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# The Determinants of Bank Stability: Evidence from Selected Balkan Countries and Turkey

**Almir ALIHODŽIĆ** ([almir.dr2@gmail.com](mailto:almir.dr2@gmail.com))

University of Zenica, Faculty of Economics Zenica, Bosnia and Herzegovina

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**İbrahim Halil EKŞİ** ([eksihalil@gmail.com](mailto:eksihalil@gmail.com))

Professor, University of Gaziantep, Faculty of Economics and Administrative Sciences

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**Berna DOĞAN** ([dogan.brn@gmail.com](mailto:dogan.brn@gmail.com))

University of Gaziantep, Faculty of Economics and Administrative Sciences

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## ABSTRACT

*Financial stability is a situation in which a financial system can absorb shock without significant disturbances in its current and future functioning and which has no negative impact on the economy. After 2007 global crisis, the importance of bank stability better understood. This paper investigates the determinant of bank stability in selected Balkan countries and Turkey. For this aim, we used to Z-score and NPL as dependent variables. We used bank performance, financial structure and macro variables as independent variables. According to ANOVA test and regression analysis, the strongest correlation between non-performing loans as the dependent variable of the Western and some EU Member countries (Bosnia and Herzegovina, Serbia, Croatia, Slovenia, Montenegro, Macedonia) and Turkey was achieved with the following independent variables: the total non-interest income to total income and foreign bank assets to total bank assets. Observed on the other hand, the weakest link between NPLs as a dependent variable was achieved with the following independent variables: the gross domestic product, the net interest margin ratio, Lerner index and the cost to income. Another dependent variable, i.e. Z-score was recorded the strongest correlation with the following independent variables in the model: the gross domestic product, the Lerner index, the net interest margin and the cost to income. The weakest link was achieved with the following independent variables: the total non-interest income to total income and the foreign bank assets to total assets. The survey covers the period from 2006-2017 as yearly. Therefore, through a multiple regression analysis, non-performing loans and Z-Score to changes in endogenous variables will be tested.*

**Keywords:** Financial stability, Lerner index, economic activity, Z-Score.

**JEL classification:** G2, G17, G21.

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## 1. INTRODUCTION

The 2007-2008 US sub-prime financial crisis and its consequences on the overall economy has increased the interest in the study of bank failures which has become the center of the political and economic debates (Korbi and Bougatef, 2017). In that period, leading famous banks and financial institutions (for example Lehman Brothers) had gone bankrupt or recorded huge losses, posing a high risk in the financial market. Consequently, a lot of instability occurred in the financial and banking sectors. So, the stability of the banking sector is a subject of great interest for bank supervision and academics, but it is also of the interest at a broader macroeconomic level as banking sector has the most important role in financial sectors.

Banking stability can be defined as the stability of banks linked to each other either directly through the interbank deposits markets and participations in syndicated loans, or indirectly through lending to common sectors and proprietary trades. Whatever the definition of banking stability is, an issue that is not clearly understood in the literature is that the factors that influence the banking stability in emerging economies while considering the role of financial structures and institutional qualities (Ozili, 2018). According to some of the experts capital resources are insufficient to achieve banking stability in developing economies due to structural weaknesses (Barth et al., 2004). Given the complexity of modern financial systems as well as the global trends, financial stability has been associated with multidimensional conditions connected to the well-functioning of financial systems (Lassoued, 2017).

The determinants of banking stability and its effect on the financial system stability may differ across countries. The empirical literature shows that some economic factors, financial structures and institutional factors can influence banking stability. This subject is important especially in emerging countries which do not have improved financial systems. So, we use data for Turkey and selected Balkan countries regarded as emerging countries in our analyses.

The selected Balkan economies experienced vary similar changes in perspective of economy as well political systems, meaning that they had to build the market economy for scratch in parallel to regaining the political and statehood independence (Kubiszewska, 2016). One of the reasons that we investigate these countries is that these countries have quite a similar modern history and experiences about banking application. An important feature of the banking sectors of Central and Eastern Europe countries is that banks are relatively small in comparison to the EU and have relatively simple traditional business models. And banking sectors in these countries are characterized by

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a high share of foreign banks and since the late 1990s foreign banks have been playing the role of host countries (Karkowska and Pawłowska, 2017). Since this year, banking sector in this region countries serious changes have been like this privatization, legislative, financial and structural reforms, capital flows liberalization, which led to the diversification of the banking products and services, increase in credibility, soundness and performance of the banking sector (Onofrei et al., 2018). And, Turkish banking sector has features similar to Balkan countries. Banking sector has been growing since 1980s in Turkey (Sümer, 2016) also foreign banks entering to Turkish banking sector has been growing since 1990s foreign bank entering to Turkish banking sector is grow after 1990s (The Banks Association of Turkey, 2005).

In addition to the size and structure of the financial system varies considerably across the observed countries and is primarily bank-based. Banking sector assets represent between 80 and 92 percent of financial sector assets in observed countries. For example, these percentage are %81 in Turkey, %91.8 in Serbia, %86.3 Bosnia, %86.3 in *Macedonia* and %86.8 in *Montenegro* and banking sectors in the region are important levels (The Banks Association of Turkey, 2015; WB, 2016). Banking sectors in Balkan economies are underdeveloped due primarily to the legacies of the pre-transition planned economy (Bonin, 2001). The economies of selected countries are among those that suffered the most the global downturn of 2007 – 2009 and after. The one of effects of global crisis observed on non-performing loans. One of the most important problems of developing banks in the Western Balkans, which dates from the late 1990's, is the poor quality of bank assets (Ganic, 2012; Yüksel, 2016).

As last dimension, in selected countries, a relatively high level of concentration of the banking sectors was observed (Kubiszewska, 2015; The Banks Association of Turkey, 2017). As a result of these, it is important to analyses financial stability and to improve policy for financial stability in these countries. So, it can be prevented more depth economic problems.

The purpose of this paper is to investigate the determinants of bank stability from 2006 to 2017. To do this, we analyse the financial structure, banking efficiency and macroeconomic variables of both Turkey and selected Balkan countries. We use two measures of banking stability which are Z-score and non-performing loan (NPL). Our explanatory variables include bank performance variables, financial structure and macroeconomic variable. Therefore, this study is a temporal and contextual extension in the art of science. The second contribution of this study is to analyse the factors which determine the stability of observed countries. For policy makers and bank management it will be useful to control those factors that can destabilize the banking system.

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And finally, to general society, to help them to choose the safe and stable banks. The findings of this study will provide useful insights for regulators, practitioners, policy makers and researchers for similar emerging countries.

The remaining paper is organized as follows: Section II consists of literature review and dimensions of different studies which are conducted on bank stability across the world. In Section III methodological approach, sample, data collection and research model are discussed. Empirical findings of the study are presented in Section IV. Section V is comprised of conclusion and recommendations

## 2. LITERATURE REVIEW

It is obvious that the existing literature differs from the past studies according to their sample data, different methodological approach and objectives. Firstly, we find studies that investigate the factors explaining the stability of conventional banks (Wang et al., 2014; Adusei, 2015; Karkowska and Pawłowska, 2017; Gomez and Ponce, 2010). While some of studies use only country - level data (Ozili, 2018; Fang et al., 2014; Creel et al., 2014), some others use both bank and country level data (Ijtsma et al., 2017). However, there is limited studies about both Islamic and conventional banking stability (Trad et al., 2017; Korbi and Bougatef, 2017). Diaconu and Oanea (2015) used only countries-level data. Ibrahim and Rizvi (2017) and Lassoued (2017) investigated only bank stability on islamic bank.

One of the controversial aspects in literature pertains to the role of competition in influencing bank stability. Competition is generally considered a positive force in most industries; it is supposed to have a positive impact on an industry's efficiency, quality of provision, innovation and international competitiveness (Casu and Girardone, 2009). Scholars and policy makers have focused their efforts on the role that bank competition plays in financial system stability as well as bank specific factors, which could impact this relationship such as size, capitalization and liquidity (Chileshe, 2017)

There are a number of studies that have investigated the effect of bank competition on banking stability. Competitive conditions in the banking sector are also relevant to be studied due to their impact on financial stability (Louati and Boujelbene, 2015). These studies have shown that there is generally no consensus on whether competition in the banking system leads to stability or fragility (Chileshe, 2017; Louati and Boujelbene, 2015; Goetz, 2016; Abel et al., 2018; Gomez and Ponce, 2010; Ijtsma et al., 2017).

The other important dimension of bank stability is bank concentration degree. Karkowska and Pawłowska (2017), Shijaku (2017), Ijtsma et al. (2017)

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and Kasman and Kasman (2015) investigate how the level of concentration affects stability.

Besides the internal determinants of the performance, represented generally by the bank characteristics, the macroeconomic environment in which banks operate remain as a country specific variable and an important external factor which can influence the bank stability. For example Adusei (2015) investigated the effect of internal factors (bank size, funding risk) on bank stability. Similarly, while Wang et al. (2014) investigated the cost and profit efficiency, Lassoued (2017) investigated corporate governance. Apart from these Pak (2018) investigated the effect of ownership structure on bank stability. Moreover Ozili (2018) investigated the determinants of banking stability using bank-level variables; financial structure; institutional quality and macroeconomic factors.

The last dimension of bank stability is institutional development on banking sector such as Fang et al., 2014; Hou and Wang, 2016.

Our study differs from previous studies. The situation in the banking sector has been studied from different perspectives: its stability, profitability, efficiency, competition, concentration. But, related to stability, there are a few paper in selected countries (Danışman, 2018; Koç and Karahan, 2017). And, we can not see paper about bank stability compare Turkey and Balkan countries.

### **3. DATA AND METHODOLOGY**

#### **3.1. Data**

This empirical study uses country-level data for observed countries. The data is annual for a period of twelve years between 2006 and 2017. We use the balanced panel data, which are obtained from the Bankscope database, the World Bank and from central banks of selected countries. We use two dependent variables called Z-score and NPL as the measure of financial stability. We use six independent variables as foreign banks (FRG), Lerner index (LRN), net interest margin (NIM), non-interest income (NII), bank cost to income (CI), and gross domestic product (GDP).

We would like to answer the following question: Which of the independent variables in the model has the strongest impact on the banking stability of the observed countries on the one hand, and on the other hand, which of the variables has the lowest impact? In this research, we will present a modified version of the model developed by Abel et al. (2018) and Ozili (2018). We will present the model in the following way:

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$$Stability = f(\text{financial structure, bank efficiency, macroeconomic factors}) \quad (1)$$

The preceding equation is adapted to the dependent and independent variables in the model:

$$ZScore_{i,t} = \beta_1 NIM_{i,t} + \beta_2 NII_{i,t} + \beta_3 CI_{i,t} + \beta_4 LRN_{i,t} + \beta_5 FRG_{i,t} + \beta_6 GDP_{i,t} + e \quad (2)$$

The Z-score is a widely-used bank stability measure (Kasman and Kasman, 2015; Trad et al., 2017; Karkowska and Pawłowska; 2017; Ozili, 2018; Abel et al., 2018; Ali and Puaah, 2018). It represents the ratio of bank buffer capital and profits to the risk of volatility of returns. The Z-score indicates how quickly profits of a firm would decrease before the capitalisation of a bank is depleted.

The Z-score combines in one single indicator the banks' profitability, capital ratio and return volatility. Obviously, the Z-score will increase with the banks' profitability and capital ratio, and decrease with increasing return volatility. Thus, from an economic viewpoint the Z-score initially measures the probability of a bank to become insolvent when the value of assets becomes lower than the value of debt. Hence, a higher (lower) Z-score implies a lower (higher) probability of insolvency risk (Creel et al., 2014).

For another dependent variable, i.e., for NPL, the regression equation can be expressed as follows:

$$NPL_{i,t} = \beta_1 NIM_{i,t} + \beta_2 NII_{i,t} + \beta_3 CI_{i,t} + \beta_4 LRN_{i,t} + \beta_5 FRG_{i,t} + \beta_6 GDP_{i,t} + e \quad (3)$$

We also use NPL, which is another commonly used measure for stability (Kasman and Kasman, 2015; Ozili, 2018; Abel et al., 2018; Abuzayed et al, 2018), for our alternative specification of stability. This analysis allows us to understand whether competition has an impact on systemic risk, measured by the level of non-performing loans. The higher the value of the indicator the riskier is the portfolio of the bank. Higher levels of non-performing loans indicate lower levels of loan quality, higher levels of bank fragility or corruption in lending.

We use common independent variables for two models. We divided the independent variables as financial structure, banking efficiency and macroeconomic. We use foreign ownership on banking sector and Lerner Index for financial structure of banking sector.

Foreign banks can be a channel through which shocks in one country are transmitted and affect the supply of credit in another country. Therefore, foreign banks can introduce financial instability (Claessens and Van Horen,

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2013). However the presence of foreign banks can also introduce new technologies and new financial products and services, and also provide a wide range of financial services for users of financial services in the country which together improves the breadth and depth of financial intermediation in the financial system thereby contributing to a more stable financial system (Ozili, 2018). Foreign ownership in banking sector is especially important for observed countries.

There are a number of studies that have investigated the effect of bank competition on banking stability (Staikouras and Wood, 2000; Liu et al. 2013). In recent years, studies have investigated competition in the banking industry used various models such as Panzar Rosse H statistic, Lerner Index and Bresnahan–Lau model. Because of the fact that the lerner index of Lerner index has been widely employed in empirical models of banking competition and measures of market power (Simpasa, 2013a; Arrawatia et al., 2014; Abel et al., 2018), we prefer Lerner Index.

The Lerner index is a relative mark-up of price over marginal cost (Lerner, 1934) and measures the banks' exercise of market power (Simpasa, 2013b). Lerner Index measures the mark-up banks charge their customers by calculating the difference between price and marginal costs, expressed as a percentage of the price. Higher values of the Lerner Index imply lower levels of bank competition.

We use three variables to measure bank efficiency. Firstly, bank efficiency is measured by net interest margin (NIM), representing the value of a bank's net interest revenue as a share of its average interest-bearing assets. Higher levels of net interest margins can indicate banking sector inefficiency or greater market power or lower competitive structure of the market that allows banks to earn higher margins. Profitable banks have higher NIM and are more stable than less profitable banks (Dwumfour, 2017)

Our second variable is non-interest income. Non-interest related income includes net gains on trading and derivatives, net gains on other securities, net fees and commissions and other operating incomes. The pertinent question to ask here is: does banks' decision to branch into non-interest income generating activities affect bank risk? Indeed, as Armstrong and Vashishtha (2012) document, executives have incentives to reduce idiosyncratic risk while increasing systematic risk. Therefore, some argue that engaging in non-interest income activities diversifies a bank's portfolio, hence reducing its idiosyncratic risk (Chen et al., 2017).

The last variable for banking sector efficiency is cost to income ratio. It is important because of the operating expenses of a bank as a share of sum of net-interest revenue and other operating income (Dwumfour, 2017).

We take gross domestic product (GDP) to proxy for economic growth. Loan defaults tend to be lower during the periods of high economic growth, which consequently has positive affect on banking sector stability (Ozili, 2018).

We show below both dependent and independent variables on Table 1.

**Brief description of the dependent and independent variables in the model**

*Table 1*

VARIABLE	MEASURED BY	REFERENCES
Foreign Bank (FRG)	Foreign bank assets / total bank assets	Ozili (2018), Karkowska and Pawłowska (2017)
Lerner index (LRN)	Difference between output prices and marginal costs	Abel et al. (2018), Ozili (2018), Chileshe (2017), Kasman and Kasman (2015)
Net interest margin (NIM)	net interest income / invested assets	Ozili (2018), Korbi and Bougatef (2017)
Non-interest income (NII)	Non-interest income/total income	Chileshe (2017), De Jonghe (2010), Stiroh and Rumble (2006), Nisar et al .(2018), Ozili (2018); Abuzayed et al (2018), Nguyen et al. (2012), Danişman (2018)
Cost to income (CI)	Operating expenses/ total income	Ozili (2018), Ijtsma et al (2017); Abuzayed et al. (2018) Nguyen et al. (2012), Lassoued (2017)
Gross domestic product (GDP)	Real gross domestic product growth rate (%)	Shijaku (2017) Fang et al. (2014) Adusei (2015), Ozili (2018) Korbi and Bougatef (2017) Chileshe (2017) Nisar et al .(2018)

**3.2. Hypothesis**

We would like to test below hypothesis:

- I) *The null hypothesis is the reason of why the independent variables do not significantly affect the dependent.*
- II) *The alternative hypothesis is the reason why the independent variables do significantly affect the dependent.*

The representation of the model will examine calculation of the coefficient of correlation ( $r$ ), the coefficient of determination  $R^2$  and adjusted coefficient of determination ( $\bar{R}^2$ ). There is also an analysis of variance (ANOVA), which will test the significance of observed variables in the model.

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### 3.3. Results

The significance test will be performed for all variables using a t-test at a significance level of 95%. Before hypothesis are tested, basic statistic indicators values are given in Table 2 and 3.

#### **Descriptive statistics of dependent and independent variables of the countries of the Western Balkans and Turkey for the period: 2006 – 2017**

*Table 2*

<b>Variables</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
ZScore	47	7.015	4.893	-0.241	18.208
NPL	47	13.383	6.131	2.576	21.58
NIM	47	3.990	0.974	1.851	5.667
NII	47	35.734	12.154	25.146	74.057
CI	47	60.615	10.553	43.149	94.317
LRN	47	0.2114	0.0960	-0.002	0.324
FGN	47	58.875	17.369	35	88
GDP	47	1.35e+11	2.85e+11	4.10e+09	9.40e+11

*Source: Calculated by the author (STATA 13.0)*

The previous table illustrates the obtained data of descriptive statistics of dependent and independent variables in the model of the countries of the Western Balkans and Turkey. Given that standard deviation represents a measure of risk, the strongest volatility was recorded by the GDP, followed by the foreign bank assets to total bank assets then the total net interest income to total income and the non-performing loans. The GDP is a very important indicator of economic activity and overall financial situation. Constant growth of GDP is a positive signal for attracting foreign investors and the survival of foreign banks and the growth of banks' asset. In the countries of the Western Balkans, the GDP had a very volatile trend. For example, in Bosnia and Herzegovina, the annual growth in 2008 was over 5%, so that in 2009 it would have recorded a negative value of about 3%. Stabilization has not come about since 2013. Also, other countries of the Western Balkans had the same trend in circulation except for Turkey, where the growth of GDP had a continuous growth trend.

**Correlation matrix between dependent and independent variables**

*Table 3*

Variables	ZScore	NPL	NIM	NII	CI	LRN	FRG	GDP
ZScore	1.000							
NPL	-0.036	1.000						
NIM	0.407	0.457	1.000					
NII	0.034	0.273	0.257	1.000				
CI	0.314	0.441	0.672	0.728	1.000			
LRN	0.158	-0.577	-0.215	-0.241	-0.431	1.000		
FRG	0.204	0.603	0.787	-0.072	0.440	-0.537	1.000	
GDP	-0.294	-0.133	-0.534	0.287	-0.181	0.383	-0.792	1.000

*Source: Calculated by the author (STATA 13.0)*

From the previous table it can be seen that the strongest correlation between Z-Score with other independent variables: the net interest margin (0.41), then the bank cost – to – income ratio (0.314) and foreign bank assets to total assets (0.204). On the other hand, the weakest correlation between the dependent variable (Z-Score) was achieved with the following independent variables: the non-performing loans (-0.04) and GDP (-0.294). In terms of non-performing loans, the strongest positive relationship was achieved with the following independent variables: the foreign banks assets to total bank assets (0.603), then net interest margin (0.457), the cost to income ratio (0.441).

In EU countries, the net interest margin ranges from 1% to 2%, which is a sign of the development process of financial mediation and the efficient placement of bank loans. Thus, foreign banks make a dominant share in the total portfolio of loans, which in turn leads to an increase in toxic loans due to, on the one hand, a bad debtor's ability to pay and on the other hand due to poor selection and moral hazard. In the Western Balkan countries, 4 to 5 foreign banks account for more than 70% of the total structural participation in the granting of loans, which certainly represents the oligopolistic position on the banks market.

The weakest correlation, non-performing loans has made with the following independent variables: LRN (-0.577) and GDP (-0.133).

The table below illustrates the interdependence between Z-Score as the dependent variable and the selected independent variables in the model. The obtained coefficient of determination is 32.5%, while the adjusted coefficient of determination is 22.6%, which means that there are 23% change in the independent variables to the dependent relation.

**The basic model of regression analysis between the dependent variable (Z-Score) of the countries of the Western Balkans and Turkey for the period: 2006– 2017**

*Table 4*

Source	SS	df	MS		
Model	365.89	5	60.982	Number of observations	47
Residual	759.79	42	18.531	F (5,42 )	3.29
<b>Total</b>	<b>1.125,68</b>	<b>47</b>	<b>79.513</b>	Prob >F	0.000
				R-squared	0.325
				Adj R-squared	0.226
				Root MSE	4.305

  

ZScore (dependent)	Coef.	Std. Err.	t	P> t	[95% Conf . Interval]	
NIM	2.033	1.717	1.18	0.243	-1.435	5.502
NII	-0.209	0.106	-1.96	0.050	-0.425	0.006
CI	0.338	0.151	2.23	0.031	0.032	0.645
LRN	11.914	11.513	1.03	0.307	-11.337	35.166
FGN	-0.098	0.1232	-0.80	0.429	-0.347	0.1503
GDP	1.39e-12	5.23e-12	0.27	0.791	-9.17e-12	1.20e-11
_cons	-11.05919	8.5402	-1.29	0.203	-28.306	6.188

Source: Calculated by the author (STATA 13.0)

The significance test will be performed for all variables using a t-test at a significance level of 95%. The p - value of the selected variables if greater than 0.05 will be considered to have a significant relationship with the dependent variable, i.e., capital adequacy ratio, otherwise the relationship between the dependent and the independent variable will be considered unsinkable. The previous table shows that the highest significance in terms of p values has independent cost - to - income (0.03) and non interest income (0.05). Therefore, increasing the probability of bankruptcy leads to an increase in the accompanying costs.

As it seen table, while NII variable is negative relationship with Z-score, CI variable is positive relationship with Z-score. Both variables are important as istatistics. The results are compatible with literature (such as Ozili, 2018; De Jonghe, 2010; Stiroh and Rumble, 2006; Danişman, 2018).

The previous table shows that there is a positive link between the the Z-score and GDP. Also, the positive correlation between Z-Score was achieved with the following independent variables: Lerner index (11.914) and net interest margin (2.033).

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A number of major foreign banks in the Western Balkan countries are entering risky placements with the sole aim of achieving high net interest margins, which in turn leads to an increase in Z-Score and a weakening of capital. Observed from the other side, the weakest link Z-Score as a dependent variable was recorded with the following independent variables: the non-interest income to total income (-0.21) and foreign banks assets to total bank assets (-0.01). Therefore, with the increase in political and financial instability in the Western Balkan countries, a possible gradual withdrawal of deposits could lead to the withdrawal of foreign banks and further expansion of financial instability. In terms of testing the zero and alternative hypotheses through the empirical and the theoretical value of the F test, we came to the next conclusion. The empirical value of the F test for 5 degrees of freedom in the numerator and 42 in the denominator was 2.44. The obtained empirical value of the F test is 3.29, which is more than the theoretical value which rejects the zero hypothesis and confirms the alternative hypothesis, and also confirms the individual influence of independent variables on the dependent variable.

The table shows the correlation between NPLs and independent variables. It is obvious that greater significance has been achieved between NPLs and independent variables compared to Z-Score and independent variables. The coefficient of determination between the NPLs and the independent variables is 72.30%, while the adjusted determination coefficient is 68.30%.

**The basic model of regression analysis between the dependent variable (NPLs) of the countries of the Western Balkans and Turkey for the period: 2006– 2017**

*Table 5*

Source	SS	Df	MS
Model	1.278,16	5	213.03
Residual	488,59	42	11.917
<b>Total</b>	<b>1.766,75</b>	<b>47</b>	<b>224.947</b>

Number of observations	47
F (5,42 )	17.88
Prob >F	0.000
R-squared	0.723
Adj R-squared	0.683
Root MSE	3.452

NPLs (dependent)	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
NIM	-1.127	1.377	-0.82	0.418	-3.908	1.654
NII	0.200	0.085	2.35	0.024	0.027	0.373
CI	-0.094	0.121	-0.78	0.441	-0.340	0.151
LRN	-6.362	9.232	-0.69	0.495	-25.008	12.284
FGN	0.251	0.098	2.54	0.015	0.0518	0.450
GDP	-5.46e-12	4.19e-12	-1.30	0.200	-1.39e-11	3.01e-12
_cons	3.728	6.848	0.54	0.589	-10.103	17.559

*Source: Calculated by the author (STATA 13.0)*

Independent variables in the model that had positive values, or a significant effect on the dependent variable is as follows: non –interest income (0.200) and foreign bank assets to total bank assets (0.251). The results are compatible with literature (such as Chileshe, 2017; Nisar et al., 2017). From Table 5 it can be seen that the highest significance in terms of p and t test is expressed in the following independent variables: foreign bank asset to total assets (0.015) and non interest income (0.024). Thus, with the increase in the participation of foreign banks in the countries of the Western Balkans and Turkey, has created an oligopolistic position where banks aim at increasing the net interest margin at a higher risk, and due to negative selection and moral hazard, they create toxic credits and increases in the provision and costs.

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## CONCLUSION

This paper analyzes the determinant of the financial stability of the banking sector of Western Balkan countries and Turkey for the period between 2006 and 2017, using ANOVA test and regression model. The null hypothesis was rejected because did not shown that the independent variables affect the dependent variable. An alternative hypothesis is accepted because a significant influence of the selected independent variables on non-performing loans and Z-score has been shown.

The results of the survey showed that financial stability was tested through the interdependence of NPLs and Z-Score conditioned by macroeconomic indicators, selected indicators of bank operations and certain indicators of the industrial branch. Therefore, the financial stability of banks in the Western Balkans countries and Turkey is primarily determined by specific bank performance, as well as the industry-specific and certain macroeconomic indicators. The strongest correlation between NPLs as dependent variables was recorded with the following independent variables: foreign bank assets to total bank assets and non-interest income.

The weakest link between NPLs as a dependent variable was recorded with the following independent variables: the GDP, the net interest margin and the Lerner index. With the increase of non-performing loans and risk placement, there is a gradual narrowing of net interest margins.

The significant correlation between Z-score as dependent variables was recorded with the following independent variables: non-interest income and bank cost to income. The insignificant link between Z-score as a dependent variable was recorded with the following independent variables: the GDP, foreign bank assets to total bank income, the net interest margin and the Lerner index.

These findings offer some important policy implications for regulatory authorities. It is important decrease of NPL and Z-score for bank stability. For this aim, both authorities and policy makers need to be monitored closely foreign banking asset, cost to income and non-interest income.

New research by the authors on the given subject can certainly be expanded depending on the availability of the database and the longer time series. Thus, the use of appropriate variables could provide the basis for a better analysis. In addition, the influence of different macroeconomic and regulatory variables on bank stability could be explored. We use only one variables (GDP) as macro economic. It is possible to use different variables. These macroeconomic and regulatory variables could include measures such as the exchange rate, the different corporate governance measures, bank private sector credit to GDP ratio and capital requirements.

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