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Banking stability during the economic transformation process in selected countries of the Western Balkans

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ABSTRACT

Economic transformation is still an ongoing process in many European countries. Despite common economic roots, the current economic situations are developing differently in different countries. This article will consider the process of economic transformation in terms of the banking sector. It aims to assess the level of banking stability throughout the transformation process in the Western Balkan region, and to assess the determinates of banking stability. A tool based on the Macroeconomic Stability Pentagon is used to estimate banking stability. The study finds that in most of the researched countries, the most common determinates of banking stability are market concentration and market competition. Additionally, it finds that the stability of banking systems in two countries – relatively the most transformed in the region (Croatia) and the one which is considered the most delayed (Serbia) – are influenced by similar factors, while the other banking systems in the region, despite common roots and experiences, vary in terms of the factors affecting their banking stability.

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1. Introduction

Economic transformation is still an ongoing process in Europe which still is present in the research. (Åslund, 2018; Voicu et al., 2018)

Many European countries are at different stages in their transition to a market economy. Some of these countries originate from the same state – the former Socialist Federal Republic (SFR) of Yugoslavia, which means they have a common economic history and common current experience in building their statehood from scratch. These countries have long fought for their independence and sovereignty. For many years, SFR Yugoslavia was a federal republic, consisting of six provinces. Economic results in SFR Yugoslavia that were achieved due to changing from a centrally planned economy to the so-called 'third way' were not visible in other aspects of socio-economic life (Yarashevich and Karneyeva, 2013). Despite the relatively high average annual GDP growth rate, the Yugoslav economy struggled with the problem

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of unemployment (Boduszynski, 2010), and non-market forces affecting the banking system that led to its deep inefficiency (Kukić, 2017). Moreover, the country had always been a home to a very diverse population, both in terms of national and religious affiliations (Illés, 2011). Religious differences among Orthodox Christian Serbs, Catholic Croats, and Muslim Bosnians, and the rise of nationalism contributed to the collapse of Yugoslavia in 1991. In the 1980s, inter-ethnic tensions grew and developed into open war conflicts, as a result of which the former republics later declared their independence. After the sanguinary conflicts, the countries had to be rebuilt and needed to heal their economies, including all institutions responsible for financial markets. Thus, they started their journey towards political and economic transformation.

The banking sector plays a special role in the economy and is particularly vulnerable to unfavourable economic changes. Due to this, this article will consider the process of economic transformation in terms of the banking sector's stability. The stability of banking systems cannot be overestimated in conditions of stable economic growth, and even more it is an important issue with regard to economies in transit.

The aims of this article are to assess the level of banking stability throughout the transformation process in the Western Balkan region, and to assess the influence of the transformation process and macroeconomic conditions on banking stability.

The article is divided into two main parts. The first addresses theoretical issues related to the main theme, i.e., the transformation of the banking system and its stability. The second part assesses the level of stability of banking systems in the transformation period and the determinants of banking stability. A new tool based on the Macroeconomic Stability Pentagon (MSP) is used to estimate banking stability. The impact of determinants on banking stability is analysed using multiple regression for five countries, covering the period of 2001–2015. The research is limited to a 14-year period since the European Bank for Reconstruction and Development (EBRD) no longer provides a full update of the Transition Report, which was the database of the determinates of banking transformation used in the study in the form of the Triangle of Banking Reforms according to Fries and Taci (2002). The economic data come from single central banks' databases.

Despite the decade-long delay in starting economic transformation compared to Central and Eastern Europe, the issue of a direct comparison of Western Balkan countries and post-transition European states is popular (Bongini et al., 2017; Iwanicz-Drozdowska et al., 2017). Therefore, the economic situation of the Western Balkans should be considered separately and not together with the region of Central-Eastern Europe. A further reason for this is the different economic environment which affects the Western Balkans now. Recent years have shown that the countries of this region have faced several challenges at the same time, such as the transformation process and the 2008 economic crisis.

The research conducted so far is on the one hand largely fragmentary and, on the other hand, the Western Balkans region is not a separate research topic, but rather is discussed at the same time, together with other transition economies from Central and Eastern Europe which are undoubtedly more engaged in the transformation

process. Therefore, it can be concluded that the presented article is a contribution to the development of knowledge and research on the relationship between the banking sector and processes occurring in the economy with regard to the countries of the Western Balkans region.

2. Banking stability and its determinants in the literature

The course of systemic transformation is an extremely important period for economic growth and development, because it is during this time that the bases and foundations for the further functioning of the national economic system are created. The reconstruction of the banking system is a key element of economic transformation, because efficient commercial banks are a prerequisite for launching competition without which privatisation will fail. As transformation is also a process that causes a certain chaos in the economic system, activities that bring stability to the economy and its individual sectors, including the banking system, become important.

An analysis of literature regarding the stability of the banking system, or, more broadly, the stability of the financial system, show that there is no single universal definition of the concept (Oziębło, 2014; Rogowski and Mesjasz, 2012; Jayakumar, Pradhan, Chatterjee, Sarangi, & Dash, 2017; Bruha and Kocenda, 2017). However, the literature defines the basic features and attributes that the banking system must meet to be stable. These include the fulfilment of basic functions for other economic sectors and the continuous interaction between these sectors, and the lack of crisis-related issues. The stability of the banking system manifests itself in the way the system operates, and a prerequisite is fulfilling tasks in a continuous and effective manner, even in conditions of unexpected and unfavourable disturbances of a significant scale. One should be aware that the banking system performs above all a service role in relation to other economic sectors, which consequently means that disruptions in its functioning, manifesting themselves, for example, in disruptions in the effectiveness of providing financial intermediation services, will adversely affect the condition of other system participants, including enterprises and households. Hence, maintaining the stability of the banking system as well as the entire financial system is very important.

Considering the above, definitions from various authors for the concept of banking system stability, as an element of the financial system, can be classified into three groups: stability determined by the quality of the banking system, stability as the relationship between the banking system and other economic sectors, and stability understood as a lack of crisis.

The quality of the banking system refers to the quality of its operation. There are several conditions and features that a banking system should display in order for its operation to be considered good quality. These include the right structure, a stable legal framework, credibility and transparency in terms of accounting and information principles, and socialist self-management, that reduced the state's impact on the entities. In addition, effective supervision and discipline of markets, and an adequate safety net also help to determine the quality of the banking system.

The relationship between the banking system and other economic sectors is used by many researchers to define banking stability because the banking system has a huge significance on the overall economy. This is due to the immensely important function of banks as financial intermediaries. The dependence of other sectors on the banking sector highlights its importance for the whole economy. A stable and a healthy banking sector, combined with the balance of public finances, may contribute to the stability of the whole economic system. An interesting stance on banking sector stability can be gained by studying it in the context of its effect on public finance crises (Gemzik-Salwach, 2013). The insolvency of countries influences the banking sector through various transmission channels, including the current account balance, security and safety, and public aid (Smaga, 2013).

The third definition of banking sector stability describes it as the absence of financial crises. This kind of definition is found most frequently in the literature. However, even such a simple formulation raises many questions due to differences in the understanding of the term 'financial crisis'. On the one hand, the classical literature on financial crises virtually does not define them, and on the other, a review of the literature on empirical studies in this scope indicates the existence of many different definitions, and a combination of these definitions must therefore be of a fairly general character.

Although there are many theories that try to explain the concept of banking sector stability, it should be noted that as a whole, all the definitions show the main features that are indispensable for achieving and maintaining banking sector stability in practice.

3. Determinants of banking stability

The literature suggests several factors that influence banking stability, classifying them into macroeconomic, financial, structural and institutional variables. Studies concerning the economy also state that the appropriate coordination and discipline of monetary and fiscal policy help with the stability of the banking system (Aikman, Giese, Kapadia, & McLeay, 2018). A consistent structural policy and striving for a balance of payments also help to ensure banking stability (Mester, 2017).

High capital requirements are believed to be a barrier for new competitors in the banking sector. This decreases competition and prevents already functioning institutions from performing highly risky actions (Agoraki, Delis, & Pasiouras, 2011). This view is consistent with results of previous studies of stability obtained due to declining credit risk (Bolt and Tieman, 2004, Barth, Lin, Lin, & Song, 2009). On the other hand, the impact of increased capital requirements has been found to decrease franchise value and increase the number of risky transactions (Hellmann et al., 2000).

The impact of competition on stability has been analysed for many years. On the one hand, banks with a stronger market power are characterised with lower general risk associated with 'competition instability'(Berger & Bouwman, 2009). However, Beck, De Jonghe, and Schepens (2013) found that an increase of competition resulted in bank instability in a more restrictive environment.

An increase in market concentration increases financial fragility. Markets with a limited number of banks gain high market power, which is an incentive to increase

interest rates on credit. This can lead to disturbances because of increased credit risk (Fu, Lin, & Molyneux, 2014).

The influence of banking regulations on banking stability has been studied by various researchers (Barth et al., 2009, Klomp and De Haan, 2014). Despite that, there is no single conclusion on this topic. The issue is even less recognised in transition economies, with a limited number of exceptions (Agoraki et al., 2011).

For a banking system in a period of transformation, ongoing reforms, including the launching of a new legal order, are of significant importance, especially for its financial results. Effective legal systems and corporate governance facilitate the development of the financial market through better contracting and law enforcement mechanisms (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997). Stronger legal governance encourages managers to take more risky but probably more profitable investments (Fang, Iftekhar, & Marton, 2014). On the other hand, stronger governance for creditors' rights tends to discourage this behaviour and leads to less diversification of funding sources (Acharya et al., 2017). Focusing on banking institutions, Laeven and Levine (2009) showed that banks with strong shareholders take more risk, and domestic regulations affect this banking risk, which may affect the bank's ownership structure. J.Houston, Lin, Lin, and Ma (2010) extended the analysis of creditor rights and information exchange. Their findings showed that enhanced creditor collateral is associated with greater banking risk, and better information sharing reduces this risk.

Bokros (2001) lists several drivers of banking. These include financial intermediation in relation to GDP, poor asset quality and low capitalisation of institutions, a limited range of services (especially in the non-banking sector), immature external and internal governance structures, and a gradually evolving legal and regulatory framework with poor implementation and enforcement. Keren and Ofer (2002) describes two groups of bad loans that the banking sector faces during the transformation period. The first group is in some way inherited from the centrally planned economy. The second group consists of completely new loans granted by newly established banks, which are created thanks to liberal supervision and relatively loose capital regulations. The growing share of these loans proves a lack of knowledge of risk assessment, lack of project monitoring and lack of or insufficiently developed corporate governance. For this reason, many of the transitioning countries experience an increase in lending, which results in a credit crisis, a threat to macroeconomic equilibrium, and even a decline in real GDP and a high degree of risk aversion. The collapse of the economy deprives the banking systems of most resources, because when the real sector of the economy records a recession, major losses in the banking system cannot be avoided. In most cases, these shocks eventually lead to the tightening of monetary policy and prudential rules. Such crises favour the restructuring of systemic market participants, but on the other hand, they create a great burden during the stabilisation process and contribute to an increase in risk aversion. Consolidation and recapitalisation has always been costly for the budget, so it was approached in conjunction with the reform of the tax system. The savings are small at the time, the capital resources insufficient and distracted, and their relationship to the total assets minimal. The gradual privatisation and orderly process of opening up to foreign

banks facilitate improvement of the banking system and improve market management both in banks and in enterprises to which banks grant loans.

It has been said that a strong supervision authority may improve banks' management, their efficiency and simultaneously the stability of the market (Beck, Demirguc-Kunt, & Levine, 2006). Chortareas, Magkonis, Moschos, and Panagiotidis (2015) believe that more efficient supervision and stronger legal frameworks have had a positive impact on the profitability of banks through various channels such as decreasing the risk of market turbulence, lowering the risk of financial problems and limiting the agency problems and market power. On the other hand, such institutions may make banks support selected interests of public institutions (Beck et al., 2006).

The literature on banking stability shows that the issue is of key importance, but it is not yet clear what its main determinants are. Therefore, each attempt to describe or assess determinants of banking stability is worth trying.

4. Research methods

The empirical part of this paper gives a comparative analysis of the macroeconomic situation and the banking sectors of several countries in the Western Balkans: Bosnia and Herzegovina, Croatia, Montenegro, Macedonia, and Serbia for the period 2001–2015. Macroeconomic and banking sector stability was measured with two tools. The first one is the MSP, which is an extension and complement to the 'magical quadrangle' launched by A.W.Philips and R.W.Mundell, created to analyse the conditions of a given economy (Rapacki, 2003). The MSP was developed in Poland by the Institute of Convictions and Foreign Trade Prices, and popularised by Kołodko (1993). The advantages of the tool are that it assesses economic stability using several key indicators simultaneously (Malina and Mierzwa, 2014).

The MSP has been used in various studies researching the stability of economies in Central and Eastern Europe. For example, it was used to assess the impact of the recent economic crisis on economic growth in the region. The period between 2008 and 2010 was recognised as an unstable period, after which the economies in the region started heading towards economic stability (Żuchowska, 2013). The concept of the MSP was examined in terms of its suitability for low and middle-income EU countries, including Ukraine. The model proved to be useful not only in the area of public administration, but also for micro-level management, and the authors of the study proposed the implementation of a micro-economic stabilisation pentagon in research on enterprises (Lyulyov and Shvindina, 2017). The tool was also used to estimate the macroeconomic stability of individual South-Central-Eastern European economies such as Romania (Abrudan, 2013), Poland (Janecki, 2017) and Russia (Walewski, 2015).

Other studies on macroeconomic stability concerned the economies of the Southern EU. It was confirmed that the MSP is an appropriate tool for comparative analysis and its use creates preconditions for appropriate policies of economic stabilisation (Hurduze and Lazar, 2015). Similar conclusions were drawn in the study of Germany's economy, and stated that the model is an effective method of mapping the real condition of a given economy (Raczkowski, 2016).

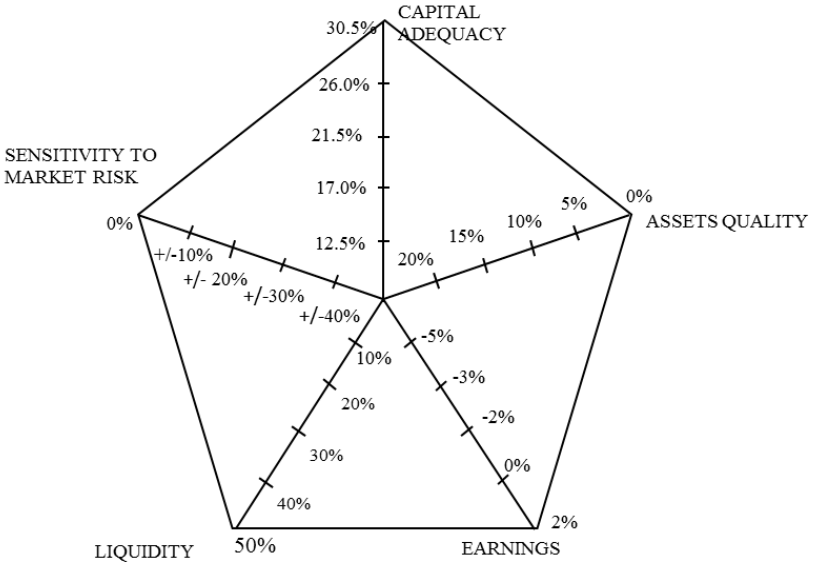

Figure 1. Banking Stability Pentagon (BSP).
Reference: own compilation, based on Kołodko (1993).

A similar tool is called the Banking Stability Pentagon (BSP) as presented in Figure 1. Its concept is based on the MSP, and was created as a result of research into the banking sectors of different countries (Kubiszewska, 2017; Komorowski and Kubiszewska, 2016).

The ratios used in the BSP are *regulatory capital* to *risk-weighted assets* (capital adequacy), *nonperforming loans* to *total gross loans* (assets quality), *return on assets* (earnings), *liquid assets* to *total assets* (liquidity), and *net open position on foreign exchange* to *capital* (sensitivity to market risk). These ratios are capital-based, asset-based, and income-based, and are the same as most of the ratios used in the CAMELS model.

Capital adequacy is measured using the ratio of the share of regulatory capital in risk-weighted assets and is based on the definition prepared by the Basel Committee in the Basel Capital Accord. Higher capital requirements reduce the incentive for banks to increase the risk of operations, and this helps to increase their stability (Anginer, Demirgüç-Kunt, & Mare, 2018). Stricter capital adequacy requirements lead to stricter criteria for granting new loans, thereby reducing the banks' exposure to insolvency risk (Dreassi, Miani, Paltrinieri, & Sclip, 2018). This means that higher capital reduces banks' exposure to systemic risk and reduces the risk of crises and risk of insolvency (Martinez-Miera and Suarez, 2014) because well capitalised banks are less induced to resort to risky portfolios (Allen et al., 2016; Mehran & Thakor, 2011).

The aim of assets quality analysis, measured using the ratio of non-performing loans to total gross loans, is to identify potential problems with the return of credit and the credit portfolio of the banking system as a whole and its impact on the economy (Balgova, Nies, & Piekhanov, 2016). Where banks avoid failure, non-performing

loans negatively influence the cost structure and efficiency of the bank (Maggi and Guida, 2013) and the bank's willingness to lend (Cucinelli, 2015). An increasing ratio may show a decline in the quality of the credit portfolio due to problems either in the economy as a whole or with an individual creditor. During a credit boom, this ratio tends to decrease and it gradually increases when general economic conditions deteriorate (Backé, Égert, & Walko, 2017).

The return on assets ratio measures the sector's efficiency in using its assets to present a market's profitability. Bank profitability is a prime determinant of bank stability (Fidanoski et al., 2018). Over time, this ratio can provide information on the sustainability of the sector's asset position. On the one hand, profitable banks are more risk-tolerant, which leads to a higher level of stability. More profitable banks can increase their core capital and ensure their profitability. In empirical studies, it was found that there is a negative, significant relationship between banks' profitability and the probability of bank failure (Cole and White, 2012; Lin and Pham et al., 2016). On the other hand, higher profits occur only when investors are ready to accept the possibility of losses. This means that profitable banks have more incentive to take risks, because thanks to their profitable core business they can expand their lending activities and take more risk in their operations, which leads to a greater likelihood of a crisis (Perotti, Ratnovski, & Vlahu, 2011; Martynova et al. 2016). Moreover, the profitability measurement method is also important. While return on equity is not important for clarifying banking problems, return on assets has a significant positive impact (Betz, Oprica, Peltonen, & Sarlin, 2014).

The liquidity of a sector is another key indicator of its performance. In the long run, the stable performance of both an entity and a sector is dependent on its profitability and liquidity. Earning profits is a key but not an essential factor in achieving liquidity, but profitability actively influences solvency; thus liquidity should be controlled and planned both in the short term as well as in the long term. The liquidity of assets affects their stability, influencing systemic risk. Higher liquidity ratios may help banks to withstand sudden funding roll-offs, reduce potential losses through fire sales, and promote stability (Rochet and Vives, 2004). The banks' ability to sell assets may also lead to the transfer of risk between a more sensitive and less sensitive sector (Wagner, 2007), thereby changing the overall instability of the financial system. The introduced Basel III framework included additional regulations on bank liquidity and funding stability (BIS, 2010).

Sensitivity to market risk, calculated using the ratio of net open position on foreign exchange to capital, measures the potential vulnerability of the ratio of deposit takers to exchange rate movements. The net open position in foreign exchange identifies the mismatch (open position) of foreign currency asset and liability positions, while its relationship to capital signals the ability of the sector to react to a changing exchange rate risk.

The size of the BSP is based on the estimated scales of its vertexes:

- capital to risk-weighted assets – between 8% and 30%
- non-performing loans to total gross loans – between 0% and 25%
- return on assets – between 7% and 2%

- liquid assets to total assets – between 0% and 50%
- net open position in foreign exchange to capital – between 0% and +/- 50%

The size of the pentagon changes automatically whenever any triangular area – limited by two of the five vertexes – changes. The pentagon's size equals the sum of the five triangles and cannot exceed 1; this represents the ideal situation. The size of the BSP is calculated using the following formula (1) which is based on the Pythagorean theorem and Heron's formula concerning the pyramid's base field, the vertex of which is the centre of the Euclidean space.

$$\left[\left(CAR\ x\frac{NPL}{TotalLoans}\right)+\left(\frac{NPL}{TotalLoans}\ x\ ROA\right)+(ROA\ x\ Liquidity\ Ratio)\right.$$

$$+(Liquidity\ Ratio\ x\ Senstivity\ to\ \text{Market Risk})$$

$$\left.+\ (Senstivity\ to\ \text{Market Risk x CAR})\right]*k \tag{1}$$

Where $k = {}^1/_2 \sin 72^\circ$

The economic analysis was conducted using annual data covering the years 2001–2015 and multiple linear regression. In order to estimate the equation calculating the banking stability value, the least-squares estimation method was employed. The general formula for the model is as follows:

$$Y_{it} = \alpha_i + \beta'_1 * X_1 + \beta'_2 * X_2 + \beta'_3 * X_3 + \beta'_4 * X_4 + \varepsilon \tag{2}$$

where the dependent variable Y is the BSP. The independent variables are as follows:

X_1 – market structure measured using three indicators:
- LI_{it} – Lerner index, as a measure of competition for each banking sector i in period t,
- BON_{it} – Bonne ratio, as a measure of competition for each banking sector i in period t,
- $CR5_{it}$ – concentration ratio, CR5, for each banking sector i in period t,
- HHI_{it} – concentration ratio, HHI, for each banking sector i in period t,

X_2 - *intermediation* in banking sector i in period t:
a. $DEPOS_{it}$ – deposits in relation to GDP for banking sector i in period t,
b. $CREDIT_{it}$ – credits in relation to GDP for banking sector i in period t,

X_3 – business cycle measured either with
a. MSP_{it} – the MSP in every country i in period t, or
b. GDP per $capita_{it}$ in every country i in period t,

X_4 – transformation measured using the Triangle of Banking Reforms (based on Fries & Taci, 2002).

Multiple linear regression requires the relationships between independent and dependent variables to be linear and it assumes that the data does not have multi-linearity. Linearity and multi-linearity were tested with correlation matrices, presented in Appendix 1. At this stage, all strongly correlated variables were discarded. Additionally, the multiple linear regression analysis requires a normal distribution of errors between observed and predicted values. Therefore the results of the normality test of the model's residual distribution are presented.

During the estimation of model parameters, attention was also paid to the fact that the explanatory variables contained in it were not collinear (mutually correlated). Variance Inflation Factor (VIF) was used for explanatory variables. The VIF for a given independent variable Xj is defined as VIF-1/(1-Rj2) - where Rj is the multiple correlation coefficient between variable Xj and other explanatory variables included in the model. According to the literature on the subject, the value of VIF> 10 is a certificate of disturbed collinearity of variables, therefore variables that did not meet this condition were removed from the model.

5. Research results

The research is based on data for the period 2001–2015 from the annual reports on the activities of central banks and annual reports on the stability of banking systems. Other sources of data included the database of the International Monetary Fund – the World Economic Outlook – and data from the EBRD, published in the annual Transition Reports. The Eurostat database and the European Central Bank database were used for data on EU member states.

The level of the stability of the banking sector in Western Balkan countries between 2001 and 2015 was measured using the BSP as shown in Figure 2.

The stability of banking systems in the Western Balkans region changed in a similar way. The researched period can be divided into two sub-periods of different levels of stability. Between 2001 and 2008, in all countries apart from Montenegro, the size of the BSPs increased, which means that the stability of the banking sector improved.

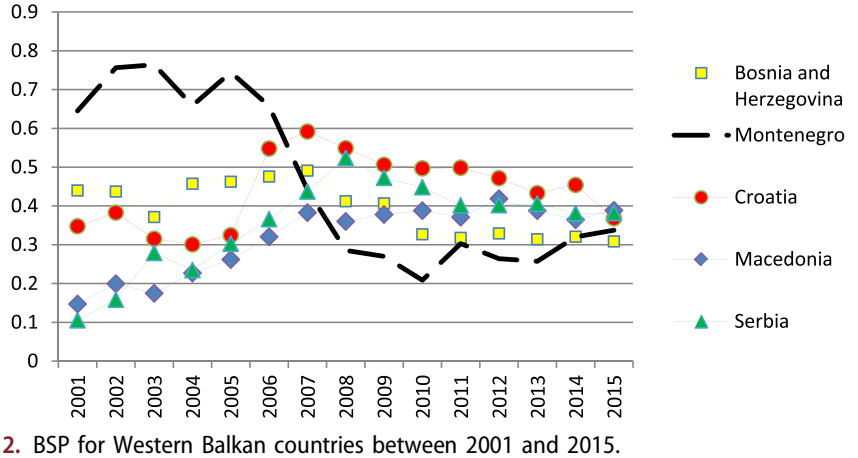

Figure 2. BSP for Western Balkan countries between 2001 and 2015.
Source: own compilation, based on databases from central banks.

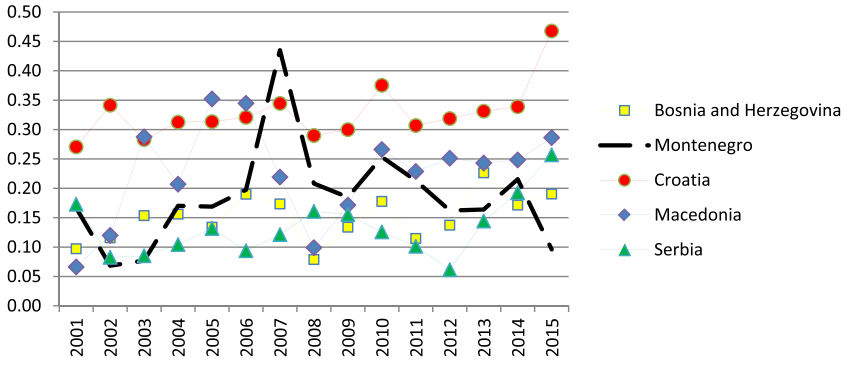

Figure 3. MSP for Western Balkan countries between 2001 and 2015.
Source: own compilation, based on databases from central banks and the EBRD.

The strongest rise was recorded in Serbia: a six-fold increase. In Macedonia and Croatia, the size almost doubled over the period.

Montenegro was the only country in which the size of the BSP decreased between 2001 and 2008. The declining stability of this country's banking sector was caused by a large withdrawal of deposits and the growth of non-performing loans during the post-crises period (Katnic and Boskovic, 2016). It was also the result of banks' insufficient provisions for credit risk (Vučinić, 2015) and an erroneous classification of assets, as a result of an underestimated share of non-performing loans, at a level of 2% of total loans at the end of June 2007. In addition, internal controls at banks revealed numerous weaknesses in the risk management process, including too limited time to assess clients' creditworthiness (Jaeger et al., 2013). Therefore it should be stressed that in the case of Montenegro, the large size of the BSP prior to the global financial crisis is the consequence of the erroneous policy on assessing asset quality and not the result of a good overall situation in the sector.

Between 2009 and 2015, in Bosnia, Croatia, and Serbia, BSP size decreased on average by 32%. In Macedonia and Montenegro, BSP size increased by 7% and 18%, respectively. Banking systems in these regions are characterised by medium-strong capital buffers that significantly exceed regulatory limits and mainly consist of first-class capital. The liquidity of these systems can also be considered beneficial, which suggests that they should be able to cope with unexpected shocks. However, due to a strong concentration of banking markets, system weaknesses may arise due to problems in only a few domestic banks that will rely on support from the public sector.

In all of the discussed countries, the size of the MSP changed significantly between 2001 and 2015 (Figure 3). In 2001, the worst situation in terms of economic stability was recorded in Macedonia; it was four times worse than Croatia's highest point. In Bosnia and Herzegovina, Croatia, Macedonia, and Serbia, the MSPs grew by from 48% in Serbia to over 300% in Macedonia during the studied period. Only in Montenegro did the indicator decrease by more than 43%.

Analysis of the individual indicators points to the transitional difficulties in each country that appeared at the turn of 2008 and 2009 as a consequence of the global financial crisis. Also, MSP sizes for the same period decreased as a result of negative changes in individual indicators, which occurred much more frequently. The size of

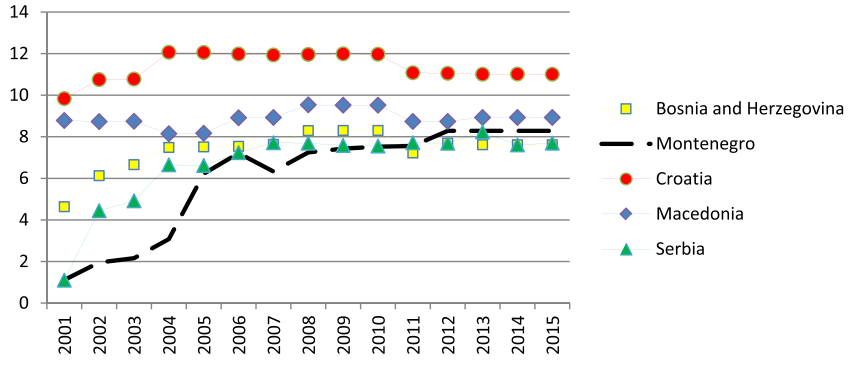

Figure 4. TBR for Western Balkan countries between 2001 and 2015.
Source: own compilation, based on the EBRD database.

the MSP decreased in at least one of the five countries in almost every year; in 2008 this happened in four countries (except Serbia), and in 2011 it occurred in all of them due to the strong decline of GDP growth, the rise of unemployment despite the introduced recovery plans (Kovtun, Meyer Cirkel, Murgasova, Smith, & Tambunlertchai, 2014; Qerimi and Sergi, 2012; Jashari and Elezi, 2014), the increase in the general government deficit (Pere and Hashorva, 2011), the current account imbalance (Dalic, 2013) as well as in some cases – the deflation rate (Dalic, 2013; Kuddo, 2013, Jurić, 2017).

The reasons for such changes can be seen in the specific links between local economies and world markets, especially the EU. In 2008, local economies were influenced by the global financial crisis through indirect channels (Bartlett and Monastiriotis, 2010). Although local banks did not participate in the so-called 'trade of toxic assets', the high proportion of foreign investors in the assets of individual banking sectors led to a reduction in lending activity in 2008, which in turn contributed to the deterioration of the economic situation in the region. Such a variation in MSP sizes and the lack of uniform trends in changes proves the precariousness of the economic situation in the region (Gabrisch et al., 2016; Kostadinov, 2011; Nenovski, 2012).

In 2001, the variation in the size of the Triangle of Banking Reform (TBR) between individual countries was significant, as presented in Figure 4.

In 2001, the differences in the size of the TBR varied by up to eight times, as was the case between Montenegro and Serbia where the TBR was the smallest, and Croatia where the TBR was the largest. The reason for this was the situation in these countries in the 1990s. Croatia was able to begin its economic transformation much earlier than the other two countries where the political situation was unstable (Barisitz, 2008).

On the other hand, in 2015 the individual indicators for the TBR in Macedonia and Croatia were similar. It should be stressed that none of the TBRs for the countries in question were equilateral, which implies that the development of the banking sector in the different countries was uneven. Another important fact is that the proportion of private assets in the banking sector for 2001 was close to 100% in two countries - Macedonia and Croatia - and over 80% in Bosnia and Herzegovina. This is not due to the development of the banking sector, but rather the need to create all of the studied banking sectors from scratch.

Table 1. Models with reduced variables.

	Serbia	Croatia	Montenegro	Macedonia	BH
Constant	0.724316***	0.0168114	1.97336***	0.0584149*	−0.179422
	(0.130365)	(0.164627)	(0.393109)	(0.0309413)	(0.102392)
CR5	−0.00859***	—	−0.010372**	—	0.00848372
	(0.00177168)		(0.00397781)		(0.00151478)
LI	—	−1.8421**	—	—	—
		(0.595448)			
BON	−0.132886**	−2.21178***	—	—	—
	(0.0497891)	(0.416828)			
DEPOS	—	0.0100281***		0.00668506***	—
		(0.0100281)		(0.000760717)	
CREDIT	0.0031261**				
	(0.00119369)				
GDP per capita			−0.000111***		
			(1.01439e-05)		

	Serbia	Croatia	Montenegro	Macedonia	BH
Mean dependent var.	0.353361	0.439166	0.460943	0.318030	0.391435
Sum squared residues	0.021108	0.020734	0.049713	0.016498	0.018512
R-squared	0.889010	0.832671	0.922678	0.855918	0.706991
Log likelihood	27.96209	28.09617	21.53748	29.81038	28.94634
Schwarz criterion	−45.09198	−45.36013	−34.95082	−54.20467	−52.47659
Autocorrelation of residues – rho1	0.116551	0.094079	0.214298	0.090436	0.025778
S.D. dependent var.	0.043805	0.043415	0.064364	0.035624	0.067177
standard error of residues	0.858740	0.787036	0.909790	0.844834	0.037736
F-statistic F	0.000015	0.000140	2.14e-07	7.88e-07	0.000086
Akaike info criterion	−47.92418	−48.19233	−37.07497	−55.62077	−53.89269
Hannana-Quinna criterion	−47.95435	−48.22250	−37.09759	−55.63585	−53.90777
Normality test:					
null hypothesis: random component is normally distributed.					
Chi-squared test	1.5169	4.83057	0.958634	1.41706	1.12527
p value	0.468391	0.0893417	0.619206	0.492368	0.569705

Notes: *p < 0.10, **p < 0.05, ***p < 0.01.
Reference: own preparation.

Over the 14 years between 2001 and 2015, the levels of banking sector reform in the individual countries became closer and differences between their TBRs stopped being significant. Between the largest TBR (Croatia) and the smallest (Bosnia and Herzegovina), the difference in 2015 was no more than 31%. It should be noted that in all the countries, the share of private sector assets in the banking sector is close to a maximum of 4.3, which means the banking sector became almost entirely private in the early stage of economic transformation (Dimić and Barjaktarović, 2017).

Unfortunately most of the variables used in the analysis strongly correlated with the PSB, which was the explained variable (correlation matrix in Appendix 1). Since the general models still had a lot of irrelevant variables, the final model, which is fully significant, only includes variables that meet the requirements of multiple regression (Table 1).

The estimated statistical models proved to be statistically significant (P value for F < 0.05), which means that the examined variables significantly explain the variation in each country's BSP. The estimated models explain over 85% of the variations in BSPs (R2 coefficient) in all countries except for Bosnia, where the R2 coefficient was lower – 70.69%. This raises a question about other factors that influence banking stability in this country.

In all but one of the studied countries, the concentration of the banking market significantly impacts banking stability, but the determinants of banking stability vary

among countries, as does the direction of the influence of market concentration. In Serbia and Montenegro, a decrease in market concentration increases the BSP; while in Bosnia it works in the opposite way. The changes in concentration are related to a change in market competition, which is confirmed in Serbia and Croatia only where more competition (a decrease in either the Bonnie or Lerner indices) causes an increase in stability. In Croatia, this effect was much stronger, and the Lerner index also plays a significant role.

On one hand, these different results may be explained with the hypothesis introduced by Martinez-Miera and Repullo (2010): the relationship between competition in the banking sector and banking risk is non-linear (i.e., it has the U-shape of a square function). On the other hand, the observed changes of the banking markets in these countries do not differ much. The changes in the structure and concentration of the banking markets as well as changes in the level of market power of the institutions indicate the development of an oligopolistic system in these countries. This is evidenced by the existence of a relatively small number of banks with relatively high economic strength and a large market share that are able to limit the entrance of new banks. Such changes are characteristic of the transitional period because of the unfavourable financial and economic situation inherited from the previous system. During the restructuring period, some banks had to be liquidated, and others were purchased by foreign investors. Simultaneously, newly established private institutions, characterised by insufficient capital and organisational power, could not threaten the position of banks taken over by foreign investors. Therefore the lack of significant impact of concentration and competition on stability in Macedonia could be related to the market structures of these systems. A deeper analysis shows that the banking system of Macedonia exhibits low H-statistic figures, which is characteristic of a monopolistic market structure (Delis, 2009; Giustiniani & Ross, 2008; Yildirim & Philippatos, 2007), but is dominated by three or five institutions, which suggests an oligopolistic one (Davcev and Hourvouliades, 2013).

In the area of financial intermediation, both the share of deposits in the banking sector relative to local GDP and credit to GDP had a positive effect in Croatia, Macedonia and Serbia. Of these countries, Croatia is recognised as the most transformed while reforms in Macedonia and Serbia are the most delayed not only in comparison to Croatia but in relation to the whole region. These banking systems had to deal with a number of problems, of which the need to restore clients' confidence and the low level of financial awareness were the most important.

The development of credit for the private sector (especially loans to households compared to loans to enterprises) caused a strong increase in financial intermediation rates (Backé et al., 2017). The general euroisation of loans and deposits remains one of the greatest threats to financial stability in these countries, as it creates indirect credit risk due to unsecured borrowers and it hinders the monetary policy transmission channel. Foreign currency loans represent a significant part of credit resources in countries that do not use the euro as legal tender. At the aggregate level, these loans were largely financed by foreign currency deposits, which alleviated the direct currency risk for banks. At the same time, this deposit base also provided a stable source of financing for foreign currency loans, potentially further promoting them.

Increased non-performing loan ratios remain a challenge for financial stability in most of the studied countries since they account for up to one-fifth of total loans, and reducing them is a very difficult process despite the introduction of comprehensive resolution strategies (Beckmann, 2017; Beckmann, Hildebrandt, & Jäger-Gyovai, 2015; Cuaresma, Fidrmuc, & Hake, 2014). In addition to limiting the development of lending, the high level of non-performing loans also remains a burden on banks' profitability, which remained heterogeneous in the period under consideration. Because retained earnings are the main source of capital for banks, profitability ratios are also helpful in assessing banks' resilience to adverse shocks and therefore require careful monitoring.

In terms of the business cycle, a negative impact of GDP per capita was significant only in Montenegro. This remains consistent with the strand of literature explaining that in the Western Balkan region there was a negative relationship between the financial system and economic situation (Gillman and Harris, 2004; Mehl et al., 2005; Abazi and Aliu, 2015). Secondly, Montenegro experienced the highest increase in non-performing loans. This is due to the turbulence in the financial markets after 2008, as well as exceptionally high credit activity, liberal supervision regarding risk taking, intensified market competition in the banking market and a high inflow of international liquidity prior to 2008.

6. Conclusions

The countries analysed in this report share a common historical and economical background, and may seem to be transforming their economies and economic sectors (e.g., banking sector) in a similar way. This is partly right. The states created from former SFR Yugoslavia have shared many common experiences related to statehood and economic transformation which have created similar structures of banking systems with comparable changes in stability. Although two of the countries – Montenegro and Serbia – were delayed with starting their transformation processes, they have caught up very quickly and do not differ much from the average situation in the region.

A stable banking system is one of the fundamental conditions for the proper functioning of an economy and, at the same time, is a *sine qua non* condition for stable long-term economic growth, making it very important. It is intriguing to note that although all of the Western Balkan states developed a similar banking system structure, various factors influence banking stability. Two main conclusions may be drawn. First, the most common factors affecting banking stability are market concentration and market competition. In four out of five of the studied countries, these factors played a significant role. Therefore aspects which may influence the number of banks, e.g., barriers to entry for new institutions, or mergers and acquisitions of institutions, should be considered with regard to their potential effects on banking stability.

Secondly, the study suggests that the stability of both the most transformed banking system in the region (Croatia) as well as the one which is considered the most delayed (Serbia) are driven by similar factors, and market competition in the banking

systems of these countries is being built in a similar way. Further analysis of these two banking systems could confirm these assumptions.

The other banking systems in the region – despite the common roots and experiences – vary in their determinants of banking stability. Most astonishingly, banking stability in Bosnia is determined by only one factor – the low R2 coefficient. This makes this banking system stand out from the others in the region because it suggests that other aspects not researched in this paper play an important role in banking stability.

This study shows that similar experiences from the past do not constitute a sufficient basis for the development of banking stability under the influence of the same factors. Further analysis of non-economic factors could help in finding further determinates of banking stability, especially for Bosnia and Herzegovina.

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Appendix 1: Correlation matrix

Bosnia and Hercegovin

BSP	HHI	CR5	LI	BON	DEPOS	CREDIT	MSP	GDP_c	TRB	
1.0000	−0.6449	0.8408	−0.4958	0.1334	−0.6675	−0.6173	−0.2725	−0.5697	−0.2349	BSP
	1.0000	−0.6615	0.6637	−0.3575	0.9316	0.9583	0.4083	0.9240	0.6840	HHI
		1.0000	−0.6333	0.2443	−0.7831	−0.6530	−0.4733	−0.5589	−0.2319	CR5
			1.0000	−0.0199	0.7640	0.5846	0.4807	0.4322	0.2866	LI
				1.0000	−0.3992	−0.5046	0.0611	−0.5836	−0.4908	BON
					1.0000	0.9450	0.5012	0.8604	0.6709	DEPOS
						1.0000	0.3712	0.9620	0.7957	CREDIT
							1.0000	0.2589	0.3359	MSP
								1.0000	0.8049	GDP_c
									1.0000	TBR

Reference: own preparation.

Croatia

BSP	HHI	CR5	LI	BON	DEPOS	CREDIT	MSP	GDP_c	TRB	
1.0000	−0.0471	−0.1753	−0.0497	−0.2373	0.4552	0.4973	0.0152	0.6893	0.4072	BSP
	1.0000	0.7660	0.7050	0.7735	0.8335	0.7697	0.5295	0.5846	0.0740	HHI
		1.0000	0.8075	0.4633	0.5232	0.5119	0.2893	0.4677	0.4605	CR5
			1.0000	0.4663	0.6402	0.5776	0.3904	0.5148	0.3406	LI
				1.0000	0.6435	0.6268	0.6841	0.3161	−0.2980	BON
					1.0000	0.9649	0.5394	0.8658	0.1700	DEPOS
						1.0000	0.6180	0.9099	0.2732	CREDIT
							1.0000	0.3692	0.0740	MSP
								1.0000	0.5131	GDP_c
									1.0000	TBR

Reference: own preparation.

Macedonia

BSP	HHI	CR5	LI	BON	DEPOS	CREDIT	MSP	GDP_c	TRB	
1.0000	−0.8049	−0.6453	0.0256	0.4500	0.9252	0.9373	0.2746	0.9424	0.4989	BSP
	1.0000	0.7944	−0.1889	−0.6324	−0.9555	−0.9097	−0.3859	−0.8969	−0.2688	HHI
		1.0000	−0.6571	−0.4174	−0.7686	−0.7561	−0.2409	−0.7398	−0.2393	CR5
			1.0000	−0.0958	0.1009	0.0870	0.3166	0.1092	−0.1803	LI
				1.0000	0.6348	0.5793	0.0019	0.5347	0.0843	BON
					1.0000	0.9849	0.2691	0.9733	0.4168	DEPOS
						1.0000	0.1688	0.9894	0.5304	CREDIT
							1.0000	0.2241	−0.2925	MSP
								1.0000	0.5075	GDP_c
									1.0000	TBR

Reference: own preparation.

Montenegro

BSP	HHI	CR5	LI	BON	DEPOS	CREDIT	MSP	GDP_c	TRB	
1.0000	0.4925	0.3864	−0.2714	−0.7907	−0.9140	−0.8627	−0.3500	−0.9375	−0.7939	BSP
	1.0000	0.2105	−0.1975	−0.5275	−0.2969	−0.1580	0.2742	−0.3902	−0.1717	HHI
		1.0000	−0.4850	−0.4381	−0.4923	−0.2402	−0.0005	−0.5921	−0.7021	CR5
			1.0000	0.3490	0.2363	0.2302	0.2370	0.3316	0.1897	LI
				1.0000	0.8343	0.7394	0.1160	0.8364	0.6817	BON
					1.0000	0.9347	0.4211	0.9808	0.9164	DEPOS
						1.0000	0.5970	0.8894	0.7836	CREDIT
							1.0000	0.3649	0.3365	MSP
								1.0000	0.9225	GDP_c
									1	TBR

Reference: own preparation.

Serbia

BSP	HHI	CR5	LI	BON	DEPOS	CREDIT	MSP	GDP_c	TRB	
1.0000	0.5009	−0.8443	0.0191	−0.6337	0.7896	0.6903	0.1582	0.9186	0.8626	BSP
	1.0000	−0.3521	−0.0604	−0.1100	0.8078	0.7176	0.3506	0.7048	0.6057	HHI
		1.0000	−0.0926	0.3945	−0.6134	−0.4826	0.2066	−0.7490	−0.9003	CR5
			1.0000	0.1866	−0.1542	−0.2798	0.0791	−0.0822	0.0998	LI
				1.0000	−0.2920	−0.3508	−0.1161	−0.4388	−0.3339	BON
					1.0000	0.9070	0.3698	0.9545	0.7910	DEPOS
						1.0000	0.3456	0.8484	0.5661	CREDIT
							1.0000	0.2940	0.0586	MSP
								1.0000	0.8816	GDP_c
									1.0000	TBR

Reference: own preparation.

Appendix 2: Variance inflation factor results

	Serbia		Croatia		Montenegro		Macedonia		BH	
	R^2	VIF	R^2	VIF	R^2	VIF	R^2	VIF	R^2	VIF
BSP	–	–	–	–	–	–	–	–	–	–
HHI	0,606975	2,5	0,891465	9,2	0,492988	2	0,899247	9,9	0,947738	19,1
CR5	0,898353	9,8	0,865198	7,4	0,879715	8,3	0,923746	13,1	0,598597	2,5
LI	0,435853	1,8	0,6478	2,8	0,437569	1,8	0,826226	5,8	0,67883	3,1
BON	0,059119	1,1	0,734479	3,8	0,735048	3,8	0,202202	1,3	0,147993	1,2
DEPOS	0,950653	20,3	0,965268	28,8	0,981371	53,7	0,990919	110,1	0,952547	21,1
CREDIT	0,907193	10,8	0,965371	28,9	0,957752	23,7	0,992534	133,9	0,969935	33,3
MSP	0,099367	1,1	0,580626	2,4	0,31184	1,5	0,444558	1,8	0,061346	1,1
GDP_c	0,957807	23,7	0,916683	12	0,982431	56,9	0,972181	35,9	0,944015	17,9
TBR	0,960262	25,2	0,700579	3,3	0,934497	15,3	0,337458	1,5	0,750658	4

Reference: own preparation.