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Economic Crisis, Development and Competitiveness in Southeastern Europe

Theoretical Foundations and Policy Issues

Springer

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ISSN 1431-1933
Contributions to Economics
ISBN 978-3-319-40321-2
DOI 10.1007/978-3-319-40322-9

ISSN 2197-7178 (electronic)

ISBN 978-3-319-40322-9 (eBook)

Library of Congress Control Number: 2016951307

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

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Theory of Optimum Currency Areas and the Balkans

Edgar Juan Saucedo Acosta and Jesus Diaz Pedroza

Abstract The theory of optimum currency areas show which are the optimal conditions for a group of countries sharing the same currency, such theory also points out the costs and benefits of giving up a national currency. There are costs and benefits for countries that decide to use the currency of another country or if they choose to belong to a monetary union. The main cost for a country when it is part of a monetary union is the loss of monetary policy, however if such country has credibility problems in monetary policy (high inflation in the past), this cost is significantly reduced or even it can become a benefit. Countries may choose to use another currency to import credibility (Dollarization or Euroisation), belonging to a monetary union or to create central banks with credibility. There are economies with anchors currencies, that is, economies with credible central banks (with inflation controlled for several years), while on the other hand there are economies that have no anchor currencies and therefore can choose to import credibility from economies with anchor currencies. The aim of this paper is to apply some theoretical elements of the theory of optimum currency areas to Balkans countries. We start to consider the idea that there are anchor currencies and non-anchor currencies on the economies of the world. Starting from the above, it is considered that the anchor currency for the countries of the Balkans is the euro, due to the credibility that the European Central Bank has acquired since its creation to the present. Furthermore, we propose to evaluate the relevance for Balkan countries choose one of the following three options: keep their national currencies, create a new regional currency or to use the euro (Euroisation or to be part of the euro area). To assess the relevance of any of the three options above, we estimate the co-movement of the economies of the Balkans with the eurozone and with themselves, besides we analyse the credibility of central banks in the region (the record

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© Springer International Publishing Switzerland 2016
A. Karasavvoglou et al. (eds.), *Economic Crisis, Development and Competitiveness in Southeastern Europe*, Contributions to Economics,
DOI 10.1007/978-3-319-40322-9_4

in the inflation in the countries of the region), trade flows of the countries of the region with the euro-zone and among themselves, and finally we estimate a political proximity variable (coincidence of voting in the UN General Assembly).

1 Introduction

The Balkan region is formed by countries that have different types of relationships with the European Union (EU). Greece, Bulgaria and Croatia are already members of the EU, while Albania, FYROM, Montenegro and Serbia are official candidates and Bosnia & Herzegovina is a potential candidate, officially recognized by the European Commission. On the other hand, from a monetary point of view, the countries of the region are linked to the euro zone and the euro, because Greece is a member of such zone, Montenegro uses the euro (Euroisation), Croatia and Bulgaria will have to use such currency and all other countries of the Balkans have to do the same once they enter the EU.

In the medium and long term, the Balkans will be linked to the euro zone, so it is relevant to analyse how convenient it is for these countries to use the euro. We will use the Optimum Currency Areas (OCA) theory which analyses what are the ideal conditions for a group of countries sharing a common currency and what are the costs and benefits of using a single currency.

In the Balkan region is interesting to apply the OCA theory, because in that region Greece already share the same currency with its partners in the euro area, so that such country can be used as parameter to analyse the pertinence of the other countries in the region to enter in the euro zone. Although Greece has its own characteristics, especially after the European financial crisis, we believe it can serve as parameter.

There are papers that have studied whether the region is an OCA with the euro zone. The results are mixed, because some studies show that for the Balkans is optimal use the euro (Sideris 2009), while other studies show that only some Balkan countries should use the euro (Gouveia 2014; Broz 2007) and others show that is not optimal use of the euro to the region (Belke and Zenkić 2007; Gockov and Jovanovski 2013; Gligorov et al. 2008). The methodology of previous studies uses some of the following criteria for OCA: trade integration, synchronization of business cycles, labour mobility and the exchange rate indicator.

The originality of the paper is based on the analysis of the feasibility of the Balkans use a regional currency or the euro. To do this, we use innovative criteria, including the criterion of co-movement of the product (which differs from the synchronization of business cycles), and a criterion of political proximity. On the other hand, we use the criteria of trade integration and inflation (used in most previous studies).

2 Theories of Optimum Currency Areas

There is a wide range of exchange rate regimes (ERR). At one extreme is the ERR free floating and the other is Monetary Union (MU). Frankel (1999) found nine ERR that vary according to the degree of monetary flexibility. The ERR of free floating and MU are known as corner solutions, because they are at the extremes of the range of the ERR. In recent years several countries have chosen one of the corner solutions.

In the ERR free floating, governments do not aim its exchange rate, it is the market that determines it. The free-floating ERR must be supported by an independent Central Bank to better results.

MU occurs when two or more countries use the same currency and may be considered in two ways. In the first case, called Dollarization (or Euroisation), a country adopts the currency of another country. Montenegro has used the euro (previously the German mark). The second case, called MU, a group of countries creates a new currency, as the euro zone when a group of European countries began to use the euro since 1999.

The OCA theory studies when it is best to have a MU, in other words, the benefits of using the fixed ERR. The choice of corner solutions will be focused using the OCA theory.

An OCA can be defined as a geographic area where it is optimal to use a single currency and one Central Bank. This area may include two or more countries. The OCA theory studies the disadvantages and advantages of MU's. According to Dellas and Tavlas (2001), there are two types of approaches in the literature that evaluated when it is optimal form a MU. The first considers the conditions that countries must meet to adopt a common currency, while the second shows the costs and benefits of forming a MU.

According to the first approach, countries must meet the following conditions to form an OCA (Table 1).

Mundell (1961) states that if there is free movement of workers between two countries, it is optimal sharing a single currency. Mckinnon (1963) was the first to show that when two or more countries trade a lot the benefits of sharing the same

Table 1 Criteria of OCA and authors

	Criteria	Authors
1	Labour mobility and flexibility of wages and prices	Mundell (1961)
2	Trade openness	Mckinnon (1963)
3	Diversification of consumption and production	Kenen (1969)
4	Political integration	De Grauwe (2006), Lee and Barro (2006)
5	Financial integration	Mundell (1973a, b)
6	History of high inflation	Alesina and Barro (2002)

Source: own elaboration

currency are high. Kenen (1969) showed that the diversification of production becomes more viable monetary integration.

De Grauwe (2006) shows that political integration among countries is a determining factor for share the same currency. Mundell (1973a, b) indicated the importance of financial integration in the decision of monetary integration. Alesina and Barro (2002) showed the role that the inflation record of a country in its decision to share the same currency.

The main problem with using this method is that there are several conditions that may result conflicting results. For example, two countries can trade a lot between them. However, these countries may have low labour mobility. If we consider the first condition, such countries should share the same currency, while the second condition it would not be desirable for these countries share the same currency.

The second approach shows the costs and benefits of forming a monetary union (Table 2 below):

The Table 2 above shows the main costs and benefits of sharing a single currency. When a currency is shared, the costs of foreign exchange are eliminated (De Grauwe (2007)); this reduces uncertainty about possible appreciations and depreciations of the exchange rate (Dellas and Tavlas (2001)). When the new MU has a credible monetary policy (McCallum (1995)), there is a benefit of having a commitment to fight inflation (Alesina and Barro (2002)).

Benefits: The main benefit of being part of a MU is the reduction of transaction costs.

Costs: the main cost being part of a MU is the loss of the exchange rate and monetary policy (Mundell (1961)) to face an external imbalance.

Another benefit of being part of a MU is based on the "hypothesis of credibility". According to such hypothesis, the stronger the commitment to have a fixed exchange rate, credibility is greater. The "hypothesis of credibility" is based on the notion that a MU implies a stronger commitment by having a fixed exchange rate. A MU with a strong commitment to price stability will increase the credibility of the members of the MU, so the result is that new entrant imports credibility of the MU.

New trends in the OCA theory include new costs and benefits of forming a monetary union. For example, Alesina and Barro (2002) showed that the benefits and costs of forming a monetary union are:

Table 2 Benefits and costs of sharing a currency

Benefits and costs	Authors
Benefits	
Elimination of transaction costs	De Grauwe (2007)
Reducing uncertainty	Dellas and Tavlas (2001)
A more credible monetary agreement	McCallum (1995)
Commitment to maintain low inflation	Alesina and Barro (2002)
Costs	
Loss of monetary policy (Traditional consideration)	Mundell (1961)

Source: own elaboration

Benefits of Trade: two countries trade more with a single currency than with two currencies, therefore, a MU would increase trade.

The benefit of commitment: inflation bias is reduced when a country adopts the currency of a country with credibility in monetary policy.

Asymmetric shocks: the main cost is the effect of monetary policy in the presence of asymmetric shocks, because in the MU, monetary policy is implemented throughout the Union and not just for an individual country, so that if a country receives a shock that does not affect the Union, there is no way for this country to react to the shock.

From the new perspective of the costs and benefits of forming a MU, potential candidates are countries ("clients") with long periods of high inflation. The "clients" should choose countries with low inflation ("anchors"), i.e. countries with high credibility in monetary policy. Additionally, an important element is that the "clients" and "anchors" have symmetric shocks, to reduce the costs of forming a monetary union.

Sometimes there are MU's with several "clients" and only one "anchor", as in the case of the euro area. It may happen that a "client" unilaterally adopts the currency of an "anchor", as in the case of Montenegro with the euro. In both cases the "client" ("clients") gets more credibility, therefore, the "client" import monetary stability from the "anchor".

In the euro area the "anchor" is Germany, because the Bundesbank has had a record of low inflation and a high degree of independence. Therefore, inflation bias has been declining for Germany since the end of World War II.

Before the launch of the euro, there were two monetary systems in Europe, where Germany was the "anchor". The first was the snake in the tunnel, where European countries in the early seventies coordinated their monetary policies to keep their exchange rates linked to the US dollar. The second occurred in the late seventies, the European Monetary System (EMS), which was created to import stability of an "anchor" in this case the Bundesbank.

Capital mobility has increased since the eighties, so it was very difficult to maintain the credibility of EMS members. One solution to this problem was the creation of the Economic and Monetary Union (EMU) with only one currency and a Central Bank for Europe. McCallum (1995) points out that the stronger is the commitment largest is credibility, so that EMU was the solution to maintain the credibility of the euro zone.

Table 3 EU membership and the Balkans

Country	EU Member	Candidate	Potential
Albania		2014	
Bosnia and Herzegovina			2003
Bulgaria	2007		
Croatia	2013		
Greece	1981		
FYROM		2004	
Montenegro		2010	
Serbia		2012	

Source: own elaboration

3 Exchange Rate Regimens and Monetary Unions in the Balkans

3.1 The Balkans and the European Union

We have considered for this text the following countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, FYROM, Montenegro and Serbia.

The Balkan countries have different types of relationships with the EU, because they have the following statuses: members, candidates and potential candidates.

Table 3 shows the relationship of the Balkan countries and their status with the European Union. There are three groups of countries according their status in the EU:

Group 1: EU Member States

Greece joined 1981 to the EU and the euro area in 2001, Bulgaria is a member of the EU since 2007 and is not a member of the eurozone and Croatia joined to the EU in 2013 and is not part of the eurozone.

Group 2: EU candidates

These countries are considered candidates who have acquired this status from 2004 to 2014. In this group are included Albania, FYROM, Montenegro and Serbia. Montenegro uses the euro since 2002 (before the German mark).

Group 3: EU potential candidates

Bosnia Herzegovina is considered by the European Commission as a potential candidate for the EU.

Table 4 Monetary policy framework and exchange rate arrangement in Balkans

	Monetary policy framework		
Exchange rate arrangement	Exchange rate anchor Euro	Inflation targeting framework	Other
No separate legal tender	Montenegro		
Currency Board	Bosnia and Herzegovina, Bulgaria		
Stabilized arrangement	FYROM		
Crawl-like arrangement	Croatia		
Floating		Albania, Serbia	
Free floating			Greece (in the euro zone)

Source: International Monetary Fund (2013)

3.2 *Exchange Rate Regimes and O Monetary Policy in the Balkans*

The exchange rate regimes and monetary policy differ in the Balkans. Table 4 shows the types of monetary policy and ERR. The region has a wide range of ERR, from unilateral dollarization to floating.

3.2.1 Greece

Greece has no longer a monetary policy and national currency. Since 2001, such country is a member of the eurozone and uses the euro and the European Central Bank determines monetary policy in this area. The European Central Bank manages monetary policy that is based on two pillars, one economic and the other monetary (Saucedo 2009), that is why the IMF classifies the Monetary Policy of such Central Bank as "other" (International Monetary Fund 2013). Exchange rate policy in the euro area is free floating (International Monetary Fund 2013), i.e. is the supply and demand for that currency determines its price.

3.2.2 Albania

Albania applies a monetary policy classified as inflation targeting. The Central Bank of Albania has the aim of achieving price stability, and for such the Central Bank has set a target of an annual increase in the consumer price index of 3 %. The policy exchange rate in Albania is free floating, although the International Monetary Fund (IMF) considers the regime as floating because sometimes there are

interventions by the Central Bank in the foreign exchange market (International Monetary Fund 2013).

3.2.3 Serbia

Serbia applies an inflation targeting monetary policy. The Central Bank of Serbia aims price and financial stability, and has set a target by inflation, in the medium term, of 2–4 %. The exchange rate policy is managed float, because it's Central Bank intervenes when there is a lot of variability in the exchange rate. The IMF points out that Serbia has an exchange rate regime classified as floating.

3.2.4 Croatia

The Central Bank of Croatia applies a monetary policy that is anchored to the exchange rate (International Monetary Fund 2013). The IMF classifies exchange rate regime in Croatia as crawl-like arrangement, where the Central Bank of that country intervenes to achieve a controlled depreciation of its national currency (kuna) with the euro, which is not greater than 2 %, otherwise would be considered as floating (International Monetary Fund 2013).

3.2.5 FYROM

The Central Bank of FYROM applies a Monetary Policy that is anchored to the exchange rate, because its intermediate target is a certain value of its currency (Denar) in relation to the euro. The IMF classifies exchange rate regime of FYROM as Stabilized arrangement (International Monetary Fund 2013), where the Central Bank intervenes in the foreign exchange market to avoid abrupt depreciation (appreciation).

3.2.6 Bulgaria

The Central Bank of Bulgaria applies a Monetary Policy that is anchored at the exchange rate at a fixed level 1.9558: 1 EURO. The exchange rate regime in Bulgaria is an Currency Board (International Monetary Fund 2013), which consists of keeping fixed the value of its currency (lev) relative to the euro, and the rule followed is that the money supply grows (decreases) as international reserves grow (decrease).

3.2.7 Bosnia and Herzegovina

The Central Bank of Bosnia and Herzegovina applies a monetary policy that is anchored at the exchange rate at a fixed level 1.9558: 1 EURO. The rate of exchange rate of Bosnia and Herzegovina is Currency Board (International Monetary Fund 2013), which is to keep fixed the value of its national currency (mark) relative to the euro (it was linked to the German mark before), and the rule followed is that the money supply grows (decreases) as international reserves grow (decrease).

3.2.8 Montenegro

Montenegro has no own currency, uses the euro (previously used the German mark). This country uses the euro unilaterally and the main objective of the Central Bank is to achieve and maintain financial stability. The IMF classifies its exchange rate policy as "no separate legal tender" (International Monetary Fund 2013).

3.3 Monetary Options for Balkan Region

In the Balkans can be considered three options:

(1) To continue using their national currencies, although Montenegro and Greece use the euro, and Bulgaria, Croatia will have to use it in the medium and long term, because they are members of the EU.
(2) Creation of a regional currency, although in the case of Greece and Montenegro already use the euro, which would complicate this option.
(3) Using the euro as the national currency, and there are two choices: which countries become members of the euro zone (Greece) or if they decide to do so unilaterally (Montenegro).

4 Methodology

4.1 Databases, Sources and Indicators

4.1.1 Price Stability

Inflation data come from the World Development Indicators 2014 (World Bank), and we use the variable Consumer Price Index for the period 1990–2012. Not all countries have data for the entire period, because several countries acquired their

independence recently, for those countries the annual average inflation data of short periods was taken into account.

Information of inflation in the euro zone come from the IMF, World Economic Outlook Database, October 2014, and we use the variable Consumer Price Index for the period 1990–2012.

$$\pi = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}}$$

Where:

CPI Consumer Price Index

4.1.2 Trade Openness

The bilateral trade data come from the Department of Trade Statistics of the IMF. Imports and exports are in US dollars for the period 1980–2013. For the calculation of trade opening we needed the Gross Domestic Product (GDP) of each of the countries, so it used the IMF, World Economic Outlook Database, October 2014. The GDP used was in billions of US dollars.

To compute the Trade Openness (TO) the following formula is used:

$$TO = \frac{M's + X's}{GDP}$$

Where:

M's imports;
X's exports;
GDP Gross Domestic Product

4.1.3 Co-Movement of GDP

The methodology used in this paper is based on the proposal of Alesina et al. (2003) in which co-movements are calculated in economies that should form a MU. Based on the results the convenience of belonging or not to an OCA (if you consider the Euro as such) is inferred.

The IMF contains all the information needed for this document. Eurostat has information for all countries in Europe, but there are some missing years for countries that are candidates to join the euro zone. The OECD database has

conversions PPP exchange rates. Finally, the database of the World Bank is one of the sources used. With all these information bases we will be able to integrate a panel covering a time period of at least fifteen years for each of the countries analysed.

The model that we propose allows observe how co-movement the variable GDP per capita of a set of economies in the Balkans. The Y_{jt}/Y_{it} variable measures the ratio of GDP of the j-th country in terms of the ith country. Eight countries were used with an annual time period ranging from 2000 to 2014, homogenizing the series at PPP prices to compare these economies. An autoregressive second order process was used to estimate model parameters, such as indicated Alesina, Barro and Tenreyro:

$$ln\frac{y_{jt}}{y_{it}} = C_0 + C_1 ln\frac{y_{jt-1}}{y_{it-1}} + C_2 ln\frac{y_{jt-2}}{y_{it-2}} + u_{ijt} \quad (1)$$

With $\widehat{u_{ijt}}$ which measures the relative product that is not predictable from the previous two periods. Then a measure of co-movement would be given by the root mean square of error:

$$VY \equiv \sqrt{\frac{1}{T-3}\sum_{t=1}^{T} u_{ijt}^2} \quad (2)$$

The above expression shows that for small values VY indicates a higher co-movement of products between countries i and j, and that most of the explanation (between products) is given by the expression (1).

The econometric technique for estimating parameters and root mean square consisted of a 2nd order autoregressive panel was developed by Arellano and Bond (AB) (1991) and Arellano (2003), due to the dynamic nature of the autoregressive process. Thus AB estimator is performed by the Generalized of Method of Moments (GMM) and to estimate a dynamic model is not required to include external instruments. Cannot be used the usual technique Pooled OLS estimator by the presence of autocorrelation of unobserved individual effect and lagged variables. The same problem would be using the methodology of the estimates of fixed effects and random effects.

Estimation by dynamic methods poses a relationship that is characterized by the presence of lags of the dependent variable in the regressors. In addition, it is assumed that the error terms follow a model with a single error component with the property that are independent and identically distributed (IID).

4.1.4 Political Proximity

The information on the resolutions of the General Assembly of the United Nations (UN) comes the Official Document System of the UN (http://www.un.org/es/documents/ag/resga.shtml) for the 2014. The degree of coincidence in the voting

at the General Assembly of the UN was compute, and the options are for, against abstentions and no vote. The option did not vote was taken as a fourth option, so that if a country did not vote and the other yes, it was considered that there was no coincidence in the resolution.

We followed Lee and Barro (2006) on the degree of coincidence of countries in the General Assembly of the UN. We used the latest available year (2014), for political proximity to the countries of the Balkans. FYROM does not belong to the UN, for reason we do not include in this analysis. For each of the Balkan countries the degree of coincidence was calculated (each resolution 2014) regarding themselves and the countries of the euro zone, and then we obtained an average of the degree of coincidence.

5 Results

5.1 *Price Stability*

Table 5 shows the average inflation, using the consumer price index, for the Balkans. We divide the information into two sub-periods, 1990–2000 and 2000–2012. Nevertheless, there are countries for which there were not data for the first period (Bosnia and Herzegovina and Montenegro) because they became independent at later dates. In the nineties was a period of low inflation in Europe, because several countries had to fulfil the Maastricht criteria, in order to enter the euro zone, but the countries of the Balkans did not have to meet these criteria (with the exception of Greece).

In the period 1990–2000, the countries of the Balkans had a double-digit inflation (excluding Greece with high inflation, but with one digit), due to the instability that occurred in this period in the region. It is noteworthy Bulgaria with an average annual inflation 117.5 %, Croatia (86.2 %) and Serbia (50.2 %). On average the Balkan region had an inflation rate of 50.22 %, very high when is compared to the euro area (2.21 %).

In the period 2000–2012, the countries of the Balkan region had lower inflation than the previous period. Inflation in the Balkans was only one digit, except Serbia having a price increase annual average of 12.9 %. Albania, Bosnia and Herzegovina, Croatia, Greece, FYROM and Montenegro had inflations very close to 3 %. The Balkans region had an average inflation 4.64 %, while in this period the euro zone had an inflation rate of 2.17 %.

The euro area seems to be an anchor in the region, because the inflation in that region is low compared with that of the Balkans. Many Balkan countries have low inflation due to: they have linked their currencies to the euro (Bulgaria and Bosnia and Herzegovina have a Currency Board) or they use the euro (Greece and Montenegro) and as a result of the process of transitional evolution of their economies. The euro is now an anchor currency for the region, so it would be very likely for countries

Table 5 Mean of annual inflation rates for Balkans region (%)

Country	1990–2000	2000–2012
Albania	27.8	2.9
Bosnia and Herzegovina		3
Bulgaria	117.5	5.9
Croatia	86.2	2.9
Greece	9	3.2
FYROM	10.6	2.4
Montenegro		3.9
Serbia	50.2	12.9
Average	50.22	4.64
Euro zone	2.21	2.17

Source: own elaboration with data from The World Bank

of the Balkans to use it in the future as a means to import stability. Greece and Montenegro uses the euro, Bulgaria and Croatia will eventually use that currency (once they pass a series of tests) because they are part of the EU, while other countries are candidates (with the exception of Bosnia and Herzegovina), so that when they become member of the EU will have to use the euro.

5.2 *Bilateral Trade*

Table 6 shows the bilateral trade (% GDP) of the countries of the Balkans with respect to the euro zone and among themselves. In general, countries in the Balkans are more integrated with the euro area (15.88 %) than among themselves (7.80 %), so it would be more likely to share a currency with the euro area than among themselves. Montenegro is the only country in the region with greater regional integration with the Balkans (15.10 %) compared with the euro area (12.36 %), while other countries in the region have greater trade integration with the euro zone. Croatia, Albania, Bosnia and Herzegovina, Bulgaria and FYROM are more integrated with the euro area than Greece, even that the latter is already using the euro. Although Montenegro already uses the euro, it is the most integrated, in terms of trade, with the Balkan region.

Overall, if we use the criterion of trade integration, the countries of the Balkans would be ideal candidates to use the euro, because their level of trade integration with the euro area is larger than themselves. The alternative of a regional currency is not feasible if we use the criterion of trade integration.

Table 6 Bilateral Trade (% GDP) for Balkans region, 2005–2013

Country	Trade partners	
	Euro zone (%)	Balkans (%)
Albania	13.73	4.32
Bosnia and Herzegovina	17.56	13.98
Bulgaria	19.98	4.80
Croatia	20.77	4.41
Greece	13.58	1.85
FYROM	16.70	11.97
Montenegro	12.36	15.10
Serbia	12.38	5.97
Average	15.88	7.80

Source: own elaboration with data from the IMF

5.3 *Co-Movement of Product*

To estimate Eq. (1) a transformation of the variable in logarithm is performed and the results are presented in Table 7.

However, the interest of our empirical analysis focuses on the residuals of the regression, because they represent the co-movements or interdependence of all countries in this panel.

Table 8 shows the co-movement of GDP per capita between the countries of the Balkans and the euro zone and among the countries of the Balkans (lower values means higher co-movements). On average, countries in the Balkans have higher co-movement among themselves (regarding the euro area). Therefore would not be optimal for those countries using the euro as a whole, while a regional currency would be more justified if we use the criterion of co-movement of products. However Greece and Montenegro, which already use the euro, have the lowest co-movement with the euro zone, which would be a contradiction if we rely on the criterion of co-movement of products. The above indicates that the decision to use the euro by Greece, and to a lesser extent Montenegro (by the size of its economy), was based more on political criteria. The low co-movement of the Greek economy with the euro zone is not new, there are studies (Lee and Barro 2006; Saucedo 2009) showing that the synchronization of its economy is low relative to the area euro.

5.4 *Political Proximity*

The Table 9 shows the political proximity (degree of coincidence in voting of the resolutions of the General Assembly of the UN) of the countries of the Balkans with the euro area and among themselves.

The Balkan countries have more political proximity to the members of the euro area than themselves, because the level of political proximity to the euro area (0.9013) is higher than among themselves (0.8820), therefore, would be more

Table 7 Results of estimation of Eq. (1)

Dependent variable	Coefficient
$ln(y_{it}/y_{it})$	
Independent variables	
$\ln\left(y_{it-1}, y_{it-1}\right)$	1.2524
	(0.1037)
$\ln\left(y_{it-2}, y_{it-2}\right)$	−0.3619
	(0.1040)
c_0	0.7446
	(0.1767)

Source: own estimation
Note: The standard error is shown in parentheses below the coefficient
All coefficients are significant at the 5 % statistical significance

Table 8 Co-movement of GDP per capita, 2000–2014

Country	VY Euro zone	VY Balkans (average)
Albania	0.0202	0.0103
Bosnia and Herzegovina	0.0222	0.0113
Bulgaria	0.0208	0.0119
Croatia	0.0246	0.0127
FYROM	0.0225	0.0121
Greece	0.0272	0.0147
Montenegro	0.0292	0.0163
Serbia	0.0259	0.0138
Average	**0.0241**	**0.0129**

Source: own estimation

Table 9 Political proximity for Balkan countries, 2007–2014

Country	Euro zone	Balkans (average)
Albania	0.9116	0.8869
Bosnia and Herzegovina	0.8543	0.8523
Montenegro	0.9341	0.9114
Serbia	0.8166	0.8119
Bulgaria	0.9213	0.8939
Croatia	0.9240	0.9013
Greece	0.9472	0.9162
Average	**0.9013**	**0.8820**

Source: own estimation with data from UN

appropriate that the euro will be used in the region regarding a the creation of a new regional currency. At the country level, Croatia, Greece, Bulgaria, Montenegro and Albania are more integrated with the euro zone.

We will use Greece as a parameter, in this section, because is already member of the euro zone and we suppose that such country has a high level of political proximity with their partners due to negotiations before and during the euro zone

creation. So, using Greece as a parameter, only Bosnia and Herzegovina and Serbia would not be politically very close to the euro zone, so it would not be desirable for these countries to use the euro.

6 Conclusion

The countries of the Balkan region are linked to the euro zone in different ways. In the future the region will be further linking with countries that share the euro, so it is relevant to investigate whether it is optimal for that region using the euro, or if a better scenario to create a new regional currency or to continue using their national currencies.

The paper shows that for the countries of the region the benefits of using the euro are large, so that the option of a regional currency would not be a good choice. The use of the euro is a feasible option once these countries have joined the EU. The option to continue using their national currencies is not viable in the long term, because there are countries that already are using the euro in the region (Greece and Montenegro), while other countries have linked their currencies to the euro. Only Serbia and Albania have implemented monetary and exchange rate policies that are not linked to the euro, because these countries have monetary policies of inflation targeting and a flexible exchange rate.

If we use as a criterion to price stability, although the countries of the Balkan region have reduced inflation, the price increase in this region is almost double that in the euro area in the period 2000–2012 while in the previous period (1990–2000), the average annual inflation Balkan region was 50 %, while in the euro area was only 2 %. The euro is an anchor currency that would serve the region to import price stability.

The criterion of bilateral trade shows that on average the Balkan countries trade more with the euro area with such region, so that the best option would be to utilize the euro instead of creating a new regional currency. Most countries in the region have greater bilateral trade with the eurozone than Greece with its euro zone partners.

The criteria of co-movement of the product shows that for Balkan countries is beneficial to use a regional currency, because their economies are more synchronized with themselves than with the euro zone. Nevertheless if we use Greece as a parameter, for the rest of Balkans countries would be optimal to use the euro, because those countries have higher co-movement than Greece (regarding euro zone).

The criterion of proximity policy shows that in general the countries of the region are more politically closer to the euro area than among themselves, so the best option is to use the euro instead of a regional currency.

The paper has the advantage that from a set of criteria is possible to determine whether it is optimal for the Balkan countries to be integrated monetarily with the euro zone. Thus, it was concluded that the best option for the region is to use the

euro in relation to launch a new regional currency. However, from the case of Greece is possible to note that monetary integration responds to political factors rather than the criteria of OCA, because that country have lower values on several criteria than other countries of the Balkans. In this sense, one of the limitations of the text is that political factors that influence share a single currency are not included, although a political proximity indicator was used. It possible to apply the same methodology to other regions that are involved in economic integration processes to analyse the feasibility of monetary integration.

When a country is a member of a monetary union loses control of its monetary policy to address economic national shocks. In the case of the eurozone, decisions of the Governing Council of the ECB are based on macroeconomic variables in such area and not a particular country, however, as a country is larger, such as Germany, its macroeconomic variables affects more the euro zone, unlike a small country (Greece). If the business cycle of a small country is synchronized with the cycle of the eurozone, a single monetary policy is optimal, but if the cycles are not synchronized a single monetary policy is not optimal. When members of a monetary union have different economic paths, the costs of belonging to a monetary union increase, because a single monetary policy is not optimal for a group of countries with different economic cycles.

References

Alesina A, Barro RJ (2002) Currency unions. Q J Econ 117(2):409–436

Alesina A, Barro RJ, Tenreyro S (2003) Optimal currency areas. In: Gertler M, Rogoff K (eds) NBER Macroeconomics annual 2002. The MIT Press, Cambridge, MA, pp 301–356

Arellano M (2003) Panel data econometrics. Oxford University Press, Oxford

Arellano M, Bond S (1991) Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev Econ Stud 58:277–297

Beike A, Zenkić A (2007) Exchange-rate regimes and the transition process in the Western Balkans. Intereconomics 42(5):267–280

Broz T (2007) The application of optimum currency area criteria to Croatia. Revistatineriloreconomisti 1(9):7–19

De Grauwe P (2006) What have we learnt about monetary integration since the Maastricht treaty? J Common Mark Stud 44:711–730

De Grauwe P (2007) The economics of monetary integration. Oxford University Press, New York, NY

Dellas H, Tavlas GS (2001) Lessons of the euro for dollarization: analytic and political economy perspectives. J Policy Model 23(3):333–345

Frankel JA (1999) No single currency regime is right for all countries or at all times. NBER Working papers 7338

Gligorov V, Iara A, Landesmann M, Stehrer R (2008) Western Balkan countries: adjustment capacity to external shocks, with a focus on labour markets. "Wiener Inst. für Internat. Wirtschaftsvergleiche" (WIIW)

Gockov G, Jovanovski K (2013) Macroeconomic shocks asymmetry: see as an optimal currency area. Review-Časopiszaekonomiju-APEIRON 6(2)

Gouveia S (2014) Business cycle correlation between the Euro area and the Balkan countries. Int J Econ Sci Appl Res 1:33–49

International Monetary Fund (2013) Annual report on exchange arrangements and exchange restrictions 2013. International Monetary Fund. Washington. DC

Kenen PB (1969) The optimum currency area: an eclectic view. In: Mundell RA, Swoboda AK (eds) Monetary problems of the international economy. University of Chicago Press, Chicago, IL. pp 41–60

Lee JW, Barro RJ (2006) East Asian currency union. Harvard University Working paper

McCallum BT (1995) Two fallacies concerning Central-Bank independence. Am Econ Rev 85 (2):207–211

McKinnon RI (1963) Optimum currency areas. Am Econ Rev 53(4):717–725

Mundell RA (1961) A theory of optimum currency areas. Am Econ Rev 51(4):657–665

Mundell RA (1973a) A plan for a European currency. In: Johnson HG, Swoboda AK (eds) The economics of common currencies. Harvard University Press, Cambridge, MA, pp 143–173

Mundell RA (1973b) Uncommon arguments for common currencies. In: Johnson HG, Swoboda AK (eds) The economics of common currencies. Harvard University Press, Cambridge, MA, pp 114–132

Saucedo EJ (2009) Essays on the European Central Bank: Ensayos sobre el Banco Central Europeo. University of Veracruz, Xalapa, Mexico

Sideris D (2009) Do the new EU member states form an optimum currency area with the eurozone? Evidence from six Central and Eastern European countries (No. 15). National Bank of Serbia