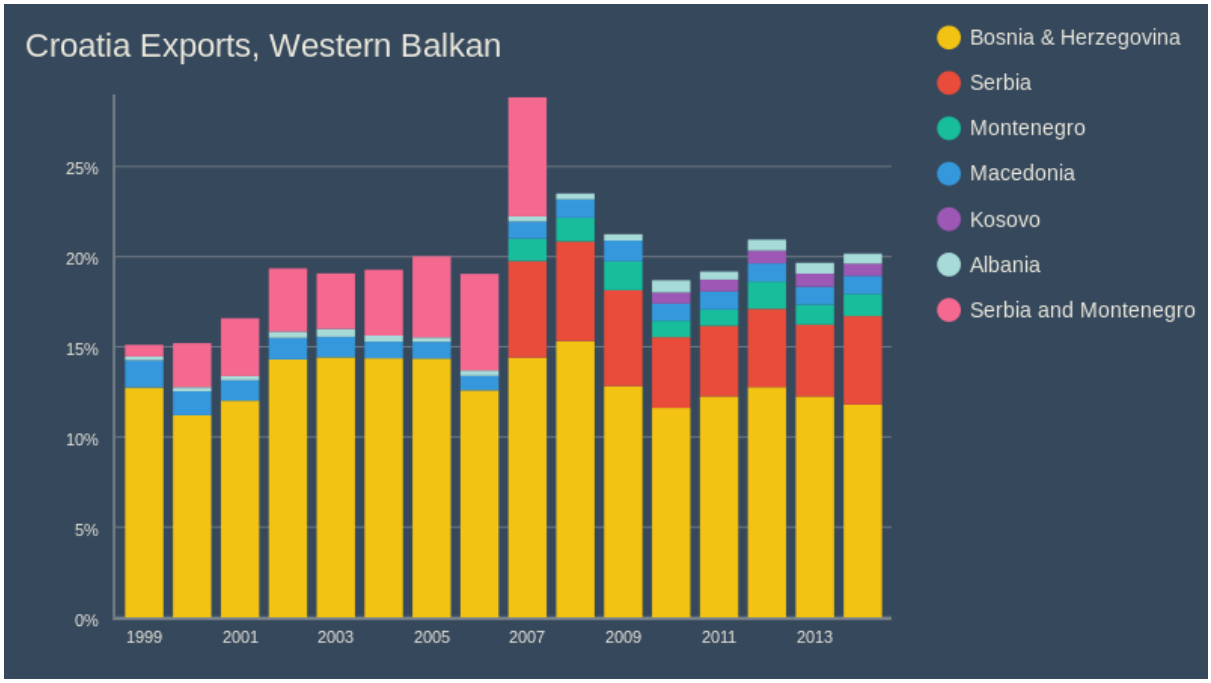
Source: own compilation on wiiw Annual Database 2015 data

26 Graph I.3.6 Croatia, exports–top EU-28 partners, 1995–2014



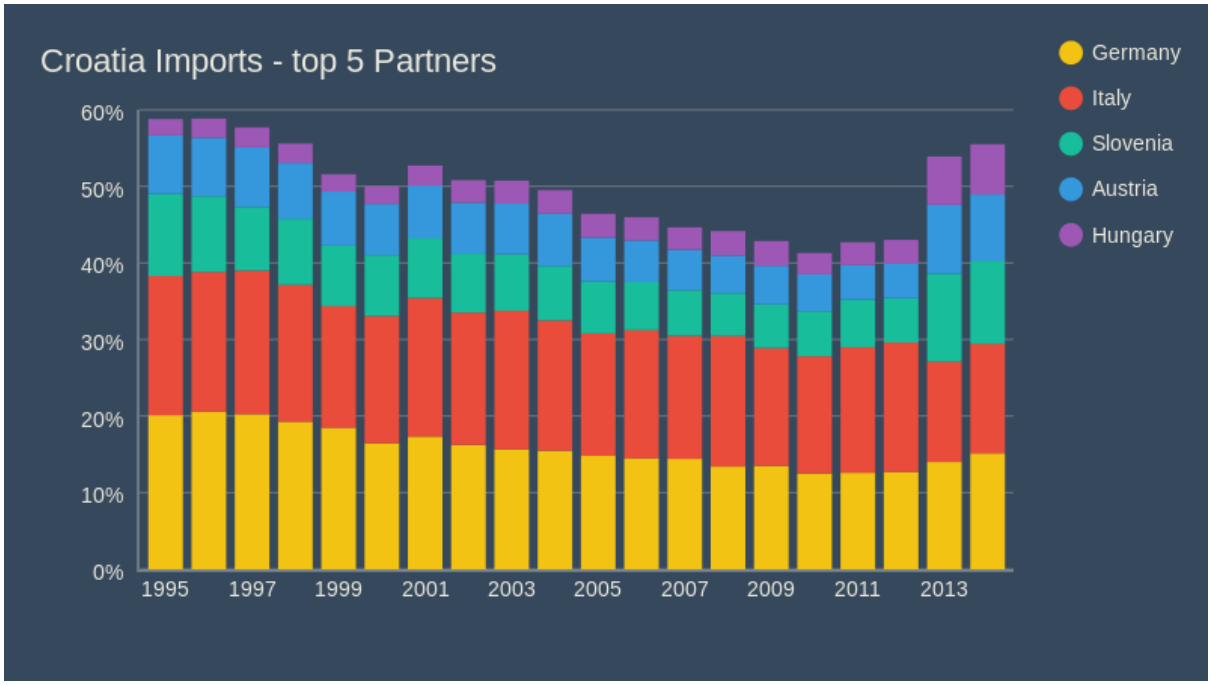
Source: own compilation on wiiw Annual Database 2015 data

27 Graph I.3.7 Croatia, exports–Western Balkans, 1999–2014



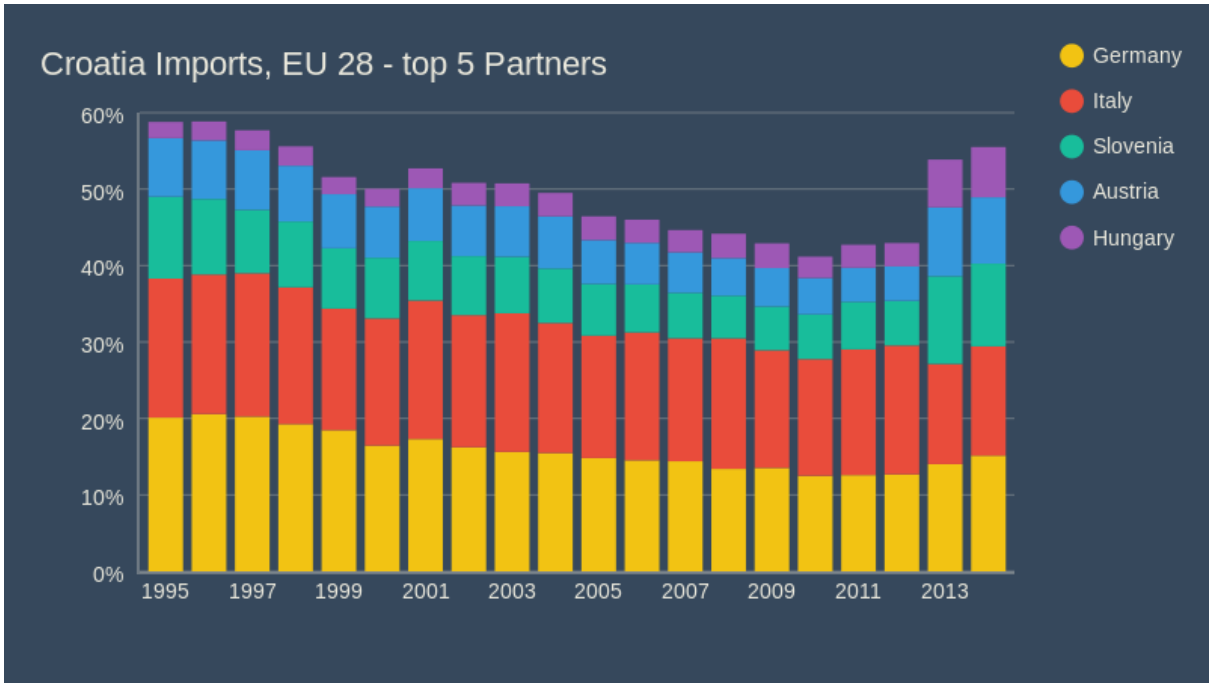
Source: own compilation on wiiw Annual Database 2015 data

28 Graph I.3.8 Croatia, imports–top partners, 1995–2014



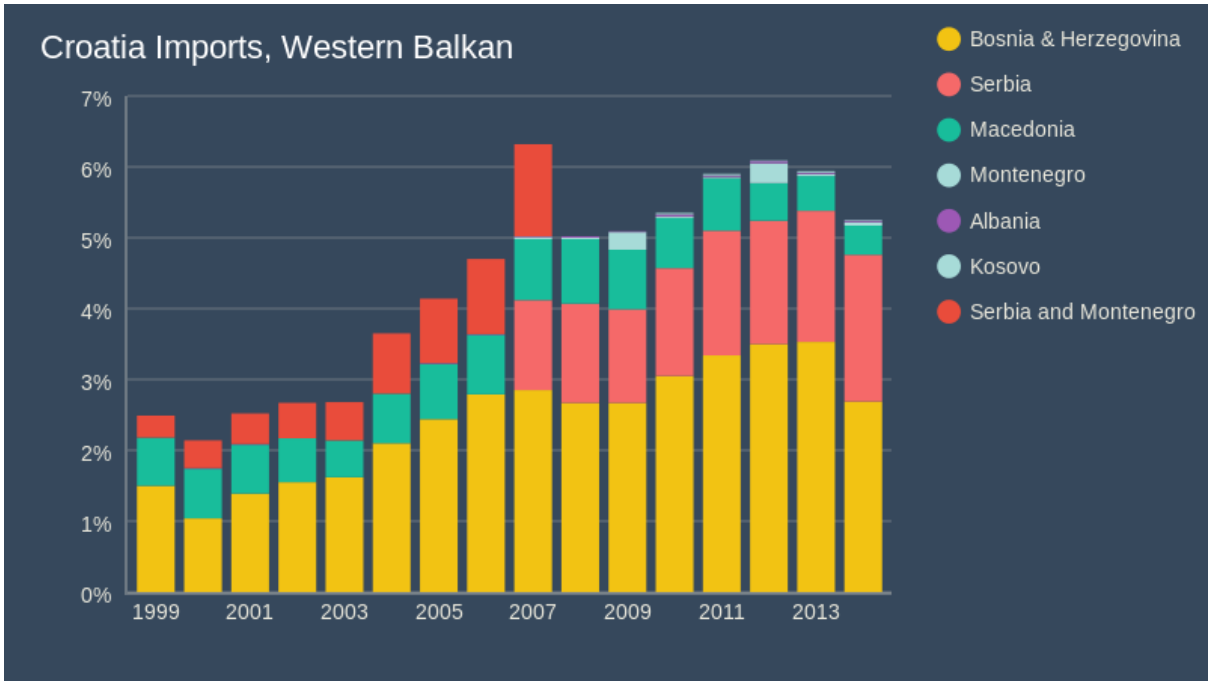
Source: own compilation on wiiw Annual Database 2015 data

29 Graph I.3.9 Croatia, imports–top EU-28 partners, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

30 Graph I.3.10 Croatia, imports–Western Balkans, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

I.4 Kosovo

I.4.1 The Dynamic of trade volume

Regarding Kosovo's foreign trade relations, the general characteristic is the relatively rapid opening of the economy as well as the low level of coverage of exports with imports (Table 1.4.1). Thus, the opening index has increased from 24.6% (2001) to 51.4% (2014), and the coverage coefficient is 12.8%.

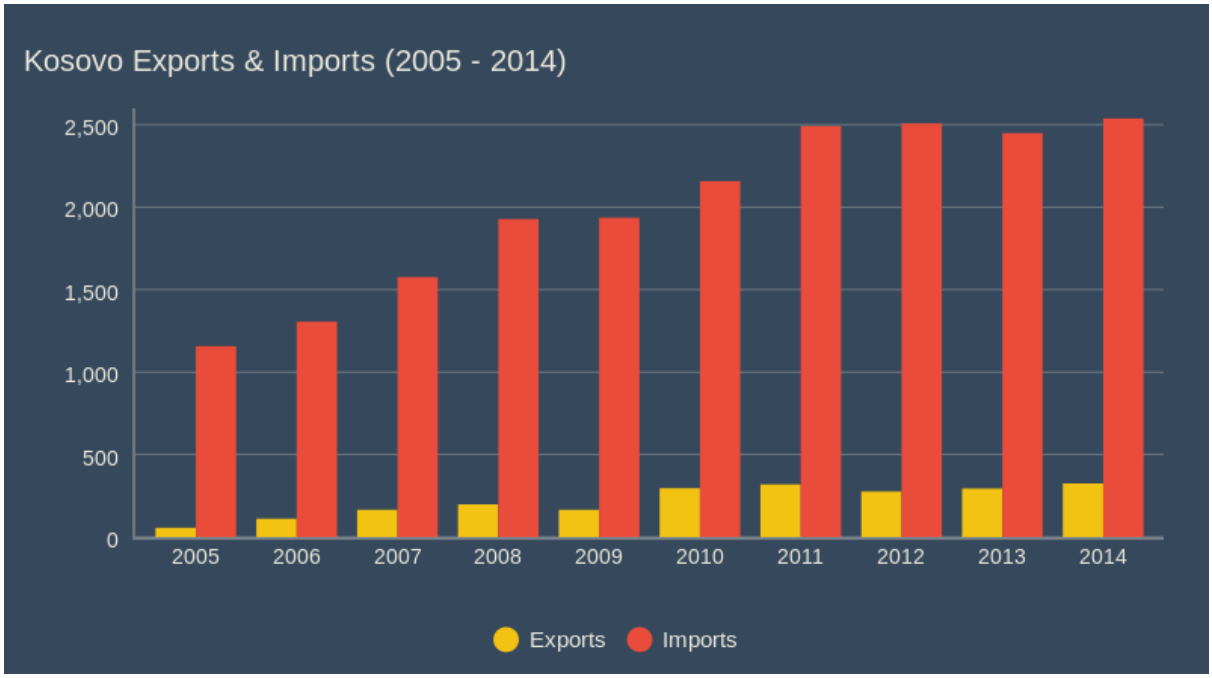
4 Table I.4.1 Kosovo, volume of international trade, 2001–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
2001	11	685	695	-674	1.5%	24.6%
2002	28	855	882	-827	3.2%	30.8%
2003	36	973	1,009	-938	3.7%	34.0%
2004	57	1,063	1,120	-1,007	5.3%	38.5%
2005	56	1,157	1,214	-1,101	4.9%	40.4%
2006	111	1,306	1,417	-1,195	8.5%	45.4%
2007	165	1,576	1,741	-1,411	10.5%	50.3%
2008	198	1,928	2,127	-1,730	10.3%	54.8%
2009	165	1,936	2,101	-1,770	8.5%	51.6%
2010	296	2,158	2,454	-1,862	13.7%	55.7%
2011	319	2,492	2,812	-2,173	12.8%	58.4%
2012	276	2,508	2,784	-2,232	11.0%	55.0%
2013	294	2,449	2,743	-2,155	12.0%	51.5%
2014	325	2,538	2,863	-2,214	12.8%	51.4%

Source: own compilation on wiiw Annual Database 2015 data

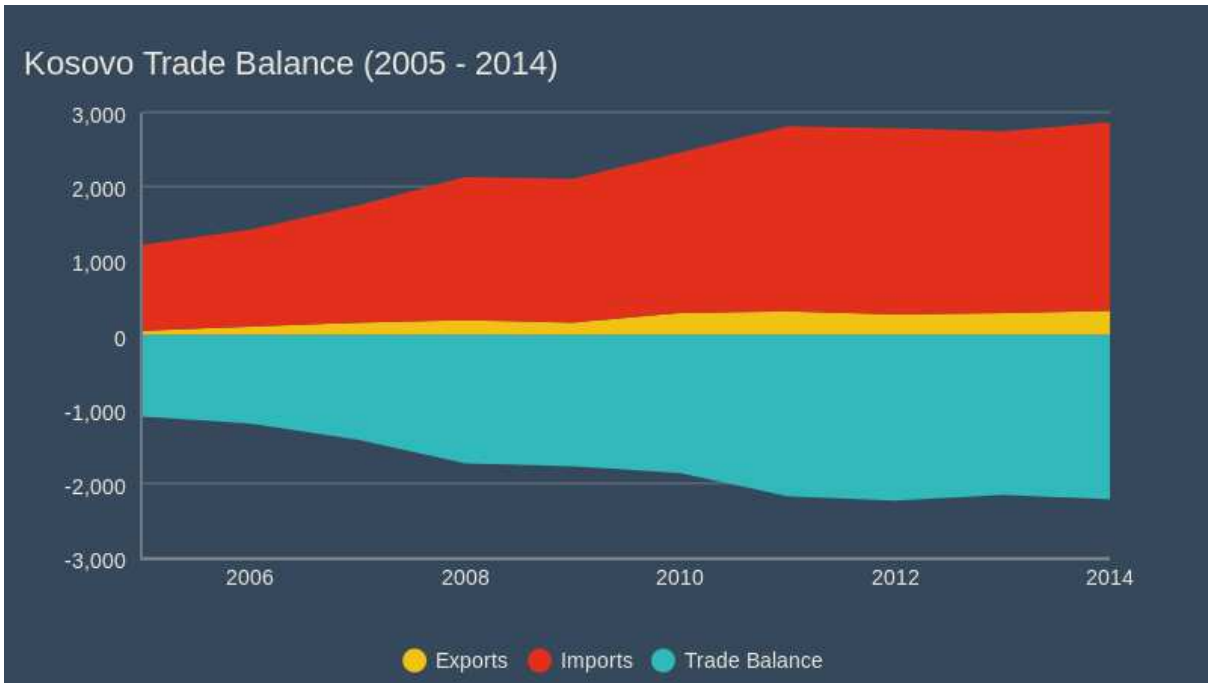
Graphs I.4.1 and I.4.2 represent the dynamics of the increase in the volume of exports and imports. The graphs show us that export growth has been modest, while that of imports is significant, thus driving the negative trend of trade deficit growth to over 2 billion euros, or about 36% of the country's GDP (2014).

31 Graph I.4.1 Kosovo, international trade in goods, 2005–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

32 Graph I.4.2 Kosovo, trade balance, 2005–2014 (million Euro)

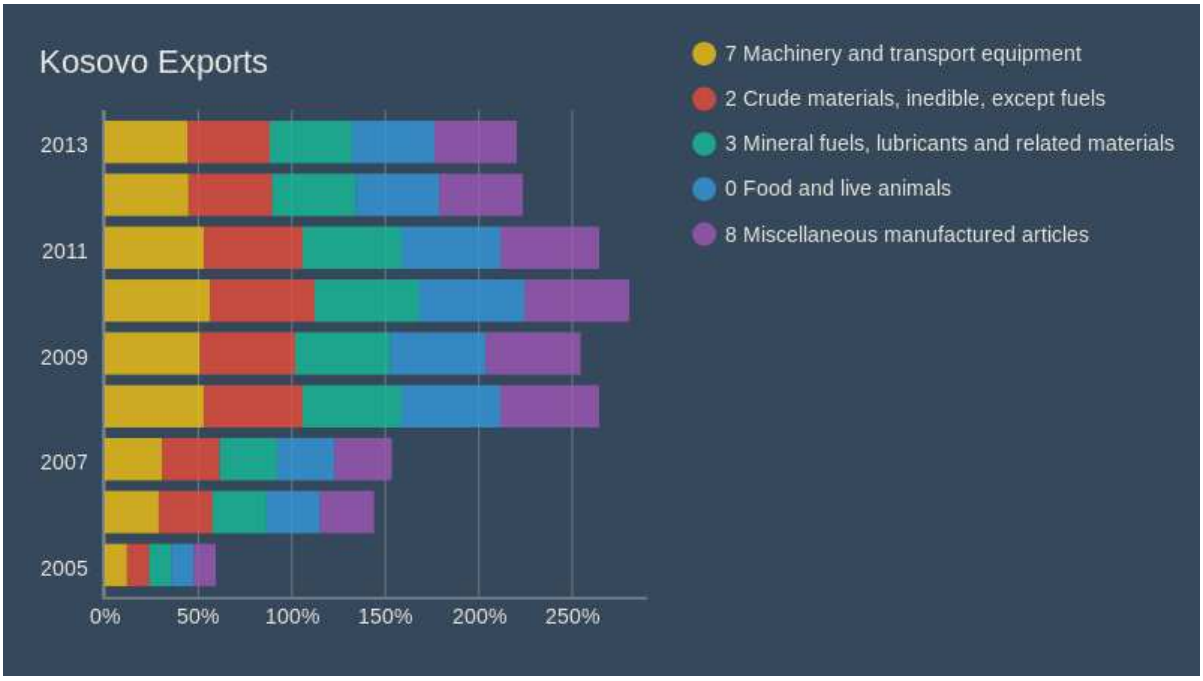


Source: own compilation on wiiw Annual Database 2015 data

I.4.2 External trade by commodity groups

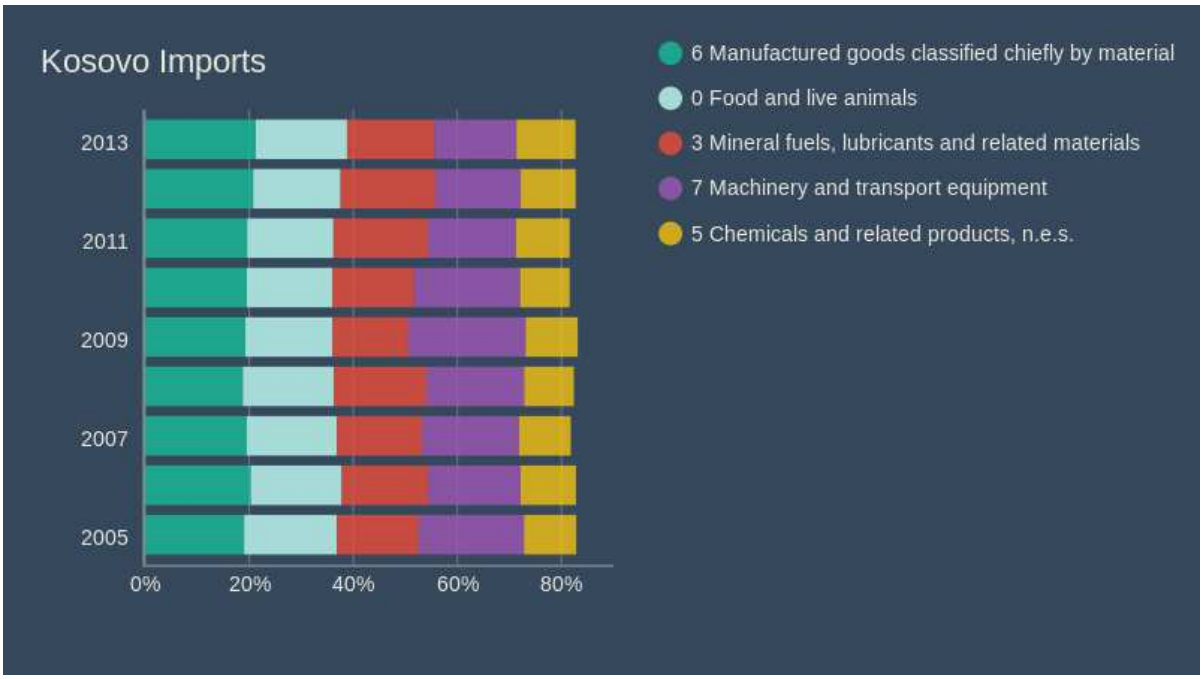
Graph I.4.3 dhe I.4.4, reflect the structure of exports and imports by group of goods.

33 Graph I.4.3 Kosovo, exports by commodities, 2005–2013



Source: own compilation on wiiw Annual Database 2015 data

34 Graph I.4.4 Kosovo, imports by commodities, 2005–2013



Source: own compilation on wiiw Annual Database 2015 data

In exports, the main items are pure metals and their products (such as iron, nickel, etc.), food products and beverages, mineral products, skins, textiles, etc. Non-food industrial products account for about 85-90% of exports, while foodstuffs around 10-15%.

While Kosovo's imports consist mainly of machinery and equipment, mineral products, oils and fuels, tobacco and food products, and other non-food products account for about 70-75% of total imports, while foodstuffs make up the rest at 25-30%[5].

I.4.3 Foreign trade by partners

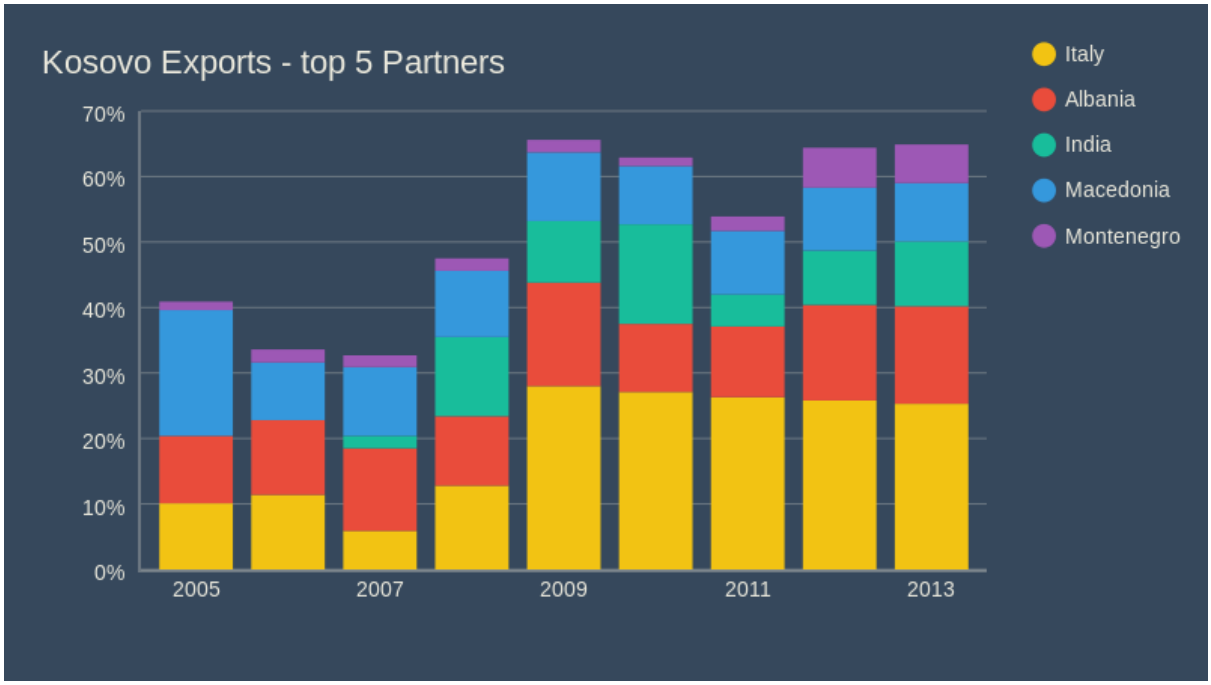
The structure of exports by main partners is shown in graphs I.4.5 -I.4.7. Kosovo exports mainly to Italy, Albania, India, Macedonia, and Montenegro. All five countries make up about 65% of the volume of exports (2014). This structure shows that the main partners for Kosovo are mainly border countries (except India).

The share of Kosovo's exports to the European Union countries (Chart I.4.6) is relatively low (32%, 2014), while that of the countries in the region is considerable (38%, 2014). In the region, the main importers of Kosovar products are Albania and Serbia.

As far as imports are concerned, the main countries are shown in Figure I.4.8. Their structure seems more in harmony, ie there is a balance in the weight of individual countries. About 55% of imports come from the European Union and mainly from Germany, Italy and Greece (Graph I.4.9). While in the region, Albania is the main trade partner (Graph I.4.10).

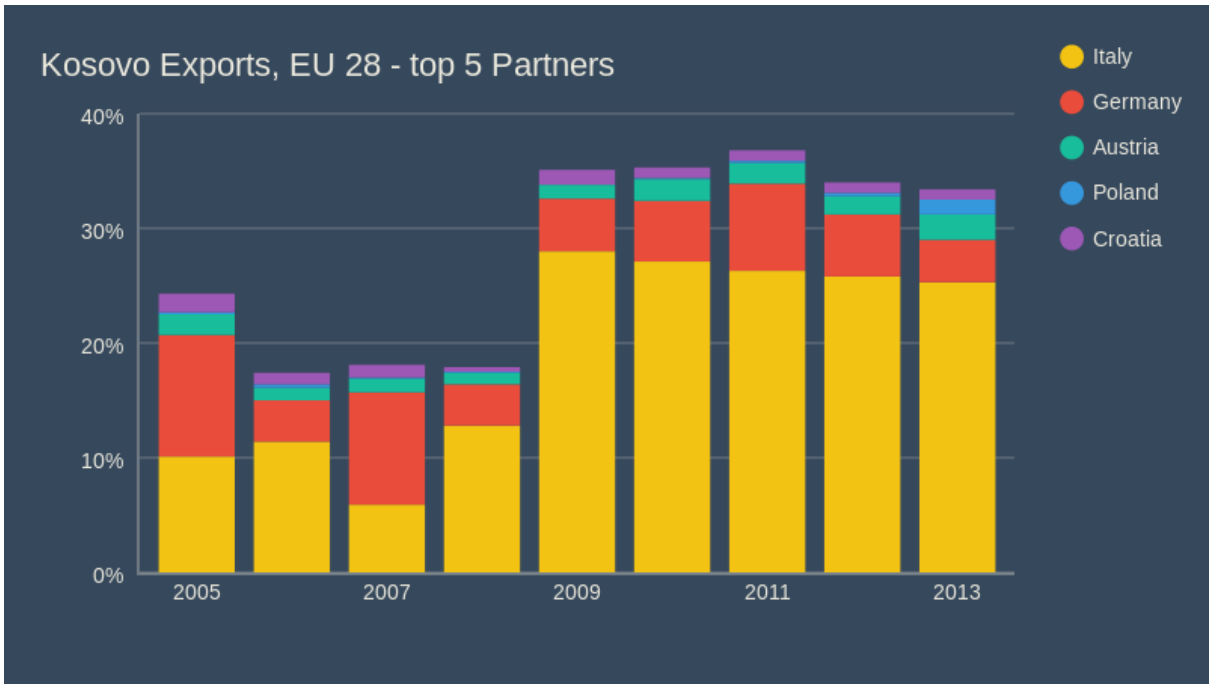
[5] Ministry of Trade and Industry of Kosovo, "Report on Kosovo trade exchanges" 01.06.2013

35 Graph I.4.5 Kosovo, exports–top partners, 2005–2013



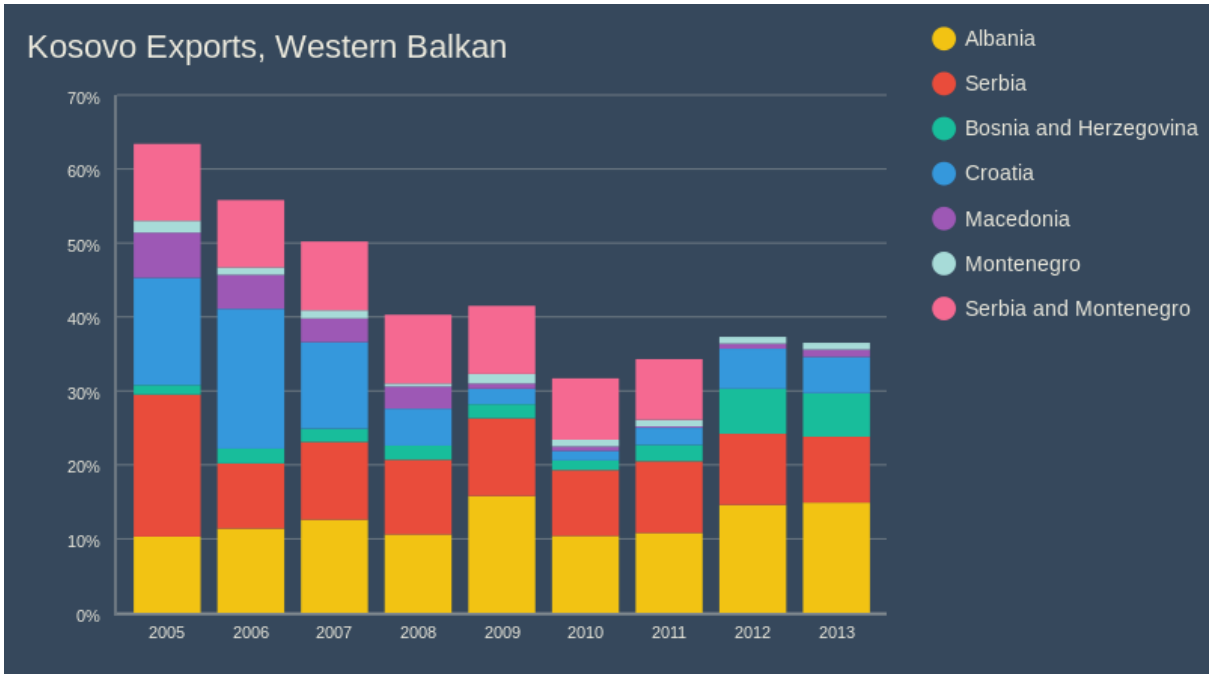
Source: own compilation on wiiw Annual Database 2015 data

36 Graph I.4.6 Kosovo, exports–top EU-28 partners, 2005–2013



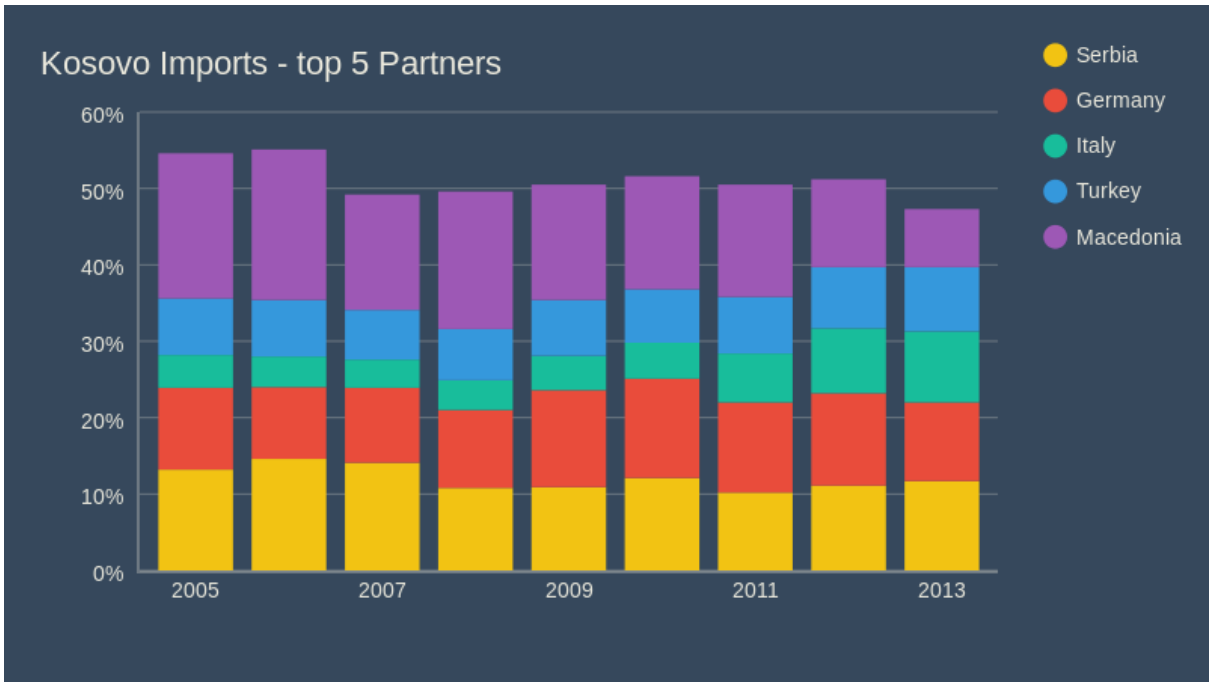
Source: own compilation on wiiw Annual Database 2015 data

37 Graph I.4.7 Kosovo, exports–Western Balkans (2005–2013)



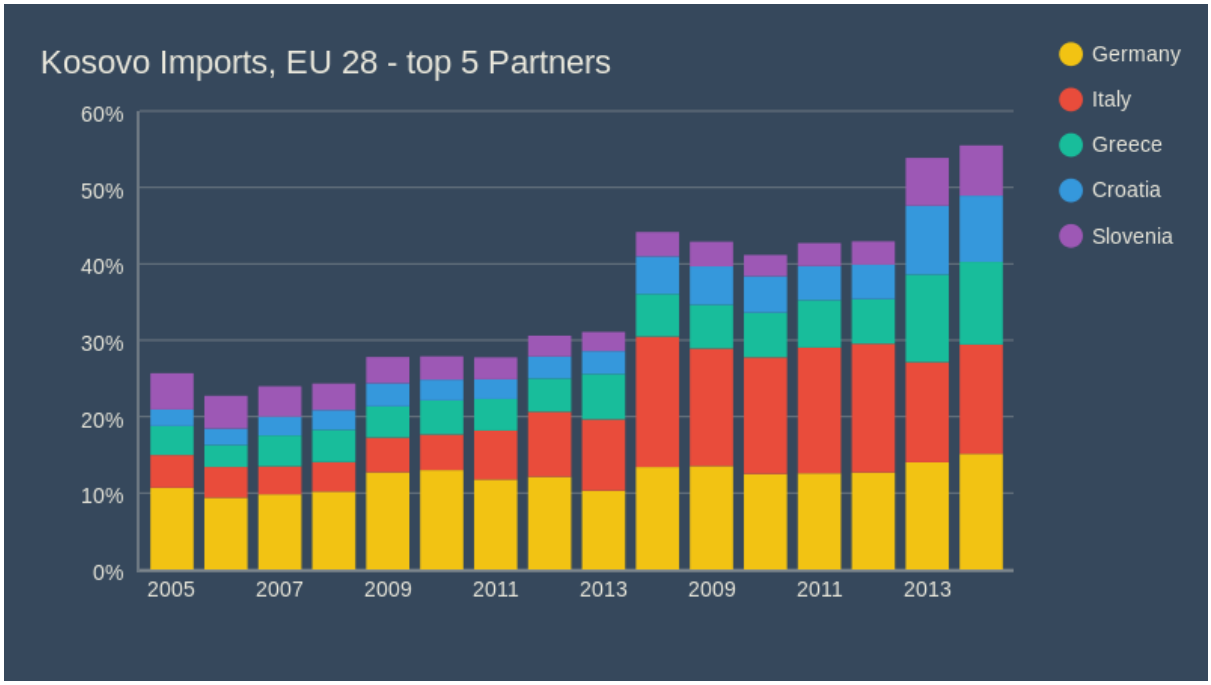
Source: own compilation on wiiw Annual Database 2015 data

38 Graph I.4.8 Kosovo, imports–top partners, 2005–2013



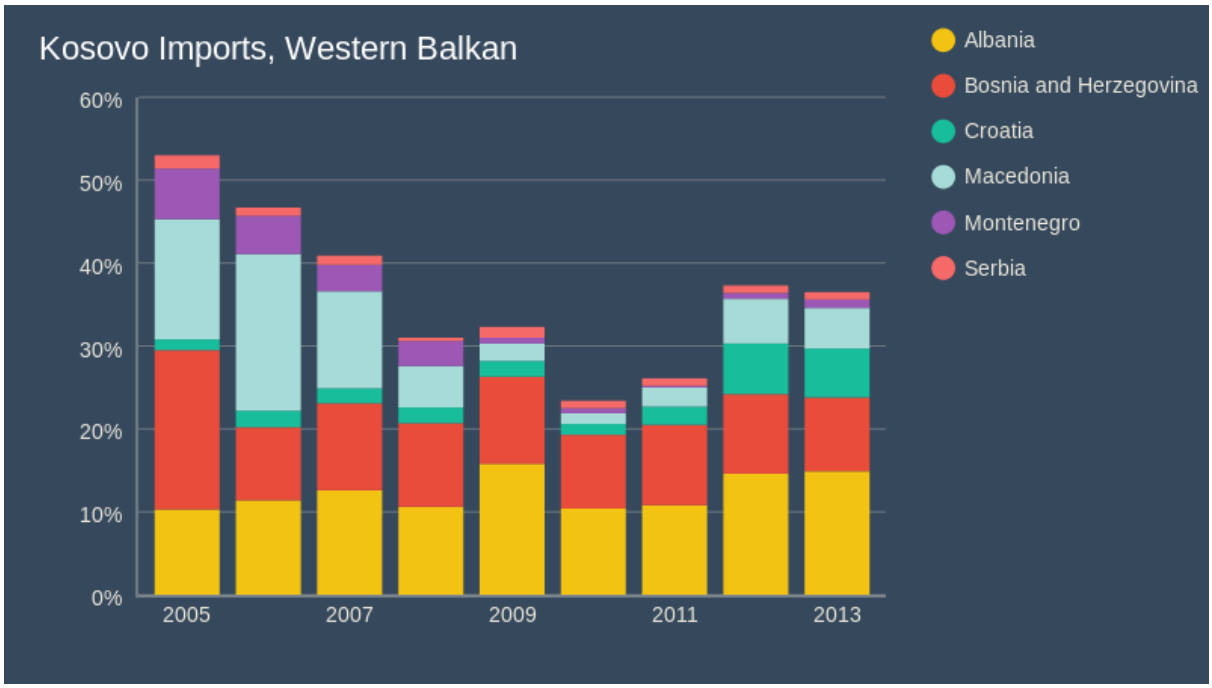
Source: own compilation on wiiw Annual Database 2015 data

39 Graph I.4.9 Kosovo, imports–top EU-28 partners, 2005–2013



Source: own compilation on wiiw Annual Database 2015 data

40 Graph I.4.10 Kosovo, imports–Western Balkans, 2005–2013



Source: own compilation on wiiw Annual Database 2015 data

I.5 Former Yugoslav Republic of Macedonia

I.5.1 Dynamic of trade volume

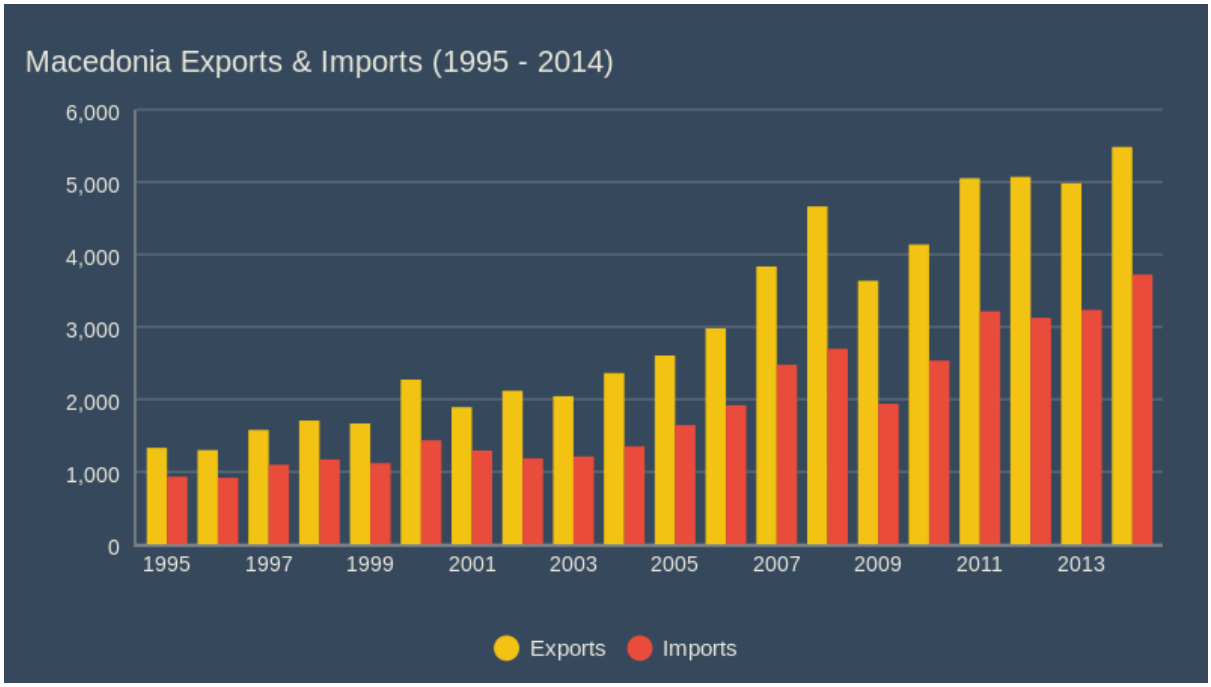
For Macedonia, there is a considerable increase in volume of trade in foreign trade relations. The economy's opening coefficient in 2014 was 108%, which means that the trade volume (import + export) was 8% larger than the country's GDP. Also a positive sign is the coefficient of coverage (67.9%, 2014). Graphs I.5.1 and I.5.2 represent the volume of imports and exports as well as the trade deficit. The first graph shows that exports and imports as a whole have grown in the same way, maintaining a constant trade deficit after 2008 of about 2 billion euros.

5 Table I.5.1 Macedonia, volume of international trade, 1995–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
1995	932	1,330	2,262	-398	70.0%	65.6%
1996	916	1,299	2,216	-383	70.5%	62.9%
1997	1,097	1,577	2,674	-480	69.5%	80.8%
1998	1,169	1,707	2,876	-539	68.5%	90.1%
1999	1,118	1,667	2,785	-549	67.1%	80.8%
2000	1,435	2,272	3,707	-837	63.2%	90.5%
2001	1,293	1,892	3,185	-599	68.3%	76.9%
2002	1,184	2,118	3,303	-934	55.9%	77.9%
2003	1,212	2,044	3,256	-833	59.3%	74.2%
2004	1,350	2,362	3,712	-1,012	57.2%	81.1%
2005	1,644	2,605	4,249	-961	63.1%	84.4%
2006	1,918	2,980	4,897	-1,062	64.4%	89.5%
2007	2,477	3,834	6,311	-1,356	64.6%	103.5%
2008	2,698	4,664	7,362	-1,967	57.8%	108.7%
2009	1,937	3,637	5,574	-1,700	53.3%	82.4%
2010	2,535	4,137	6,672	-1,602	61.3%	93.9%
2011	3,215	5,053	8,268	-1,838	63.6%	109.6%
2012	3,124	5,071	8,195	-1,947	61.6%	108.0%
2013	3,235	4,983	8,218	-1,748	64.9%	101.3%
2014	3,723	5,485	9,208	-1,762	67.9%	107.9%

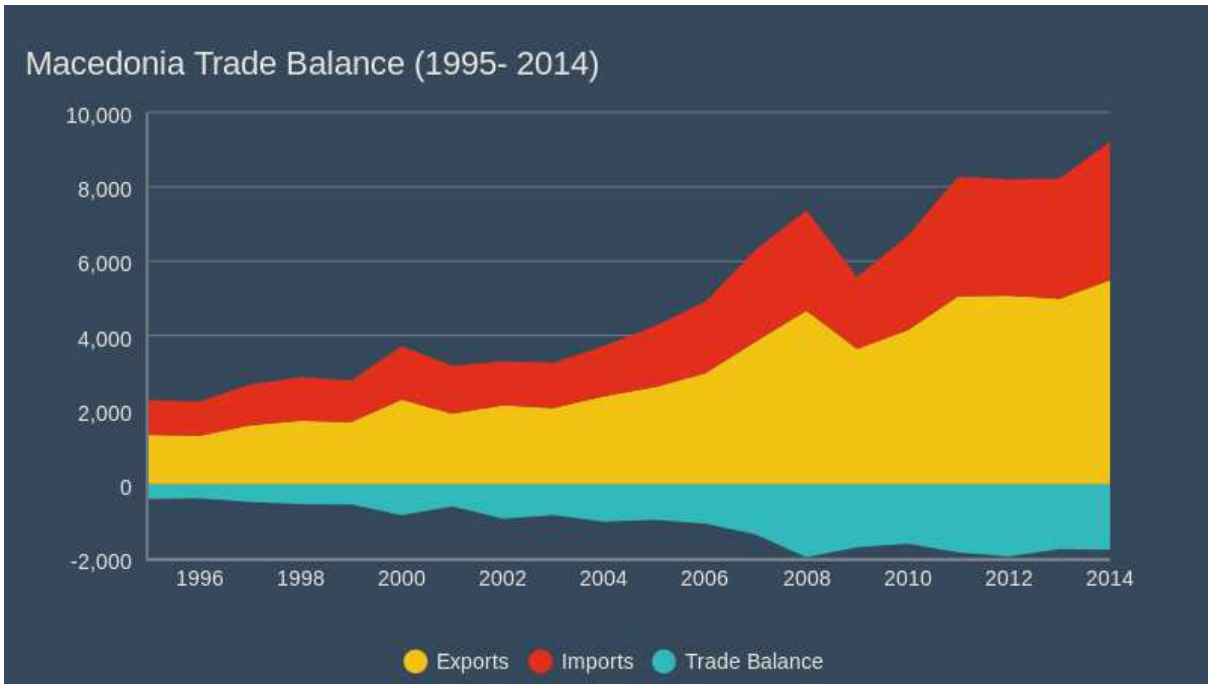
Source: own compilation on wiiw Annual Database 2015 data

41 Graph I.5.1 Macedonia, international trade in goods, 1999–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

42 Graph I.5.2 Macedonia, trade balance, 1999–2014 (million Euro)

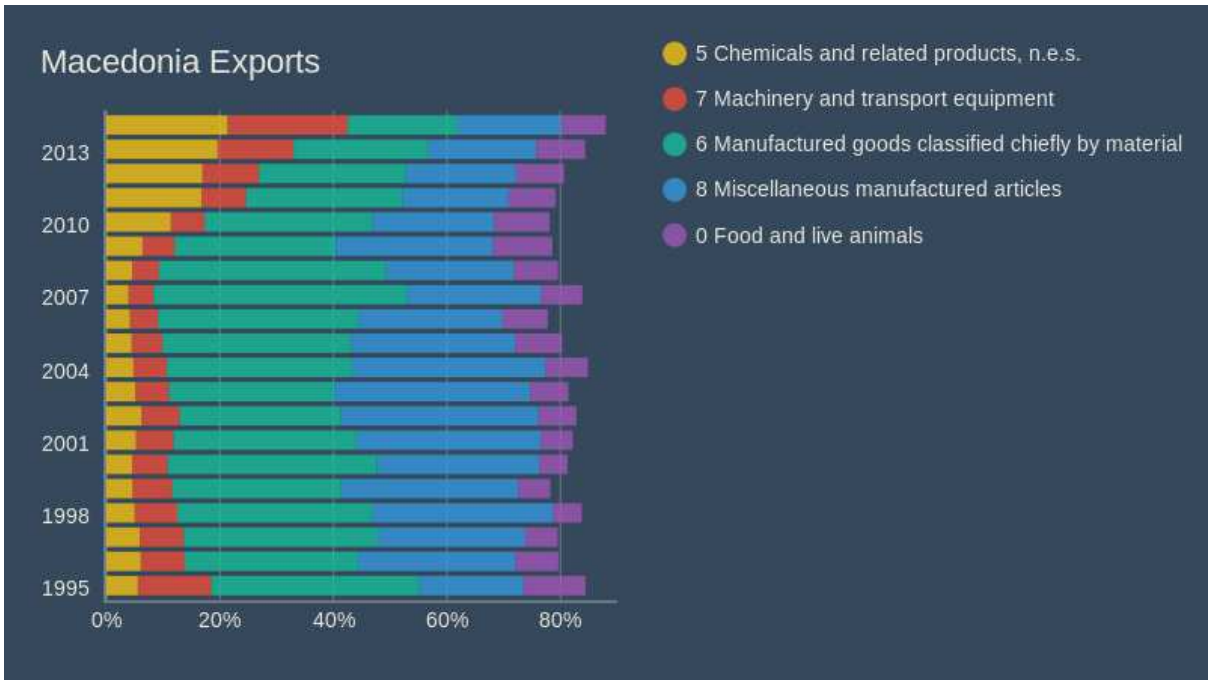


Source: own compilation on wiiw Annual Database 2015 data

I.5.2 Foreign trade by commodity groups

Among the exports from Macedonia, the main products are manufacturing products, but after 2010 this weight has been steadily declining. Currently, the most important exports are those from the chemical industry, including precious metals catalysts with active substances, iron-nickel, wiring, and others (Graph I.5.3). Among the imports, platinum and its raw alloys, petroleum oils and oils obtained from bituminous minerals, electricity and other metals of the platinum group are important (Graph I.5.4)[6].

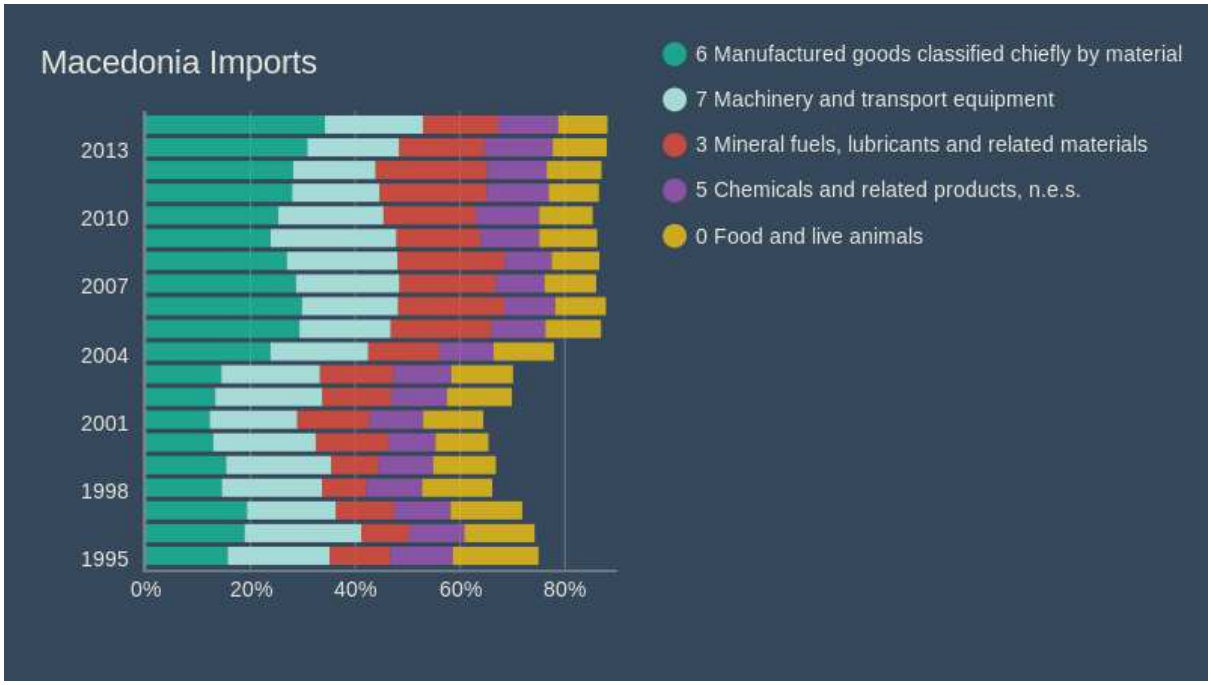
43 Graph I.5.3 Macedonia, exports by commodities, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

[6] State Statistical Office of Macedonia (SSO) 2015

44 Graph I.5.4 Macedonia, imports by commodities, 1995–2014



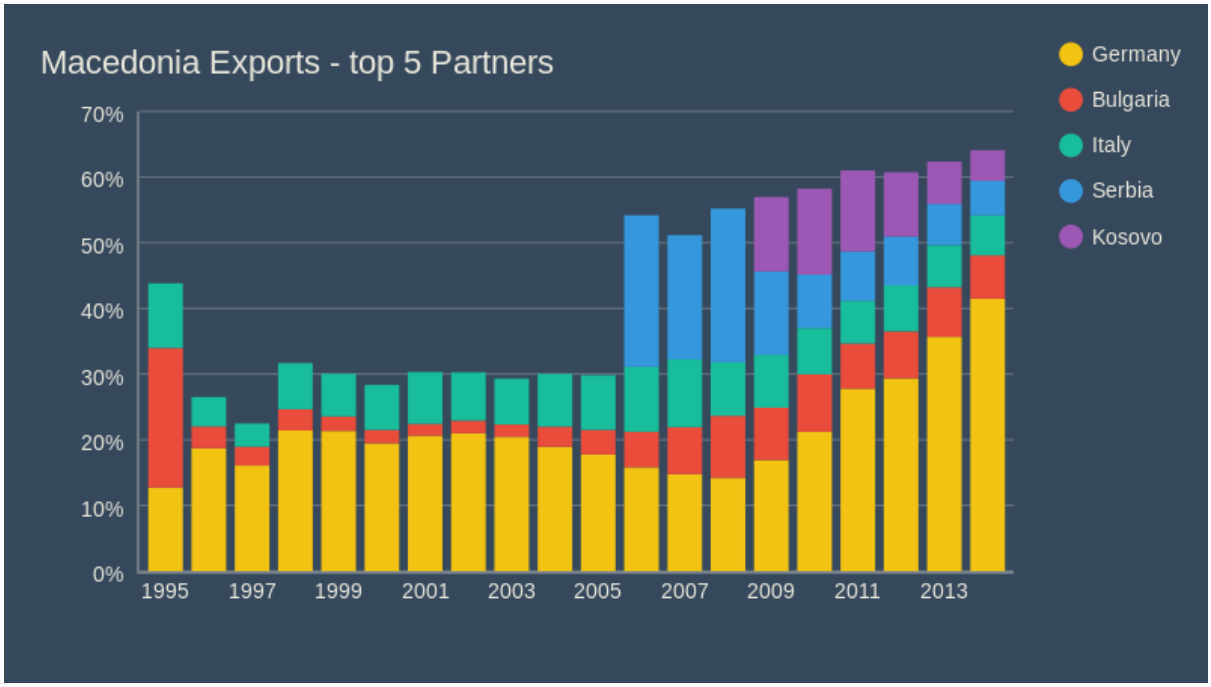
Source: own compilation on wiiw Annual Database 2015 data

I.5.3 Foreign trade by partners

Regarding exports (chart I.5.5), Germany takes first place as Macedonia's main partner country (over 40%) with it's trade share gradually increasing. Macedonia's top five exporting destinations account for about 65% of the total. With the exception of Serbia, other major importing countries from Macedonia are from the European Union (61% of the total, Graph I.5.5). Meanwhile, exports to the region have a relatively small share, at about 12% (Graph I.5.7), where Serbia has the largest share at about 8% of the total.

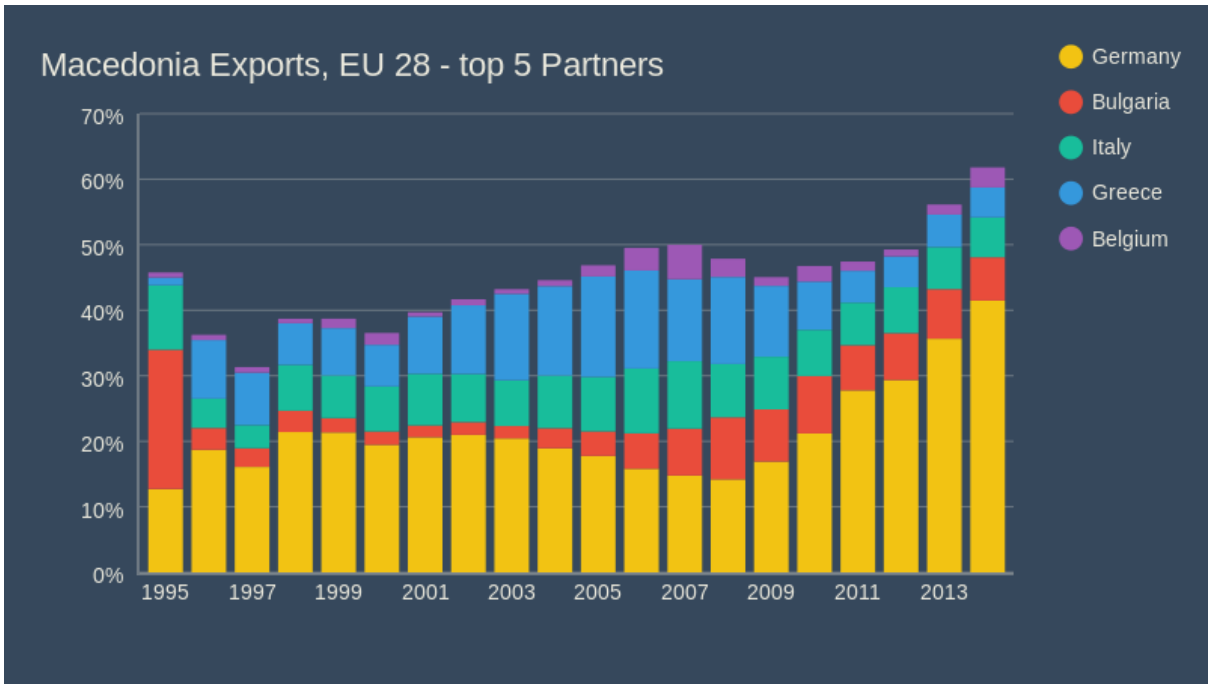
Unique compared to other Balkan countries regarding imports is the role of the United Kingdom whose weight has steadily increased after 2009. In 2014, imports from the United Kingdom accounted for 11% of total imports by making it the first exporting country to Macedonia (chart I.5.8). While in the region, the main and dominant role are imports from Serbia (8%, chart I.5.10). About 43% of imports come from the European Union and only 12% from the Western Balkans region (Graphs I.5.9 and I.5.10).

45 Graph I.5.5 Macedonia, exports–top partners, 1995–2014



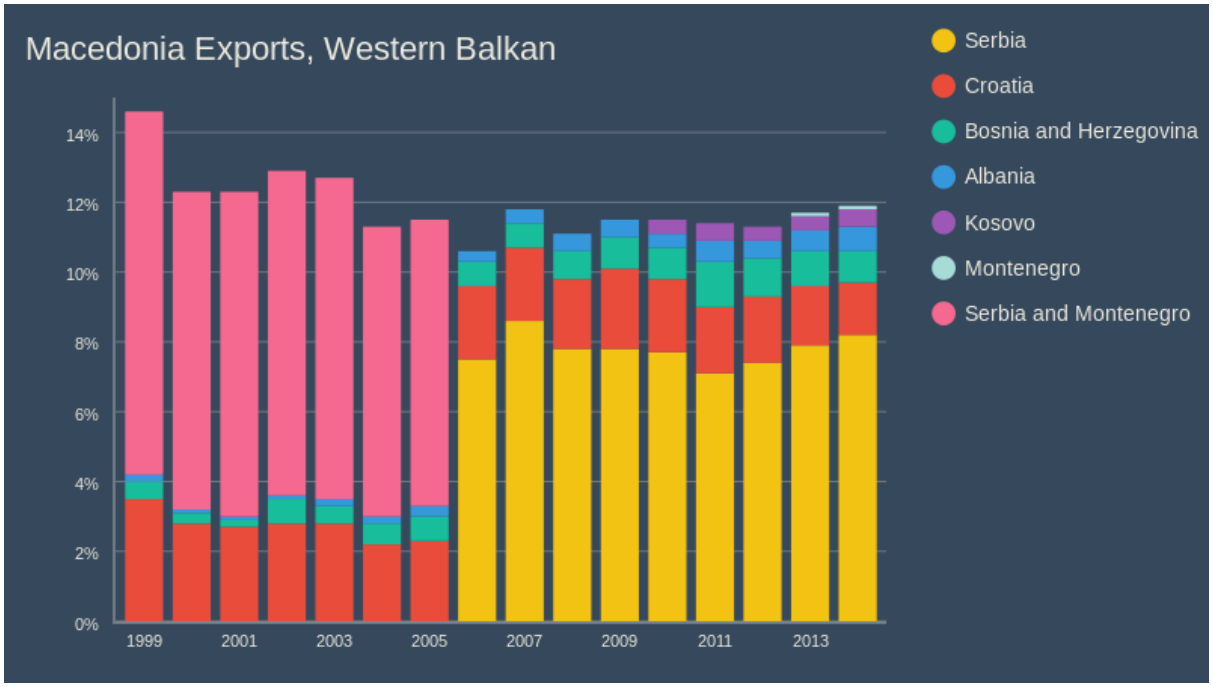
Source: own compilation on wiiw Annual Database 2015 data

46 Graph I.5.6 Macedonia, exports–top EU-28 partners, 1995–2014



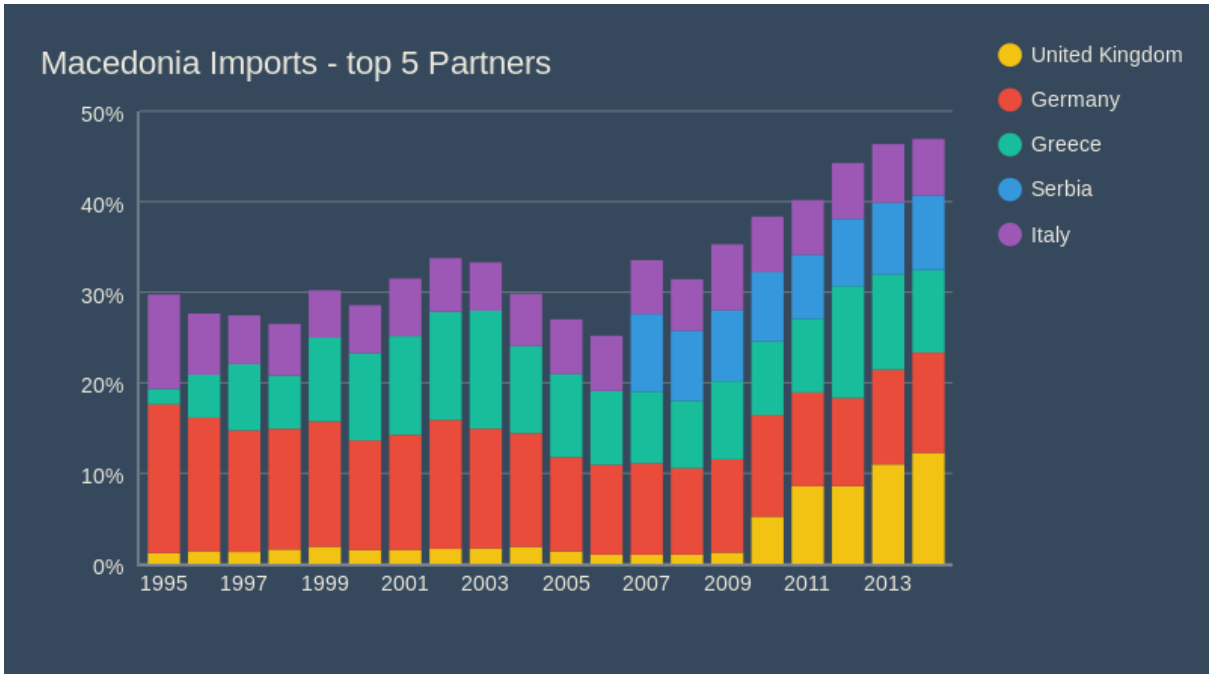
Source: own compilation on wiiw Annual Database 2015 data

47 Graph I.5.7 Macedonia, exports–Western Balkans, 1999–2014



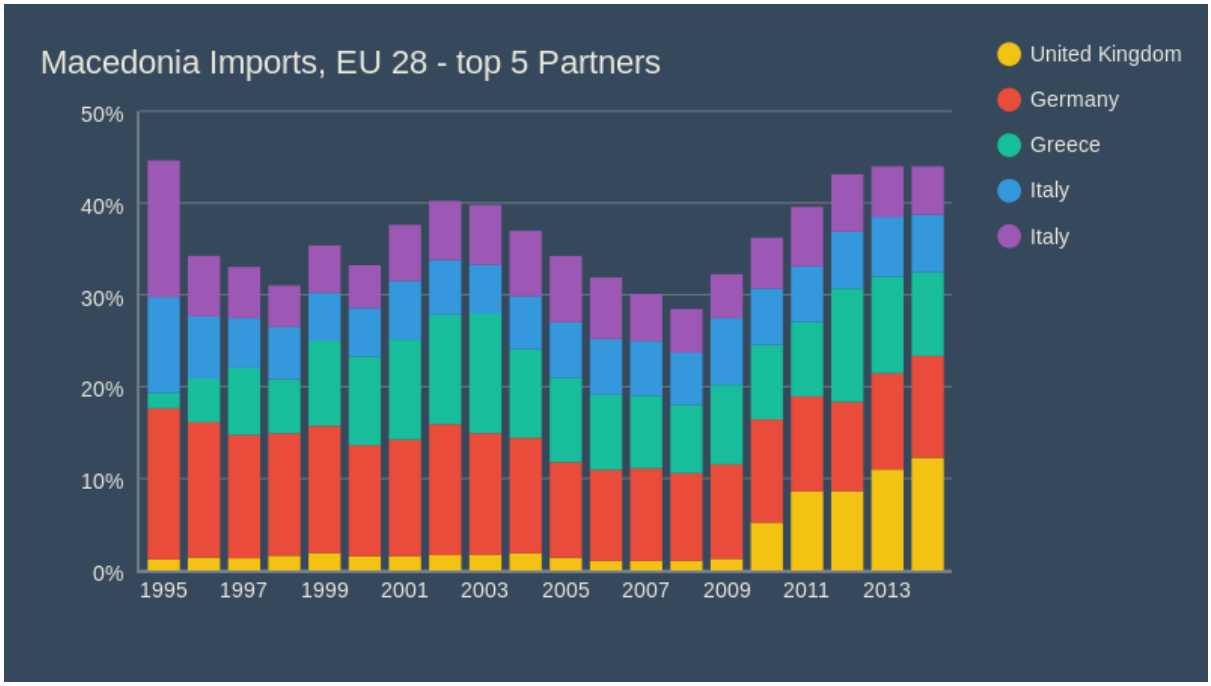
Source: own compilation on wiiw Annual Database 2015 data

48 Graph I.5.8 Macedonia, imports–top partners, 1995–2014



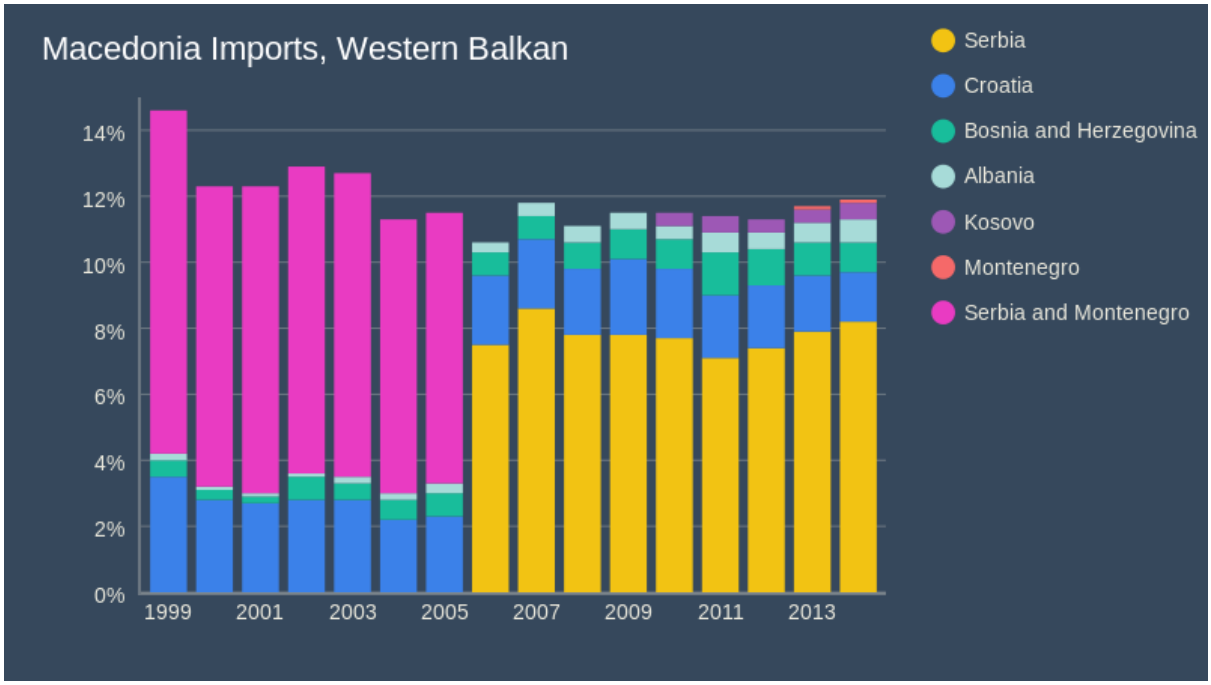
Source: own compilation on wiiw Annual Database 2015 data

49 Graph I.5.9 Macedonia, imports–top EU-28 partners, 1995–2014



Source: own compilation on wiiw Annual Database 2015 data

50 Graph I.5.10 Macedonia, imports–Western Balkans, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

I.6 Montenegro

I.6.1 Dynamic of trade volume

In the case of Montenegro, it is worth underlining the sharp increase in imports compared to exports. In fact, the value of imports has increased over 200%, whereas in the same period of time (2001-2014) the value of exports has increased by only 63%. This disproportionate increase in imports compared to exports is reflected in the constant deepening of the trade deficit amounting to almost 1.5 billion euros in 2014, as well as in the fall in the coverage coefficient which falls by 52% from its highest value in 2004 to 18.7% in 2014. Even the Openness Index, following a growth phase that culminated in 2008 when the index reached 95%, fluctuated approaching 2014 levels from the early 2000s (Table I .6.1).

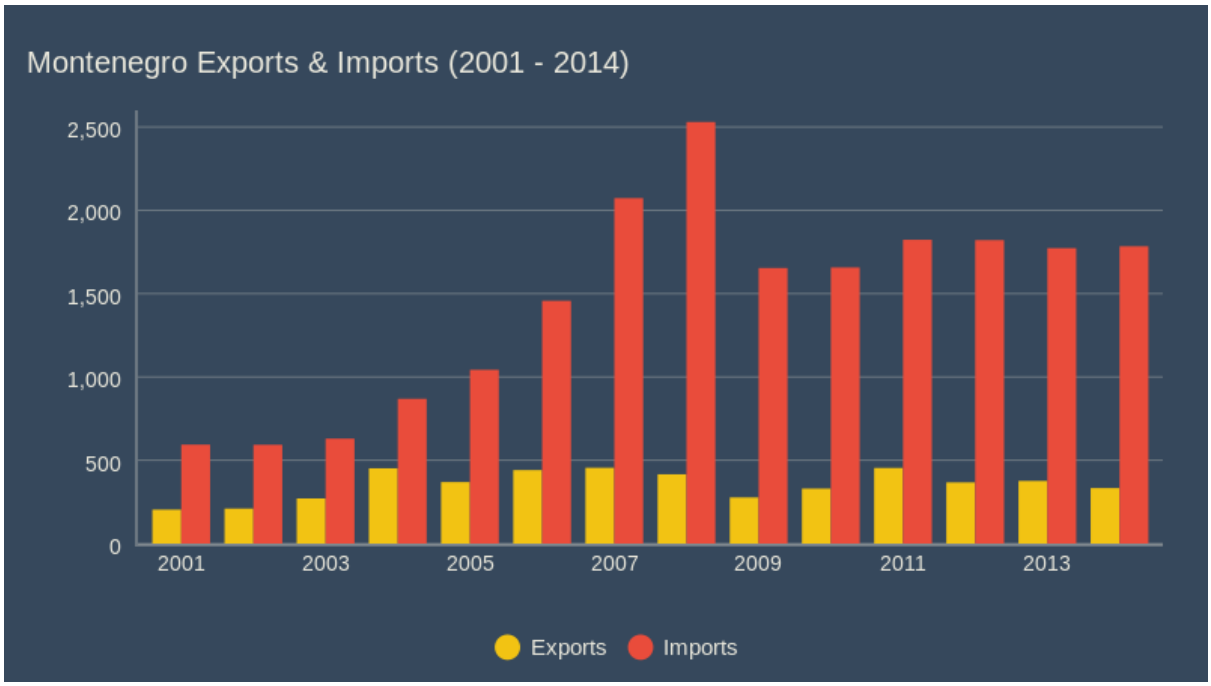
6 Table I.6.1 Montenegro, volume of international trade, 2001–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
2001	204	594	798	-390	34.3%	61.6%
2002	210	593	802	-383	35.4%	59.0%
2003	271	630	900	-359	43.0%	59.6%
2004	452	869	1,321	-416	52.1%	79.1%
2005	369	1,043	1,412	-673	35.4%	77.8%
2006	441	1,457	1,898	-1,016	30.3%	88.3%
2007	455	2,073	2,528	-1,618	21.9%	94.3%
2008	416	2,530	2,946	-2,114	16.5%	95.5%
2009	277	1,654	1,931	-1,377	16.7%	64.8%
2010	330	1,657	1,988	-1,327	19.9%	64.0%
2011	454	1,823	2,278	-1,369	24.9%	70.4%
2012	367	1,821	2,188	-1,454	20.1%	69.5%
2013	376	1,773	2,149	-1,398	21.2%	64.6%
2014	333	1,784	2,117	-1,451	18.7%	61.8%

Source: own compilation on wiiw Annual Database 2015 data

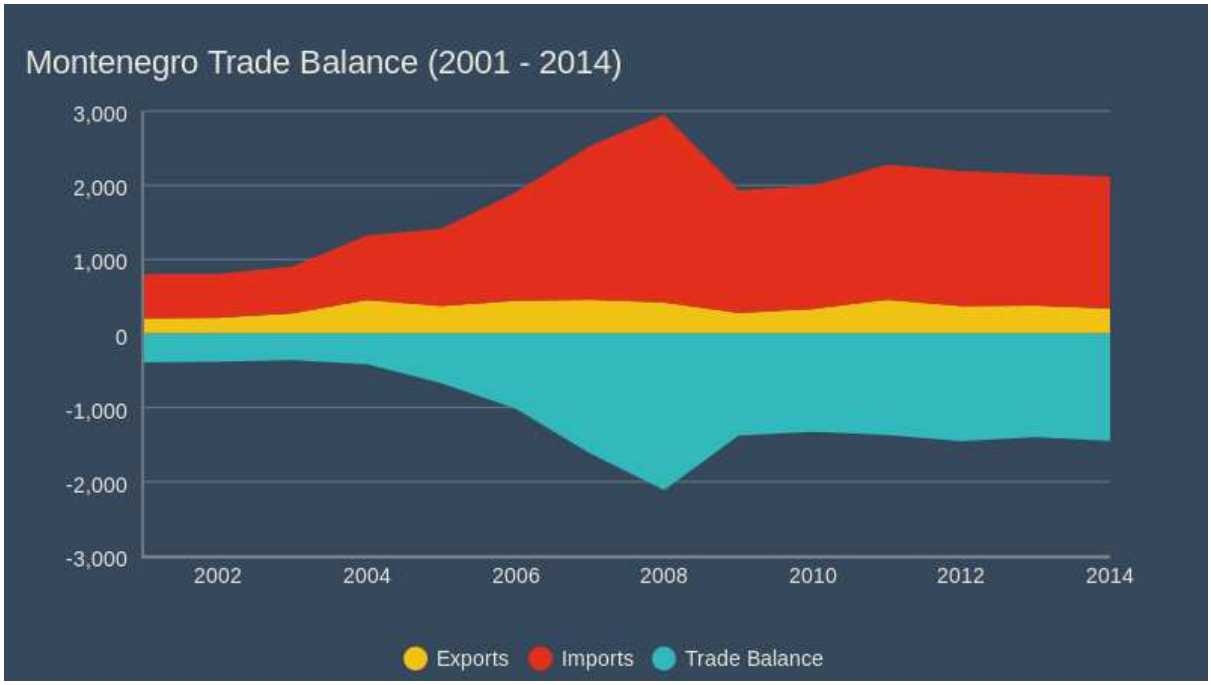
Overall export and import dynamics are reflected in Graphs I.6.1 and I.6.2. The foreign trade deficit may be considered as high, with approximately 41% to GDP in 2014. It worsened particularly during the period 2004–2008, but has remained almost constant after 2009 (€1.3 – €1.4 Billion).

51 Graph I.6.1 Montenegro, international trade in goods, 2001–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

52 Graph I.6.2 Montenegro, trade balance, 2001–2014 (million Euro)



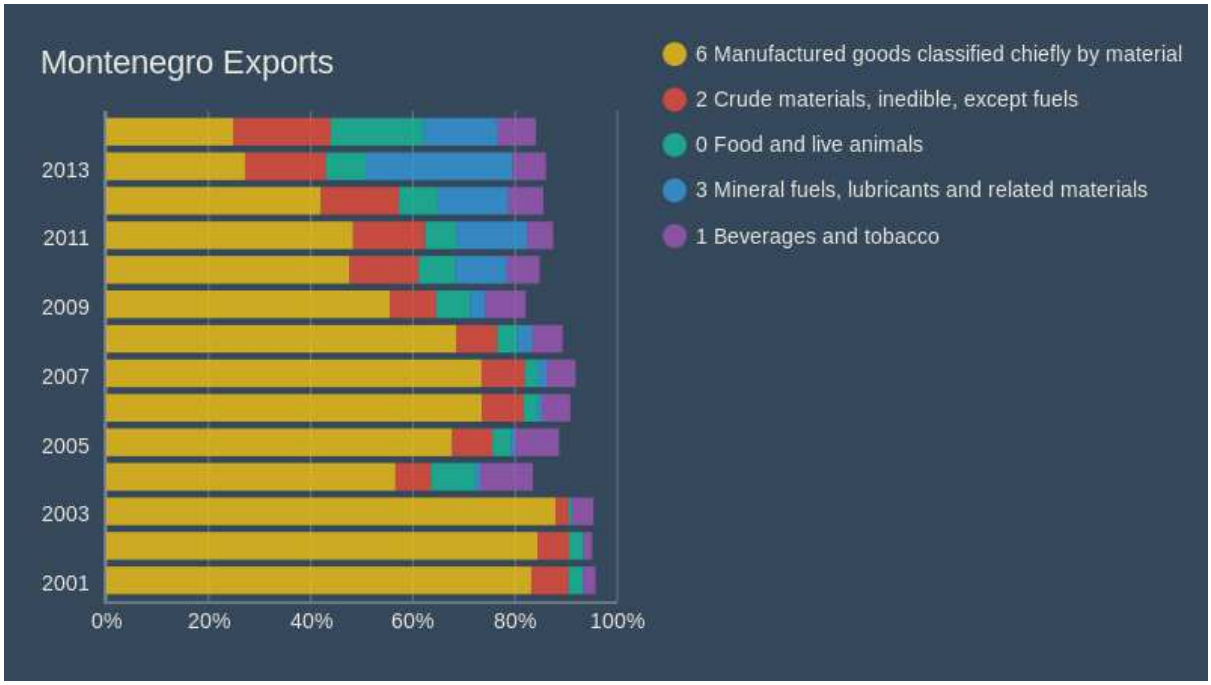
Source: own compilation on wiiw Annual Database 2015 data

I.6.2 External trade by commodity groups

The following shows the structure of exports and imports of Montenegro, which exports mainly manufactured goods, raw materials (non-fuels), food and beverages, which in 2014 accounted for about 62% of total exports. While in imports, the main groups are food, beverages and tobacco (22%), machinery and equipment (19%) and manufacturing (15%)[7].

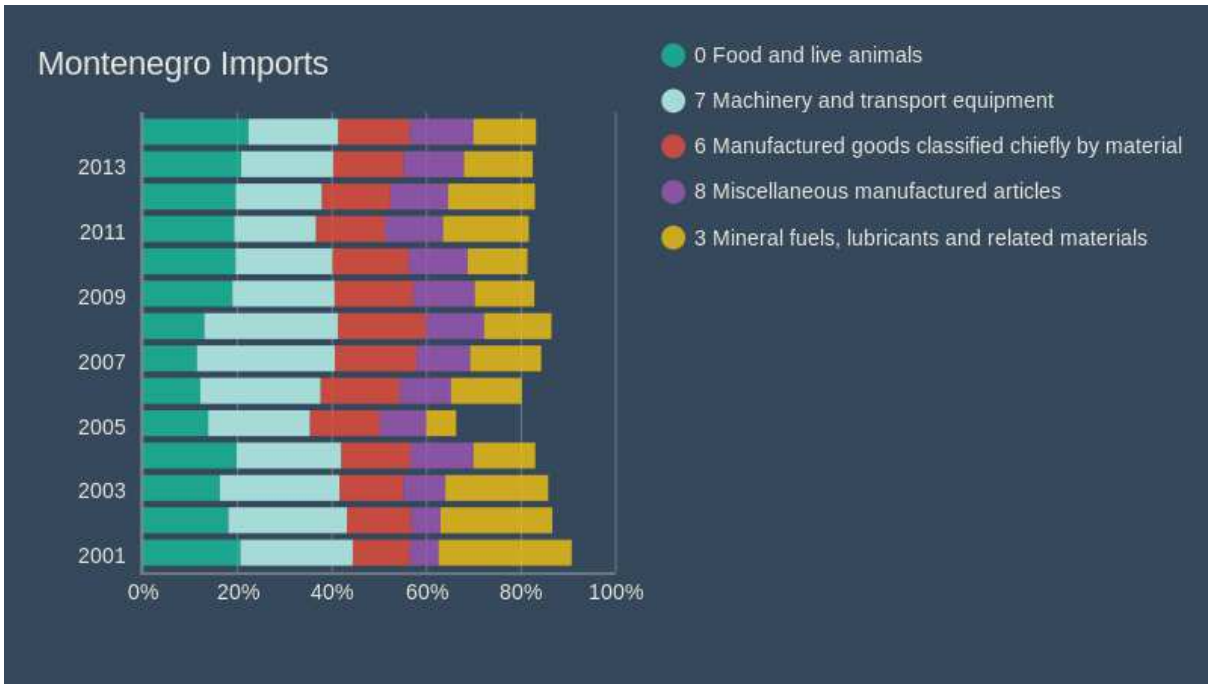
[7] Statistical Office of Montenegro – MONSTAT, Statistical Yearbook, 2015.

53 Graph I.6.3 Montenegro, exports by commodities, 2001–2014



Source: own compilation on wiiw Annual Database 2015 data

54 Graph I.6.4 Montenegro, imports by commodities, 2001–2014



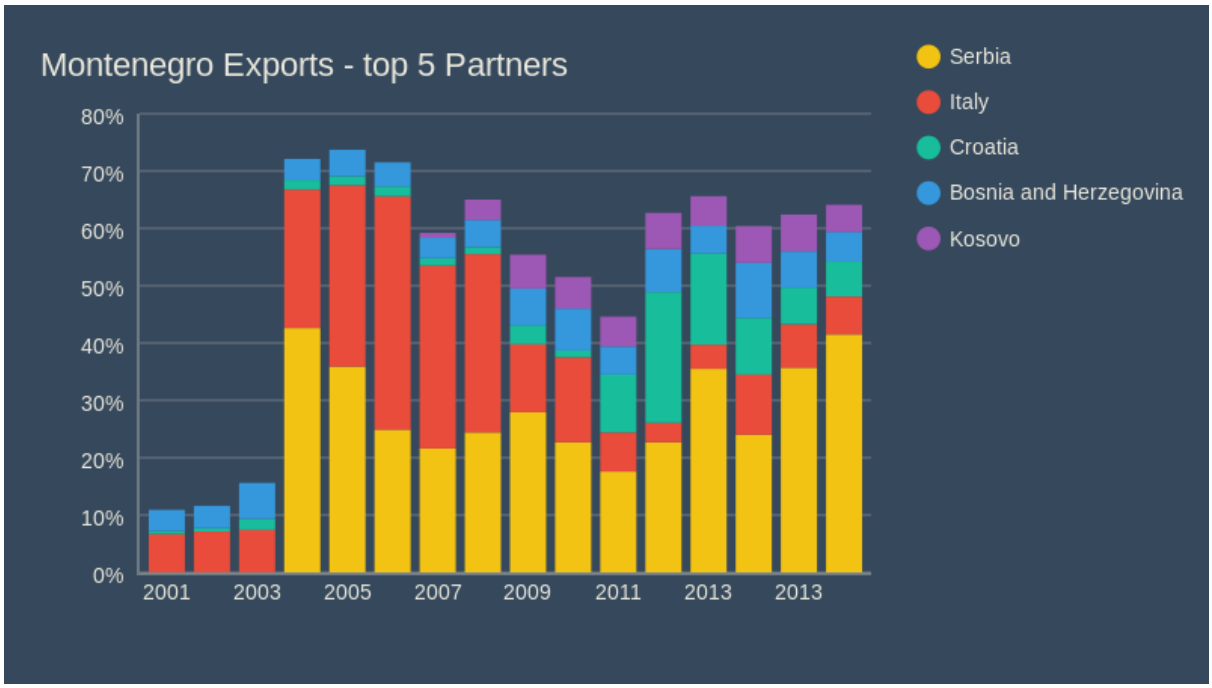
Source: own compilation on wiiw Annual Database 2015 data

I.6.3 Foreign trade by partners

Excluding Italy, all other main importers (in the top five list) from Montenegro are from the region, where Serbia holds first place with over 40% (Graph I.6.5). Such an occurrence could be related with the preservation of co-operation among the former – Yugoslav Republics. International trade relations with European Union countries on exports (Graph I.6.6) are moderately low at approximately 28%, while exports to countries in the region reached 68% in year 2014 (Graph I.6.7).

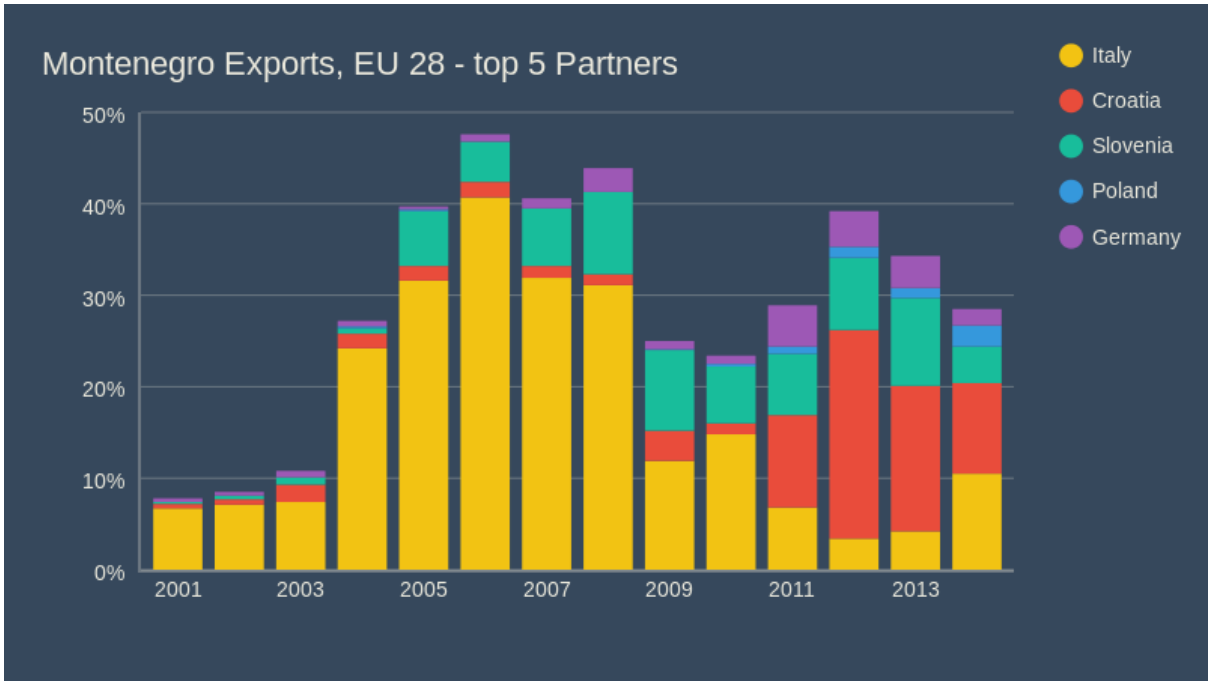
As far as imports are concerned, about 45% come from the European Union, and about 55% come from the surrounding countries in the region (Charts I.6.8-I.6.10).

55 Graph I.6.5 Montenegro, exports–top partners, 2001–2014



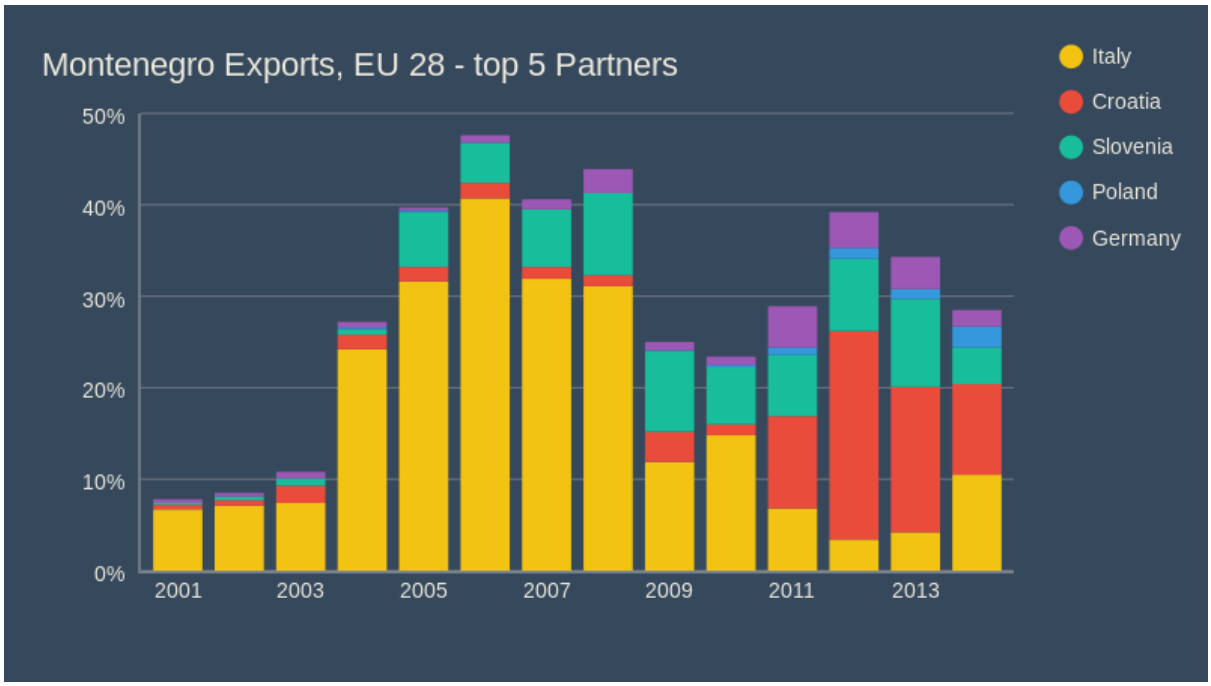
Source: own compilation on wiiw Annual Database 2015 data

56 Graph I.6.6 Montenegro, exports–top EU-28 partners, 2001–2014



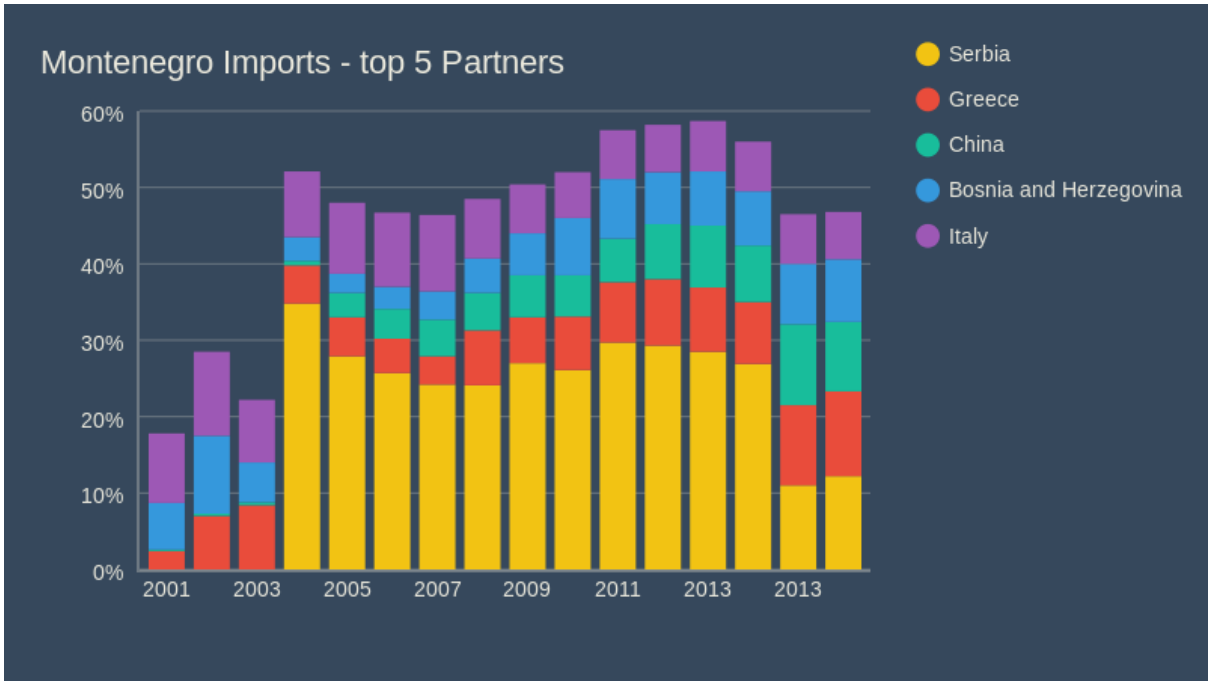
Source: own compilation on wiiw Annual Database 2015 data

57 Graph I.6.7 Montenegro, exports–Western Balkans, 2001–2014



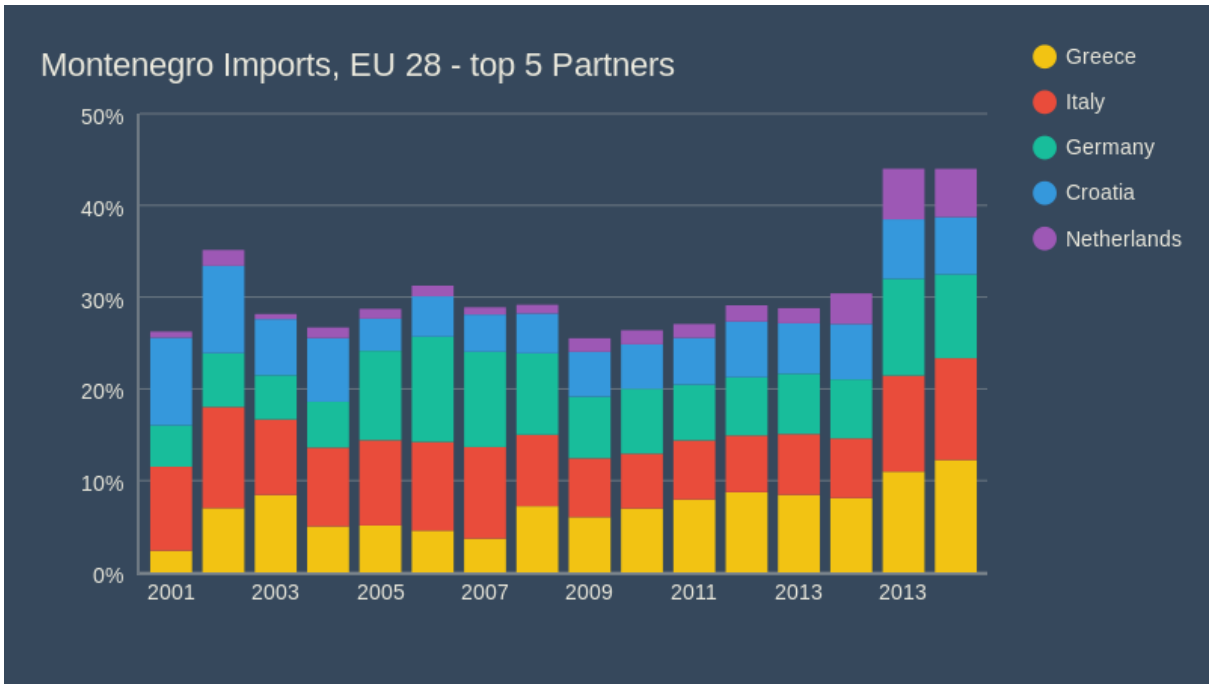
Source: own compilation on wiiw Annual Database 2015 data

58 Graph I.6.8 Montenegro, imports–top partners, 2001–2014



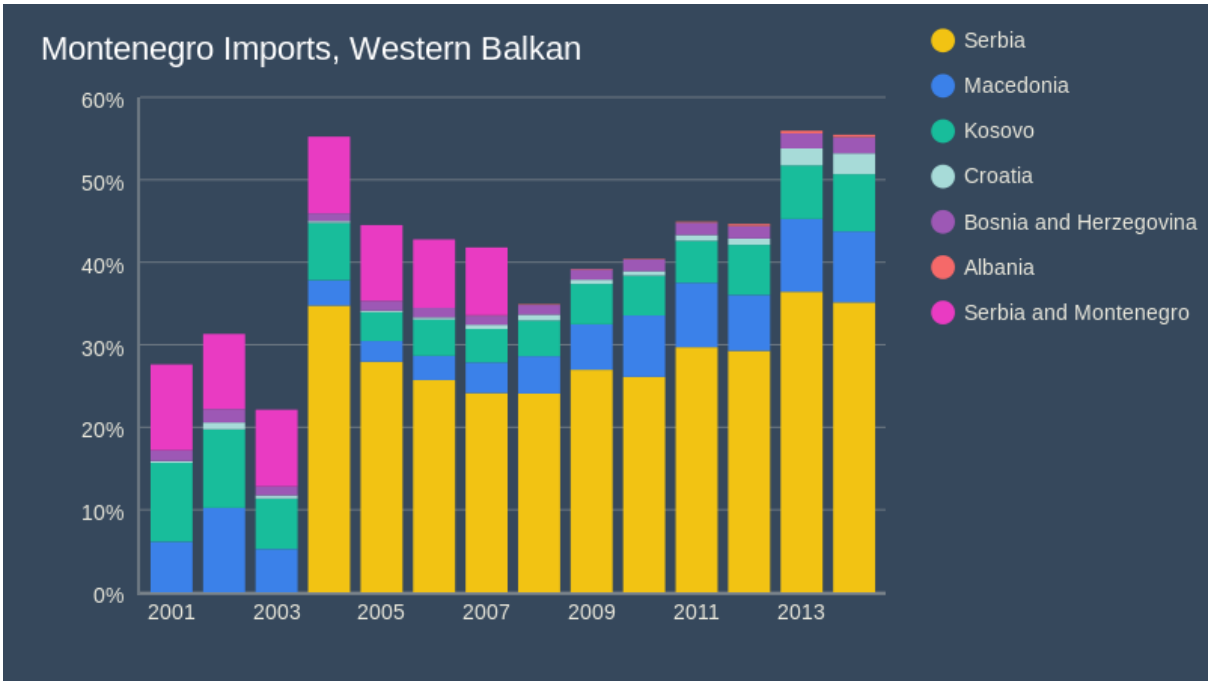
Source: own compilation on wiiw Annual Database 2015 data

59 Graph I.6. Montenegro, imports–top EU-28 partners, 2001–2014



Source: own compilation on wiiw Annual Database 2015 data

60 Graph I.6.10 Montenegro, imports–Western Balkans, 2001–2014



Source: own compilation on wiiw Annual Database 2015 data

I.7 Serbia

I.7.1 Dynamic of trade volume

After 1999, a significant increase in the volume of foreign trade was observed in Serbia. The economic openness coefficient quadrupled from 21.7% in 1999 to 80.6% in 2014, higher than the average for the region as a whole (see section I.8 below). The import coverage ratio with exports has improved gradually, especially in recent years, reaching 72% in 2014 (Table I.7.1).

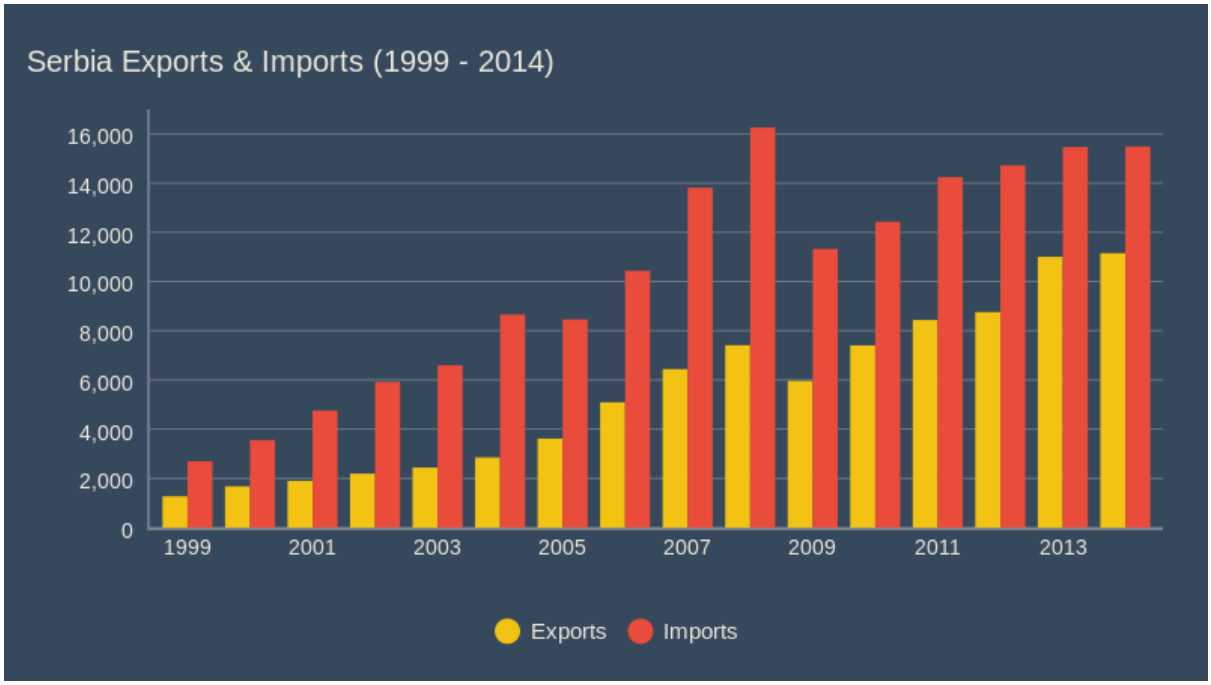
7 Table I.7.1 Serbia, volume of international trade, 1999–2014 (million Euro)

Year	Exports	Imports	Trade	Trade Balance	Cover's Percentage (%)	Openness Index (merchandise trade to GDP - %)
1999	1,270	2,694	3,964	-1,424	47.2%	21.7%
2000	1,674	3,559	5,233	-1,885	47.0%	19.1%
2001	1,897	4,754	6,651	-2,858	39.9%	48.2%
2002	2,192	5,917	8,110	-3,725	37.0%	47.4%
2003	2,438	6,596	9,034	-4,157	37.0%	48.2%
2004	2,848	8,662	11,510	-5,814	32.9%	57.6%
2005	3,614	8,457	12,071	-4,843	42.7%	57.2%
2006	5,089	10,440	15,529	-5,350	48.7%	63.6%
2007	6,439	13,810	20,249	-7,371	46.6%	68.8%
2008	7,411	16,260	23,671	-8,849	45.6%	70.2%
2009	5,959	11,328	17,287	-5,369	52.6%	56.4%
2010	7,404	12,429	19,833	-5,024	59.6%	66.6%
2011	8,436	14,244	22,680	-5,807	59.2%	67.9%
2012	8,758	14,718	23,476	-5,960	59.5%	74.1%
2013	11,001	15,468	26,469	-4,467	71.1%	77.3%
2014	11,149	15,487	26,635	-4,338	72.0%	80.6%

Source: own compilation on wiiw Annual Database 2015 data

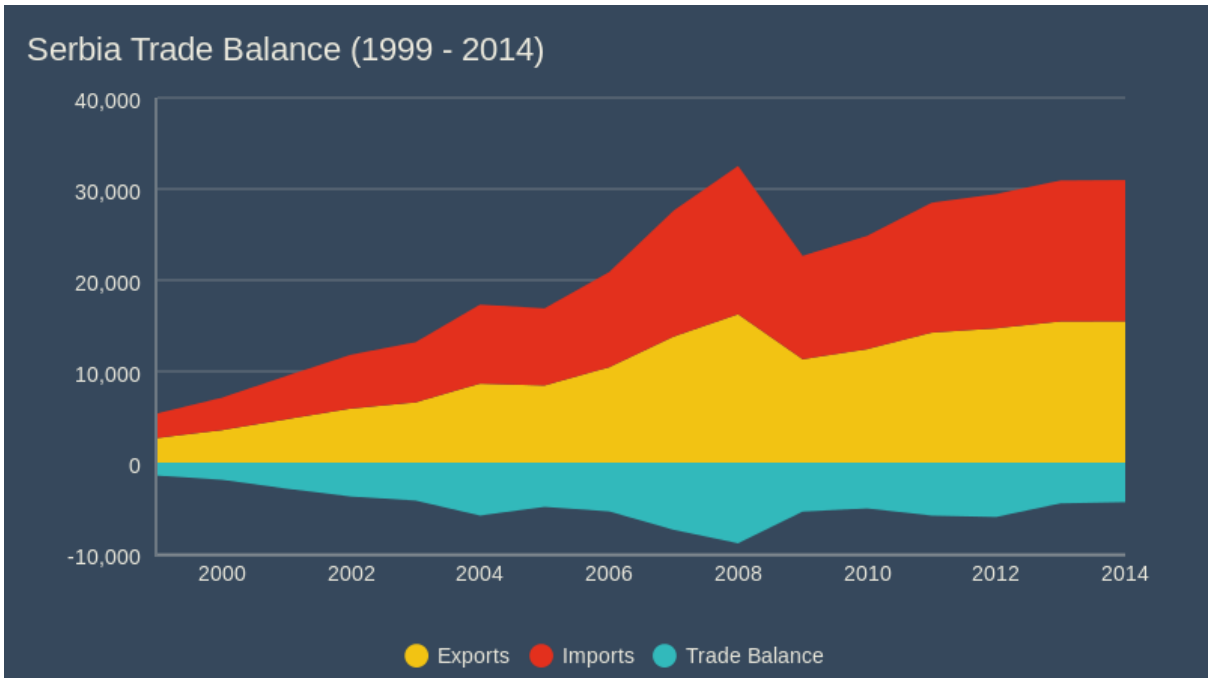
The overall export and imports dynamics are reflected in the Graph I.7.1 and I.7.2, where we notice that the increase of exports and imports have been continuous. At the same time, the trade deficit in absolute terms has been almost constant, remaining at the level of approximatly €5–€6 Billion after year 2004 (excluding the year 2008).

61 Graph I.7.1 Serbia, international trade in goods, 1999–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

62 Graph I.7.2 Serbia, trade balance, 1999–2014 (million Euro)

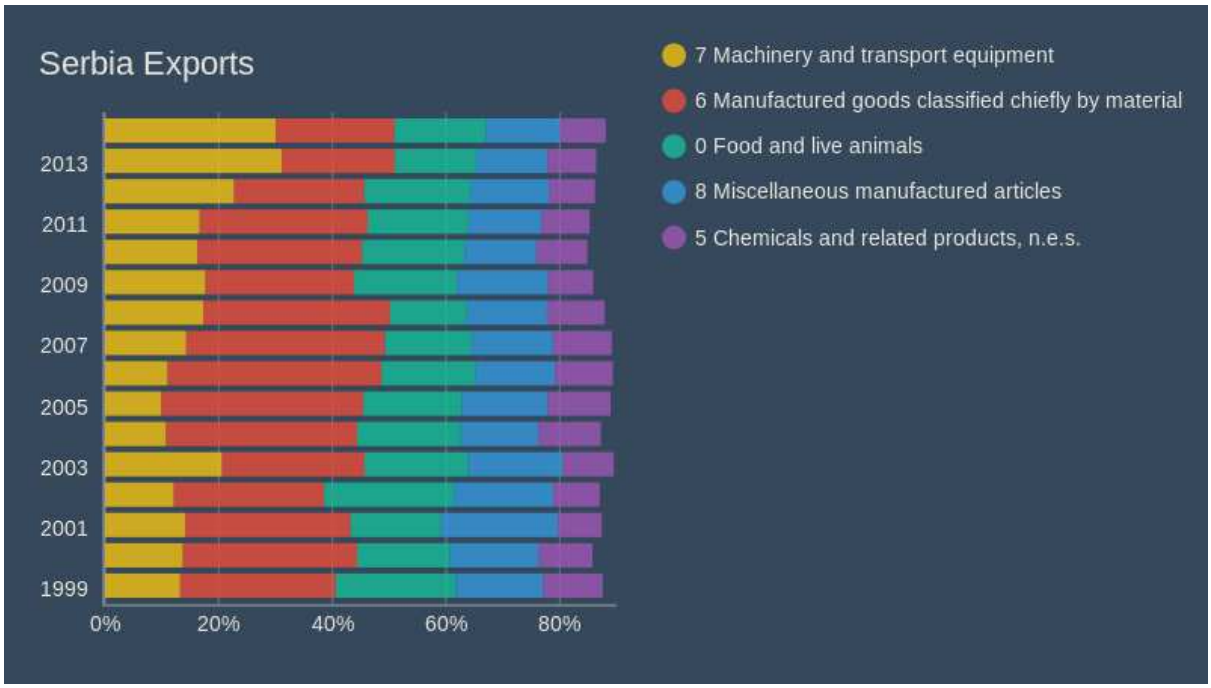


Source: own compilation on wiiw Annual Database 2015 data

I.7.2 External trade by commodity groups

The structure of exports to Serbia for the five main product groups, which account for about 80% of the country's exports (2014), is shown in Graph I.7.3. The graph shows that the first place is occupied by machinery and transport equipment (30% in 2014). The dynamics of this structure show that in the last few years the weight of the group of machinery and transport equipment has increased, while that of manufactured products (light industry) has decreased.

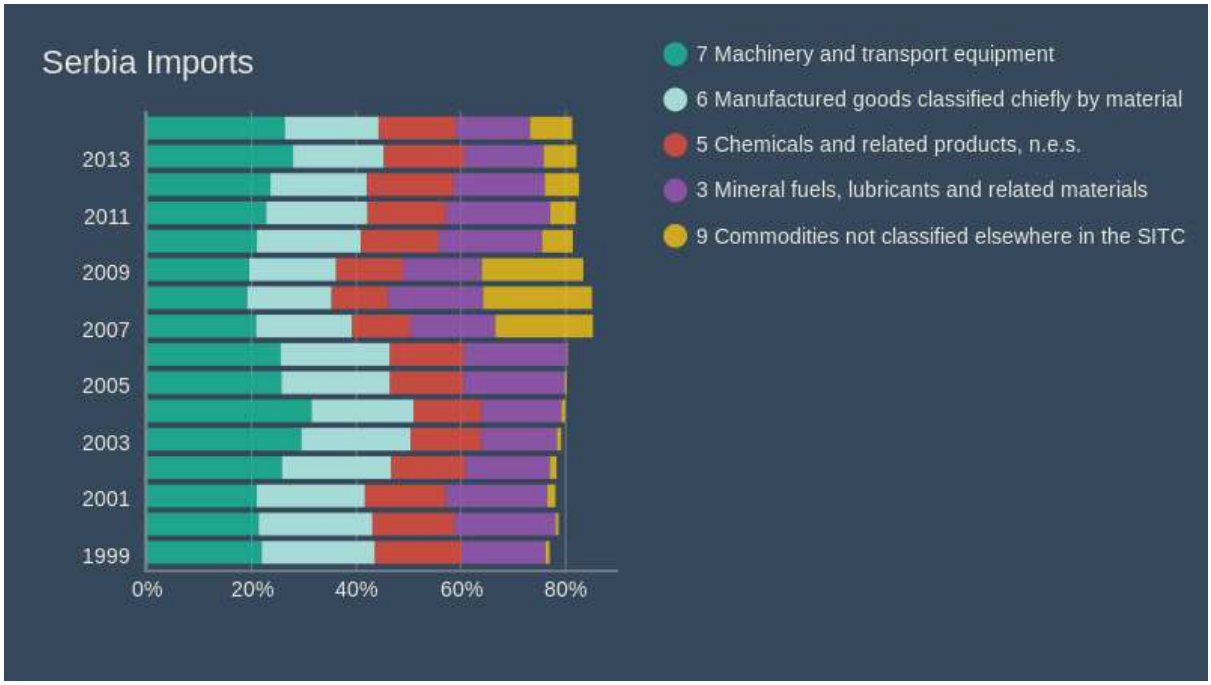
63 Graph I.7.3 Serbia, exports by commodities, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

Graph I.7.4 shows the dynamics of imports for the five main groups of goods. In the first place is the group of machinery and transport equipment (26.3%) and next the group of manufactured products (food industry), with 17.8% of imports in 2014.

64 Graph I.7.4 Serbia, imports by commodities, 1999–2014



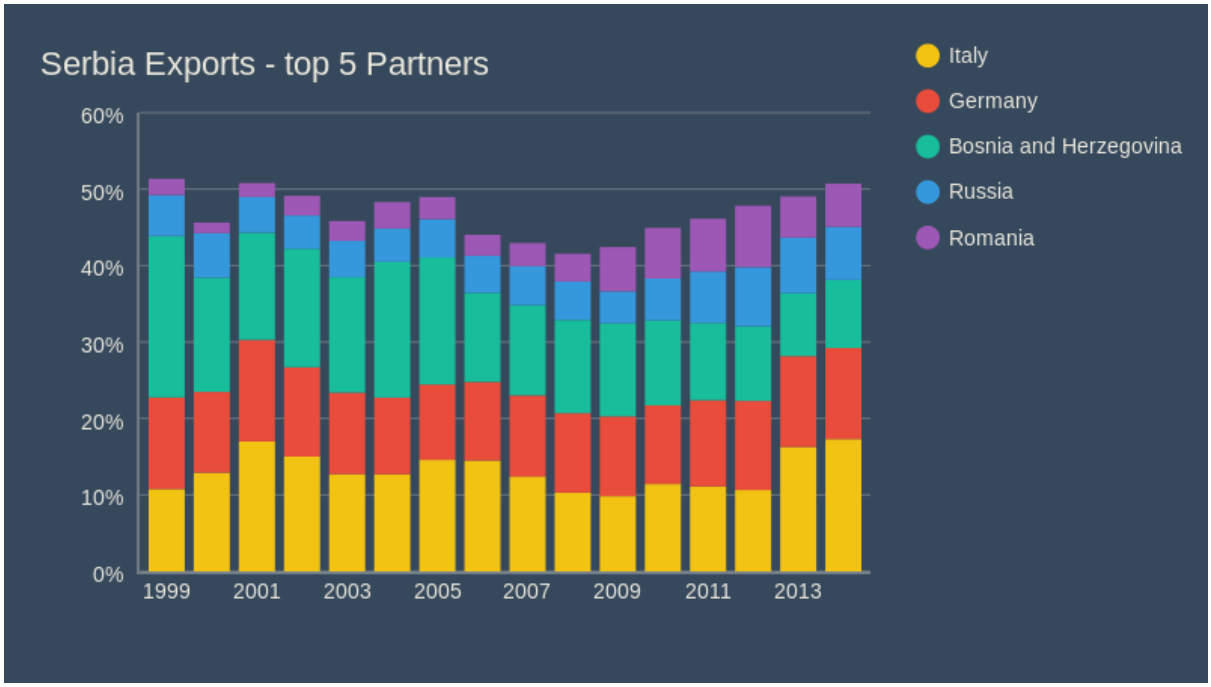
Source: own compilation on wiiw Annual Database 2015 data

I.7.3 Foreign trade by partners

Serbia's main export partners (2014) were Italy (17%), Germany (11%), Bosnia and Herzegovina (9%), Russia (7%) and Romania (6% of total exports). About 50% of Serbian exports goes to these 5 countries. As shown in Chart I.7.5, key partners are EU countries such as Italy, Germany and Romania. The decline in exports to Bosnia and Herzegovina is striking (from 21% in 1999 to 9% in 2014), with its shared border and shared history of being a part of the former Yugoslavia. As far as exports to Western Balkan countries are concerned (Graph I.7.7), the distinctive feature is the decline in their weight, from 37% in 1999 to around 25% in 2014[8].

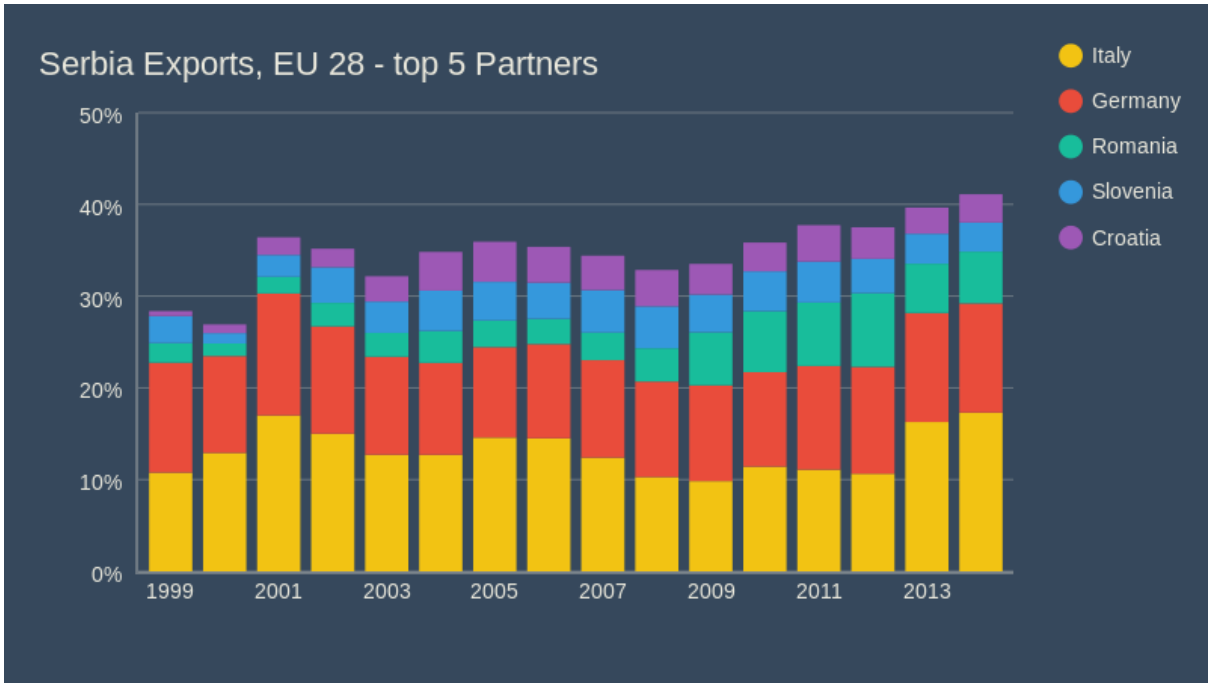
[8] Eksports and imports with Montenegro are taken into account after 2005, that is after the proclamation of independence with the 21 May 2005 Referendum.

65 Graph I.7.5 Serbia, exports–top partners, 1999–2014



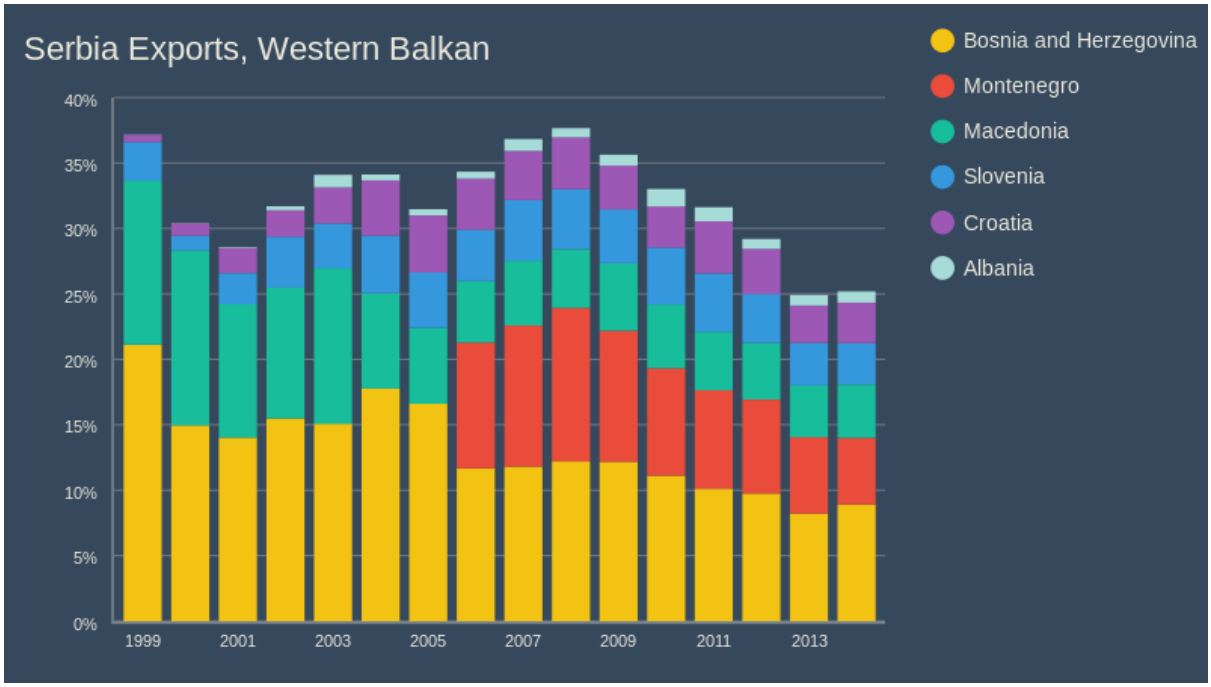
Source: own compilation on wiiw Annual Database 2015 data

66 Graph I.7.6 Serbia, exports–top EU-28 partners, 1999–2014



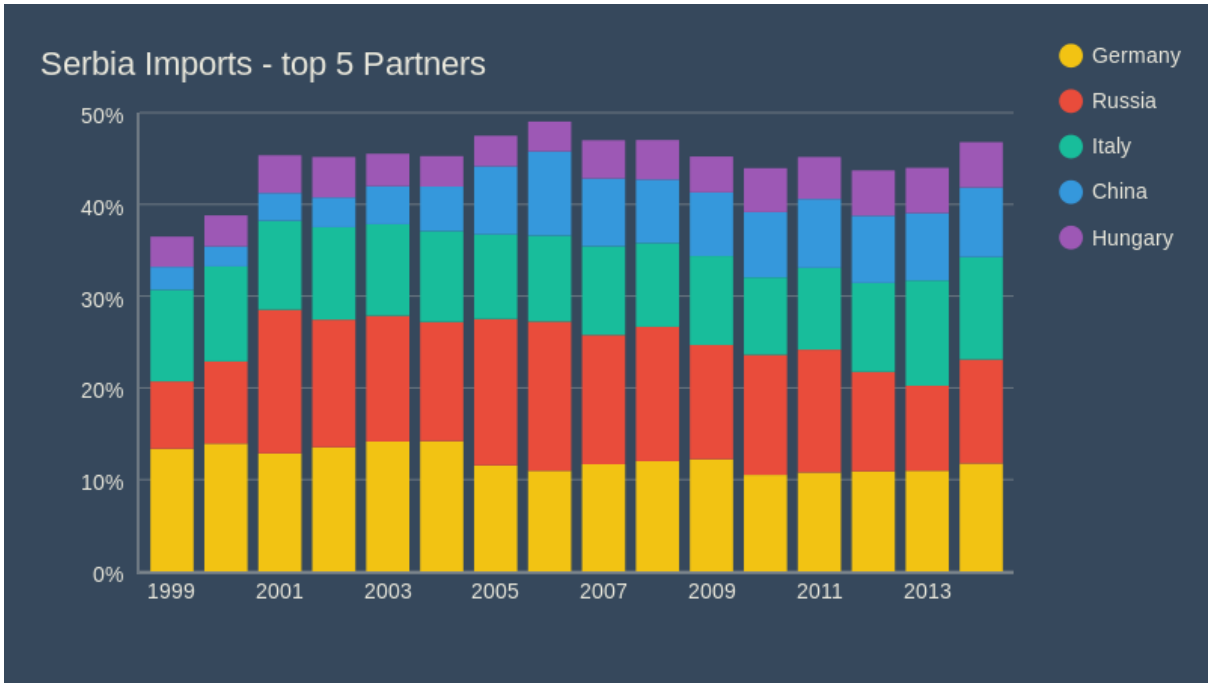
Source: own compilation on wiiw Annual Database 2015 data

67 Graph I.7.7 Serbia exports–Western Balkans, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

68 Graph I.7.8 Serbia, imports–top partners, 1999–2014

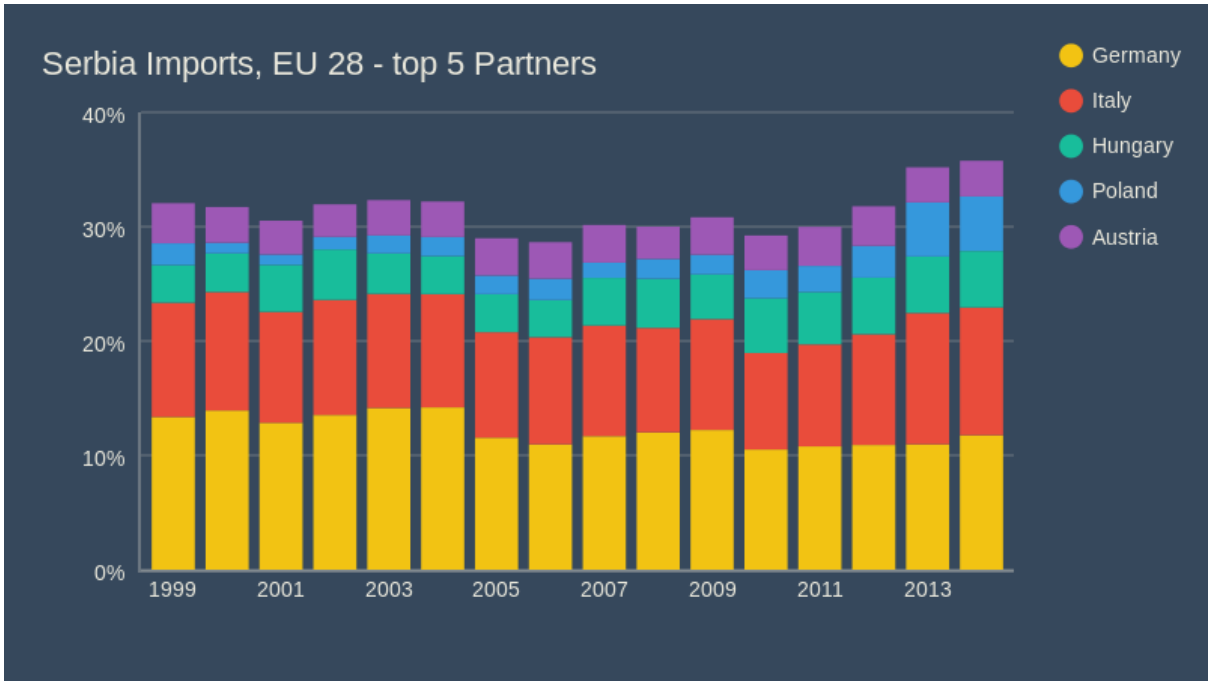


Source: own compilation on wiiw Annual Database 2015 data

In relation to imports (Chart I.7.8), Serbia's main partners (2014) were Germany (11.8%) and Russia (11.3%). Among the top five countries that export to Serbia are Italy, China and Hungary. These five countries together account for about 45-47% of Serbia's total imports.

As far as the EU-28 countries (Chart I.7.9), the list of five major import partners, besides Germany, Italy and Hungary, also includes Poland and Austria. The volume of imports with these 5 countries has fluctuated by 30-38%, with an increase in the last 2-3 years.

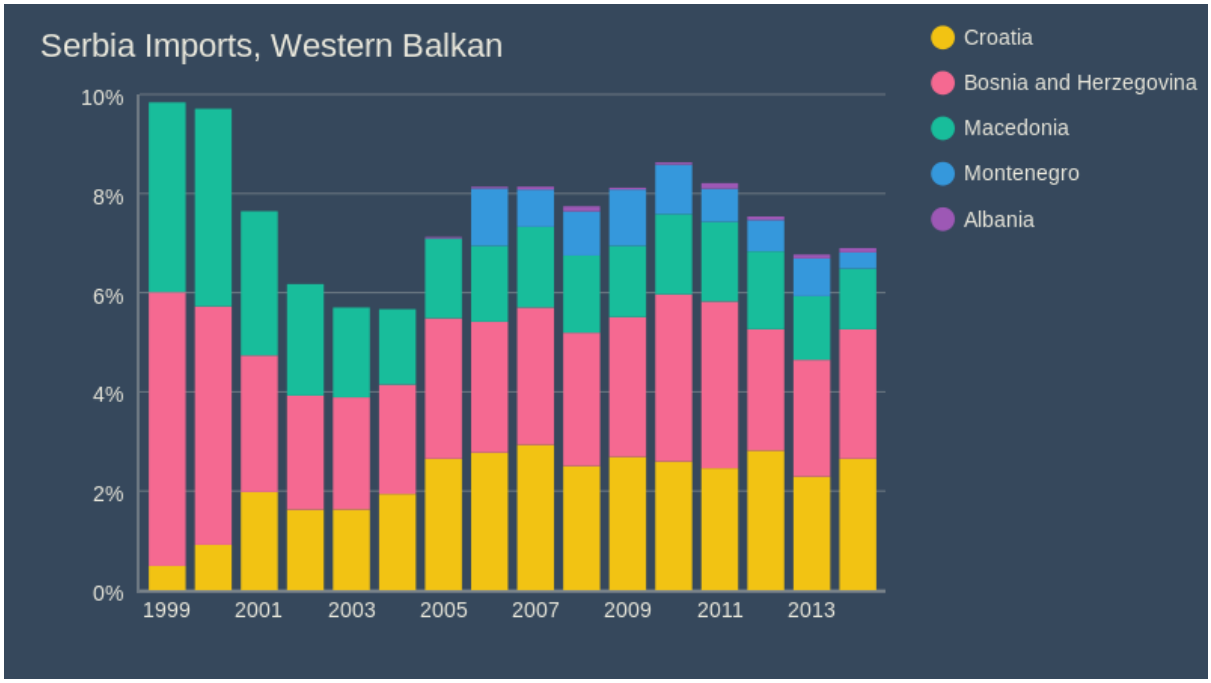
69 Graph I.7.9 Serbia, imports–top EU-28 partners, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

Serbia's imports from the Western Balkan countries have been relatively low, accounting for only 7% of the total volume of imports with a declining trend. In fact, from around 10% of the total in 1999, they reach about 7% in 2014. Serbia's main partners in the region are Croatia and Bosnia and Herzegovina.

70 Graph I.7.10 Serbia, imports–Western Balkans, 1999–2014



Source: own compilation on wiiw Annual Database 2015 data

I.8 Western Balkans as a region

Most interesting is the analysis of trade relations for the region of the Western Balkans as a whole. On one hand, the importance of this analysis is related to the fact that the economies of the Western Balkans region are relatively small economies, which when taken together constitute an important market for both developed economies and special economic unions, and most importantly for the European Union. On the other hand, this analysis would point out the relations of the region in general with other countries, describe the structure of goods that are exported or imported from the region, cite who its main partners are and so on.

Even in this analysis, the structure of the study will be the same as it has been so far for the analysis of each country with the only difference being that in this part of the study, the trade relations between the Balkan countries will not be taken into account as they are considered within the region's internal relations.

I.8.1 The Dynamic of trade volume

Table I.8.1 presents the volume of exports and imports of Western Balkan countries, considering the region as a whole. While Chart I.8.1 shows the trade dynamics of the region divided between trade with other countries and its domestic trade.

As can be seen, the region is characterized by a continuous opening up of the economy, an openness that is highlighted by the Openness Index, which reaches about 63.4% in 2014, from 24.3% in 1995. This openness can be clearly observed in Graph I.8.1 where it shows that the trade volume (exports plus imports) has increased considerably. Intra-regional trade has also been increasing, but this growth has been more moderate.

With respect to the coefficient of coverage, a decrease is noticed between the years 1999-2009 (39-37%), but after 2009 the indicator improved, reaching 2014 at about 52%.

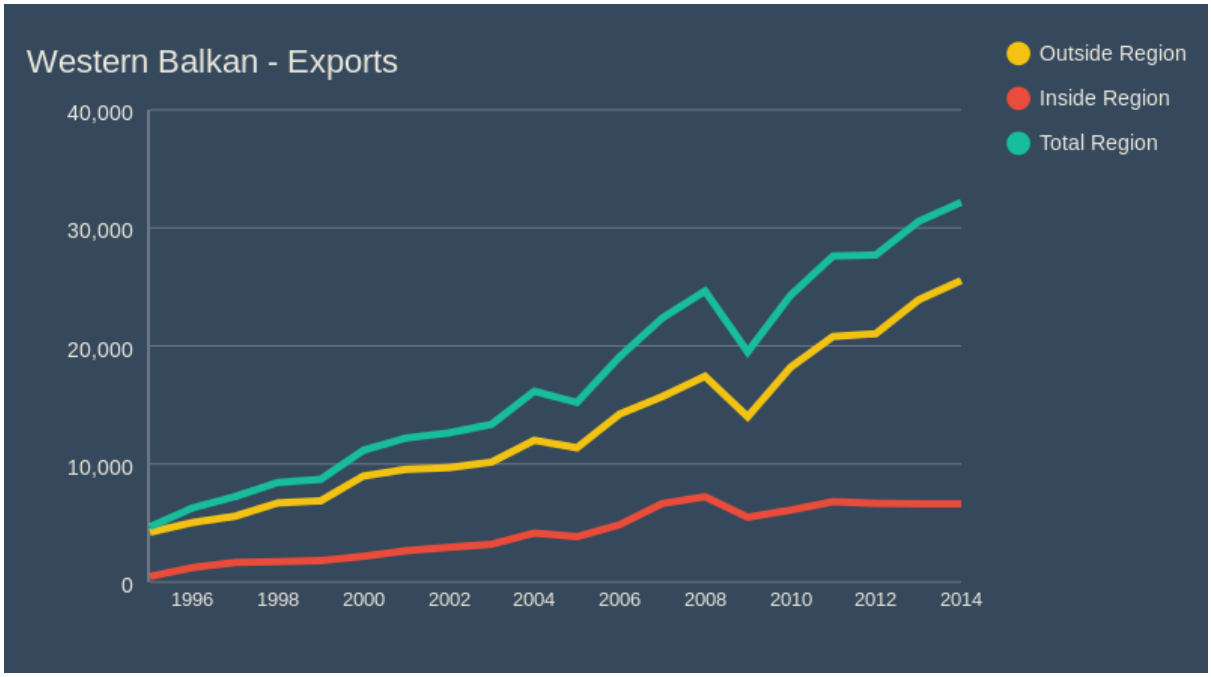
Perhaps the most striking thing in the two graphs I.8.1 and I.8.2 is the relatively small share of intra-regional trade as compared to the weight of international trade. If in 2014 the value of trade with third countries exceeds the figure of 74 billion euros, the value of inter-regional trade fluctuates around 15 billion euros.

8 Table I.8.1 Western Balkans, volume of international trade with the rest of the World, 1995–2014 (million Euro)

Year	Exports (outside region)	Imports (outside region)	Trade	Trade Balance (virtual)	Cover's percentage (%)	Openness Index (merchandise trade to GDP - %)
1995	4,212.2	7,465.6	11,677.8	-3,253.3	56.4%	24.3%
1996	5,044.2	10,874.8	15,919.1	-5,830.6	46.4%	37.1%
1997	5,581.6	13,476.5	19,058.1	-7,894.9	41.4%	27.6%
1998	6,705.8	15,649.8	22,355.6	-8,944.1	42.8%	34.8%
1999	6,879.7	17,377.5	24,257.2	-10,497.7	39.6%	35.6%
2000	8,979.8	21,818.0	30,797.9	-12,838.2	41.2%	32.8%
2001	9,547.4	26,499.9	36,047.3	-16,952.5	36.0%	49.9%
2002	9,689.9	30,615.0	40,304.9	-20,925.0	31.7%	48.9%
2003	10,156.7	33,018.1	43,174.8	-22,861.4	30.8%	48.4%
2004	12,005.8	38,461.0	50,466.8	-26,455.2	31.2%	52.4%
2005	11,370.1	32,027.3	43,397.4	-20,657.2	35.5%	52.3%
2006	14,226.2	36,814.9	51,041.1	-22,588.8	38.6%	55.0%
2007	15,702.2	43,983.0	59,685.2	-28,280.7	35.7%	56.9%
2008	17,423.7	50,989.0	68,412.7	-33,565.3	34.2%	58.3%
2009	14,000.3	37,975.4	51,975.7	-23,975.1	36.9%	46.9%
2010	18,179.1	39,927.6	58,106.6	-21,748.5	45.5%	52.2%
2011	20,804.4	44,998.5	65,802.9	-24,194.2	46.2%	56.5%
2012	21,030.8	45,293.6	66,324.4	-24,262.7	46.4%	58.0%
2013	23,892.4	46,347.7	70,240.0	-22,455.3	51.6%	59.6%
2014	25,532.0	49,010.2	74,542.2	-23,478.2	52.1%	63.4%

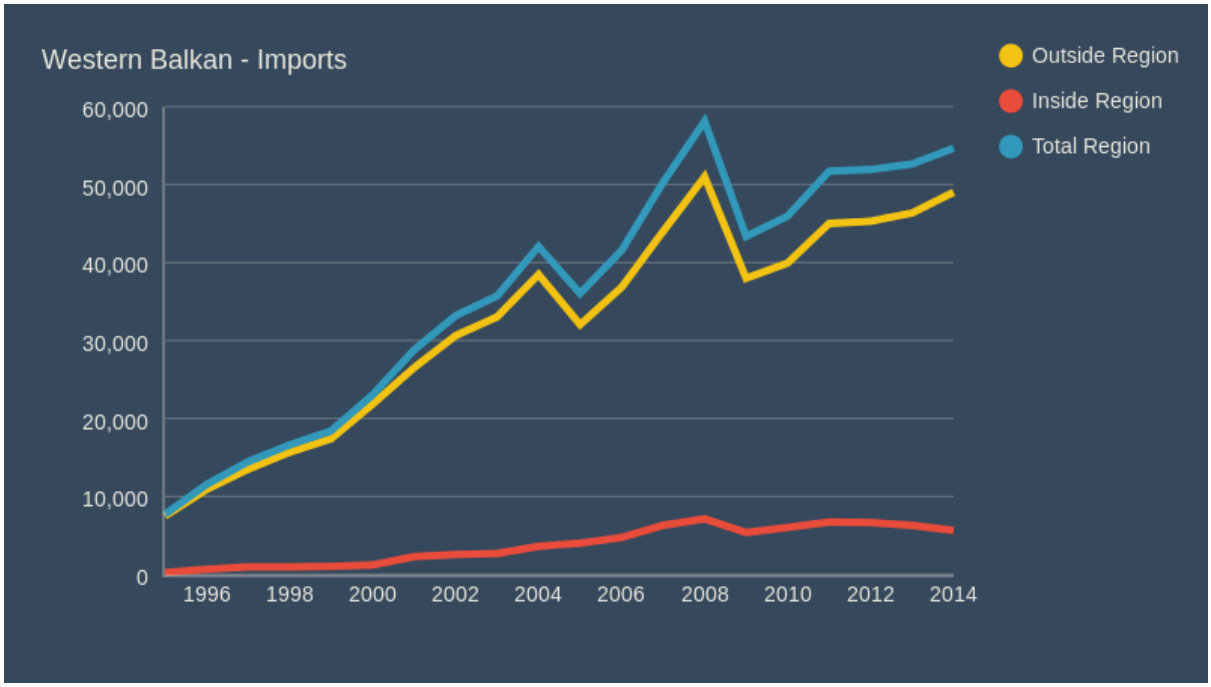
Source: own compilation on wiiw Annual Database 2015 data

71 Graph I.8.1 Western Balkans, exports, 1995–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

72 Graph I.8.2 Western Balkans, imports, 1995–2014 (million Euro)



Source: own compilation on wiiw Annual Database 2015 data

In fact, if cross-regional trade is compared with trade with other countries outside the region, the data shows that cross-regional exports are on average about 32% of the volume of exports to “third countries” (26% in 2014), while when comparing imports, this percentage is approximately 12% (11.6% in 2014).

A more detailed presentation of the relations between Balkan countries is provided in Table I.8.2. This table is based on the volume of exports and imports of a country to other countries in the region, by also taking into account the fact that a country's export to another country can be considered as import of the second country to the first. How can this chart be read? The table is constructed in matrix form. Each of its cells provides the value of exports / imports between the two countries (as we said we consider country A exports to country B as country B country A). If we read the table in rows, from left to right, columns are placed on a country's exports to other countries in the region. For example, in line ALB (row two of the table), Albania's exports to other countries have been tered. To the right of every value is given the weight of the total exports of this country to the total for the region. The amount of exports is presented in the last column. If we continue with the example of Albania, we see that the country in 2014 exported goods worth 3 million Euros to Bosnia and Herzegovina, which make up 2% of Albania's exports to the Western Balkans region, amounting to 214 million Euros total. If we read the table under the columns, the values of imports of each country from the other countries of the region are set in each row and below each value in the same column, are these values in relation to the total imports of the country, expressed in percentages. Continuing with the example of Albania, the country imported goods in 2014 of 57 million Euros from Croatia, the value of which is 22% of the value of domestic imports from the whole Western Balkans region (267 million Euros in 2014).

9 Table I.8.2 Western Balkan, intra-regional trade, 2014 (million Euro and %)

		ALB		BIH		CR		KS		MC		MN		SR		Total	
		Imp	%	Imp	%	Imp	%	Imp	%	Imp	%	Imp	%	Imp	%	Exp	
ALB	Exp			3	2%	2	1%	134	63%	38	18%	25	12%	12	5%	214.3	100%
	%			0%		0%		34%		6%		3%		1%			
BIH	Exp					488	45%			48	4%	150	14%	409	37%	1096.0	100%
	%					52%		0%		7%		16%		34%			
CR	Exp	57	3%	1223	58%			70	3%	104	5%	128	6%	509	24%	2090.7	100%
	%	22%		53%				17%		15%		14%		42%			
KS	Exp	43	40%	3	3%	3	3%			27	25%	17	16%	15	14%	107.4	100%
	%	16%				0%				4%		2%		1%			
MC	Exp	56	10%	70	12%	70	12%	174	29%			24	4%	195	33%	590.2	100%
	%	21%		3%		7%		44%				3%		16%			
MN	Exp	15	8%	32	17%	33	18%	21	12%	3	2%			80	43%	184.9	100%
	%	6%		1%		4%		5%		0%				7%			
SR	Exp	96	4%	994	40%	344	14%			454	18%	568	23%			2455.2	100%
	%	36%		43%		37%		0%		67%		62%					0%
Total	Imp	267		2322		941		399		674		912		1219		6735.6	
	%	100%		100%		100%		100%		100%		100%		100%			100%

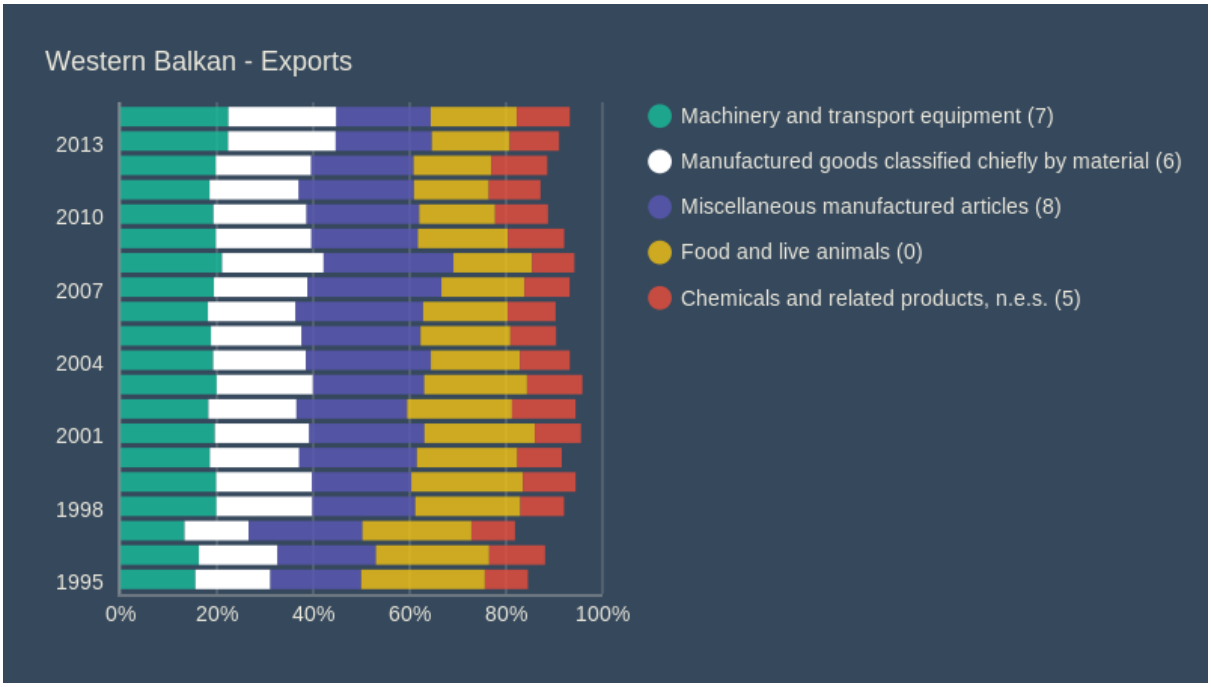
Source: own compilation on wiiw Annual Database 2015 data

I.8.2 Foreign trade by commodity groups

The structure of exported and imported goods for the Western Balkans, taken as a whole, is shown in Graphs 1.8.3 and 1.8.4.

According to the SITC classification, the five main groups of goods exported from the region for 2014 are those of "Machinery and Transport Equipment" (group "7", 22.4% in 2014), "Manufacturing Goods and Goods Classified primarily as materials (group "6", 22.3% in 2014), "Different manufactured items" (group "8", 19.6% in 2014), "Food and livestock products" (group "0" 17.8% in 2014) and the group of products "Chemicals and related products" (group "5", 11.0% in 2014). It is noticed that the structure as a whole has not changed during the period 1995-2014, but there is a slight increase in the group of machinery and transport equipment as well as a decrease in the group of food and livestock.

73 Graph 1.8.3 Western Balkans, exports by commodities, 1995–2014

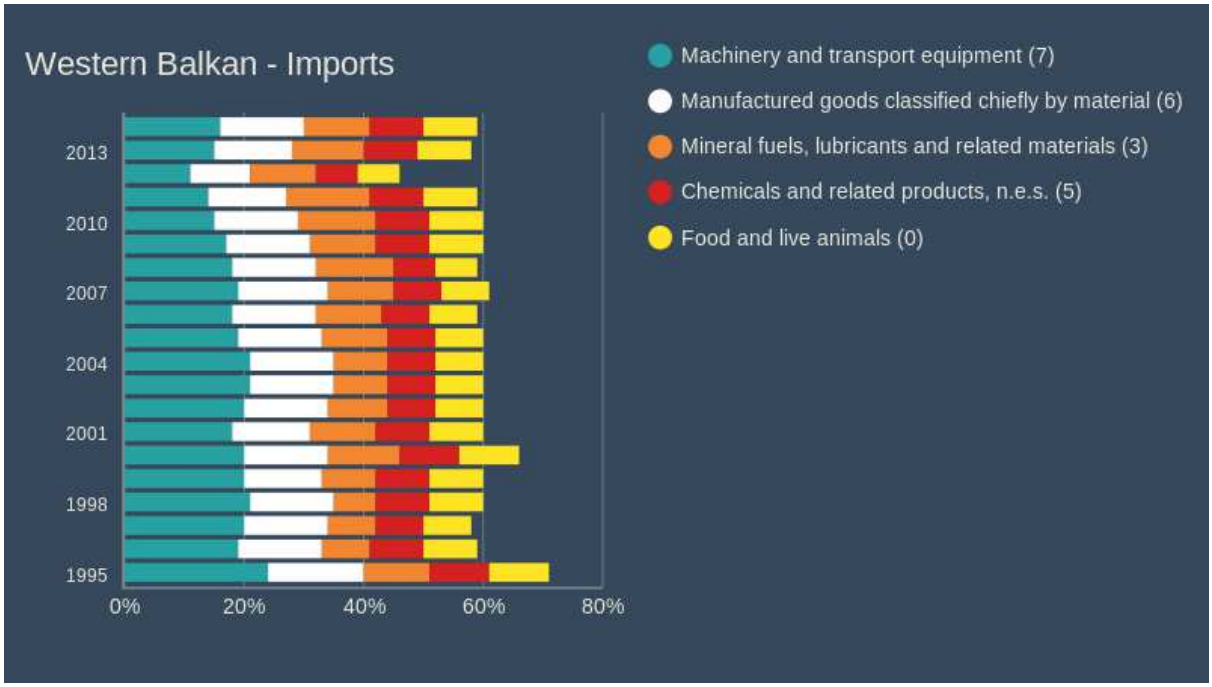


Source: own compilation on wiiw Annual Database 2015 data

Regarding imports (Graph 1.8.4), in 2014, the five main groups were those of "Machinery and Transport Equipment" (group "7", 16.5%), "Manufacturing Goods and Commodities mainly classified as materials" (Group "6", 14.3%), "Fuels, lubricants, etc." (group "3", 11.2%), "Chemicals and related products" (group "5", 9.7% in 2014) and "Food and livestock products" (group "0", 9%). In the period

1995-2014 there is a slight decrease of the weight of machinery and transport equipment, as well as a slight increase of the group of fuels and lubricants.

74 Graph 1.8.4 Western Balkans, imports by commodities, 1995–2014



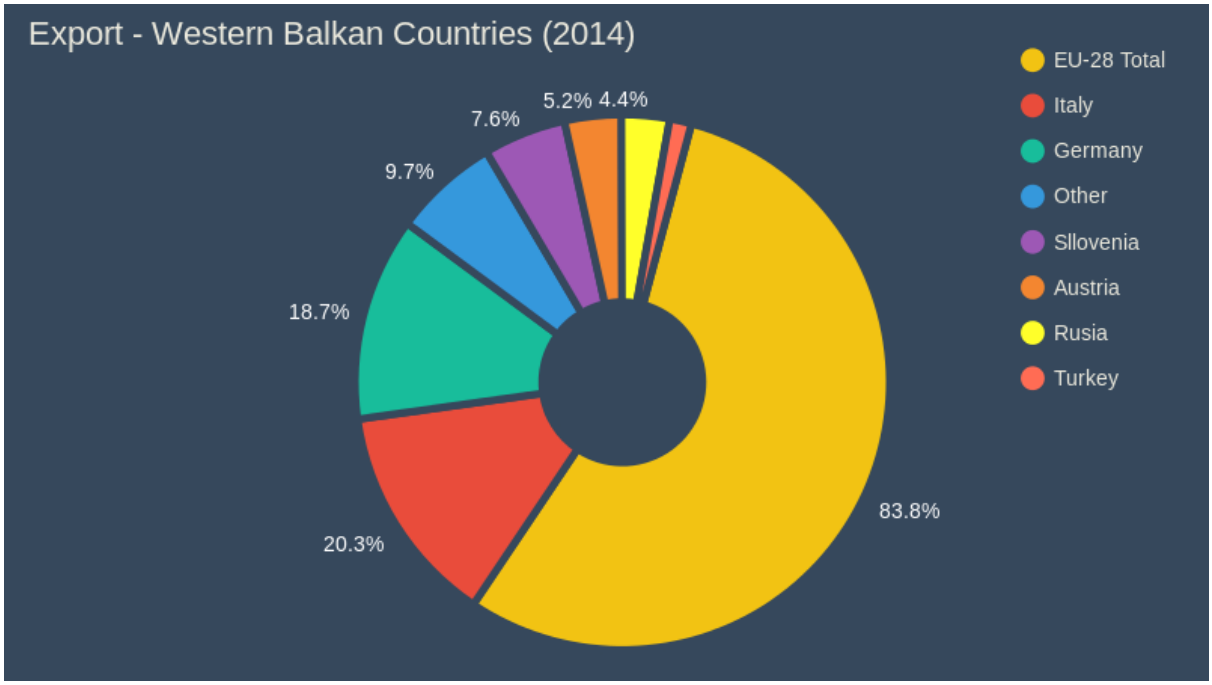
Source: own compilation on wiiw Annual Database 2015 data

I.8.3 Foreign trade by partners

If we analyze the export structure by key partners (Graph I.8.5), we will see that the main export countries for the Western Balkans are those of the European Union (over 82% of the total, 2014, EU-28). Among these countries, the main partners are Italy and Germany, with 20.3% and 18.7% of the total respectively.

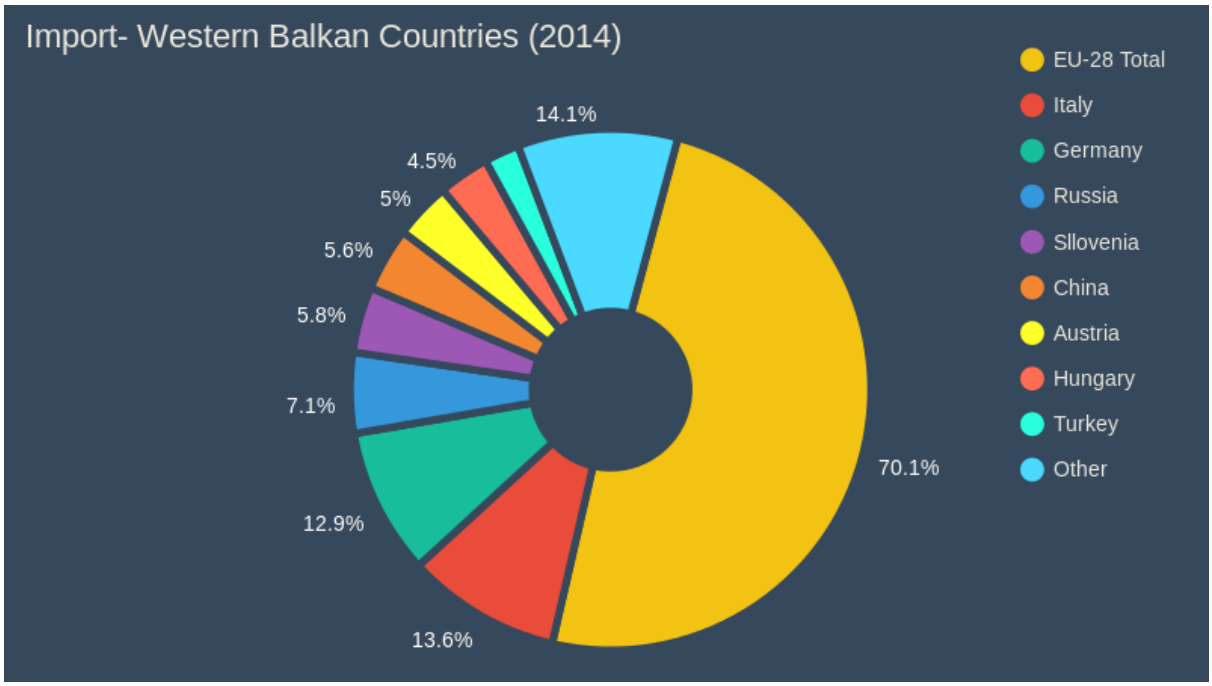
Even in imports, the main partner is the European Union with about 70% of the total. Also among individual countries, in the first place is Italy and in second place is Germany with 13.6% and 12.9% respectively. As a partner country outside the European Union, Russia is considered to be significant with about 14% of the volume of imports of Balkan countries (Graph I.8.6).

75 Graph I.8.5 Western Balkans, exports by countries, 2014



Source: own compilation on wiiw Annual Database 2015 data

76 Graph 1.8.6 Western Balkans, imports by countries, 2014



Source: own compilation on wiiw Annual Database 2015 data

II. Gravity model analysis for each country of Western Balkans and the overall region

The use of the gravity model in the analysis of trade relations between two countries is well known. Unlike the classic foreign trade model, which bases the analysis of economic relations between countries primarily on the absolute or relative advantages of countries, the gravity model is based on the idea that a country's exports or imports depend heavily on economic, geographical or social factors, such as the size of the respective economies, the distance between countries, the trade agreements signed between them, the differences in economic development, and the similarities of language, religion, etc. In this part of the study, the economic relations of Western Balkan countries will be analyzed based on this model. Specifically, by means of the gravity model, the dependence of exports and imports of each of the seven Western Balkan countries is analyzed according to the following factors:

Quantitative economic factors

- Western Balkan country GDP
- Partner country GDP
- The share of exports and imports to GDP

Economic development factors

- GDP per capita of Western Balkans country
- GDP per capita of the partner country
- Value added of industrial production to respective country GDP[9].

Development relative factor

- Relative change of exchange rate between two countries

Geographical features

- The distance between countries
- Existence of common borders between two countries
- Country in the Western Balkans region

[9] Manufacturing, value added (% of GDP).

Trade agreements

- Member country of CEFTA agreement[10]

Political and other factors

- European Union Member State (EU)
- Country part of former Yugoslav Federation[11]
- Language similarities[12]

On the basis of these factors, the gravity models of exports and imports on each country in the Western Balkans are designed according to a general format (Equation 1 and Equation 2):

$$\ln(exp_i) = \ln(gdp_i) + \ln(gdp_j) + \ln\left(gdp_{pc_i}\right) + \ln\left(gdp_{cap_j}\right) + \ln(ppp_i) + \ln(ppp_j) + \ln\left(\frac{man}{gdp_j}\right) + \ln\left(\frac{imp}{gdp_j}\right) + \ln(dis_{i,j}) + BORDER_{i,j} + LANG_{i,j} + FY_j + WB_j + EU_j + CEFTA_j + \varepsilon$$

$$\ln(imp_i) = \ln(gdp_i) + \ln(gdp_j) + \ln\left(gdp_{pc_i}\right) + \ln\left(gdp_{cap_j}\right) + \ln(ppp_i) + \ln(ppp_j) + \ln\left(\frac{man}{gdp_j}\right) + \ln\left(\frac{exp}{gdp_j}\right) + \ln(dis_{i,j}) + BORDER_j + LANG_j + FY_j + WB_j + EU_j + CEFTA_j + \varepsilon$$

where *ln(exp$_i$)* and *ln(imp$_i$)* are the two dependent variables in the model:

ln(exp$_i$) natural logarithm of exports of Western Balkan country (i).

ln(imp$_i$) natural logarithm of imports of Western Balkan country (i).

while the following variables are the independent ones:

ln(gdp$_i$) natural logarithm of GDP of Western Balkan country (i).

ln(gdp$_j$) natural logarithm of GDP of partner country (j).

ln(imp/gdp$_j$) natural logarithm of imports percentage over GDP of partner country (j). Represents the dependence of country from imports.

[10] CEFTA agreement, on Western Balkans countries included in this paper, have enter into effect in year 2007, with the exemption of Macedonia (2006) and Croatia (2003–2013).

[11] Excluding Albania, all other Western Balkans countries have been Socialist Republics or Autonomous Socialist Regions (Kosovo) of the former Federal Socialist Republic of Yugoslavia.

[12] In the former Yugoslavia (see footnote above) the official language was Serbio-Croatian, which was used alongside with local official languages of each Republic or Autonomous Region.

$ln(exp/gdp_j)$	natural logarithm of exports percentage over GDP for partner country (j). Represents the dependence of country from exports.
$ln(gdp\_cap_i)$	natural logarithm of GDP per capita of Western Balkan country (i). Represents the economic development of respective country.
$ln(gdp\_cap_j)$	natural logarithm of GDP per capita of partner country (j). Represents the economic development of partner country.
$ln(ppp_i)$	natural logarithm of Purchasing Power Parity indicator "*PPP conversion factor, GDP (LCU per international $)*" for Western Balkan country (i)[13].
$ln(ppp_j)$	natural logarithm of Purchasing Power Parity indicator "*PPP conversion factor, GDP (LCU per international $)*". Shows the impact of exchange rate in the foreign trade of the partner country (j).
$ln(man/gdp_j)$	natural logarithm of manufacture production value added percentage over country GDP. Represents the industrial development of partner country (j).
$ln(dis_{ij})$	natural logarithm of distance between countries (i) and (j).
$BORDER_j$	dichotomous variable ("dummy"), gets value 1 if countries (i) and (j) share common borders and the value 0 if they don't.
$LANG_j$	LANGUAGE, dichotomous variable, gets value 1 if the countries (i) and (j) have similar languages and value 0 if not.
FY_j	Former Yugoslavia, dichotomous variable, gets value 1 if country (j) have been part of former Yugoslavia, and the value 0 if not.
WB_j	Western Balkans, dichotomous variable, gets value 1 if country (j) is part of Western Balkans, and 0 if not.
EU_j	European Union, dichotomous variable, gets value 1 if country (j) is part of European Union, and value 0 if not.
$CEFTA_j$	dichotomous variable, gets value 1 if country (i) and country (j) are part of CEFTA agreement.
ε	*is the error term.*

[13] The indicator represent the value in the domestic currency of a basket of given goods, over the value of the same basket of goods valued in USA with US Dollars. In this way, indicator represent the exchange rate of domestic currency to US Dollar.

The period under investigation in this paper is 1995–2015, but in the case of some countries this period is more limited, taking into consideration the recent state formation in the Western Balkans, or the lack of data, as in the case of Kosovo (time series begins in 2005), Bosnia and Herzegovina (in 2001), Montenegro (in 2001), and Serbia (in 1999). The main database used in this paper is that of the World Bank, and partially, those of the Vienna International Economic Studies Institute (WIIW). The analysis is conducted using STATA 13. In each of the Western Balkan countries, the export and import models are designed taking into consideration their trade relations with the 11 main partner countries. In this way, over 85% of respective exports or imports are included in the model.

Methodology

From a methodological perspective, a well-known problem in the construction of the gravity model is the lack of data on exports or imports for specific years. It may happen that for certain years exports or imports of the country concerned to the partner countries selected in the model are zero[14]. The handling of this problem in the literature varies widely and the methods used present specific advantages and disadvantages. For this reason, a full argumentation of the results requires the use of various econometric tests. In this regard, we emphasize that this paper avoids so detailed an analysis. Data processing and regression analysis in the study is based on two basic methods: (1) the method of initial "imputation" of missing data and OLS evaluation; and (2) the PPP (Poisson Quasi-Maximum Likelihood Estimator) method.

According to the first method, the "imputation" of the missing data was initially performed, followed by the evaluation of the indicators, and finally the correlation analysis with the OLS (Ordinary Least Squares) model was performed. The OLS model was originally tested in its two main variants a) with Random-Effects Generalized Least Squares and b) with a Fixed-Effects (within) Regression. Based on the literature, the best variant between GLS Random Effects and Fixed Effects is determined on the basis of the Hausman Test. According to this test, the best variant resulted for some countries from the Random-effects GLS regression, while in some other cases the Fixed Effects variant resulted as best.

[14] In the literature this issue is known as "zero trade flows".

In the case of the second PPML method (Santos and Tenreyro, 2010), the initial imputation of the missing data was not needed as this is accomplished by the method itself.

Both of the models used, OLS and PPML, in many cases produced different results. Since the OLS model is processed after imputation, statistically not significant variables are also considered to be not significant when evaluated at the imputation stage, (according to Test F), although these variables may be significant ($p < 0.05$) in OLS estimation. This has led to factors that are considered statistically acceptable for OLS model analysis often to be quite reduced in number. Starting from this method of data handling, and based on the literature, we suggest that among the two models presented, the PPML model results can be considered the most meaningful.

II.1 Albania

II.1.1 Exports model (ALB)

The export model results for Albania are presented in Appendices 1, 2 and 3. Appendices 1 and 2 show the results of the Gravity model estimation by the imputation method and the OLS, while in Appendix, 3 the results of the PPML method are given.

In appendix 1, the imputation method is evaluated. Here it is seen that the following variables are not statistically significant in the Gravity Model: country GDP, (*lngdp_c*, p = 0.327> 0.05), partner country purchasing power parity (*lnppp_c*, p = 0.484), the existence of the common border between countries (*BORDER*, p = 0.614) and participation in CEFTA (*CEFTA*, p = 0.179). While in Appendix 2, the results according to the OLS method are presented using the best variant of the Hausman Test as determined by the Random-effects model. After eliminating statistically not significant variables, the OLS export gravity model for Albania is given in Table II.1.1.1

The PPML assessment is presented in Appendix 3. A summary of the results for statistically significant variables is presented in Table II.1.1.2.

10 Table II.1.1.1 Albania, exports model (1995–2015), Random-effects GLS regression

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.4498	0.2270	1.98	0.048	0.0048	0.8947
lngdpcap_c	2.1926	0.5561	3.94	0.000	1.1027	3.2825
lngdpcap_p	2.1001	0.6752	3.11	0.002	0.7767	3.4236
lnimpgdp	-2.2676	0.6908	-3.28	0.001	-3.6216	-0.9136
lnppp_p	-1.3435	0.2822	-4.76	0.000	-1.8966	-0.7903
lnmangdp	-1.2567	0.6101	-2.06	0.039	-2.4525	-0.0609
lndis	-1.6101	0.4775	-3.37	0.001	-2.5460	-0.6741
LANG	-3.9754	1.2655	-3.14	0.002	-6.4558	-1.4950
EU	1.5019	0.5407	2.78	0.005	0.4421	2.5617
WB	7.9217	1.3018	6.09	0.000	5.3702	10.4733
_cons	-12.9080	7.0292	-1.84	0.066	-26.6851	0.8691
Number of observations		**182**		**R^2**		**0.425**

Source: own calculations

11 Table II.1.1.2 Albania, exports model (1995–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0257	0.0096	2.67	0.008	0.0069	0.0445
lngdpcap_c	0.1324	0.0327	4.05	0.000	0.0684	0.1964
lngdpcap_p	0.1405	0.0349	4.03	0.000	0.0722	0.2089
lnimpgdp	-0.1478	0.0453	-3.27	0.001	-0.2365	-0.0591
lnppp_p	-0.0826	0.0137	-6.05	0.000	-0.1094	-0.0558
lnmangdp	-0.0701	0.0336	-2.08	0.037	-0.1360	-0.0041
lndis	-0.1014	0.0263	-3.85	0.000	-0.1531	-0.0498
LANG	-0.2562	0.0560	-4.57	0.000	-0.3660	-0.1463
EU	0.0732	0.0292	2.51	0.012	0.0160	0.1304
WB	0.4823	0.0790	6.11	0.000	0.3276	0.6371
CEFTA	-0.0463	0.0216	-2.14	0.032	-0.0886	-0.0040
_cons	0.9923	0.3981	2.49	0.013	0.2119	1.7726
Number of observations		**182**		**R^2**		**0.643**

Source: own calculations

In both models R^2 is over 42% and 64% respectively - values that can be considered satisfactory. The results show a logical dependence of exports on the factors considered. They are in proportion to the GDP of partner countries as well as the GDP per capita of both countries. Meanwhile, they are in a direct relationship

with distance, the industrial development of partner countries (*lnmangdp*-weight of manufacturing output to GDP), partner countries purchasing power parity (*lnppp_p*) and the share of imports to GDP of these countries (*lnimpgdp*). As far as dummy variables are concerned, positives in exports are affected by the fact that importing countries from Albania are part of the European Union or in the Western Balkans, while the common language (*LANG*) is not seen to have a positive impact (in the case of Albania, the country with a common language is Kosovo)[15].

Overall, the most positive factor in exports is economic growth (*GDP per capita*), both for Albania and partner countries, while the most negative impact is the distance between countries (*lndis*). In the model, the impact of the share of imports to GDP of the respective partner countries (*imgdp*) is negative. This can be explained by the fact that the relative increase of imports in these countries compared to their GDP is mainly directed towards other countries, reducing the volume of imports from Albania (or Albania's exports to these countries).

If we compare the two models, we should point out that regression coefficients in the PPML model are smaller, even though the impact trend of particular factors on exports is the same.

II.1.2 Imports model (ALB)

The econometric assessment results for Albanian imports are presented in Appendices 4, 5 and 6 respectively (the results of the regression according to the imputation method, OLS and PPML). Even in this case, the Hausman test estimates the most suitable option for OLS Random-effects. After eliminating statistically unimportant factors, the results of the OLS model (after imputation) and the PPML model are presented in the following tables II.1.2.1 and II.1.2.2:

[15] Albeit part of Montenegro and Macedonia are inhabited by ethnic Albanian populations, we considered in the model the main (official) language.

12 Table II.1.2.1 Albania, imports model (1995–2015), Random-effects GLS regression

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdpcap_c	2.0824	0.3831	5.44	0.000	1.3316	2.8332
lngdpcap_p	0.8699	0.3833	2.27	0.023	0.1187	1.6211
lnmangdp	1.9332	0.5731	3.37	0.001	0.8099	3.0564
lndis	-0.0002	0.0001	-2.06	0.039	-0.0003	0.0000
BORDER	2.3098	0.5175	4.46	0.000	1.2955	3.3241
EU	-0.7505	0.4005	-1.87	0.061	-1.5354	0.0344
WB	-4.0120	0.7978	-5.03	0.000	-5.5757	-2.4484
_cons	-9.3189	5.0100	-1.86	0.063	-19.1383	0.5004
Number of observations		215		R^2		0.611

Source: own calculations

13 Table II.1.2.2 Albania, imports model (1995–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdpcap_c	0.1150	0.0256	4.49	0.000	0.0648	0.1653
lngdpcap_p	0.0506	0.0228	2.22	0.026	0.0059	0.0953
lnmangdp	0.1106	0.0290	3.81	0.000	0.0537	0.1675
lndis	-0.00001	0.0000	-2.25	0.025	0.0000	0.0000
BORDER	0.1256	0.0219	5.72	0.000	0.0826	0.1686
EU	-0.0415	0.0183	-2.26	0.024	-0.0774	-0.0056
WB	-0.2299	0.0475	-4.84	0.000	-0.3230	-0.1368
CEFTA	0.0452	0.0200	2.26	0.024	0.0059	0.0844
_cons	1.3562	0.2402	5.65	0.000	0.8855	1.8270
Number of observations		215		R^2		0.5495

Source: own calculations

The factors taken into consideration explain 61% (according to imputation and according to the OLS model), and 55% (according to the PPML model) of the dependence of Albanian imports. In both models, we notice that the main factor that has a positive impact on Albanian imports is economic development (the GDP per capita in both countries is *lngdpcap_c* and *lngdpcap_p*). The Tables also show that imports are positively impacted by industrial production growth in the partner countries of Albania (an increased share of manufactured goods to GDP *lnmangdp*). In relation to geographic and political factors, we have included the distance between countries with a negative sign as is provided in the theoretical model. In general, Albanian imports from European Union (*EU*) countries or Western Balkan (*WB*) are lower than the imports from other third countries (non-EU or non WB). In fact, two countries China and Turkey are among partners from whom Albania is importing

more. Nevertheless, sharing common borders with Albania (*BORDER*)[16], or a member country in the CEFTA agreement has a positive impact on Albanian imports.

II.2 Bosnia and Herzegovina

II.2.1 Exports model (BiH)

The estimation results with the export model for Bosnia and Herzegovina are shown in Appendices 7, 8, and 9 respectively (using the imputation method, the OLS method and the PPML method). The Fixed-Effects option is more acceptable than the Random-Effects option. However, as shown in Appendices 7 and 8, the OLS model does not provide statistically significant results. So, in Table II.2.1.1 are shown only the results in accordance with the PPML estimator.

14 Table II.2.1.1 Bosnia & Herzegovina, exports model (2001–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdpcap_p	0.0844	0.0153	5.53	0.000	0.0545	0.1143
lnimpgdp	-0.1311	0.0199	-6.59	0.000	-0.1701	-0.0921
lnppp_p	0.0127	0.0027	4.74	0.000	0.0075	0.0180
lndis	0.2293	0.0963	2.38	0.017	0.0406	0.4180
FY	0.1078	0.0108	9.94	0.000	0.0866	0.1291
BORDER	0.0750	0.0145	5.15	0.000	0.0465	0.1035
EU	0.0501	0.0084	5.99	0.000	0.0337	0.0665
CEFTA	-0.0502	0.0121	-4.13	0.000	-0.0740	-0.0264
_cons	1.9449	0.6419	3.03	0.002	0.6868	3.2031
Number of observations		132		R^2		0.749

Source: own calculations

According to this assessment for exports of Bosnia and Herzegovina, GDP per capita and the purchasing power parity of partner countries have a positive impact on exports, while growth in the weight of manufacturing to GDP of these countries (*lnimpgdp*) causes a negative effect. Of particular interest are the results of geographic and political factors (coefficients of dichotomous variables or dummy). First of all, it is worth noting that distance does not play any significant role in the trade relations of this country. In fact, the variable enters the model with the opposite

[16] As having common borders, are considered only those countries, that have land borders with the respective country.

sign from what was expected and is statistically significant only for p> 1%. Bosnia and Herzegovina's exports are positively influenced by whether the partner country has been part of the former Yugoslavia (*FY*), if it is a border country with Bosnia and Herzegovina (*BORDER*), and if it is a member of the European Union (*EU*). Nonetheless, the CEFTA agreement does not seem to have a positive impact (on the contrary, the coefficient is negative and statistically significant). However, overall regression coefficients are low, reflecting that gravity factors do not have a statistically significant influence on the model.

II.2.2 Imports model (BiH)

The imports model for Bosnia and Herzegovina is given in Appendices 10, 11 and 12. In relation to the imputation method and OLS [17] model (Appendices 10 and 11), the results are shown in Table II.2.2.1., while the analysis with the PPML model is represented in Table II.2.2.2 (see, even Appendix 12).

15 Table II.2.2.1 Bosnia & Herzegovina, imports model (2001–2015), Fixed-effects (within) regression

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdp_c	-1.1323	0.4055	-2.79	0.006	-1.9352	-0.3294
lngdp_p	1.0377	0.2858	3.63	0.000	0.4718	1.6035
lngdpcap_c	1.2695	0.5112	2.48	0.014	0.2573	2.2816
lnexpgdp	1.0790	0.3954	2.73	0.007	0.2961	1.8619
lnppp_c	3.0337	1.2223	2.48	0.014	0.6135	5.4538
lnppp_p	0.6600	0.3463	1.91	0.059	-0.0258	1.3457
lnmangdp	-1.3741	0.5762	-2.38	0.019	-2.5151	-0.2332
EU	-0.5393	0.1192	-4.52	0.000	-0.7753	-0.3033
_cons	10.0830	4.6078	2.19	0.031	0.9591	19.2069
Number of observations		**139**		**R^2**		**0.636**

Source: own calculations

According to the OLS model, an increase in the share of production in the total production of partner countries combined with these countries being a part of the European Union have a negative impact on Bosnia and Herzegovina's imports. Meanwhile, the size of the economy and the share of exports in relation to the GDP of the partner countries in trade both have a positive impact on the imports of Bosnia and Herzegovina.

[17] The OLS model is designed on the basis of Fixed-effects (within) option, regression.

Although R^2 in the PPML method is high (0.869), the regression coefficients are quite low. We can say that factors having a positive impact on imports include "large" economies (*lngdp_p*) as well as countries known as exporting countries (*lnexpgdp*- represents the share of exports to GDP of partner countries). The positive GDP per capita ratios (*lngdpcap_p*) can be explained by the fact that imports are mainly coming from developed countries. Distance plays a negative role in trade between countries. The correlation of imports with the former Yugoslav countries is positive (*FY*). On the other hand, border countries part of the European Union and CEFTA have a negative impact. However, in the PPML assessment it should be said that the coefficients of the variables are quite close to zero and as such it is difficult to comment.

16 Table II.2.2.2 Bosnia & Herzegovina, imports model (2001–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_c	-0.0610	0.0134	-4.56	0.000	-0.0872	-0.0348
lngdp_p	0.0521	0.0043	12.25	0.000	0.0438	0.0604
lngdpcap_c	0.0975	0.0175	5.59	0.000	0.0633	0.1318
lnexpgdp	0.0310	0.0154	2.01	0.044	0.0008	0.0613
lnppp_c	0.1455	0.0585	2.49	0.013	0.0309	0.2601
lnppp_p	0.0121	0.0038	3.19	0.001	0.0047	0.0196
lndis	-0.0698	0.0041	-17.12	0.000	-0.0778	-0.0618
FY	0.0977	0.0069	14.15	0.000	0.0842	0.1113
BORDER	-0.0259	0.0091	-2.83	0.005	-0.0437	-0.0080
EU	-0.0407	0.0065	-6.27	0.000	-0.0534	-0.0280
CEFTA	-0.0321	0.0119	-2.69	0.007	-0.0555	-0.0088
_cons	2.5933	0.1865	13.91	0.000	2.2278	2.9588
Number of observations		**139**		**R^2**		**0.869**

Source: own calculations

II.3 Croatia

II.3.1 Exports model (HRV)

The regression analysis on Croatian exports is shown in Appendices 13, 14, and 15. The Hausman Test estimates the OLS model with the Random-effects method as most appropriate. In Tables II.3.1.1 and II.3.1.2, the statistically significant variables are represented according to the OLS estimator and PPML estimator. The OLS model after missing-data imputation results with only three variables that can be taken into consideration in the analysis.

17 Table II.3.1.1 Croatia, exports model (1995–2015), Random-effects GLS regression

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.6540	0.1703	3.84	0.000	0.3203	0.9878
lngdpcap_c	1.0906	0.2540	4.29	0.000	0.5929	1.5884
lndis	-1.0946	0.2613	-4.19	0.000	-1.6068	-0.5824
_cons	4.6060	4.1439	1.11	0.266	-3.5159	12.7280
Number of observations		218		**R^2**		0.7494

Source: own calculations

18 Table II.3.1.2 Croatia, exports model (1995–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0561	0.0023	24.17	0.000	0.0516	0.0607
lngdpcap_c	0.0529	0.0210	2.52	0.012	0.0118	0.0940
lndis	-0.0993	0.0042	-23.70	0.000	-0.1075	-0.0911
FY	0.0734	0.0082	8.91	0.000	0.0572	0.0895
EU	-0.0487	0.0065	-7.44	0.000	-0.0615	-0.0359
WB	0.0900	0.0179	5.03	0.000	0.0549	0.1251
CEFTA	-0.0402	0.0106	-3.79	0.000	-0.0610	-0.0194
_cons	1.8983	0.3768	5.04	0.000	1.1598	2.6369
Number of observations		**218**		**R^2**		**0.8261**

Source: own calculations

In both models we notice that the distance between countries is the most significant, and negative, factor in the gravity of exports. The exports are related positively with the partner countries GDP (*lngdp_p*) and the GDP per capita of Croatia (*lngdpcap_c*). The PPML model shows that the exports of this country are more attractive than those from the former-Yugoslav countries as well as the Western

Balkan countries (*WB*), while the European Union (*EU*) countries and CEFTA agreement parties have the opposite effect. In fact, the coefficients are negative for the European Union (*EU*) and *CEFTA* countries.

II.3.2 Imports model (HRV).

Import models are given in Appendices 16, 17 and 18. For the OLS model, the most acceptable variant is the Fixed-effects one. Tables II.3.2.1 and II.3.2.2 show that imports are positively dependent on the partner economies' GDP (*lngdp_p*) - an indicator that characterizes the size of these economies and the fact that Croatian imports come mainly from large economies. By eliminating the statistically unrelated factors according to the imputation method (Appendix 16) and the OLS model (Appendix 17), it can be seen that the variables that can be considered in the OLS analysis are reduced to three (Table II.3.2.1, *lngdp_p*; *lnppp_c*; *lnppp_p*). Meanwhile, PPML estimates show the positive dependence of imports on GDP per capita (*lngdpcap_c*) as well as the purchasing power parity of both countries. Just as for exports and imports, the factor "ex-Yugoslavia" (*FY*) has a positive impact.

19 Table II.3.2.1 Croatia, imports model (1995–2015), Fixed-effects (within) regression

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdp_p	1.5293	0.1388	11.02	0.000	1.2555	1.8032
lnppp_c	1.5658	0.3393	4.61	0.000	0.8964	2.2351
lnppp_p	-0.6942	0.2323	-2.99	0.003	-1.1525	-0.2358
_cons	-10.8593	2.6077	-4.16	0.000	-16.0038	-5.7149
Number of observations		**207**		**R^2**		**0.8342**

Source: own calculations

20 Table II.3.2.2 Croatia, imports model (1995–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0475	0.0061	7.78	0.000	0.0355	0.0595
lngdpcap_c	0.0595	0.0157	3.80	0.000	0.0288	0.0902
lnppp_c	0.0897	0.0286	3.14	0.002	0.0337	0.1457
lnppp_p	0.0067	0.0016	4.26	0.000	0.0036	0.0098
lndis	-0.0531	0.0080	-6.65	0.000	-0.0687	-0.0374
FY	0.0921	0.0113	8.13	0.000	0.0699	0.1143
_cons	1.9784	0.1976	10.01	0.000	1.5912	2.3656
Number of observations		**207**		**R^2**		**0.8560**

Source: own calculations

R^2 in both models is considerable, but the regression coefficients are relatively low.

II.4 Kosovo

II.4.1 Exports model (RKS)

The results of the regression analysis for Kosovo exports are presented in Appendices 19, 20 and 21. Neither the imputation method nor the OLS (Random-effects) model yield an acceptable result as many variables are considered statistically not significant (except GDP per capita and the distance between countries). The PPML model (Appendix 21) provides results that can be analyzed, though R^2 is a relatively low 47% (Table II.4.1.1).

21 Table II.4.1.1 Kosovo, exports model (2005–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0231	0.0085	2.73	0.006	0.0065	0.0397
lngdpcap_c	0.2092	0.0800	2.62	0.009	0.0525	0.3660
lngdpcap_p	-0.1333	0.0285	-4.68	0.000	-0.1891	-0.0775
lnppp_p	0.0102	0.0041	2.50	0.013	0.0022	0.0181
lndis	-0.0979	0.0214	-4.57	0.000	-0.1398	-0.0559
FY	-0.0204	0.0101	-2.03	0.043	-0.0401	-0.0007
EU	0.1185	0.0375	3.16	0.002	0.0450	0.1920
_cons	0.2118	1.4068	0.15	0.880	-2.5456	2.9692
Number of observations		**108**		**R^2**		**0.4662**

Source: own calculations

As can be seen, exports are positively dependent on partner country GDP and Kosovo GDP per capita, while the coefficient is negative for the per capita GDP of the importing countries. The purchasing power parity of partner countries in trade has a positive impact. The coefficient of dependence on exports from countries (*lndis*) is negative. The table also shows that the factor "ex-Yugoslavia" (*FY*) has a negative impact, while that of the European Union (*EU*) is positive.

II.4.2 Imports model (RKS)

As far as imports are concerned, the analysis is provided in Appendices 22, 23 and 24. The OLS model, based on a Fixed-effects (within) regression (see Appendix 23), does not represent statistically significant variables on a practical level with the exception of a negative dependence of Kosovar imports on production quotas in exporting countries (*lnmangdp*). A clearer analysis of Kosovo's imports can be seen in the following table based on the PPML model (Table II.4.2.1).

22 Table II.4.2.1 Kosovo, imports model (2005–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdpcap_p	0.0430	0.0130	3.31	0.001	0.0176	0.0684
lnexpgdp	-0.0418	0.0107	-3.92	0.000	-0.0627	-0.0209
lnppp_c	0.2573	0.1000	2.57	0.010	0.0614	0.4533
lnppp_p	-0.0583	0.0063	-9.32	0.000	-0.0705	-0.0460
lnmangdp	-0.0492	0.0124	-3.95	0.000	-0.0736	-0.0248
lndis	0.0787	0.0123	6.42	0.000	0.0547	0.1028
FY	0.0872	0.0138	6.30	0.000	0.0601	0.1144
BORDER	0.3563	0.0280	12.72	0.000	0.3014	0.4111
_cons	2.2250	0.5671	3.92	0.000	1.1135	3.3366
Number of observations		**116**		**R^2**		**0.8493**

Source: own calculations

A negative impact of two variables is distinguished, including share of exports to GDP and manufacturing production quota to GDP of partner countries. Both of these variables are, in fact, a feature of developed countries. Another “anomaly” in the regression results is the impact of distance. The positive coefficient here shows that imports are higher from more distant countries. This “anomaly” in the case of Kosovo, may well be acceptable given that we are dealing with a newly-created state which tries to extend its trade relations with new countries. The model also shows that the impact on Kosovo's imports by countries of the former Yugoslavia and of the border countries with it is considerable.

II.5 Former Yugoslav Republic of Macedonia

II.5.1 Exports model (MKD)

The regression model analysis for Macedonia is represented in Appendices 25 (OLS) and 26 (PPML). We emphasize that in this case we did not need to use the missing-data imputation method because there was no missing data with the variables under investigation. Tables II.5.1.1 and II.5.1.2, present the statistically significant variables used in the OLS and PPML estimators.

23 Table II.5.1.1 Macedonia, exports model (1995–2015), Fixed-effects (within) regression

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdp_c	-2.6459	0.6476	-4.09	0.000	-3.9234	-1.3683
lngdp_p	2.5859	0.5953	4.34	0.000	1.4116	3.7603
lngdpcap_c	2.6064	0.8009	3.25	0.001	1.0265	4.1864
lnppp_p	-0.9563	0.1352	-7.07	0.000	-1.2229	-0.6896
lnmangdp	0.6753	0.2474	2.73	0.007	0.1872	1.1633
CEFTA	-0.5635	0.2855	-1.97	0.050	-1.1267	-0.0003
_cons	-29.6696	10.9756	-2.70	0.008	-51.3221	-8.0170
Number of observations		**206**		**R^2**		**0.7419**

Source: own calculations

24 Table II.5.1.2 Macedonia, exports model (1995–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_c	-0.1093	0.0359	-3.04	0.002	-0.1798	-0.0389
lngdp_p	0.0970	0.0082	11.77	0.000	0.0808	0.1131
lngdpcap_c	0.1681	0.0438	3.84	0.000	0.0822	0.2539
lnimpgdp	0.1303	0.0147	8.89	0.000	0.1016	0.1591
lnppp_c	0.0656	0.1013	0.65	0.518	-0.1330	0.2641
lnppp_p	-0.0386	0.0090	-4.28	0.000	-0.0563	-0.0209
lnmangdp	0.0391	0.0139	2.81	0.005	0.0118	0.0664
lndis	0.2686	0.0238	11.29	0.000	0.2220	0.3153
FY	0.1457	0.0157	9.29	0.000	0.1150	0.1764
LANG	-0.0001	0.0000	-8.52	0.000	-0.0001	-0.0001
EU	-0.3212	0.0970	-3.31	0.001	-0.5114	-0.1311
CEFTA	-0.4049	0.1002	-4.04	0.000	-0.6014	-0.2085
_cons	1.0626	0.6184	1.72	0.0860	-0.1494	2.2747
Number of observations		**206**		**R^2**		**0.8319**

Source: own calculations

Models show that Macedonian exports negatively impact the country's GDP growth (*lngdp_c*), while positively impacting GDP per capita of partner countries. There is a positive dependence between exports and GDP per capita. In both models it is seen that exports depend positively on the increase in the weight of manufacturing to the total production of partner countries.

In relation to dummy variables, there is a positive relationship between exports to the countries of the former Yugoslavia indicating that trade relations with exports to the former Yugoslav Republics continue to be maintained, while other variables have a negative impact.

II.5.2 Imports model (MKD)

Assessment of the Import Model is given in Appendices 27, 28 and 29. The results of both methods (see tables II.5.2.1 and II.5.2.2) show that imports are positively dependent on the GDP growth of partner countries (*lngpd_p*) as well as increased exports to total production of these countries (*lnexpgdp*). On the other hand, the dependence is negative on the weight of manufacturing output relative to the respective GDP (*lnmangdp*). As far as dummy variables are concerned, it appears that Macedonia imports mainly from border countries, while the dependence is negative with the European Union and CEFTA countries.

25 Table II.5.2.1 Macedonia, imports model (1995–2015), Fixed-effects (within) regression

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdp_p	1.4877	0.3782	3.93	0.000	0.7410	2.2345
lnexpgdp	2.1215	0.3674	5.78	0.000	1.3963	2.8468
lnppp_p	-0.2096	0.0866	-2.42	0.017	-0.3805	-0.0387
lnmangdp	-1.4061	0.5569	-2.52	0.013	-2.5056	-0.3065
_cons	-14.8194	7.5630	-1.96	0.052	-29.7508	0.1119
Number of observations		**187**		**R^2**		**0.7490**

Source: own calculations

26 Table II.5.2.2 Macedonia, imports model (1995–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0780	0.0061	12.86	0.000	0.0661	0.0899
lngdpcap_p	-0.0518	0.0111	-4.67	0.000	-0.0735	-0.0300
lnexpgdp	0.0949	0.0180	5.28	0.000	0.0597	0.1300
lnppp_p	0.0150	0.0042	3.59	0.000	0.0068	0.0232
lnmangdp	-0.0392	0.0192	-2.04	0.042	-0.0768	-0.0015
lndis	-0.1006	0.0095	-10.54	0.000	-0.1193	-0.0819
BORDER	0.0752	0.0111	6.78	0.000	0.0535	0.0970
EU	-0.0370	0.0074	-4.98	0.000	-0.0516	-0.0224
CEFTA	-0.0172	0.0055	-3.13	0.002	-0.0280	-0.0064
_cons	1.7090	0.3938	4.34	0.000	0.9371	2.4808
Number of observations		187		R^2		0.7961

Source: own calculations

II.6 Montenegro

II.6.1 Exports model (MNE)

The assessment of the export model for Montenegro is presented in Appendices 30, 31 and 32. According to the OLS (Fixed-effects) model, statistically significant variables are reduced to only three: GDP per capita of exporting countries (*lngdpcap_p*), production weight of manufacturing to their GDP (*lnmangdp*, p = 0.059), as well as the dichotomous variable *CEFTA*. Meanwhile, statistically significant variables according to the PPML model are given in Table II.6.1.1.

27 Table II.6.1.1 Montenegro, exports model (2001–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdpcap_p	0.3949	0.0350	11.29	0.000	0.3263	0.4635
lnimpgdp	-0.2235	0.0451	-4.96	0.000	-0.3119	-0.1351
lnmangdp	0.1152	0.0574	2.01	0.045	0.0026	0.2278
lndis	0.0646	0.0113	5.70	0.000	0.0424	0.0868
FY	0.0784	0.0261	3.01	0.003	0.0273	0.1294
BORDER	0.7470	0.0798	9.37	0.000	0.5907	0.9034
EU	-0.0992	0.0280	-3.54	0.000	-0.1542	-0.0443
CEFTA	-0.1584	0.0260	-6.09	0.000	-0.2095	-0.1074
_cons	-1.8066	1.2452	-1.45	0.147	-4.2470	0.6339
Number of observations		145		R^2		0.7186

Source: own calculations

The results show that Montenegro's exports are proportional to the GDP per capita of the partner countries (*lngdpcap_p*) as well as the weight of manufacturing output to the total output of these countries (*lnmangdp*). This can be commented on by the fact that the exports of this country are attracted most by the countries in which manufacturing production is relatively more significant in relation to the total GDP. On the other hand, exports are negatively dependent on an increase in the share of imports to GDP in partner countries (*lnimpgdp*). In other words, they should be directed mainly to countries with lower imports. The anomaly represents the variable that captures the distance effect (*lndis*), which indicates that the exports of this country are mainly destined for the most remote countries. From this point of view, the European Union (*EU*) and *CEFTA* countries' dummy variables go hand in hand. Montenegro exports less to these countries.

II.6.2 Imports model (MNE)

The regression coefficients for the Montenegrin import model are presented in Appendices 33, 34 and 35. Even in this case, removing from consideration the not statistically significant variables, we have presented the results in Tables II.6.2.1 and II.6.2.2.

The analysis shows that Montenegrin imports are positively dependent on the size of the partner economies; they are also subordinated to GDP per capita, but negatively with GDP per capita of partner countries. There is a negative dependency on the volume of imports with countries that have the highest share of manufacturing output in overall production. Unlike exports, in the case of imports it is seen that there is a normal impact of the variable that captures the effect of distance between countries. The data shows that Montenegro imports the most from the countries of the former Yugoslavia (FY), but not with bordering countries where the coefficient is negative (BORDER) or European Union (EU) countries.

28 Table II.6.2.1 Montenegro, imports model (2001–2015), Fixed-effects (within) regression

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdp_p	1.8149	0.3310	5.48	0.000	1.1606	2.4692
lngdpcap_c	1.9185	0.6033	3.18	0.002	0.7258	3.1112
lnmangdp	-1.0100	0.3953	-2.56	0.012	-1.7915	-0.2286
EU	-0.6583	0.2369	-2.78	0.006	-1.1265	-0.1900
_cons	-18.6945	5.7531	-3.25	0.001	-30.0680	-7.3210
Number of observations		**162**		**R^2**		**0.7569**

Source: own calculations

29 Table II.6.2.2 Montenegro, imports model (2001–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0740	0.0061	12.09	0.000	0.0620	0.0860
lngdpcap_c	0.1203	0.0412	2.92	0.004	0.0395	0.2010
lngdpcap_p	-0.0465	0.0124	-3.74	0.000	-0.0709	-0.0222
lnppp_p	0.0196	0.0045	4.32	0.000	0.0107	0.0285
lnmangdp	-0.1016	0.0180	-5.63	0.000	-0.1369	-0.0662
lndis	-0.0729	0.0068	-10.72	0.000	-0.0862	-0.0596
FY	0.2504	0.0246	10.18	0.000	0.2022	0.2987
BORDER	-0.1028	0.0201	-5.11	0.000	-0.1422	-0.0633
_cons	1.9656	0.4143	4.74	0.000	1.1536	2.7775
Number of observations		162		**R^2**		0.7897

Source: own calculations

II.7 Serbia

II.7.1 Exports model (SRB)

The results of the regression analysis for Serbia are presented in Appendices 36, 37 and 38. An overview of statistically significant variables is given in Tables II.7.1.1 and II.7.1.2 respectively for OLS and PLMM models.

30 Table II.7.1.1 Serbia, exports model (1999–2015), Fixed-effects (within) regression

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.Interval]	
lngdpcap_c	0.9292	0.3389	2.74	0.007	0.2588	1.5995
lngdpcap_p	0.8655	0.3526	2.45	0.015	0.1681	1.5629
lnimpgdp	1.3484	0.2460	5.48	0.000	0.8619	1.8349
CEFTA	0.5186	0.1302	3.98	0.000	0.2611	0.7761
_cons	-1.2870	3.8964	-0.33	0.742	-8.9935	6.4194
Number of observations		154		R^2		0.9040

Source: own calculations

31 Table II.7.1.2 Serbia, exports model (1999–2015), PPML Method

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0611	0.0027	22.99	0.000	0.0559	0.0663
lngdpcap_p	-0.0287	0.0069	-4.17	0.000	-0.0422	-0.0152
lnimpgdp	0.0642	0.0112	5.74	0.000	0.0423	0.0861
lnppp_c	0.0277	0.0093	2.97	0.003	0.0094	0.0460
lnppp_p	-0.0065	0.0014	-4.47	0.000	-0.0093	-0.0036
lndis	-0.1156	0.0055	-20.99	0.000	-0.1264	-0.1048
FY	0.0722	0.0099	7.29	0.000	0.0528	0.0916
BORDER	-0.0189	0.0060	-3.12	0.002	-0.0307	-0.0070
EU	-0.0812	0.0103	-7.92	0.000	-0.1014	-0.0611
CEFTA	0.0199	0.0087	2.29	0.022	0.0029	0.0369
_cons	1.8725	0.1540	12.16	0.000	1.5706	2.1744
Number of observations		154		R^2		0.9370

Source: own calculations

The best OLS model is the one with Fixed Effects (FE). However, the only statistically significant variables in this model are those of GDP per capita (in both countries), the share of imports to GDP in the partner countries of Serbia (*lnimgdp*), and the variable that captures trade relations with CEFTA countries. The most

dominant variable considered is *lnimgpd*, which means that Serbian exports are attracted most by the countries that have the largest share of imports to their output.

As far as the PPML model is concerned, the results show that exports depend positively on the partner countries' GDP (*lngdp_p*), the increase in the share of imports of these countries (*lnimdgp*) and the change of the purchasing power parity of Serbia (*lnppp_c*). While negative dependence is on Serbia's GDP (*lndgp_c*) as well as GDP per capita of partner countries (*lngdppp_p*). As far as the exchange rate (purchasing power parity) is concerned, this indicator positively affects exports, while the increase in partner country purchasing power parity has a negative impact. This correlation in both cases can be explained by the increased competitiveness of the respective country. Dummy variables represent a positive dependence on exports to the former Yugoslav Republics (*FY*) and CEFTA countries, while there is a negative dependence on the border countries (*BORDER*) and those of the European Union (*EU*).

II.7.2 Imports model (SRB)

Regression coefficients for Serbia's imports are presented in Appendices 39, 40 and 41. Even in this case, without taking into account the statistically not significant variables, we have presented the results in Tables II.7.2.1 and II. 7.2.2.

32 Table II.7.2.1 Serbia, imports model (1999–2015), Fixed-effects (within) regression

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	0.2340	0.0890	2.63	0.009	0.0584	0.4097
lnppp_c	0.6092	0.0869	7.01	0.000	0.4375	0.7809
lnmangdp	0.9278	0.3641	2.55	0.012	0.2087	1.6469
EU	0.4839	0.1079	4.49	0.000	0.2708	0.6969
_cons	-0.8072	2.4583	-0.33	0.743	-5.6621	4.0476
Number of observations		**180**		**R^2**		**0.8798**

Source: own calculations

33 Table II.7.2.2 Serbia, imports model (1999–2015), PPML Method

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
lngdp_p	0.0280	0.0038	7.42	0.000	0.0206	0.0354
lngdpcap_p	0.0165	0.0078	2.11	0.035	0.0012	0.0317
lnppp_c	0.0328	0.0111	2.96	0.003	0.0110	0.0545
lnppp_p	0.0294	0.0032	9.08	0.000	0.0230	0.0357
lnmangdp	0.0408	0.0129	3.17	0.002	0.0156	0.0661
lndis	-0.0253	0.0058	-4.36	0.000	-0.0367	-0.0139
FY	0.1661	0.0234	7.09	0.000	0.1202	0.2120
BORDER	-0.1209	0.0185	-6.54	0.000	-0.1571	-0.0847
_cons	1.8473	0.1896	9.74	0.000	1.4757	2.2190
Number of observations		**180**		**R^2**		**0.7953**

Source: own calculations

Here, too, the best model according to the Hausman Test is the one with fixed-effects, which as statistically significant variables presents only the following: the purchasing power parity of both countries (Serbia and its partner countries in trade), the weight of manufacturing to GDP in the countries importing from Serbia. as well as the dichotomous variable of the European Union (*EU*)

The PPML model shows that in addition to the factors above, imports also depend on GDP per capita of the partner countries. They also relate positively to trade with former Yugoslavia (*FY*) countries but negatively to border countries (*BORDER*) of Serbia.

II.8. A summary of econometric analysis results

In this section we briefly summarize the main results of the econometric analysis, as seen from the perspective of the gravity model, considering only the PPML model.

Western Balkan countries are economically small (or "of a small size" if we use the physical term from which, in fact, the concept of the gravity model is borrowed). Consequently, their strength of "attraction" is relatively small or negligible compared with that of their trading partners. This is also noted in the econometric assessment results, where the *lngdp_c* variable is almost always not statistically important (except for MKD in the pattern of exports and BIH in the pattern of imports where the variable results as statistically significant, but in both cases with a negative sign).

By contrast, the economies of the partner countries exercise a great attraction in trade. In fact, with some exceptions - BIH and MNE in the case of exports and ALB and RKS in the case of imports - in all other cases, the GDP variable *lngdp_p* gets a positive sign and is statistically significant.

The economic development of Western Balkan countries (measured by GDP per capita *lngdpcap_c*) is accompanied by an increase in trade volume. This is noticed especially for ALB, HRV and MKD (countries that have had a positive effect with *lngdpcap_c*, both in exports as well as in imports); partly for BIH and MNE (positive effect only on imports), and RKS (positive effect only on exports); no statistically significant effect of the SRB per capita GDP over its trade volume.

In the same way, trade relations with developed countries (measured by GDP per capita *lngdpcap_p*), have boosted exports of ALB, BIH and MNE, while in the case of RKS and SRB, the effect was negative. More concretely, a growth of 1% in the level of GDP per capita of trade partner countries increased exports to them:from ALB by 0.14%, from BIH by 0.08%, and from MNE by 0.4%.

ALB, RKS, and SRB have experienced an increase in imports from economically most developed countries, while for BIH, MKD, and MNE the effect has been negative. The elasticity of import volumes from countries of WB to GDP per capita of partner countries is within the interval of [-0.05; +0.05]

34 Table II.8.1 Western Balkan countries, exports model. Regression coefficients with PPML method and statistically significant variables.

lnexp	ALB	BIH	HRV	RKS	MKD	MNE	SRB
lngdp_c	0.0052	-0.0230	-0.0166	0.0890	-0.1093***	0.1081	-0.0053
lngdp_p	0.0257***	-0.0047	0.0561***	0.0231***	0.0970***	-0.0101	0.0611***
lngdpcap_c	0.1324***	0.0708	0.0529**	0.2092***	0.1681***	-0.0885	0.0332
lngdpcap_p	0.1405***	0.0844***	0.0010	-0.1333***	-0.0224	0.3949***	-0.0287***
lnimpgdp_p	-0.1478***	-0.1311***	-0.0027	-0.0375	0.1303***	-0.2235***	0.0642***
lnppp_c	-0.0526	0.0756	-0.0024	—	0.0656	0.4689	0.0277***
lnppp_p	-0.0826***	0.0127***	-0.0021	0.0101**	-0.0386	-0.0052	-0.0065***
lnmangdp	-0.0701**	0.0124	0.0430	0.0591	0.0391***	0.1152**	0.0218
lndis	-0.1014***	0.2293**	-0.0993***	-0.0979***	0.2686***	0.0646***	-0.1156***
FY	—	0.1078***	0.0733***	-0.0204*	0.1457***	0.0783***	0.0722***
BORDER	-0.0139	0.0750***	—	—	0.0358	0.7470***	-0.0189***
LANG	-0.2562***	—	—	—	-0.00001***	-0.0628*	—
EU	0.0732**	0.0501***	-0.0487***	0.1185***	-0.3212***	-0.0992***	-0.0812***
WB	0.4823***	—	0.0900***	-0.0723	—	-0.0163	—
CEFTA	-0.0463**	-0.0502***	-0.0402***	-0.0287	-0.4049***	-0.1584***	0.0199**

Source: own calculations. p=0.01***, p=0.05**, p=0.1*

35 Table II.8.1 Western Balkan countries, imports model. Regression coefficients with PPML method and statistically significant variables.

lnimp	ALB	BIH	HRV	RKS	MKD	MNE	SRB
lngdp_c	-0.0033	-0.0610***	-0.0202	-0.0113	-0.0229	-0.0423	0.0093
lngdp_p	-0.0067	0.0521***	0.0475***	0.0061	0.0780***	0.0740***	0.0280***
lngdpcap_c	0.1150***	0.0975***	0.0595***	0.0418	0.0518*	0.1203***	-0.0114
lngdpcap_p	0.0506**	-0.0123***	-0.0087	0.0430***	-0.0518***	-0.0465***	0.0165**
lnexpgdp	-0.0014	0.0310**	-0.0125	-0.0418***	0.0949***	0.0039	0.0105
lnppp_c	0.0062	0.1455**	0.0897***	0.2573***	0.0531	0.0923	0.0328**
lnppp_p	0.0059	0.0121***	0.0067***	-0.0583***	0.0150***	0.0196***	0.0294***
lnmangdp	0.1106***	-0.0203	0.0105	-0.0492***	-0.0391**	-0.1016***	0.0408**
lndis	-0.00001**	-0.0698***	-0.0531***	0.0787***	-0.1006***	-0.0729***	-0.0253***
FY	—	-0.0977***	0.0921***	0.0872***	—	0.2304***	0.1661***
BORDER	0.1256***	-0.0258***	—	0.3563***	0.0752***	-0.1027***	-0.1209***
LANG	—	—	—	-0.0006	—	—	—
EU	-0.0415**	0.0407***	-0.0104*	—	-0.0370***	-0.0009	-0.0037
WB	-0.2299***	—	-0.0196	—	-0.0327*	—	—
CEFTA	0.0452**	0.0321***	-0.0239	-0.0017	-0.0171***	0.0094	—

Source: own calculations. p=0.01***, p=0.05**, p=0.1*

Less clear is the role that distance plays in trade in Western Balkan countries. In fact, the variable that captures the effect of distance, *lndis*, results as statistically significant and almost always with the expected negative sign – the further apart two

locations are, the less trade between them. The exception is BIH, MKD and MNE in the pattern of exports and RKS in the import model. In these cases the variable that captures the effect of the distance is statistically significant, but with a positive sign.

Of particular interest are the results of dichotomous variables. Being a country of the former Yugoslavia plays an important role in trade between the Western Balkan countries. In the export model, the *FY* variable is always positive and statistically significant (except for ALB where the model excludes it because of co-linearity, and RKS where it gets a negative sign, but remains statistically significant). The same result is also observed in the import model. Again, variable *FY* gets a positive sign in the cases of HRV, RKS, MNE and SRB (and remains statistically significant), and gets a negative sign in the case of BIH.

The border effect in trade between countries is not clear from the results of the analysis. In fact, the *BORDER* variable is always statistically important in the case of the pattern of imports and only in three cases in the pattern of exports, but the direction of the effect varies from country to country. The effect is negative in the pattern of exports and in imports only in the case of SRB. In all other cases when *BORDER* is statistically significant, its direction alternates between positive and negative when moving from one model to another.

The European Union (*EU*) countries have an attractive (positive) effect on the exports of some countries (ALB, BIH and RKS) and a negative effect for other countries. By contrast, in the case of the import model, negative signs prevail (except for BIH). However, it is worth noting that coefficients are very small and in two cases (SRB and MNE) are not statistically different from zero.

Western Balkan countries do not trade enough between one-another. This was apparent in the descriptive analysis of the first part and was confirmed by the econometric analysis. Trade with WB countries has positive effects on exports of ALB and HRV, although the impact on ALB exports is five times higher than that of HRV. The dummy *WB* has a negative effect on imports, although it is worth noting that the *WB* variable in some cases is not statistically significant or is excluded from the model because it is co-linear with other variables.

The results with regard to the CEFTA agreement are interesting. In fact, the variable is always statistically important in the case of the export model (with the exception of RKS that signed the agreement later than other countries) and its sign is

always negative. The important exception here is SRB (positive sign) which seems to be the only one that has benefited from the CEFTA agreement (however, the effect is relatively small, at about 0.02%). Regarding the import pattern, ALB and BIH see an increase in their imports from member states to this agreement.

II.9. Western Balkans as a region

For a long time, mainly in the economic sphere, the idea has been taken up of handling the countries of the Western Balkans as a whole - as one integrated economic zone. This idea emerges as the initial aim of economic integration of these countries is closely linked with political aspects such as with the creation of a common spirit of cooperation and peace in the region. In particular, this idea seems meaningful if we consider the ethnic conflicts between the countries of the region in recent decades. Several political initiatives such as the annual meetings of the Western Balkans Conference, also known as the Berlin Process[18] have served to this end.

In this respect, this section of work relates to building the Gravity model of trade relations in the region taken as a whole. What would be the gravity factors that determine the trade relationship if we were to see the region as one? Which countries tend to "attract" these relationships more? What are the economic relationships with the European Union with which the region intends to integrate?

Just to discuss the answers to these questions in this section, efforts have been taken to build gravity models that view the region as a whole. In this sense, models built for the region as a whole are more "virtual" than real. The conception of the Western Balkans region as a single economic zone undoubtedly presupposes a relatively long period of time, cooperation, significant political-economic decision-making on trade barriers, increased levels of cooperation between countries, their specialization in production, determination perhaps of production quotas, and so on. These changes would undoubtedly affect the trade relations of the region with other

[18] The Berlin process is a diplomatic initiative, initially incouraged from the German Government of Angela Merkel, which invited all the heads of states and governments of Western Balkan countries (including Croatia and Slovenia), in Berlin, in August 2014. The main objective of the Conference was to consolidate and enhance the integration process of WB countries into EU. The Berlin Conference was followed by other annual meetings in Vienna (2015), in Paris (2016), and in Trieste (2017).

countries, which would not be the same as they have been in the past. In this sense, built models, based on past periods, do not represent the reality of the region's behavior if it is integrated as a single economic zone. However, while “virtual”, such models can capture the main trends of this behavior.

For the construction of the gravity model for the Western Balkans region, the same database was used as was dealt with in the previous sections. From the perspective of a single area, the trade relations between the countries of the region were not taken into account in the analysis. In other words, export-imports of WB countries between one-another are eliminated. Also, in building dummy dichotomous variables, only three aspects have been taken into account: the region's boundaries with other countries, the approximate language, and relations with European Union countries. In this case, it is no longer meaningful to include in an analysis variables such as being a part of the former Yugoslavia, trade with Western Balkan countries and membership in the CEFTA agreement.

Methodologically, the analysis is done only with the PPML evaluation model. The method of imputation and estimation with the OLS model is not used because the built-in matrix presents many difficulties (such as lack of data, an unbalanced panel, etc.).

II.9.1 The Gravity Model of Exports

The gravity model for exports to the region as a whole would be presented by function (3):

$$\ln(exp_i) = \ln(gdp_i) + \ln(gdp_j) + \ln\left(gdp_{pc_i}\right) + \ln\left(gdp_{pc_j}\right) + \ln(ppp_i) + \ln(ppp_j) + \ln\left(\frac{man}{gdp_j}\right) + \ln\left(\frac{imp}{gdp_j}\right) + \ln(dis_{i,j}) + BORDER_{i,j} + LANG_{i,j} + EU_j + \varepsilon$$

The evaluation results according to the PPML model are shown in Appendix 42. The regression analysis shows that all the variables are statistically significant at p <0.05, except for the EU dummy variable indicating whether the partner country is or is not a member of the European Union which results as statistically significant at p <10% (p = 0.094). Regression coefficients show that the region's exports overall

depend positively on its GDP (*lngdp_c*), and are largely oriented towards large economies (*lngdp_p*). The distance has a negative impact on trade. In addition, exports are negatively dependent on GDP per capita in the region (*lngdpcap_c*) and positive GDP per capita of the partner countries (*lngdpcap_p*). The negative coefficient of the *lnimpgdp* (-0.0474) variable shows that exports are attracted by countries with a lower relative weight of their imports to GDP, while the positive coefficient *lnmangdp* (0.03) indicates that exports of the region are attracted by many of the most industrialized countries (where the production scale is bigger).

As far as dummy variables are concerned, priority is given to exports to countries bordering the region, countries with a similar language (countries with a similar language to the WB countries considered are only Slovenia and Bulgaria), as well as European Union countries.

II.9.2 The Gravity Model of Imports

The gravity model for imports of countries in the region would be presented by function (4):

$$\ln(imp_i) = \ln(gdp_i) + \ln(gdp_j) + \ln\left(gdp_{pc_i}\right) + \ln\left(gdp_{pc_j}\right) + \ln(ppp_i) + \ln(ppp_j) + \ln\left(\frac{man}{gdp_j}\right) + \ln\left(\frac{exp}{gdp_j}\right) + \ln(dis_{i,j}) + BORDER_{i,j} + LANG_{i,j} + EU_j + \varepsilon$$

The PPML assessment results are presented in Appendix 43.

Imports are positively dependent on GDP in the region as a whole (*lngdp_c*), and come from large economies (*lngdp_p*). They are subordinated to GDP per capita in the region (*lngdpcap_c*). The negative coefficient of *lngdpcap_p* variables shows that GDP per capita growth in partner countries negatively affects imports of the Western Balkans. Dummy variables, such as the existence of common borders (*BORDER*) with the region and the closeness of language (*LANG*), have a positive impact.

Statistically not significant variables in this case are those of the weight of exports (*lnexpgdp*) and the weight of manufacturing output to total production in partner countries (*lnmangdp*), and the dummy variable that captures the impact of being a member state of the European Union (*EU*).

III. Conclusions

Regional cooperation between Western Balkan countries is a fundamental objective of policy in all the countries concerned as it is considered a very important step on the path to European integration. This is because European integration would first seek to overcome old nationalist conflicts in the region and create a new spirit of cooperation between countries. On the other hand, the Balkan countries are relatively small and share, to a greater or lesser degree, the same characteristics and problems in their economic and social development. From this point of view, the integration of these countries into the European Union can be considered to be the integration of a region as a whole. Viewed pragmatically, although the European Community has emphasized that the "gateway" to Europe for the Balkan countries is open, populist responses to limiting EU accession seem to have delayed new accession plans, instead considering cooperation between countries as a "school" or "antechamber" to European integration.

In this context, it is important to look at the Berlin Process, initiated in Berlin in 2014 and followed by meetings in Vienna in 2015, Paris in 2016 and Trieste in 2017. At the recent summit of this initiative (Trieste, July 2017), a fund of more than 500 million Euro was earmarked precisely for the development and facilitation of regional integration of the Western Balkan countries. At the same time, confirmation of the need for inter-regional cooperation was provided by the proposal of former Serbian Prime Minister at the time, today President of Serbia A.Vucic, in February 2017, on establishing a customs union with the Western Balkan countries. This proposal, according to him, with the understanding of Austrian Chancellor Ch. Kern, was also discussed with Prime Minister of Albania E. Rama and that of Bosnia and Herzegovina D. Zvizdic.

The establishment of a common trade area, especially for the Western Balkan countries with small scale economies is surely a positive factor. But what is in fact the reality of current relations in the area of economic co-operation between those countries? How much are they inclined to economic co-operation with each other, and how powerful are the global economic factors in the trade relationships with these countries? The conclusions of this paper have as their objective to answer exactly these questions.

For individual countries as well as for the region as a whole, the data shows a persistent trend towards integration with the world economy. In the last twenty years (1995-2014), the Openness Index for the region (volume of exports and imports in relation to GDP), taking into account only trade relations with other countries, has increased from 24.3% to 63.4% (Table 36).

36 Table III.1 Western Balkan countries, volume of international trade, 2014 (million Euro)

Country	Exports	Imports	Trade	Trade Balance	Cover's percentage (%)	Openness Index (merchandise trade to GDP - %)
Albania	1,827	3,945	5,773	-2,118	46.3%	58.0%
Bosnia & Herzegovina	4,440	8,283	12,723	-3,843	53.6%	91.3%
Croatia	10,367	17,126	27,493	-6,759	60.5%	63.9%
Kosovo	325	2,538	2,863	-2,214	12.8%	51.4%
Macedonia	3,723	5,485	9,208	-1,762	67.9%	107.9%
Montenegro	333	1,784	2,117	-1,451	18.7%	61.8%
Serbia	11,149	15,487	26,635	-4,338	72.0%	80.6%
Western Balkans	25,532	49,010	74,542	-23,478	52.1%	63.4%

Source: own compilation on wiiw Annual Database 2015 data; Western Balkans data exclude intra-regional trade (see Table 8).

All the Western Balkan countries remain net importers; however, the percentage of coverage of imports with exports, with the exception of Montenegro, tends to be on the rise. This coverage varies from about 12% in Kosovo to over 70% in Serbia. For this indicator, for the region as a whole excluding intraregional trade (that between the countries of the region), a decrease is noticed in 1999-2009 (39-37%), with an improvement after 2009 that reaches to about 52% in 2014.

In regional trade, Serbia and then Croatia occupy the first and second place in absolute numbers. While relative to the total of exports and imports, Montenegro is the country that exports a significant share of exports and imports to the countries of the region (67% and 56% respectively, 2014). Behind Montenegro is Kosovo (38% and 37%, 2014) and Bosnia and Herzegovina (24% and 23%, in 2014). Regarding exports to the region, Albania occupies last place at about 11% (2014), followed by Macedonia at about 12% (2014). In imports, the last place is occupied by Croatia, which in 2014 imported from the region only 5.5% of the total.

It is characteristic for the region as a whole, without considering intraregional trade, that the volume of exports and imports has increased more with countries outside the region than with those within it. Thus in 2014, compared to 2001, total exports to "third countries" increased by about 16 billion euros (from 9.5 to 25.5 billion), while among the countries in the region only by about 4.5 billion euros. As a percentage of total exports, trade with the countries of the region in 2014 was about 17-18%, maintaining the same level as 2001. When viewing imports, this weight has increased from about 9% in 2001 to around 12% in 2014. By volume, imports with "third countries" in 2014 compared to 2001 increased by about 22,000m euros, while within the region this volume increased by about 4,000m euros.

As far as the main partners are concerned for the region as a whole, the European Union is the main partner, with about 83% of the region's exports and around 70% of imports (2014). The most important trade partners are Italy and Germany. Their individual weight in exports accounts for around 18-20% of the total, while in imports around 12-14% (2014).

In terms of the structure of exported and imported goods, the Balkan countries as a whole mainly export and import groups 7 and 6 according to SITC classification, ie "Machinery and transport equipment" (22% exports and 18% imports) and "Manufacturing and commodities mainly classified as material" products (ie 20% exports and 16% imports). Behind them, food products (group 0) account for about 17% of exports and less than 10% of imports.

The defining feature of this paper was the analysis of the import-export relations of the Balkan countries based on the gravity model. In addition to building this model for individual countries, the paper analyzes the "attractive" forces of exports and imports for the region as a whole, considering relations between countries as the region's internal relations.

As far as exports are concerned, the analysis shows that border countries with the region and the EU member states have a positive impact on exports. However, for the latter, dependence is weaker and statistically acceptable with a significance level of <0.1 (10%). Exports of the region are also positively attracted by countries where manufacturing production has the highest share in GDP. This can be explained by the fact that a significant part of the exports of the countries of the region are part of a single manufacturing production chain of partner countries such as the wood

industry in Albania, or the production of vehicles in Serbia, etc. While a negative impact on exports is the indicator which takes into account the share of partner countries' imports to their output. This means that countries with significant import loads do not mainly import from countries in the Western Balkan region, but from other countries, something which may indicate that the region's exports are not sufficiently competitive in the world economy. As far as other factors are concerned, export dependencies can be considered normal. Thus the distance between countries has a negative impact, as well as the increase in per capita domestic demand. Meanwhile, the language and size of the country's economy has a positive impact.

As far as imports are concerned, the model shows that they are still positively dependent on the economies of the border countries with the region (Slovenia, Hungary, Bulgaria, Romania and Greece). We can say something similar about the dependence of imports from countries where production of manufacturing is considerable (with a significance level <0.1 or 10%). This may indicate the fact that some of the Balkan countries' imports are processed products (machinery, equipment, etc.). We can also say that imports do not come mainly from the most developed countries (GDP per capita), which may also reflect on their quality. Dependence on other factors can be considered normal, so distance has a negative impact, while the economic development of countries has a positive impact on imports. The model does not say anything about the dependence on imports from European Union countries or about the countries with significant exports (relative to their production) due to the fact that in both cases the results are statistically not significant.

IV. Bibliography

Ben Shepherd: *The Gravity Model of International Trade: A User Guide*, ESCAP, http://www.unescap.org/sites/default/files/full-report-gravity-model-2013.pdf.

Cipollina, M. and Salvatici, L.: *Hands-on gravity estimation with STATA*, AGRODEP Technical Note TN-05 (April 2013).

Peci, F.; Holzner, M.; and Enver Kutllovci, E.: *Determinants of Kosovo Trade: A Gravity Model Approach*; South East European Journal of Economics and Business (The Journal of University of Sarajevo); Volume 5, Issue 2 (Nov 2010).

Kareem, F. O., Martinez-Zarzoso, I. and Brümmer, B.: Fitting the Gravity Model when Zero Trade Flows are Frequent: a Comparison of Estimation Techniques using Africa's Trade Data,

https://ideas.repec.org/p/ags/gagfdp/230588.html.

Pere, E., Thanasi, and G., Shkurti, A.: *Studimi i flukseve tregtare mbi bazën e Modelit të Gravitetit Tregtar. Rasti i Shqipërisë*, Economicus (Research Journal FEUT–Tirana) Nr. 8 / 2012

Rault, C., Sova R., and Sova, A. M.: *Modeling International Trade Flows Between Eastern European Countries and OECD Countries*, IZA DP No. 2851 (June 2007)

Sejdini, A and Kraja, I.: *International Trade of Albania. Gravity model* European Journal of Social Sciences (Education and Research) Sep–Dec. 2014 (Vol. 2. No. 1).

Serlenga, L. and Shin, Y.: Gravity Models of the Intra-EU Trade: Application of the Hausman-Taylor Estimation in Heterogeneous Panels with Common Time-specific Factors,

http://fmwww.bc.edu/repec/esFEAM04/up.8838.1080694540.pdf.

Santos Silva, J.M.C. and Tenreyro, S: *On the existence of the maximum likelihood estimates in Poisson regression*, Economics Letters 107 (2010) 310–312

Xhepa, S. and Agolli, M.: *Albanian's Foreign Trade through a Gravity Approach*, http://pdc.ceu.hu/archive/00002092/01/dec_2003_S_Xhepa_and_MAgolli.pdf.

Vernby, K. and Lindgren, K.: Estimating Dynamic Panel Models When There are Gaps in the Dependent Variable,

https://karevernby.files.wordpress.com/2011/06/dynamicpanels.pdf.

Yotov, V., Piermartini, R., and Larch, M: *An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model*, WTO Website: http://vi.unctad.org/tpa.

V. Annexes

Annex 1

```
Albania Gravity Model Export  Tuesday July 18 10:34:39 2017   Page 1

1 . mi unregister lngdp_p lngdpcap_p lnimpgdp
  (5 m=0 obs. now marked as complete)
  (300 m>0 marginal obs. dropped)

2 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_p lnppp_c lr

Multiple-imputation estimates                   Imputations      =         60
Linear regression                               Number of obs    =        182
                                                Average RVI      =     0.0000
                                                Largest FMI      =     0.0000
                                                Complete DF      =        167
DF adjustment:   Small sample                   DF:     min      =     165.04
                                                        avg      =     165.04
                                                        max      =     165.04
Model F test:       Equal FMI                   F(  14,  165.0)  =      22.91
Within VCE type:          OLS                   Prob > F         =     0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.0966542	.0982222	0.98	0.327	-.09728	.2905883
lngdp_p	.4497581	.2270239	1.98	0.049	.0015126	.8980037
lngdpcap_c	2.192602	.5560821	3.94	0.000	1.09465	3.290554
lngdpcap_p	2.100134	.6752265	3.11	0.002	.7669381	3.43333
lnimpgdp	-2.26761	.6908438	-3.28	0.001	-3.631641	-.9035783
lnppp_p	-1.343463	.282211	-4.76	0.000	-1.900672	-.7862533
lnppp_c	-.8620658	1.229562	-0.70	0.484	-3.289765	1.565634
lnmangdp	-1.256688	.6101167	-2.06	0.041	-2.461328	-.0520472
lndis	-1.610089	.4775312	-3.37	0.001	-2.552947	-.6672306
fy	0	(omitted)				
bor	-.3245727	.6430707	-0.50	0.614	-1.594279	.9451335
lan	-3.975396	1.265513	-3.14	0.002	-6.47408	-1.476712
be	1.501872	.5407268	2.78	0.006	.4342379	2.569506
bw	7.921734	1.301832	6.09	0.000	5.351341	10.49213
cefta	-.8086209	.599805	-1.35	0.179	-1.992901	.3756595
_cons	-12.908	7.029244	-1.84	0.068	-26.78684	.9708415

Annex 2

```
Albania Gravity Model Export  Tuesday July 18 18:47:48 2017   Page 1

1 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy
  note: fy omitted because of collinearity

Random-effects GLS regression                   Number of obs      =       182
Group variable: code                            Number of groups   =        11

R-sq:  within  = 0.4251                         Obs per group: min =         9
       between = 0.9156                                        avg =      16.5
       overall = 0.6576                                        max =        21

                                                Wald chi2(14)      =    320.77
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0966542	.0982222	0.98	0.325	-.0958578	.2891662
lngdp_p	.4497581	.2270239	1.98	0.048	.0047996	.8947167
lngdpcap_c	2.192602	.5560821	3.94	0.000	1.102701	3.282503
lngdpcap_p	2.100134	.6752265	3.11	0.002	.7767143	3.423553
lnimpgdp	-2.26761	.6908438	-3.28	0.001	-3.621639	-.9135807
lnppp_c	-.8620658	1.229562	-0.70	0.483	-3.271963	1.547832
lnppp_p	-1.343463	.282211	-4.76	0.000	-1.896586	-.7903393
lnmangdp	-1.256688	.6101167	-2.06	0.039	-2.452494	-.0608808
lndis	-1.610089	.4775312	-3.37	0.001	-2.546033	-.6741446
fy	0	(omitted)				
bor	-.3245727	.6430707	-0.50	0.614	-1.584968	.9358228
lan	-3.975396	1.265513	-3.14	0.002	-6.455757	-1.495035
be	1.501872	.5407268	2.78	0.005	.4420668	2.561677
bw	7.921734	1.301832	6.09	0.000	5.37019	10.47328
cefta	-.8086209	.599805	-1.35	0.178	-1.984217	.3669752
_cons	-12.908	7.029244	-1.84	0.066	-26.68506	.8690684
sigma_u	0					
sigma_e	1.3294688					
rho	0	(fraction of variance due to u_i)				

Annex 3

Albania Gravity Model Export Thursday July 20 14:46:43 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 1
Excluded regressors:  fy
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  29.30504
Iteration 2:   deviance =  29.25254
Iteration 3:   deviance =  29.25254
Iteration 4:   deviance =  29.25254

Number of parameters: 15
Number of observations: 182
Pseudo log-likelihood: -436.49643
R-squared: .64313646
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0051796	.0055334	0.94	0.349	-.0056656	.0160248
lngdp_p	.0256967	.0096132	2.67	0.008	.0068552	.0445382
lngdpcap_c	.1323747	.0326504	4.05	0.000	.0683811	.1963683
lngdpcap_p	.140547	.0348768	4.03	0.000	.0721897	.2089043
lnimpgdp	-.1478231	.0452573	-3.27	0.001	-.2365258	-.0591204
lnppp_c	-.0526256	.0654872	-0.80	0.422	-.1809781	.075727
lnppp_p	-.0826085	.0136532	-6.05	0.000	-.1093684	-.0558487
lnmangdp	-.0700578	.0336463	-2.08	0.037	-.1360034	-.0041122
lndis	-.1014434	.0263482	-3.85	0.000	-.1530849	-.0498019
bor	-.0139043	.0271723	-0.51	0.609	-.067161	.0393523
lan	-.2561585	.0560411	-4.57	0.000	-.365997	-.1463201
be	.0731951	.0292001	2.51	0.012	.015964	.1304263
bw	.4823236	.0789513	6.11	0.000	.3275819	.6370653
cefta	-.0462747	.0215912	-2.14	0.032	-.0885927	-.0039568
_cons	.9922747	.3981415	2.49	0.013	.2119317	1.772618

Annex 4

Albania Gravity Model Import Wednesday July 19 19:13:51 2017 Page 1

```
1 . mi unregister lnimp lnmangdp
  (16 m=0 obs. now marked as complete)
  (640 m>0 marginal obs. dropped)

2 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c ln

Multiple-imputation estimates                     Imputations     =         40
Linear regression                                 Number of obs   =        215
                                                  Average RVI     =     0.0000
                                                  Largest FMI     =     0.0000
                                                  Complete DF     =        201
DF adjustment:   Small sample                     DF:     min     =     199.03
                                                          avg     =     199.03
                                                          max     =     199.03
Model F test:       Equal FMI                     F(  13,  199.0) =      19.53
Within VCE type:          OLS                     Prob > F        =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp c	-.059684	.07689	-0.78	0.439	-.2113077	.0919397
lngdp p	-.1063021	.2401342	-0.44	0.658	-.5798358	.3672316
lngdpcap c	2.082385	.3830574	5.44	0.000	1.327013	2.837757
lngdpcap_p	.8699125	.3832554	2.27	0.024	.1141501	1.625675
lnexpgdp	.0151424	.4560293	0.03	0.974	-.8841268	.9144116
lnppp p	.0892612	.1269717	0.70	0.483	-.1611213	.3396436
lnppp_c	.0239723	.8992142	0.03	0.979	-1.749237	1.797182
lnmangdp	1.933151	.5730854	3.37	0.001	.8030524	3.063249
lndis	-.0001644	.0000796	-2.06	0.040	-.0003214	-7.31e-06
fy	0	(omitted)				
bor	2.309821	.517514	4.46	0.000	1.289307	3.330335
lan	0	(omitted)				
be	-.7504802	.4004713	-1.87	0.062	-1.540192	.039231
bw	-4.012036	.7977821	-5.03	0.000	-5.585227	-2.438846
cefta	.6675513	.4267785	1.56	0.119	-.1740366	1.509139
_cons	-9.318917	5.009966	-1.86	0.064	-19.19834	.5605094

Annex 5

Albania Gravity Model Import Wednesday July 19 23:16:00 2017 Page 1

```
1 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy
note: fy omitted because of collinearity
note: lan omitted because of collinearity

Random-effects GLS regression                   Number of obs      =       215
Group variable: code                            Number of groups   =        11

R-sq:  within  = 0.6107                         Obs per group: min =        14
       between = 0.4617                                        avg =      19.5
       overall = 0.5581                                        max =        21

                                                Wald chi2(13)      =    253.84
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

lnimp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.059684	.07689	-0.78	0.438	-.2103857	.0910178
lngdp_p	-.1063021	.2401342	-0.44	0.658	-.5769564	.3643522
lngdpcap_c	2.082385	.3830574	5.44	0.000	1.331606	2.833164
lngdpcap_p	.8699125	.3832554	2.27	0.023	.1187457	1.621079
lnexpgdp	.0151424	.4560293	0.03	0.974	-.8786586	.9089435
lnppp_c	.0239723	.8992142	0.03	0.979	-1.738455	1.7864
lnppp_p	.0892612	.1269717	0.70	0.482	-.1595988	.3381211
lnmangdp	1.933151	.5730854	3.37	0.001	.8099241	3.056377
lndis	-.0001644	.0000796	-2.06	0.039	-.0003204	-8.27e-06
fy	0	(omitted)				
bor	2.309821	.517514	4.46	0.000	1.295512	3.32413
lan	0	(omitted)				
be	-.7504802	.4004713	-1.87	0.061	-1.53539	.0344291
bw	-4.012036	.7977821	-5.03	0.000	-5.575661	-2.448412
cefta	.6675513	.4267785	1.56	0.118	-.1689192	1.504022
_cons	-9.318917	5.009966	-1.86	0.063	-19.13827	.500436
sigma_u	0					
sigma_e	.8454705					
rho	0	(fraction of variance due to u_i)				

Annex 6

Albania Gravity Model Import Thursday July 20 14:52:18 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering
WARNING: lndis has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors:  fy lan
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1:   deviance =  17.44975
Iteration 2:   deviance =  17.44189
Iteration 3:   deviance =  17.44189

Number of parameters: 14
Number of observations: 215
Pseudo log-likelihood: -517.02469
R-squared: .54950518
Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0033156	.0028052	-1.18	0.237	-.0088136	.0021824
lngdp_p	-.0067181	.0128383	-0.52	0.601	-.0318807	.0184446
lngdpcap_c	.115049	.025647	4.49	0.000	.0647817	.1653163
lngdpcap_p	.0506163	.0228048	2.22	0.026	.0059197	.095313
lnexpgdp	-.0013871	.0218494	-0.06	0.949	-.0442111	.0414369
lnppp_c	.0062492	.0536325	0.12	0.907	-.0988685	.1113668
lnppp_p	.0058767	.0056681	1.04	0.300	-.0052326	.016986
lnmangdp	.1105603	.0290264	3.81	0.000	.0536696	.1674509
lndis	-9.20e-06	4.09e-06	-2.25	0.025	-.0000172	-1.18e-06
bor	.125591	.0219464	5.72	0.000	.0825767	.1686052
be	-.0414945	.0183263	-2.26	0.024	-.0774133	-.0055757
bw	-.2299129	.047488	-4.84	0.000	-.3229877	-.1368382
cefta	.0451934	.0200261	2.26	0.024	.0059431	.0844437
_cons	1.35621	.2401779	5.65	0.000	.8854698	1.82695

Annex 7

Bosnia & Herzeg Gravity Model Export Tuesday July 18 11:07:13 2017 Page 1

```
1 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p ln

Multiple-imputation estimates                   Imputations     =         40
Linear regression                               Number of obs   =        132
                                                Average RVI     =     0.0000
                                                Largest FMI     =     0.0000
                                                Complete DF     =        118
DF adjustment:   Small sample                   DF:     min     =     116.05
                                                        avg     =     116.05
                                                        max     =     116.05
Model F test:       Equal FMI                   F(  13,  116.0) =      28.34
Within VCE type:          OLS                   Prob > F        =     0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.5184329	.7977975	-0.65	0.517	-2.098564	1.061699
lngdp_p	-.0755046	.1032358	-0.73	0.466	-.2799752	.1289659
lngdpcap_c	1.25855	1.001511	1.26	0.211	-.7250587	3.242159
lngdpcap_p	1.590929	.2470588	6.44	0.000	1.1016	2.080258
lnimpgdp	-2.472823	.3451742	-7.16	0.000	-3.156481	-1.789165
lnppp_c	1.406697	2.174717	0.65	0.519	-2.900585	5.713978
lnppp_p	.2464562	.0454434	5.42	0.000	.1564501	.3364622
lnmangdp	.2245576	.4265067	0.53	0.600	-.6201889	1.069304
lndis	4.462341	1.941197	2.30	0.023	.6175727	8.307109
fy	2.074322	.2696414	7.69	0.000	1.540266	2.608379
bor	1.503982	.504307	2.98	0.003	.5051427	2.502821
lan	0	(omitted)				
be	.9283459	.1439434	6.45	0.000	.6432492	1.213443
bw	0	(omitted)				
cefta	-.956711	.4836565	-1.98	0.050	-1.914649	.0012273
_cons	2.172142	11.97539	0.18	0.856	-21.54652	25.8908

Annex 8

Bosnian & Herzeg Gravity Model Export Thursday August 17 01:29:53 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (unbalanced)
         time variable:    year, 2001 to 2015
                 delta:    1 year

2 .
3 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       132
Group variable:  code                             Number of groups   =        11

R-sq:  within  =  0.6934                          Obs per group: min =         8
       between =  0.0032                                         avg =      12.0
       overall =  0.0039                                         max =        13

                                                  F(11,110)          =     22.61
corr(u_i, Xb)  =  -0.9677                         Prob > F           =    0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.077246	.5587765	0.14	0.890	-1.030118	1.18461
lngdp_p	.2547628	.4749213	0.54	0.593	-.6864196	1.195945
lngdpcap_c	1.63089	.7119326	2.29	0.024	.2200066	3.041773
lngdpcap_p	.6058328	.7388153	0.82	0.414	-.8583256	2.069991
lnimpgdp	.8720634	.5265505	1.66	0.101	-.1714361	1.915563
lnppp_c	.846997	1.32955	0.64	0.525	-1.78786	3.481854
lnppp_p	2.520025	.4606155	5.47	0.000	1.607193	3.432857
lnmangdp	-.0297807	.2575901	-0.12	0.908	-.5402638	.4807024
lndis	.6285331	1.278617	0.49	0.624	-1.905385	3.162451
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	-.1021855	.1970379	-0.52	0.605	-.4926683	.2882974
bw	0	(omitted)				
cefta	-.358719	.3291871	-1.09	0.278	-1.01109	.2936526
_cons	-16.90858	8.838249	-1.91	0.058	-34.42392	.6067542

Annex 9

Bosnia & Herzeg Gravity Model Export Thursday July 20 14:51:03 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors:  lan bw
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  2.522029
Iteration 2:   deviance =  2.520963
Iteration 3:   deviance =  2.520963

Number of parameters: 14
Number of observations: 132
Pseudo log-likelihood: -316.64695
R-squared: .74927257
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0229725	.0393602	-0.58	0.559	-.1001171	.0541721
lngdp_p	-.0047185	.0052918	-0.89	0.373	-.0150902	.0056532
lngdpcap_c	.0708496	.0471721	1.50	0.133	-.021606	.1633051
lngdpcap_p	.084382	.0152582	5.53	0.000	.0544765	.1142875
lnimpgdp	-.1311057	.0198856	-6.59	0.000	-.1700808	-.0921306
lnppp_c	.0756536	.0963008	0.79	0.432	-.1130925	.2643997
lnppp_p	.0127378	.0026862	4.74	0.000	.0074731	.0180026
lnmangdp	.0124427	.0235992	0.53	0.598	-.033811	.0586964
lndis	.2293446	.0962793	2.38	0.017	.0406405	.4180486
fy	.1078463	.0108456	9.94	0.000	.0865893	.1291032
bor	.0749592	.0145412	5.15	0.000	.046459	.1034595
be	.0500852	.0083683	5.99	0.000	.0336836	.0664869
cefta	-.050177	.0121425	-4.13	0.000	-.0739759	-.0263781
_cons	1.944925	.641923	3.03	0.002	.6867793	3.203071

Annex 10

Bosnia & Herzeg Gravity Model Imports Thursday August 24 16:05:40 2017 Page 1

```
1 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c lnmangdp

Multiple-imputation estimates                   Imputations     =             80
Linear regression                               Number of obs   =            139
                                                Average RVI     =         0.0000
                                                Largest FMI     =         0.0000
                                                Complete DF     =            125
DF adjustment:   Small sample                     DF:     min   =         123.05
                                                        avg   =         123.05
                                                        max   =         123.05
Model F test:       Equal FMI                   F(   13,   123.0) =       65.42
Within VCE type:          OLS                   Prob > F        =         0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-1.176263	.3306565	-3.56	0.001	-1.830775	-.5217512
lngdp_p	1.028288	.0751022	13.68	0.000	.8794697	1.177106
lngdpcap_c	1.873567	.4531125	4.13	0.000	.9766618	2.770472
lngdpcap_p	-.254072	.1473221	-1.72	0.087	-.545686	.0375421
lnexpgdp	.6303797	.2500502	2.52	0.013	.1354226	1.125337
lnppp_p	.2319196	.0550776	4.21	0.000	.1228972	.340942
lnppp_c	2.807443	1.268004	2.21	0.029	.2975167	5.317369
lnmangdp	.3654295	.3329484	1.10	0.275	-.2936189	1.024478
lndis	-1.371981	.0833854	-16.45	0.000	-1.537037	-1.206926
fy	1.913901	.1492313	12.83	0.000	1.618508	2.209294
bor	-.480537	.1722209	-2.79	0.006	-.8214364	-.1396376
lan	0	(omitted)				
be	-.803144	.1096125	-7.33	0.000	-1.020114	-.5861736
bw	0	(omitted)				
cefta	-.6238011	.2166151	-2.88	0.005	-1.052576	-.1950264
_cons	11.97235	4.445992	2.69	0.008	3.171816	20.77288

Annex 11

Bosnia & Herzeg Gravity Model Imports Thursday August 24 16:16:52 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (strongly balanced)
         time variable:    year, 2001 to 2015
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy bor lar
  note: lndis omitted because of collinearity
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity
  note: cefta omitted because of collinearity

  Fixed-effects (within) regression               Number of obs      =       139
  Group variable:  code                           Number of groups   =        11

  R-sq:  within  =  0.6362                        Obs per group: min =         6
         between =  0.0582                                       avg =      12.6
         overall =  0.0148                                       max =        15

                                                  F(9,119)           =     23.12
  corr(u_i, Xb)  =  -0.9347                       Prob > F           =    0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-1.132339	.4054808	-2.79	0.006	-1.935232	-.3294466
lngdp_p	1.037658	.285783	3.63	0.000	.471779	1.603537
lngdpcap_c	1.269478	.5111616	2.48	0.014	.2573265	2.281629
lngdpcap p	-.2296309	.2297432	-1.00	0.320	-.6845454	.2252835
lnexpgdp	1.078988	.3953705	2.73	0.007	.2961146	1.861861
lnppp_c	3.033661	1.222252	2.48	0.014	.6134799	5.453843
lnppp p	.6599568	.3463178	1.91	0.059	-.025787	1.345701
lnmangdp	-1.374129	.5762042	-2.38	0.019	-2.515071	-.2331873
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	-.5393009	.1192011	-4.52	0.000	-.775331	-.3032708
bw	0	(omitted)				
cefta	0	(omitted)				
_cons	10.083	4.607805	2.19	0.031	.9590814	19.20691
sigma_u	2.0676413					
sigma e	.25292381					
rho	.98525724	(fraction of variance due to u_i)				

F test that all u i=0: F(10, 119) = 77.21 Prob > F = 0.0000

Annex 12

Bosnia & Herzeg Gravity Model Imports Thursday August 24 16:14:09 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy bor lan

  note: checking the existence of the estimates
  WARNING: lngdp_c has very large values, consider rescaling  or recentering
  WARNING: lngdp_p has very large values, consider rescaling  or recentering

  Number of regressors excluded to ensure that the estimates exist: 2
  Excluded regressors:  lan bw
  Number of observations excluded: 0

  note: starting ppml estimation
  note: lnimp has noninteger values

  Iteration 1:   deviance =     .523979
  Iteration 2:   deviance =     .523862
  Iteration 3:   deviance =     .523862

  Number of parameters: 14
  Number of observations: 139
  Pseudo log-likelihood: -335.74168
  R-squared: .86921601
  Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0610163	.0133683	-4.56	0.000	-.0872177	-.0348149
lngdp_p	.0521092	.0042527	12.25	0.000	.043774	.0604444
lngdpcap_c	.0975483	.0174558	5.59	0.000	.0633355	.131761
lngdpcap_p	-.0123093	.0090374	-1.36	0.173	-.0300223	.0054038
lnexpgdp	.0310342	.0154196	2.01	0.044	.0008123	.061256
lnppp_c	.145502	.0584626	2.49	0.013	.0309173	.2600866
lnppp_p	.0121415	.0038061	3.19	0.001	.0046818	.0196013
lnmangdp	.0202991	.0203772	1.00	0.319	-.0196396	.0602377
lndis	-.0698442	.0040797	-17.12	0.000	-.0778401	-.0618482
fy	.0977496	.0069076	14.15	0.000	.084211	.1112883
bor	-.02585	.0091245	-2.83	0.005	-.0437338	-.0079663
be	-.0407027	.0064906	-6.27	0.000	-.053424	-.0279814
cefta	-.0321474	.0119326	-2.69	0.007	-.0555349	-.00876
_cons	2.593325	.1864889	13.91	0.000	2.227813	2.958836

Annex 13

Croatia Gravity Model Export Tuesday July 18 11:12:44 2017 Page 1

```
1 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_p lnppp_c lr

Multiple-imputation estimates                     Imputations     =         40
Linear regression                                 Number of obs   =        218
                                                  Average RVI     =     0.0000
                                                  Largest FMI     =     0.0000
                                                  Complete DF     =        204
DF adjustment:   Small sample                     DF:     min     =     202.03
                                                          avg     =     202.03
                                                          max     =     202.03
Model F test:       Equal FMI                     F(  13,  202.0) =      76.00
Within VCE type:          OLS                     Prob > F        =     0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.3435915	.2233854	-1.54	0.126	-.7840575	.0968745
lngdp_p	1.092903	.056738	19.26	0.000	.9810286	1.204778
lngdpcap_c	.9846202	.3965102	2.48	0.014	.202791	1.766449
lngdpcap_p	.0469235	.1918983	0.24	0.807	-.3314569	.4253039
lnimpgdp	-.0815586	.0867842	-0.94	0.348	-.2526775	.0895603
lnppp_p	-.0400986	.0292463	-1.37	0.172	-.0977657	.0175686
lnppp_c	-.162864	.498618	-0.33	0.744	-1.146027	.8202988
lnmangdp	.528606	1.023191	0.52	0.606	-1.488897	2.546109
lndis	-1.946786	.0857878	-22.69	0.000	-2.11594	-1.777632
fy	1.418494	.1872635	7.57	0.000	1.049252	1.787736
bor	0	(omitted)				
lan	0	(omitted)				
be	-.9751152	.1209741	-8.06	0.000	-1.213649	-.7365814
bw	1.854196	.2927436	6.33	0.000	1.276971	2.431421
cefta	-.8660211	.2030554	-4.26	0.000	-1.266401	-.4656414
_cons	.5137149	7.307727	0.07	0.944	-13.89548	14.92291

Annex 14

Croatia Gravity Model Export Tuesday July 18 18:49:07 2017 Page 1

```
1 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy bor
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity

Random-effects GLS regression                     Number of obs      =       218
Group variable: code                              Number of groups   =        11

R-sq:  within  = 0.7494                           Obs per group: min =         9
       between = 0.6831                                          avg =      19.8
       overall = 0.6926                                          max =        21

                                                  Wald chi2(13)      =    600.20
corr(u_i, X)   = 0 (assumed)                      Prob > chi2        =    0.0000
```

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.3519811	.1542777	-2.28	0.023	-.6543599	-.0496023
lngdp_p	.6540499	.1702865	3.84	0.000	.3202944	.9878054
lngdpcap_c	1.09062	.2539576	4.29	0.000	.5928723	1.588368
lngdpcap_p	-.0880965	.2299608	-0.38	0.702	-.5388113	.3626183
lnimpgdp	.5277118	.1794239	2.94	0.003	.1760474	.8793762
lnppp_c	-.3544859	.27181	-1.30	0.192	-.8872237	.1782519
lnppp_p	-.0825219	.0892972	-0.92	0.355	-.2575412	.0924975
lnmangdp	.5811974	.542406	1.07	0.284	-.4818988	1.644293
lndis	-1.0946	.261324	-4.19	0.000	-1.606786	-.5824146
fy	1.090724	.703943	1.55	0.121	-.2889792	2.470427
bor	0	(omitted)				
lan	0	(omitted)				
be	.0425111	.0938798	0.45	0.651	-.1414899	.2265121
bw	1.107484	.7228446	1.53	0.125	-.3092658	2.524233
cefta	-.1011283	.121663	-0.83	0.406	-.3395835	.1373268
_cons	4.606022	4.143936	1.11	0.266	-3.515943	12.72799
sigma_u	.51151701					
sigma_e	.23467259					
rho	.82612064	(fraction of variance due to u_i)				

Annex 15

Croatia Gravity Model Export Thursday July 20 14:47:28 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors:  bor lan
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  2.186906
Iteration 2:   deviance =  2.186061
Iteration 3:   deviance =  2.186061

Number of parameters: 14
Number of observations: 218
Pseudo log-likelihood: -525.98532
R-squared: .82609823
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0166125	.0108149	-1.54	0.125	-.0378093	.0045843
lngdp_p	.0561303	.002322	24.17	0.000	.0515793	.0606812
lngdpcap_c	.0528943	.0209766	2.52	0.012	.0117809	.0940077
lngdpcap_p	.001012	.0125569	0.08	0.936	-.023599	.025623
lnimpgdp	-.0027492	.0040224	-0.68	0.494	-.0106329	.0051346
lnppp_c	-.002401	.0260624	-0.09	0.927	-.0534823	.0486804
lnppp_p	-.0021339	.0017817	-1.20	0.231	-.005626	.0013582
lnmangdp	.0430324	.0530468	0.81	0.417	-.0609375	.1470023
lndis	-.0993137	.0041909	-23.70	0.000	-.1075277	-.0910997
fy	.073373	.0082374	8.91	0.000	.057228	.089518
be	-.0487099	.0065468	-7.44	0.000	-.0615414	-.0358784
bw	.0900141	.017907	5.03	0.000	.054917	.1251112
cefta	-.0402111	.0106114	-3.79	0.000	-.0610091	-.0194131
_cons	1.898326	.376827	5.04	0.000	1.159759	2.636893

Annex 16

Croatia Gravity Model Import Wednesday July 19 23:00:35 2017 Page 1

```
1 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c ln

Multiple-imputation estimates                     Imputations     =         60
Linear regression                                 Number of obs   =        207
                                                  Average RVI     =     0.0000
                                                  Largest FMI     =     0.0000
                                                  Complete DF     =        193
DF adjustment:   Small sample                     DF:     min     =     191.03
                                                          avg     =     191.03
                                                          max     =     191.03
Model F test:       Equal FMI                     F(  13,  191.0) =      65.06
Within VCE type:          OLS                     Prob > F        =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.3997481	.2378667	-1.68	0.094	-.8689307	.0694345
lngdp_p	.9615795	.0896839	10.72	0.000	.7846816	1.138477
lngdpcap_c	1.20372	.3375143	3.57	0.000	.5379861	1.869453
lngdpcap_p	-.1845156	.1695201	-1.09	0.278	-.5188871	.149856
lnexpgdp	-.2711142	.1682382	-1.61	0.109	-.6029574	.060729
lnppp_p	.1327125	.0293556	4.52	0.000	.0748098	.1906152
lnppp_c	1.686007	.5421913	3.11	0.002	.6165563	2.755458
lnmangdp	.2154977	.2775285	0.78	0.438	-.3319162	.7629116
lndis	-1.079307	.123171	-8.76	0.000	-1.322257	-.8363575
fy	1.843447	.2289756	8.05	0.000	1.391802	2.295093
bor	0	(omitted)				
lan	0	(omitted)				
be	-.2123599	.1412294	-1.50	0.134	-.4909292	.0662093
bw	-.3425963	.3102715	-1.10	0.271	-.9545944	.2694018
cefta	-.5456024	.2440131	-2.24	0.027	-1.026908	-.0642963
_cons	-.4254317	3.591283	-0.12	0.906	-7.509093	6.65823

Annex 17

Croatia Gravity Model Import Thursday August 17 01:42:10 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (unbalanced)
         time variable:    year, 1995 to 2015
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
note: lndis omitted because of collinearity
note: fy omitted because of collinearity
note: bor omitted because of collinearity
note: lan omitted because of collinearity
note: bw omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       207
Group variable:  code                           Number of groups   =        11

R-sq:  within  =  0.8342                        Obs per group: min =         7
       between =  0.2476                                       avg =      18.8
       overall =  0.2255                                       max =        21

                                                F(10,186)          =     93.59
corr(u_i, Xb)  =  -0.9396                       Prob > F           =    0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.8043976	.1773727	-4.54	0.000	-1.154319	-.4544767
lngdp_p	1.529337	.1387945	11.02	0.000	1.255523	1.803151
lngdpcap_c	.410479	.2918023	1.41	0.161	-.1651886	.9861467
lngdpcap_p	-.2000054	.1578939	-1.27	0.207	-.5114984	.1114877
lnexpgdp	1.107171	.2319822	4.77	0.000	.6495163	1.564825
lnppp_c	1.56577	.3392834	4.61	0.000	.896432	2.235109
lnppp_p	-.6941511	.2323281	-2.99	0.003	-1.152488	-.2358143
lnmangdp	.9292543	.3861338	2.41	0.017	.1674894	1.691019
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	-.1440884	.104735	-1.38	0.171	-.3507097	.0625329
bw	0	(omitted)				
cefta	.0069674	.1750571	0.04	0.968	-.3383853	.3523201
_cons	-10.85934	2.607689	-4.16	0.000	-16.00379	-5.714887
sigma_u	2.9351975					
sigma_e	.29039015					
rho	.99030698	(fraction of variance due to u_i)				

F test that all u_i=0: F(10, 186) = 79.74 Prob > F = 0.0000

Annex 18

Croatia Gravity Model Import Thursday July 20 14:54:06 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors:  bor lan
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1:   deviance =  2.437481
Iteration 2:   deviance =  2.436702
Iteration 3:   deviance =  2.436702

Number of parameters: 14
Number of observations: 207
Pseudo log-likelihood: -502.86987
R-squared: .80596052
Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0201567	.0123134	-1.64	0.102	-.0442905	.0039771
lngdp_p	.0475027	.0061056	7.78	0.000	.0355359	.0594695
lngdpcap_c	.059523	.0156634	3.80	0.000	.0288232	.0902227
lngdpcap_p	-.0087266	.0129138	-0.68	0.499	-.0340371	.016584
lnexpgdp	-.0125389	.0108946	-1.15	0.250	-.0338919	.008814
lnppp_c	.0896949	.0285599	3.14	0.002	.0337186	.1456712
lnppp_p	.0067378	.0015835	4.26	0.000	.0036342	.0098413
lnmangdp	.0104647	.0159674	0.66	0.512	-.0208308	.0417602
lndis	-.0530801	.0079801	-6.65	0.000	-.0687208	-.0374394
fy	.0921043	.0113342	8.13	0.000	.0698897	.114319
be	-.0104156	.0061394	-1.70	0.090	-.0224486	.0016174
bw	-.0195733	.0194947	-1.00	0.315	-.0577822	.0186356
cefta	-.0238961	.0160678	-1.49	0.137	-.0553884	.0075961
_cons	1.978415	.197555	10.01	0.000	1.591214	2.365616

Annex 19

Kosovo Gravity Model Export Tuesday July 18 11:17:29 2017 Page 1

```
1 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_p lnppp_c lr
```

Multiple-imputation estimates — Imputations = 80
Linear regression — Number of obs = 108
Average RVI = 0.0000
Largest FMI = 0.0000
Complete DF = 95
DF adjustment: **Small sample** — DF: min = 93.06
avg = 93.06
max = 93.06
Model F test: **Equal FMI** — F(12, 93.1) = 6.94
Within VCE type: **OLS** — Prob > F = 0.0000

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	1.379194	1.423399	0.97	0.335	-1.447369	4.205758
lngdp_p	.3690794	.1412061	2.61	0.010	.0886745	.6494844
lngdpcap_c	3.420592	1.796219	1.90	0.060	-.1463115	6.987495
lngdpcap_p	-2.158773	.5909825	-3.65	0.000	-3.332337	-.985209
lnimpgdp	-.6036658	.4124935	-1.46	0.147	-1.422789	.2154573
lnppp_p	.1652868	.1076798	1.53	0.128	-.048542	.3791157
lnppp_c	0	(omitted)				
lnmangdp	.8758361	1.601777	0.55	0.586	-2.304947	4.056619
lndis	-1.586304	.4309055	-3.68	0.000	-2.44199	-.7306187
fy	-.3458125	.4040891	-0.86	0.394	-1.148246	.4566213
bor	0	(omitted)				
lan	0	(omitted)				
be	1.930992	.7373799	2.62	0.010	.4667144	3.39527
bw	-1.215072	1.676475	-0.72	0.470	-4.54419	2.114047
cefta	-.4294495	.5730377	-0.75	0.455	-1.567379	.7084799
_cons	-23.97483	18.39251	-1.30	0.196	-60.49839	12.54873

Annex 20

Kosovo Gravity Model Export Tuesday July 18 18:49:40 2017 Page 1

```
1 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy bor
  note: lnppp_c omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity
```

Random-effects GLS regression — Number of obs = 108
Group variable: **code** — Number of groups = 11

R-sq: within = 0.2525 — Obs per group: min = 9
between = 0.7037 — avg = 9.8
overall = 0.4662 — max = 10

Wald chi2(12) = 49.67
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

lnexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	1.32647	1.303224	1.02	0.309	-1.227802	3.880743
lngdp_p	.3909429	.2324246	1.68	0.093	-.064601	.8464868
lngdpcap_c	3.253614	1.671006	1.95	0.052	-.0214981	6.528727
lngdpcap_p	-1.946343	.8712117	-2.23	0.025	-3.653887	-.2387997
lnimpgdp	-.4805816	.5969182	-0.81	0.421	-1.65052	.6893566
lnppp_c	0	(omitted)				
lnppp_p	.1675774	.178365	0.94	0.347	-.1820116	.5171664
lnmangdp	.9129618	1.45409	0.63	0.530	-1.937003	3.762926
lndis	-1.471381	.672739	-2.19	0.029	-2.789925	-.1528366
fy	-.3684865	.6788826	-0.54	0.587	-1.699072	.9620989
bor	-.86847	2.563274	-0.34	0.735	-5.892394	4.155454
lan	0	(omitted)				
be	1.707228	1.108867	1.54	0.124	-.4661112	3.880567
bw	0	(omitted)				
cefta	-.4470807	.5213438	-0.86	0.391	-1.468896	.5747344
_cons	-25.27201	17.56308	-1.44	0.150	-59.69502	9.150998
sigma_u	.42183879					
sigma_e	.82341733					
rho	.20789187	(fraction of variance due to u_i)				

Annex 21

Kosovo Gravity Model Export Wednesday July 26 19:51:33 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 3
Excluded regressors:  lnppp_c bor lan
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  5.694894
Iteration 2:   deviance =  5.693219
Iteration 3:   deviance =  5.693219

Number of parameters: 13
Number of observations: 108
Pseudo log-likelihood: -252.88387
R-squared: .4661982
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0890545	.0790597	1.13	0.260	-.0658996	.2440086
lngdp_p	.0231367	.008468	2.73	0.006	.0065397	.0397337
lngdpcap_c	.2092462	.0799528	2.62	0.009	.0525415	.3659509
lngdpcap_p	-.1333401	.0284707	-4.68	0.000	-.1891416	-.0775385
lnimpgdp	-.0374637	.023754	-1.58	0.115	-.0840206	.0090932
lnppp_p	.0101537	.004067	2.50	0.013	.0021824	.0181249
lnmangdp	.05906	.0952395	0.62	0.535	-.127606	.245726
lndis	-.097865	.0214159	-4.57	0.000	-.1398395	-.0558906
fy	-.0204149	.0100637	-2.03	0.043	-.0401393	-.0006905
be	.1185331	.037493	3.16	0.002	.0450482	.1920179
bw	-.072276	.0585435	-1.23	0.217	-.1870193	.0424672
cefta	-.0286958	.0325087	-0.88	0.377	-.0924116	.0350201
_cons	.2117998	1.40684	0.15	0.880	-2.545556	2.969155

Annex 22

Kosovo Gravity Model Import Wednesday July 19 23:03:32 2017 Page 1

```
1 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c lr

Multiple-imputation estimates                     Imputations     =         60
Linear regression                                 Number of obs   =        116
                                                  Average RVI     =     0.0000
                                                  Largest FMI     =     0.0000
                                                  Complete DF     =        102
DF adjustment:   Small sample                     DF:     min     =     100.06
                                                          avg     =     100.06
                                                          max     =     100.06
Model F test:       Equal FMI                     F(  13,  100.1) =      47.43
Within VCE type:          OLS                     Prob > F        =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.4151409	.4886871	-0.85	0.398	-1.384675	.5543936
lngdp_p	.0972884	.1201344	0.81	0.420	-.1410533	.33563
lngdpcap_c	1.030822	.8036632	1.28	0.203	-.5636119	2.625255
lngdpcap_p	.8317815	.2583509	3.22	0.002	.3192244	1.344339
lnexpgdp	-.7441636	.2294445	-3.24	0.002	-1.199372	-.2889554
lnppp_p	-1.06187	.1068182	-9.94	0.000	-1.273793	-.8499468
lnppp_c	4.803017	1.896636	2.53	0.013	1.040172	8.565861
lnmangdp	-.8757287	.2721321	-3.22	0.002	-1.415627	-.3358301
lndis	1.465242	.2325056	6.30	0.000	1.00396	1.926523
fy	1.162924	.3103815	3.75	0.000	.5471408	1.778708
bor	6.481037	.4791026	13.53	0.000	5.530517	7.431556
lan	-.4441838	.324069	-1.37	0.174	-1.087123	.1987554
be	0	(omitted)				
bw	0	(omitted)				
cefta	.471776	.2654405	1.78	0.079	-.0548467	.9983987
_cons	7.890003	10.3216	0.76	0.446	-12.58761	28.36762

Annex 23

Kosovo Gravity Model Import Thursday August 17 01:43:36 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (strongly balanced)
         time variable:    year, 2005 to 2015
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp c lngdp p lngdpcap c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: be omitted because of collinearity
  note: bw omitted because of collinearity

  Fixed-effects (within) regression               Number of obs      =       116
  Group variable:  code                           Number of groups   =        11

  R-sq:  within  =  0.7619                        Obs per group: min =         9
         between =  0.4152                                       avg =      10.5
         overall =  0.0500                                       max =        11

                                                  F(10,95)           =     30.40
  corr(u_i, Xb)  =  -0.8030                       Prob > F           =    0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.8356397	.637431	1.31	0.193	-.4298208	2.1011
lngdp_p	-.5225596	.5248278	-1.00	0.322	-1.564474	.5193553
lngdpcap_c	.4297898	.9076806	0.47	0.637	-1.372184	2.231764
lngdpcap_p	.3834935	.7234638	0.53	0.597	-1.052764	1.819751
lnexpgdp	-.4156513	.3164413	-1.31	0.192	-1.043867	.2125641
lnppp_c	3.664518	1.58435	2.31	0.023	.5191855	6.80985
lnppp_p	-.4122106	.454317	-0.91	0.367	-1.314144	.4897227
lnmangdp	-1.279005	.3072597	-4.16	0.000	-1.888993	-.6690176
lndis	1.097586	1.332578	0.82	0.412	-1.547917	3.743089
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	0	(omitted)				
bw	0	(omitted)				
cefta	.2534171	.2182406	1.16	0.248	-.1798452	.6866794
_cons	8.141908	11.55607	0.70	0.483	-14.79979	31.0836
sigma_u	1.4210719					
sigma_e	.25622748					
rho	.96851346	(fraction of variance due to u_i)				

F test that all u_i=0: F(10, 95) = 50.19 Prob > F = 0.0000

Annex 24

Kosovo Gravity Model Import Thursday July 20 14:54:46 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy k

  note: checking the existence of the estimates
  WARNING: lngdp_c has very large values, consider rescaling  or recentering
  WARNING: lngdp_p has very large values, consider rescaling  or recentering

  Number of regressors excluded to ensure that the estimates exist: 2
  Excluded regressors:  be bw
  Number of observations excluded: 0

  note: starting ppml estimation
  note: lnimp has noninteger values

  Iteration 1:   deviance =   .673636
  Iteration 2:   deviance =  .6732903
  Iteration 3:   deviance =  .6732903

  Number of parameters: 14
  Number of observations: 116
  Pseudo log-likelihood: -276.21837
  R-squared: .84929782
  Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0112975	.0310121	-0.36	0.716	-.0720801	.049485
lngdp_p	.0061254	.0057222	1.07	0.284	-.00509	.0173408
lngdpcap_c	.0418398	.0498423	0.84	0.401	-.0558493	.1395289
lngdpcap_p	.0429825	.0129677	3.31	0.001	.0175663	.0683987
lnexpgdp	-.0418014	.0106519	-3.92	0.000	-.0626787	-.020924
lnppp_c	.257332	.0999741	2.57	0.010	.0613864	.4532777
lnppp_p	-.0582926	.0062521	-9.32	0.000	-.0705466	-.0460387
lnmangdp	-.0492038	.012446	-3.95	0.000	-.0735976	-.02481
lndis	.0787135	.0122685	6.42	0.000	.0546677	.1027593
fy	.0872297	.0138498	6.30	0.000	.0600845	.1143748
bor	.3562546	.0280056	12.72	0.000	.3013646	.4111446
lan	-.0006332	.0139034	-0.05	0.964	-.0278835	.026617
cefta	-.0016807	.0075308	-0.22	0.823	-.0164408	.0130793
_cons	2.225033	.5671239	3.92	0.000	1.113491	3.336575

Annex 25

Makedonia Gravity Model Export Thursday August 17 01:33:55 2017 Page 1

```
1 . xtset code year, yearly
        panel variable:    code (unbalanced)
         time variable:    year, 1995 to 2015
                 delta:    1 year

2 .
3 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
note: lndis omitted because of collinearity
note: fy omitted because of collinearity
note: bor omitted because of collinearity
note: lan omitted because of collinearity
note: be omitted because of collinearity
note: bw omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       206
Group variable: code                            Number of groups   =        11

R-sq:  within  =  0.7419                        Obs per group: min =         7
       between =  0.0917                                       avg =      18.7
       overall =  0.0000                                       max =        21

                                                F(9,186)           =     59.40
corr(u_i, Xb)  =  -0.9403                       Prob > F           =    0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-2.645853	.647579	-4.09	0.000	-3.923397	-1.36831
lngdp_p	2.585927	.5952774	4.34	0.000	1.411564	3.76029
lngdpcap_c	2.606432	.8008601	3.25	0.001	1.026495	4.186369
lngdpcap p	.351017	.8421274	0.42	0.677	-1.310332	2.012366
lnimpgdp	.7170312	.4785073	1.50	0.136	-.226968	1.66103
lnppp_c	2.698696	1.862377	1.45	0.149	-.9754011	6.372794
lnppp p	-.9562668	.1351754	-7.07	0.000	-1.222941	-.6895927
lnmangdp	.6752781	.2473942	2.73	0.007	.1872188	1.163337
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	0	(omitted)				
bw	0	(omitted)				
cefta	-.563529	.285477	-1.97	0.050	-1.126718	-.0003399
_cons	-29.66956	10.97555	-2.70	0.008	-51.32213	-8.016987
sigma_u	6.3599306					
sigma e	.64825284					
rho	.98971758	(fraction of variance due to u_i)				

F test that all u i=0: F(10, 186) = 58.60 Prob > F = 0.0000

Annex 26

Makedonia Gravity Model Export Thursday July 20 14:48:25 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy l

note: checking the existence of the estimates
WARNING: lngdp c has very large values, consider rescaling  or recentering
WARNING: lngdp p has very large values, consider rescaling  or recentering
WARNING: lan has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 1
Excluded regressors:  bw
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  8.036692
Iteration 2:   deviance =  8.020196
Iteration 3:   deviance =  8.020196

Number of parameters: 15
Number of observations: 206
Pseudo log-likelihood: -489.52603
R-squared: .83189428
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.1093348	.0359354	-3.04	0.002	-.1797669	-.0389027
lngdp_p	.0969927	.0082436	11.77	0.000	.0808355	.1131499
lngdpcap_c	.1680682	.0438003	3.84	0.000	.0822211	.2539153
lngdpcap_p	-.0224365	.0209578	-1.07	0.284	-.063513	.01864
lnimpgdp	.1303284	.0146594	8.89	0.000	.1015966	.1590602
lnppp_c	.0655517	.101303	0.65	0.518	-.1329986	.2641019
lnppp_p	-.0386151	.0090254	-4.28	0.000	-.0563046	-.0209256
lnmangdp	.0390898	.0139104	2.81	0.005	.0118259	.0663537
lndis	.2686177	.0237976	11.29	0.000	.2219753	.31526
fy	.1456948	.015685	9.29	0.000	.1149528	.1764368
bor	.035809	.0432574	0.83	0.408	-.0489739	.120592
lan	-.0000828	9.72e-06	-8.52	0.000	-.0001018	-.0000637
be	-.3212173	.0970213	-3.31	0.001	-.5113756	-.1310591
cefta	-.4049458	.1002147	-4.04	0.000	-.6013629	-.2085287
_cons	1.062637	.6183869	1.72	0.086	-.1493788	2.274654

Annex 27

Makedonia Gravity Model Import Wednesday July 19 23:06:51 2017 Page 1

```
1 . . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c

Multiple-imputation estimates                   Imputations     =         40
Linear regression                               Number of obs   =        187
                                                Average RVI     =     0.0000
                                                Largest FMI     =     0.0000
                                                Complete DF     =        173
DF adjustment:   Small sample                   DF:     min     =     171.03
                                                        avg     =     171.03
                                                        max     =     171.03
Model F test:       Equal FMI                   F(  13,  171.0) =      53.47
Within VCE type:          OLS                   Prob > F        =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.364362	.4138248	-0.88	0.380	-1.181224	.4524996
lngdp_p	1.43996	.1261696	11.41	0.000	1.19091	1.689011
lngdpcap_c	.9047131	.5062454	1.79	0.076	-.0945804	1.904007
lngdpcap_p	-.9930257	.2143601	-4.63	0.000	-1.416158	-.5698937
lnexpgdp	1.784738	.339939	5.25	0.000	1.113722	2.455754
lnppp_p	.2603973	.0516099	5.05	0.000	.1585229	.3622716
lnppp_c	.9803759	1.035697	0.95	0.345	-1.064019	3.024771
lnmangdp	-.7322199	.2898613	-2.53	0.012	-1.304386	-.1600537
lndis	-1.855665	.1812063	-10.24	0.000	-2.213354	-1.497976
fy	0	(omitted)				
bor	1.391515	.200119	6.95	0.000	.9964943	1.786536
lan	0	(omitted)				
be	-.6721606	.1424468	-4.72	0.000	-.9533409	-.3909804
bw	-.5826067	.6011055	-0.97	0.334	-1.769148	.6039341
cefta	-.2928085	.5854218	-0.50	0.618	-1.448391	.8627738
_cons	-4.368797	7.300923	-0.60	0.550	-18.78032	10.04272

Annex 28

Makedonia Gravity Model Import Thursday August 17 01:44:55 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (unbalanced)
         time variable:    year, 1995 to 2015
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
  note: lndis omitted because of collinearity
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       187
Group variable:  code                           Number of groups   =        10

R-sq:  within  =  0.7490                        Obs per group: min =         8
       between =  0.0000                                       avg =      18.7
       overall =  0.1230                                       max =        21

                                                F(10,167)          =     49.83
corr(u_i, Xb)  =  -0.8555                       Prob > F           =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.6397853	.4227901	-1.51	0.132	-1.474487	.1949169
lngdp_p	1.487735	.3782424	3.93	0.000	.7409818	2.234488
lngdpcap_c	.3003388	.6005794	0.50	0.618	-.8853677	1.486045
lngdpcap_p	-.1405056	.5438767	-0.26	0.796	-1.214266	.9332543
lnexpgdp	2.12152	.3673545	5.78	0.000	1.396263	2.846778
lnppp_c	1.016777	.9345881	1.09	0.278	-.8283528	2.861907
lnppp_p	-.2096043	.0865602	-2.42	0.017	-.3804976	-.038711
lnmangdp	-1.406051	.5569431	-2.52	0.013	-2.505607	-.306494
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	.1401104	.2471648	0.57	0.572	-.3478599	.6280806
bw	0	(omitted)				
cefta	-.1206875	.500362	-0.24	0.810	-1.108538	.8671626
_cons	-14.81944	7.562956	-1.96	0.052	-29.75076	.111885
sigma_u	2.4426071					
sigma_e	.46000485					
rho	.96574834	(fraction of variance due to u_i)				

F test that all u_i=0: F(9, 167) = 35.15 Prob > F = 0.0000

Annex 29

Makedonia Gravity Model Import Thursday July 20 14:55:26 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors:  fy lan
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1:   deviance =  2.896753
Iteration 2:   deviance =  2.895139
Iteration 3:   deviance =  2.895139

Number of parameters: 14
Number of observations: 187
Pseudo log-likelihood: -446.96382
R-squared: .7960979
Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0228808	.0243034	-0.94	0.346	-.0705146	.0247529
lngdp_p	.0779953	.0060666	12.86	0.000	.0661049	.0898857
lngdpcap_c	.0517618	.0296908	1.74	0.081	-.0064311	.1099547
lngdpcap_p	-.0517571	.0110787	-4.67	0.000	-.0734709	-.0300433
lnexpgdp	.0948562	.0179551	5.28	0.000	.0596648	.1300477
lnppp_c	.0531308	.0506172	1.05	0.294	-.0460771	.1523388
lnppp_p	.0150346	.0041891	3.59	0.000	.0068241	.023245
lnmangdp	-.0391507	.0192304	-2.04	0.042	-.0768416	-.0014599
lndis	-.1005926	.0095481	-10.54	0.000	-.1193066	-.0818786
bor	.0752218	.011088	6.78	0.000	.0534897	.096954
be	-.036996	.007434	-4.98	0.000	-.0515664	-.0224256
bw	-.0327115	.0193303	-1.69	0.091	-.0705983	.0051753
cefta	-.0172128	.0054971	-3.13	0.002	-.0279869	-.0064388
_cons	1.708971	.393794	4.34	0.000	.9371485	2.480793

Annex 30

Montenegro Gravity Model Export Tuesday July 18 11:22:27 2017 Page 1

```
1 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_p lnppp_c lnmar

Multiple-imputation estimates                     Imputations     =         80
Linear regression                                 Number of obs   =        145
                                                  Average RVI     =     0.0000
                                                  Largest FMI     =     0.0000
                                                  Complete DF     =        129
DF adjustment:   Small sample                     DF:     min     =     127.05
                                                          avg     =     127.05
                                                          max     =     127.05
Model F test:       Equal FMI                     F(  15,  127.0) =      23.98
Within VCE type:          OLS                     Prob > F        =     0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	1.727511	1.119467	1.54	0.125	-.4877049	3.942726
lngdp_p	-.1695058	.1366661	-1.24	0.217	-.4399425	.1009308
lngdpcap_c	-1.269323	1.747698	-0.73	0.469	-4.72769	2.189044
lngdpcap_p	5.924953	.4824923	12.28	0.000	4.970191	6.879714
lnimpgdp	-3.53113	.6419216	-5.50	0.000	-4.801372	-2.260887
lnppp_p	-.0673349	.093073	-0.72	0.471	-.2515089	.1168392
lnppp_c	7.120116	5.023451	1.42	0.159	-2.820352	17.06058
lnmangdp	1.903187	1.035673	1.84	0.068	-.1462161	3.952591
lndis	.9926456	.208999	4.75	0.000	.5790756	1.406215
fy	1.266298	.4591008	2.76	0.007	.3578237	2.174773
bor	11.26105	1.554682	7.24	0.000	8.184627	14.33748
lan	-.7577278	.5235762	-1.45	0.150	-1.793787	.2783314
be	-1.428119	.3584605	-3.98	0.000	-2.137445	-.7187929
bw	-.3889104	1.22414	-0.32	0.751	-2.811254	2.033433
cefta	-2.378145	.4521888	-5.26	0.000	-3.272942	-1.483348
_cons	-54.85732	19.51691	-2.81	0.006	-93.47763	-16.23702

Annex 31

Montenegro Gravity Model Export Thursday August 17 01:36:42 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (strongly balanced)
         time variable:    year, 2001 to 2015
                 delta:    1 year

2 .
3 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
note: lndis omitted because of collinearity
note: fy omitted because of collinearity
note: bor omitted because of collinearity
note: lan omitted because of collinearity
note: be omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       145
Group variable:  code                           Number of groups   =        11

R-sq:  within  =  0.6020                        Obs per group: min =         9
       between =  0.0389                                       avg =      13.2
       overall =  0.0004                                       max =        15

                                                F(10,124)          =     18.76
corr(u_i, Xb)  =  -0.9469                       Prob > F           =    0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.792423	1.782518	0.44	0.657	-2.735678	4.320524
lngdp_p	1.191919	1.385346	0.86	0.391	-1.550069	3.933907
lngdpcap_c	-2.802427	2.158023	-1.30	0.196	-7.073759	1.468905
lngdpcap_p	6.219959	1.840016	3.38	0.001	2.578052	9.861865
lnimpgdp	1.534476	.9661307	1.59	0.115	-.3777671	3.446719
lnppp_c	7.447152	4.642768	1.60	0.111	-1.742185	16.63649
lnppp_p	1.862343	1.248936	1.49	0.138	-.6096503	4.334337
lnmangdp	1.679461	.8801679	1.91	0.059	-.0626379	3.42156
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	0	(omitted)				
bw	.3931371	1.049443	0.37	0.709	-1.684005	2.470279
cefta	-2.152701	.4372442	-4.92	0.000	-3.018129	-1.287272
_cons	-68.38358	17.64442	-3.88	0.000	-103.3068	-33.46033
sigma_u	6.4382709					
sigma_e	.93304059					
rho	.97942992	(fraction of variance due to u_i)				

F test that all u_i=0: F(10, 124) = 21.57 Prob > F = 0.0000

Annex 32

Montenegro Gravity Model Export Thursday July 20 14:49:06 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 0
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =  12.27607
Iteration 2:   deviance =  12.25894
Iteration 3:   deviance =  12.25894

Number of parameters: 16
Number of observations: 145
Pseudo log-likelihood: -339.52741
R-squared: .71864549
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.108082	.0662976	1.63	0.103	-.0218588	.2380229
lngdp_p	-.0101511	.0090061	-1.13	0.260	-.0278028	.0075007
lngdpcap_c	-.0885143	.0959177	-0.92	0.356	-.2765096	.099481
lngdpcap_p	.394885	.0349864	11.29	0.000	.326313	.4634571
lnimpgdp	-.2235432	.0451051	-4.96	0.000	-.3119477	-.1351388
lnppp_c	.4688803	.3268846	1.43	0.151	-.1718018	1.109562
lnppp_p	-.005193	.004869	-1.07	0.286	-.0147361	.0043501
lnmangdp	.1151844	.0574411	2.01	0.045	.002602	.2277669
lndis	.0646348	.0113296	5.70	0.000	.0424293	.0868404
fy	.0783546	.0260672	3.01	0.003	.0272638	.1294453
bor	.747037	.0797584	9.37	0.000	.5907134	.9033606
lan	-.0628243	.0372834	-1.69	0.092	-.1358984	.0102498
be	-.0992466	.0280484	-3.54	0.000	-.1542205	-.0442727
bw	-.0163226	.0314203	-0.52	0.603	-.0779054	.0452601
cefta	-.1584446	.0260287	-6.09	0.000	-.2094599	-.1074294
_cons	-1.806589	1.245152	-1.45	0.147	-4.247042	.6338637

Annex 33

Montenegro Gravity Model Import Wednesday July 19 23:10:56 2017 Page 1

```
1 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c lr

Multiple-imputation estimates                   Imputations     =         60
Linear regression                               Number of obs   =        162
                                                Average RVI     =     0.0000
                                                Largest FMI     =     0.0000
                                                Complete DF     =        148
DF adjustment:   Small sample                   DF:     min     =     146.04
                                                        avg     =     146.04
                                                        max     =     146.04
Model F test:       Equal FMI                   F(  13,  146.0) =      46.59
Within VCE type:          OLS                   Prob > F        =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.7454736	.4813375	-1.55	0.124	-1.696761	.2058135
lngdp_p	1.260138	.1067301	11.81	0.000	1.049203	1.471073
lngdpcap_c	2.117075	.6602794	3.21	0.002	.8121374	3.422012
lngdpcap_p	-.8011048	.1764477	-4.54	0.000	-1.149826	-.4523838
lnexpgdp	.0702001	.1960154	0.36	0.721	-.3171933	.4575935
lnppp_p	.3319292	.082483	4.02	0.000	.1689147	.4949437
lnppp_c	1.560013	1.262023	1.24	0.218	-.9341745	4.054201
lnmangdp	-1.641678	.3378739	-4.86	0.000	-2.309432	-.9739237
lndis	-1.282612	.121422	-10.56	0.000	-1.522583	-1.042641
fy	4.192696	.4259516	9.84	0.000	3.35087	5.034522
bor	-1.709789	.3376734	-5.06	0.000	-2.377147	-1.042431
lan	0	(omitted)				
be	-.0044886	.1472049	-0.03	0.976	-.2954158	.2864385
bw	0	(omitted)				
cefta	.1391571	.1934198	0.72	0.473	-.2431064	.5214207
_cons	2.29701	6.338975	0.36	0.718	-10.23097	14.82499

Annex 34

Montenegro Gravity Model Import Thursday August 17 01:46:29 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (strongly balanced)
         time variable:    year, 2001 to 2015
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor l
  note: lndis omitted because of collinearity
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       162
Group variable:  code                           Number of groups   =        11

R-sq:  within  =  0.7569                        Obs per group: min =        13
       between =  0.0002                                       avg =      14.7
       overall =  0.0221                                       max =        15

                                                F(10,141)          =     43.91
corr(u_i, Xb)  =  -0.9427                       Prob > F           =     0.0000
```

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-1.233081	.4881856	-2.53	0.013	-2.198191	-.2679719
lngdp_p	1.814903	.3309605	5.48	0.000	1.160617	2.469189
lngdpcap_c	1.918518	.6032971	3.18	0.002	.7258411	3.111195
lngdpcap_p	-.1829897	.3284179	-0.56	0.578	-.8322495	.46627
lnexpgdp	1.004782	.3372563	2.98	0.003	.3380492	1.671514
lnppp_c	1.24445	1.04903	1.19	0.238	-.8294096	3.31831
lnppp_p	.0937862	.1606094	0.58	0.560	-.2237275	.4113
lnmangdp	-1.010028	.395275	-2.56	0.012	-1.79146	-.2285965
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	-.6582573	.2368775	-2.78	0.006	-1.126548	-.1899666
bw	0	(omitted)				
cefta	-.1166136	.1744711	-0.67	0.505	-.4615309	.2283037
_cons	-18.69453	5.75311	-3.25	0.001	-30.06804	-7.321031
sigma_u	3.6033459					
sigma_e	.44491391					
rho	.98498349	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(  10, 141) =     44.14              Prob > F =  0.0000
```

Annex 35

Montenegro Gravity Model Import Thursday July 20 14:56:08 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy b
```

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling or recentering
WARNING: lngdp_p has very large values, consider rescaling or recentering

Number of regressors excluded to ensure that the estimates exist: 2
Excluded regressors: lan bw
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1: deviance = **2.953019**
Iteration 2: deviance = **2.951353**
Iteration 3: deviance = **2.951353**

Number of parameters: 14
Number of observations: 162
Pseudo log-likelihood: -382.34167
R-squared: .7896981
Option strict is: off

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0422647	.0312175	-1.35	0.176	-.1034499	.0189205
lngdp_p	.0740194	.0061231	12.09	0.000	.0620184	.0860204
lngdpcap_c	.1202745	.0411978	2.92	0.004	.0395284	.2010207
lngdpcap_p	-.0465208	.0124305	-3.74	0.000	-.0708841	-.0221576
lnexpgdp	.0039171	.0100172	0.39	0.696	-.0157162	.0235504
lnppp_c	.0923437	.0746997	1.24	0.216	-.054065	.2387524
lnppp_p	.0196363	.0045413	4.32	0.000	.0107356	.028537
lnmangdp	-.1015793	.0180273	-5.63	0.000	-.1369122	-.0662463
lndis	-.0728836	.0067992	-10.72	0.000	-.0862098	-.0595575
fy	.2504457	.0245992	10.18	0.000	.2022321	.2986593
bor	-.1027547	.0201074	-5.11	0.000	-.1421644	-.0633449
be	-.0009084	.0076932	-0.12	0.906	-.0159868	.01417
cefta	.009443	.0101436	0.93	0.352	-.0104382	.0293242
_cons	1.965572	.4142731	4.74	0.000	1.153612	2.777532

Annex 36

Serbia Gravity Model Export Tuesday July 18 11:25:52 2017 Page 1

```
1 . mi estimate : regress lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_p lnppp_c lr
```

Multiple-imputation estimates Imputations = 60
Linear regression Number of obs = 154
Average RVI = 0.0000
Largest FMI = 0.0000
Complete DF = 140
DF adjustment: **Small sample** DF: min = 138.04
avg = 138.04
max = 138.04
Model F test: **Equal FMI** F(13, 138.0) = 161.06
Within VCE type: **OLS** Prob > F = 0.0000

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.072603	.1191333	-0.61	0.543	-.3081652	.1629591
lngdp_p	1.121238	.0483161	23.21	0.000	1.025703	1.216773
lngdpcap_c	.578708	.3167652	1.83	0.070	-.0476312	1.205047
lngdpcap_p	-.5272287	.0973534	-5.42	0.000	-.7197255	-.334732
lnimpgdp	1.177455	.1614635	7.29	0.000	.858194	1.496717
lnppp_p	-.1194953	.0230558	-5.18	0.000	-.1650835	-.0739071
lnppp_c	.5086382	.1638009	3.10	0.002	.1845967	.8326797
lnmangdp	.5033846	.4323259	1.16	0.246	-.3514527	1.358222
lndis	-2.111532	.1074008	-19.66	0.000	-2.323896	-1.899169
fy	1.29743	.1555965	8.34	0.000	.9897688	1.60509
bor	-.345426	.1276904	-2.71	0.008	-.597908	-.0929439
lan	0	(omitted)				
be	-1.567074	.1502327	-10.43	0.000	-1.864129	-1.270019
bw	0	(omitted)				
cefta	.4186757	.1332256	3.14	0.002	.1552489	.6821026
_cons	-1.277388	2.550033	-0.50	0.617	-6.319564	3.764788

Annex 37

Serbia Gravity Model Export Thursday August 17 01:38:25 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (strongly balanced)
         time variable:    year, 1999 to 2015
                 delta:    1 year

2 .
3 . xtreg lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
  note: lndis omitted because of collinearity
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: be omitted because of collinearity
  note: bw omitted because of collinearity

  Fixed-effects (within) regression               Number of obs      =       154
  Group variable:  code                           Number of groups   =        11

  R-sq:  within  =  0.9040                        Obs per group: min =        14
         between =  0.0246                                       avg =      14.0
         overall =  0.2480                                       max =        14

                                                  F(9,134)           =    140.22
  corr(u_i, Xb)  =  -0.2472                       Prob > F           =    0.0000
```

lnexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	-.0265784	.1008226	-0.26	0.792	-.2259879	.1728311
lngdp_p	-.00551	.2136314	-0.03	0.979	-.4280356	.4170157
lngdpcap_c	.9291548	.3389242	2.74	0.007	.2588217	1.599488
lngdpcap p	.8655275	.352615	2.45	0.015	.1681164	1.562939
lnimpgdp	1.348375	.2459789	5.48	0.000	.8618712	1.834878
lnppp_c	.1329441	.1499434	0.89	0.377	-.1636178	.429506
lnppp p	-.1127524	.0771892	-1.46	0.146	-.2654192	.0399145
lnmangdp	-.6191352	.4110198	-1.51	0.134	-1.432061	.1937903
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	0	(omitted)				
bw	0	(omitted)				
cefta	.5186027	.1301766	3.98	0.000	.2611361	.7760693
_cons	-1.287017	3.896426	-0.33	0.742	-8.993469	6.419434
sigma_u	1.0107248					
sigma e	.24322247					
rho	.94526142	(fraction of variance due to u_i)				

F test that all u i=0: F(10, 134) = 170.51 Prob > F = 0.0000

Annex 38

Serbia Gravity Model Export Thursday July 20 14:49:44 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis fy k

  note: checking the existence of the estimates
  WARNING: lngdp_c has very large values, consider rescaling  or recentering
  WARNING: lngdp_p has very large values, consider rescaling  or recentering

  Number of regressors excluded to ensure that the estimates exist: 2
  Excluded regressors:  lan bw
  Number of observations excluded: 0

  note: starting ppml estimation
  note: lnexp has noninteger values

  Iteration 1:   deviance =  .6743894
  Iteration 2:   deviance =  .6734187
  Iteration 3:   deviance =  .6734187

  Number of parameters: 14
  Number of observations: 154
  Pseudo log-likelihood: -366.95879
  R-squared: .93709437
  Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	-.0053183	.0100271	-0.53	0.596	-.024971	.0143344
lngdp_p	.0610948	.002658	22.99	0.000	.0558852	.0663044
lngdpcap_c	.0331682	.0202163	1.64	0.101	-.006455	.0727914
lngdpcap_p	-.0287461	.0068874	-4.17	0.000	-.0422452	-.0152471
lnimpgdp	.0641824	.0111864	5.74	0.000	.0422575	.0861073
lnppp_c	.0276992	.0093276	2.97	0.003	.0094175	.0459809
lnppp_p	-.006467	.0014471	-4.47	0.000	-.0093033	-.0036308
lnmangdp	.0217991	.0194986	1.12	0.264	-.0164174	.0600156
lndis	-.1155861	.0055061	-20.99	0.000	-.1263778	-.1047944
fy	.0721633	.0099048	7.29	0.000	.0527502	.0915764
bor	-.0188708	.0060494	-3.12	0.002	-.0307274	-.0070141
be	-.0812389	.0102612	-7.92	0.000	-.1013505	-.0611273
cefta	.019861	.008669	2.29	0.022	.00287	.036852
_cons	1.872491	.1540335	12.16	0.000	1.570591	2.174391

Annex 39

Serbia Gravity Model Import Wednesday July 19 23:14:11 2017 Page 1

```
1 . mi estimate : regress lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_p lnppp_c ln
```

Multiple-imputation estimates — Imputations = 40
Linear regression — Number of obs = 180
Average RVI = 0.0000
Largest FMI = 0.0000
Complete DF = 167
DF adjustment: **Small sample** — DF: min = 165.04
avg = 165.04
max = 165.04
Model F test: **Equal FMI** — F(12, 165.0) = 51.99
Within VCE type: **OLS** — Prob > F = 0.0000

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.1694676	.1525959	1.11	0.268	-.1318243	.4707594
lngdp_p	.5542747	.0863285	6.42	0.000	.383824	.7247253
lngdpcap_c	-.1514977	.3646787	-0.42	0.678	-.8715349	.5685394
lngdpcap_p	.3255033	.1503947	2.16	0.032	.0285575	.622449
lnexpgdp	.2378287	.2549253	0.93	0.352	-.2655066	.741164
lnppp_p	.5665633	.0738464	7.67	0.000	.4207579	.7123687
lnppp_c	.5890101	.1507702	3.91	0.000	.291323	.8866972
lnmangdp	.7992368	.2400757	3.33	0.001	.3252212	1.273252
lndis	-.492482	.1285116	-3.83	0.000	-.7462208	-.2387433
fy	3.238116	.5170435	6.26	0.000	2.217243	4.258988
bor	-2.365225	.3991355	-5.93	0.000	-3.153295	-1.577155
lan	0	(omitted)				
be	-.1069327	.1402752	-0.76	0.447	-.383898	.1700326
bw	0	(omitted)				
cefta	0	(omitted)				
_cons	-2.94471	2.568228	-1.15	0.253	-8.015528	2.126108

Annex 40

Serbia Gravity Model Import Thursday August 17 01:47:37 2017 Page 1

```
1 . mi xtset code year, yearly
        panel variable:    code (unbalanced)
         time variable:    year, 1999 to 2015, but with a gap
                 delta:    1 year

2 .
3 . xtreg lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy  bor la
  note: lndis omitted because of collinearity
  note: fy omitted because of collinearity
  note: bor omitted because of collinearity
  note: lan omitted because of collinearity
  note: bw omitted because of collinearity
  note: cefta omitted because of collinearity
```

Fixed-effects (within) regression — Number of obs = 180
Group variable: **code** — Number of groups = 11

R-sq: within = 0.8798 — Obs per group: min = 14
between = 0.0640 — avg = 16.4
overall = 0.4403 — max = 17

F(9,160) = 130.14
corr(u_i, Xb) = -0.2213 — Prob > F = 0.0000

lnimp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lngdp_c	.2340453	.0889609	2.63	0.009	.0583563	.4097344
lngdp_p	.1350119	.1392959	0.97	0.334	-.1400837	.4101075
lngdpcap_c	.4285629	.2500834	1.71	0.089	-.0653272	.922453
lngdpcap_p	.2363773	.1435239	1.65	0.102	-.0470683	.519823
lnexpgdp	.0472187	.1804279	0.26	0.794	-.3091086	.403546
lnppp_c	.60921	.0869336	7.01	0.000	.4375248	.7808953
lnppp_p	-.1201159	.1259119	-0.95	0.342	-.3687795	.1285477
lnmangdp	.9277862	.3641261	2.55	0.012	.2086729	1.646899
lndis	0	(omitted)				
fy	0	(omitted)				
bor	0	(omitted)				
lan	0	(omitted)				
be	.4838677	.1078803	4.49	0.000	.2708147	.6969206
bw	0	(omitted)				
cefta	0	(omitted)				
_cons	-.8072333	2.458278	-0.33	0.743	-5.662089	4.047623
sigma_u	.76440678					
sigma_e	.25734801					
rho	.89819625	(fraction of variance due to u_i)				

F test that all u_i=0: F(10, 160) = 53.54 — Prob > F = 0.0000

Annex 41

Serbia Gravity Model Import Thursday July 20 14:56:51 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis fy b

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 3
Excluded regressors:  lan bw cefta
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1:   deviance =  1.846758
Iteration 2:   deviance =  1.845705
Iteration 3:   deviance =  1.845705

Number of parameters: 13
Number of observations: 180
Pseudo log-likelihood: -435.72804
R-squared: .79527619
Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0093407	.011915	0.78	0.433	-.0140123	.0326937
lngdp_p	.0279773	.0037686	7.42	0.000	.0205909	.0353636
lngdpcap_c	-.0113787	.0231621	-0.49	0.623	-.0567756	.0340183
lngdpcap_p	.016474	.0077939	2.11	0.035	.0011983	.0317497
lnexpgdp	.0104756	.0148048	0.71	0.479	-.0185413	.0394926
lnppp_c	.0327509	.0110798	2.96	0.003	.0110349	.0544669
lnppp_p	.0293575	.0032328	9.08	0.000	.0230214	.0356936
lnmangdp	.0408341	.0128894	3.17	0.002	.0155713	.0660969
lndis	-.025298	.0057983	-4.36	0.000	-.0366624	-.0139335
fy	.1660986	.0234222	7.09	0.000	.1201919	.2120053
bor	-.1208645	.0184756	-6.54	0.000	-.157076	-.084653
be	-.0036907	.0089877	-0.41	0.681	-.0213063	.0139249
_cons	1.847309	.1896255	9.74	0.000	1.47565	2.218969

Annex 42

Gravity Model Western Balkans Exports Thursday August 24 19:48:59 2017 Page 1

```
1 . ppml lnexp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnimpgdp lnppp_c lnppp_p lnmangdp lndis bor lan be

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 0
Number of observations excluded: 0

note: starting ppml estimation
note: lnexp has noninteger values

Iteration 1:   deviance =    135.7232
Iteration 2:   deviance =    135.5702
Iteration 3:   deviance =    135.5702
Iteration 4:   deviance =    135.5702

Number of parameters: 13
Number of observations: 926
Pseudo log-likelihood: -2247.4722
R-squared: .55493579
Option strict is: off
```

lnexp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0545102	.0063316	8.61	0.000	.0421004	.06692
lngdp_p	.0183043	.004226	4.33	0.000	.0100214	.0265872
lngdpcap_c	-.0397025	.0139379	-2.85	0.004	-.0670203	-.0123846
lngdpcap_p	.0956897	.0108831	8.79	0.000	.0743592	.1170201
lnimpgdp	-.0473882	.0102195	-4.64	0.000	-.0674181	-.0273584
lnppp_c	-.0069257	.0015511	-4.46	0.000	-.0099658	-.0038855
lnppp_p	.011318	.0024254	4.67	0.000	.0065643	.0160717
lnmangdp	.0300046	.0069586	4.31	0.000	.016366	.0436432
lndis	-.017626	.0067556	-2.61	0.009	-.0308668	-.0043851
bor	.0779013	.008673	8.98	0.000	.0609026	.0949
lan	.1381728	.0134557	10.27	0.000	.1118002	.1645455
be	.0152729	.0091222	1.67	0.094	-.0026062	.0331521
_cons	.6693076	.1108134	6.04	0.000	.4521173	.8864979

```
2 .
```

Annex 43

Gravity Model Western Balkans Imports Thursday August 24 19:41:35 2017 Page 1

```
1 . ppml lnimp lngdp_c lngdp_p lngdpcap_c lngdpcap_p lnexpgdp lnppp_c lnppp_p lnmangdp lndis bor lan be

note: checking the existence of the estimates
WARNING: lngdp_c has very large values, consider rescaling  or recentering
WARNING: lngdp_p has very large values, consider rescaling  or recentering

Number of regressors excluded to ensure that the estimates exist: 0
Number of observations excluded: 0

note: starting ppml estimation
note: lnimp has noninteger values

Iteration 1:   deviance =    47.49407
Iteration 2:   deviance =    47.46537
Iteration 3:   deviance =    47.46537

Number of parameters: 13
Number of observations: 1013
Pseudo log-likelihood: -2448.2037
R-squared: .62407129
Option strict is: off
```

lnimp	Coef.	Semirobust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lngdp_c	.0298592	.0042498	7.03	0.000	.0215297	.0381887
lngdp_p	.0362598	.0029507	12.29	0.000	.0304766	.0420431
lngdpcap_c	.036149	.0085645	4.22	0.000	.0193629	.0529351
lngdpcap_p	-.0119428	.0059873	-1.99	0.046	-.0236776	-.000208
lnexpgdp	-.005522	.0065316	-0.85	0.398	-.0183238	.0072797
lnppp_c	.0027847	.0010681	2.61	0.009	.0006913	.004878
lnppp_p	.0089518	.0015792	5.67	0.000	.0058566	.0120471
lnmangdp	.0144554	.0087919	1.64	0.100	-.0027764	.0316872
lndis	-.0537701	.0043135	-12.47	0.000	-.0622245	-.0453158
bor	.0220173	.0066743	3.30	0.001	.008936	.0350987
lan	.0636531	.0096406	6.60	0.000	.0447579	.0825482
be	-.0024903	.0037095	-0.67	0.502	-.0097607	.00478
_cons	1.388378	.0713564	19.46	0.000	1.248522	1.528233

```
2 .
```