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The impact of macroeconomic performance on the stability of financial system in the EU countries[3]

Summary

This study analyzes the relationship between macroeconomic performance and financial system stability in the theoretical and empirical perspective. The empirical part verifies the impact of a few macroeconomic variables on the financial system stability proxied by bank nonperforming loans to total gross loans, absolute change in the index of nominal effective exchange rate, the ROA and ROE indices for deposit takers. The analysis includes 28 EU countries and the 1996–2015 or 2006–2015 period. The results indicate that the increase in the GDP per capita level and the acceleration of economic growth as well as good fiscal stance all lead to greater stability of the financial sector.

Keywords: financial development, financial stability, financial sector, economic growth, panel data

1. Introduction

The aim of the study is to determine the impact of the macroeconomic environment on the stability of the financial system. Given many indicators that can be used to measure financial system stability, in this paper it is proxied by four variables: non-performing loans, exchange rate fluctuations, and rates of return on assets and equity in the banking sector. The synthetic analysis of the problem carried out in the study is to constitute a background for further research, in order not only to identify current threats to the stability of the financial system but – above all – to learn the conditions of the policy in terms of its

stabilization. Knowledge of the development trends, opportunities and risks is necessary to consider the desired structure of the financial system, the scope of regulations, prudential norms, as well as the choice of instruments for the policy of stabilizing the financial system.

The goals of the paper are twofold. First, it aims to present the relationship between macroeconomic environment and financial stability in theoretical perspective on the basis of the literature review. Second, the study empirically verifies the impact of selected variables representing macroeconomic performance on the financial system stability for the 28 EU countries during the 1996–2015 or 2006–2015 period (depending on the variable). The value added of the paper is, among others, the discussion of the newest literature on the subject and the inclusion of nonlinearities and lagged variables into regression equations.

The paper is composed of five sections. Point 2, that appears after introduction, presents the review of the literature and theoretical aspects related with financial system stability. Section 3 and 4 show the empirical analysis. Section 5 concludes.

2. The theoretical aspects and the review of the literature

Statistical data indicate that the financial systems in developed countries grew in the last 2–3 decades faster than the economies of these countries[4]. It is worth considering what factors influence these changes, and how they translate into the functioning and stability of the system.

Rabin and Stevens[5] state that financial system creates a more favorable environment for savers and investors to make intertemporal contracts, enhances the efficiency of financial intermediation and helps improve allocation of real resources. It provides a better environment for the implementation of macroeconomic policy. Instability, on the other hand, can have damaging consequences, from the fiscal costs of bailing out troubled institutions to the real GNP losses associated with banking and currency crises.

The functioning of the financial system, including its level of development and stability, depends on national or regional economic conditions. Therefore,

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[4]   *Rozwój systemu finansowego w Polsce w 2014 r.*, Narodowy Bank Polski, Warszawa 2015.
[5]   *Handbook of Monetary Policy*, eds J. Rabin, G.L. Stevens, Public Administration and Public Policy (Book 97), CRC Press, 2001, p. 73.

they are closely dependent on the external (exogenous and dynamically changing) economic and social conditions, the institutional environment of the country, law, political cycle, the perception of a given country by foreign markets, and evaluation of attractiveness of the financial market in the given country. It is the macroeconomic environment of the financial system.

Nasir et al.[6] state that the effects of macroeconomic policies are not limited to the real economy as various studies reported significant impacts of macroeconomic policies on the financial sector. Hence, this study answers the question what are the interactions between macroeconomic policy and financial stability.

It should be emphasized that the impact of the economic environment on the financial system is multi-dimensional and is part of the discussion on the interaction between the financial system and the real economy[7]. The economic situation of a country directly affects the economic condition of financial institutions and the situation of their stakeholders, which has direct implications for both the financial institutions and the financial market[8].

There are quantitative indicators whose values can be evaluated, especially if the boundary conditions are determined. If the indicators assessing the economic situation of a country or region take appropriate values, we can say that the macroeconomic environment is conducive to a stable and functioning financial system. The possible indicators are: GDP growth, inflation and interest rates, a stable exchange rate, budget deficit and public debt, trade balance, taxes, and unemployment. By evaluating the attractiveness of investments in the country, they are used by international rating institutions to assess the investment climate.

However, some other factors that cannot be included in the form of simple indicators are also very important. These are mainly such areas like the stability of governments, the legal environment, and the clarity of regulations. The regulatory and legal environment[9] plays an important role in shaping the structure

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[6]   M.A. Nasir, J. Wu, M. Yago, A.M. Soliman, *Macroeconomic Policy Interaction: State Dependency and Implications for Financial Stability in UK: A Systemic Review*, "Cogent Business & Management" 2016, vol. 3, issue 1, pp 1–36.

[7]   T. Jacobsen, J. Lindé, K. Roszbach, *Exploring Interactions Between Real Activity and the Financial Stance*, "Journal of Financial Stability" 2005, vol. 1, pp. 308–341; U. Volz, *Effects of Financial System Size and Structure on the Real Economy?*, United Nations Environment Programme, Inquiry Working Paper no. 15/10, 2015

[8]   K. Tsatsaronis, *Investigating the Relationship Between the Financial and Real Economy*, BIS Papers no. 22, 2005.

[9]   S. Claessens, D. Klingebiel, *Alternative Frameworks for the Provision of Financial Services. Economic Analysis and Country Experiences*, The World Bank, Policy Research Working Paper no. 2189, 1999.

of the financial system. The impact of the environment on the emergence and development of the financial system supports the economic theories emphasizing the political and legal conditions for the development of the financial system and shaping its structure[10].

The social environment, understood as the behaviour of real economy entities, mainly households and businesses, is also of great importance for the development of the financial system and its structure. The following aspects of the social environment, aptly referred to as 'social foundations' of the financial system, should be indicated: practices related to financing and saving, preferences in methods of satisfying financial needs, tendency to take risks, and human capital[11].

There are two models of the financial system that can be distinguished: bank-oriented (German-Japanese model) and market-oriented (Anglo-Saxon model). The structure of both models over the last several decades has undergone significant and noticeable changes, largely because the banking system, as the leading link in the financial system in the German-Japanese model, is losing the dominant position in favour of other sectors. The development of the financial system is moving toward solutions increasingly based on financial markets[12]. Moreover, the dynamic development of financial instruments, and thus financial intermediation services, is taking place. Products of increasing complexity are appearing, providing the potential for higher profits, but subject to a much higher risk. The increase in competitive pressure on the financial market is visible.

Harris et al.[13] show that increased competition cannot only render previously optimal bank capital regulations ineffective but also imply that increases in capital requirements cause more banks in the economy to engage in value-destroying

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[10] R.G. King, R. Levine, *Finance and Growth: Schumpeter Might Be Right*, "Quarterly Journal of Economics" 1993, vol. 108, pp. 717–738; R. La Porta, F. Lopez-de-Silanes, A. Shleifer, R.W. Vishny, *Law and Finance*, "Journal of Political Economy" 1998, vol. 106, pp. 1113–1155; R.G. Rajan, L. Zingales, *The Great Reversals: the Politics of Financial Developments in the 20th Century*, NBER Working Papers no. 8178, 2001.

[11] A. Matysek-Jędrych, *System finansowy – definicja i funkcje*, „Bank i Kredyt" 2007, nr 10, p. 90.

[12] J.C. Trichet, *Worldwide Tendencies in Financial Systems*, BIS Review no. 85, 2000; *Report on Financial Structures*, ECB, Frankfurt 2002; R.G. Rajan, L. Zingales, *Banks and Markets: The Changing Character of European Finance*, in: *The Transformation of the European Financial System*, eds V. Gaspar, P. Hartmann, O. Sleijpen, Second ECB Central Banking Conference, ECB, Frankfurt 2003.

[13] M. Harris, Ch.C. Opp, M. Opp, *Higher Capital Requirements, Safer Banks?*, March, 2014, pp. 1–3, http://www.haas.berkeley.edu/groups/finance/Regulator74.pdf.

risk-shifting. To avoid this perverse outcome, the regulator has to set capital requirements high enough, so that risk-shifting activities become less profitable from a banker's perspective than socially valuable banking activities.

It is worth noting that the contemporary crisis and measures aiming to minimize its negative effects both have shown how big role is attributed to central banks in stabilizing the financial system. In many countries, it was necessary to use, on an unprecedented scale, non-standard monetary policy instruments (e.g. quantitative easing) in order to provide liquidity to markets and stimulate the economy, because it turned out that some of the standard tools of monetary policy have lost their potency. The issue of zero boundary of nominal interest rates with which central banks are trying to deal with at the moment has also appeared[14].

According to the literature, the processes most affecting the financial system in recent years are: financial liberalization, deregulation, integration, globalization, and technological progress[15]. These changes have been deeply investigated in the literature. Matysek-Jędrych[16] performs a thorough synthesis of the impact of individual processes on the structure and functions of the financial system. From the point of view of the stability of the financial system, it is necessary to recognize the risk factors that can destabilize the system, as well as the channels through which imbalances can spread onto the individual elements of the system. Sources of instability of the financial system can be divided into two groups: endogenous, i.e. those directly connected with the system, and exogenous, i.e. deriving from outside the system but able to affect its destabilization through transmission channels. Studies of systemic risk distributed into these two groups were undertaken by e.g. Houben et al.[17]

Imbalances in the macroeconomic environment are complex and need to be controlled through the properly conducted widely understood economic policy. Blanchard[18] said that what strikes him most when analyzing the situation of

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[14] J. Bullard, *Effective Monetary Policy in a Low Interest Rate Environment*, The Henry Thornton Lecture, Cass Business School, London 2009; J.B. Taylor, *The Need to Return to a Monetary Framework*, mimeo, January 2009; A.A. Drakos, G.P. Kouretas, *The Conduct of Monetary Policy in the Eurozone Before and After the Financial Crisis*, "Economic Modelling" 2015, vol. 48, pp. 83–92.

[15] J.C. Trichet, op.cit.; G.J. Schinasi, *Safeguarding Financial Stability. Theory and Practice*, IMF, Washington 2005.

[16] A. Matysek-Jędrych, *Współczesne przeobrażenia systemu finansowego i ich konsekwencje*, „Bank i Kredyt" 2008, nr 1, pp. 34–60.

[17] A. Houben, J. Kakes, G. Schinasi, *Toward a Framework for Safeguarding Financial Stability*, IMF Working Paper no. WP/04/101, 2004.

[18] O. Blanchard, *World Economic Outlook*, International Monetary Fund, April 2015, p. xiii.

the world economy is the complexity of the forces shaping the macroeconomic processes around the world, and consequently, the difficulty to draw simple conclusions. And as far as in his opinion macroeconomic risk somewhat diminished and financial and geopolitical risk intensified, it is difficult to formulate general rules for the global economy in this regard.

New regulations implemented in recent years (the Dodd-Frank Act and Basel III) have made improvements by requiring higher bank capital, and financial institutions themselves have reduced risk-taking activities but it has been argued that the fundamental risks remained. "The efforts of regulators and politicians were simply rearranging the deckchairs on the Titanic"[19]. The changing nature of financial institution risk is noticeable. Admittedly institutions have become less risky individually after the crisis, but the financial market has become more vulnerable to systemic contagion[20].

3. Data and methodology

The empirical verification of the research hypotheses is based on regression equations in which financial sector stability indicators are regressed against a number of variables that measure macroeconomic performance. As there are numerous indices that can be treated as the proxy of the stability of financial sector, four such indices are employed in this study to obtain robust results: a) bank nonperforming loans to total gross loans (%) [*nonp_loans*], b) absolute change in the index of nominal effective exchange rate for 42 trading partners [*neer*], c) return on assets for deposit takers [*roa*], d) return on equity for deposit takers [*roe*]. The first variable (*nonp_loans*) measures the stock of nonperforming loans and its higher value reflects greater instability of the financial sector. As regards exchange rates, instability means large fluctuations in exchange rates. That is why the variable *neer* is calculated as the absolute value of the change in the index of the nominal effective exchange rate (2005 = 100). The greater the value of the *neer* variable, the greater instability of the financial sector. Since *neer* is

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[19] M.N. Baily, D.J. Elliott, *Five Years After Lehman, We're Much Safer*, The Brookings Institution, 9.09.2013, http://www.brookings.edu/research/opinions/ 2013/09/09-five-years-after-lehman-safer-baily-elliott.

[20] P. Calluzzo, G.N. Dong, *Has the Financial System Become Safer After the Crisis? The Changing Nature of Financial Institution Risk*, "Journal of Banking & Finance" 2015, vol. 53, pp. 233–248.

calculated in absolute terms, nominal appreciation and nominal depreciation of the same magnitude both mean the same size of instability. ROA and ROE indicators measure the level of net profits of banks and the other deposit takers and it is assumed that their lower values mean greater financial system instability.

The following variables are included as explanatory variables that measure macroeconomic performance: a) GDP per capita at PPP in the previous year (at constant international \$) [*gdp*], b) real GDP growth rate (%) [*gdp_growth*], c) gross public debt in the previous year (% of GDP) [*debt*], d) the annual change (in percentage points) of the gross public debt as % of GDP [*debt_diff*], e) general government balance (% of GDP) [*gov_bal*], f) CPI annual inflation rate (%) [*infl*]. Two variables: the level of GDP per capita at PPP and the level of public debt are included as lagged values to proxy the causal impact on the financial stability. Income variables measure the general macroeconomic performance, public debt and government balance represent fiscal stance, while inflation can be treated as the proxy for monetary policy.

The analysis is based on annual panel data for 28 EU countries. The calculations for the variables *nonp_loans* and *neer* cover the 1996–2015 period while the calculations for the variables *roa* and *roe* cover the 2006–2015 period (in the case of some countries the time series are shorter due to missing observations).

To analyze the impact of macroeconomic performance on nonperforming loans, the following equation is used:

$$\Delta nonp\_loans_{it} = \alpha_0 + \alpha_1 nonp\_loans_{it-1} + \beta_1 x_{1it} + \ldots + \beta_n x_{nit} + \theta_i + \varepsilon_{it}, \qquad (1)$$

where x_1–x_n are the macroeconomic performance indicators, θ_i is the individual country effect while ε_{it} is the random factor. When estimating the regression equation given by (1), there are some problems related e.g. to the fact that some variables (like initial level of nonperforming loans) are endogenous. Given the autoregressive character of the model, a proper method of estimation is necessary. Firstly, classical estimators as fixed or random effects are inconsistent, however, if model (1) is transformed to the following form:

$$nonp\_loans_{it} = \alpha_0 + \left(1+\alpha_1\right) nonp\_loans_{it-1} + \beta_1 x_{1it} + \ldots + \beta_n x_{nit} + \theta_i + \varepsilon_{it} \qquad (2)$$

an instrumental variables approach can be used. The model (2) is equivalent to the formula (1). Model (2) can be estimated using the instrumental variables method or – more frequently – the generalized method of moments. The most popular estimator from the latter group is the Blundell and Bond's GMM system

estimator[21]. It is free from some weaknesses of the previously widely used Arellano and Bond[22] estimator, like – in the case of the latter – the strong bias in small samples, especially in the case of strong autoregression[23]. Given the above problems, the Blundell and Bond's GMM system estimator is applied. It requires the division of the set of explanatory variables into three groups: endogenous, predetermined, and strictly exogenous variables. Taking into account the economic theory, all the macroeconomic variables are assumed to be endogenous.

The models for the variables *neer, roa* and *roe* do not have the autoregressive character and are estimated using the fixed effects estimator.

To account for nonlinearities, squared forms of the two variables (*gdp* and *infl* are included). The latter case accounts for the fact that both deflation and rapid inflation are not good outcomes (and it is likely that there could be some small positive inflation that leads to financial stability).

4. Results

The results of the analysis are presented in Tables 1–4. For each explanatory variable, four models have been estimated with different specifications of the set of explanatory variables.[24] The first two models in each table include lagged GDP per capita (in the linear and squared form) while the last two models take into account GDP growth rate. Each model includes also a few variables related with fiscal or monetary policy. Since in the case of nonlinear impact it is very difficult to assess the direction of the relationship on the basis of information in the tables, the nonlinear impact of GDP per capita have been presented

[21] R. Blundell, S. Bond, *Initial Conditions and Moment Restrictions in Dynamic Panel Data Models*, "Journal of Econometrics" 1998, vol. 87, pp. 115–143.

[22] M. Arellano, S. Bond, *Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations*, "Review of Economic Studies" 1991, vol. 58, pp. 277–297.

[23] See e.g. Ł. Goczek, B. Witkowski, *Determinants of Card Payments*, "Applied Economics" 2016, vol. 48, pp. 1530–1543 for more discussion and applications.

[24] The analysis is based on a few specific models that have strong theoretical justification. Another approach is to estimate all the possible combinations of the regression equations for a given set of explanatory variables and to average the results. Such an alternative approach, called Bayesian model averaging, has been applied by some other authors (e.g. P. Białowolski, T. Kuszewski, B. Witkowski, *Bayesian Averaging of Classical Estimates in Forecasting Macroeconomic Indicators with Application of Business Survey Data*, "Empirica" 2014, vol. 41, pp. 53–68).

in the figures. Figure 1 shows the impact on the change in nonperforming loans while Figure 2 – the impact on the fluctuations in nominal effective exchange rates (data in Figures 1 and 2 are standardized). The impact on ROA and ROE is not illustrated in the figures because the estimated coefficients are not statistically significant.

As regards non-performing loans (Table 1), three variables are statistically significant: GDP per capita level, GDP growth rate, and debt difference. The coefficient standing on GDP growth is negative meaning that the higher economic growth rate, the lower increase in the volume of non-performing loans. This relationship is in line with the theoretical structural model according to which the increase in income means better general economic condition of the country and the improvement in terms of non-performing loans. When assessing the impact of lagged GDP per capita on non-performing loans, it turns out that the relationship has a shape of a downward sloping parabola – at low GDP per capita levels the increase in income is correlated with the increase in non-performing loans but after a certain level of income is reached, the increase in the level of development implies a decrease in the volume of non-performing loans. A positive coefficient on debt difference means that the increase in debt leads to the increase in non-performing loans.

GDP per capita level and GDP growth rate both are also statistically significant factors of nominal effective exchange rate fluctuations (Table 2). The coefficient on GDP growth is negative meaning that the higher economic growth, the greater stability of the financial sector in terms of the lack of fluctuations in exchange rates. Figure 2 shows that there is a nonlinear negative relationship between lagged GDP per capita and exchange rate fluctuations which is another argument that high income is a factor conducive to financial sector stability.

The results for ROA and ROE imply that the most important variables affecting the rates of return are: economic growth, the volume of debt (its level and difference), and general government balance. The higher economic growth is, the greater are both ROA and ROE that indicates a positive impact of GDP growth rate on financial sector stability. The relationship with debt is negative while that with general government balance – positive, meaning that good fiscal stance (in terms of low indebtedness and low budget deficit) positively affects the rates of return on assets and equity and hence – leads to greater financial stability.

Table 1. Regression results for nonperforming loans (nonp_loans)

Explanatory variable/ statistics	Model [1]	Model [2]	Model [3]	Model [4]
nonp_loans $(t-1)$	0.949***	0.918***	0.834***	0.920***
gdp	47.608**	43.314**		
(gdp)^2	–2.330**	–2.148**		
gdp_growth			–0.415***	–0.338***
debt	0.011			
debt_diff		0.267***		0.093**
gov_bal			0.035	
infl			–0.319*	–0.024
(infl)^2			0.003	–0.001
constant	–242.855**	–217.644**	3.015***	1.353***
No. of observations	455	455	440	434
Obs. per country min.	7	7	6	6
avg.	16.3	16.3	15.7	15.5
max.	18	18	17	17

Estimator: Blundell and Bond's GMM system estimator. Regression equations have been estimated on the basis of annual data for the EU28 countries.
*** Significant at 1% level. ** Significant at 5% level. * Significant at 15% level.
Source: own calculations.

Table 2. Regression results for nominal effective exchange rate (neer)

Explanatory variable/ statistics	Model [5]	Model [6]	Model [7]	Model [8]
gdp	–67.049***	–52.390**		
(gdp)^2	3.056***	2.267**		
gdp_growth			–0.080*	–0.084*
debt	–0.013			
debt_diff		0.097***		0.012
gov_bal			–0.104*	
infl			0.290***	–0.081
(infl)^2			0.000	0.015***
constant	369.353***	301.369***	2.213***	3.189***
R-squared within	0.1230	0.1447	0.3105	0.0705
between	0.3443	0.3364	0.7372	0.3829
overall	0.1292	0.1314	0.411	0.0974
No. of observations	491	491	524	491

Explanatory variable/ statistics		Model [5]	Model [6]	Model [7]	Model [8]
Obs. per country	min.	14	14	15	14
	avg.	17.5	17.5	18.7	17.5
	max.	18	18	19	18

Estimator: fixed effects. The remaining notes as in Table 1.
Source: own calculations.

Table 3. Regression results for return on assets (roa)

Explanatory variable/ statistics		Model [9]	Model [10]	Model [11]	Model [12]
gdp		2.210	–16.745		
$(gdp)^2$		–0.091	0.901		
gdp_growth				0.101***	0.111***
debt		–0.006*			
debt_diff			–0.055***		–0.012
gov_bal				0.059***	
infl				–0.030	–0.012
$(infl)^2$				0.007*	0.006*
constant		–12.220	77.418	0.655***	0.443***
R-squared	within	0.0190	0.1485	0.3603	0.3173
	between	0.0861	0.0075	0.2249	0.2580
	overall	0.0363	0.0034	0.3132	0.2835
No. of observations		248	248	224	224
Obs. per country	min.	6	6	5	5
	avg.	8.9	8.9	8.0	8.0
	max.	11	11	10	10

Notes as in Table 2.
Source: own calculations.

Table 4. Regression results for return on equity (roe)

Explanatory variable/ statistics	Model [13]	Model [14]	Model [15]	Model [16]
gdp	256.881	–84.121		
$(gdp)^2$	–12.394	5.463		
gdp_growth			1.117***	0.880***

Explanatory variable/ statistics		Model [13]	Model [14]	Model [15]	Model [16]
debt		–0.131***			
debt_diff			–1.000***		–0.606***
gov_bal				0.851***	
infl				0.691	0.962**
(infl)^2				0.002	–0.011
constant		–1314.473	295.149	7.882***	6.632***
R-squared	within	0.0501	0.3025	0.3968	0.4003
	between	0.0877	0.0451	0.2856	0.3569
	overall	0.0568	0.0764	0.3585	0.3793
No. of observations		245	245	222	222
Obs. per country	min.	6	6	5	5
	avg.	8.8	8.8	7.9	7.9
	max.	11	11	10	10

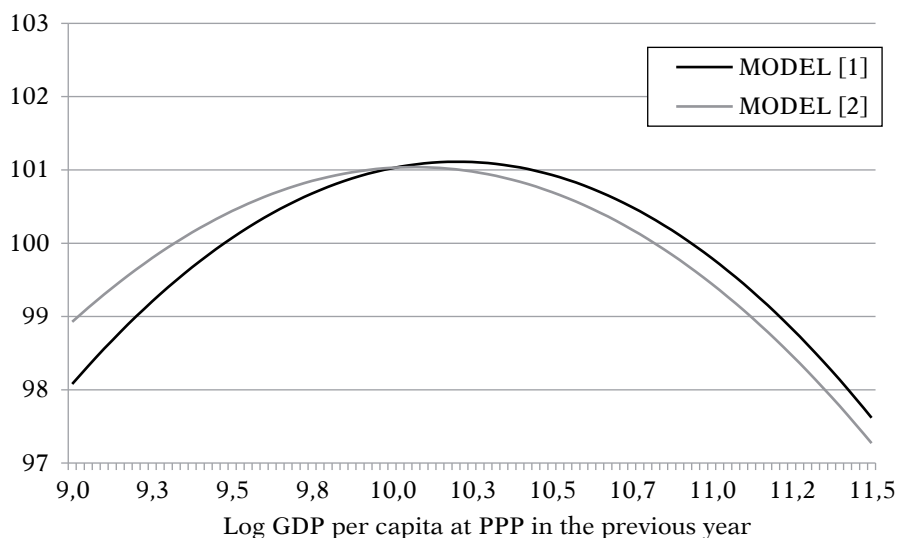Notes as in Table 2.
Source: own calculations.

Figure 1. The impact of lagged GDP per capita on nonperforming loans
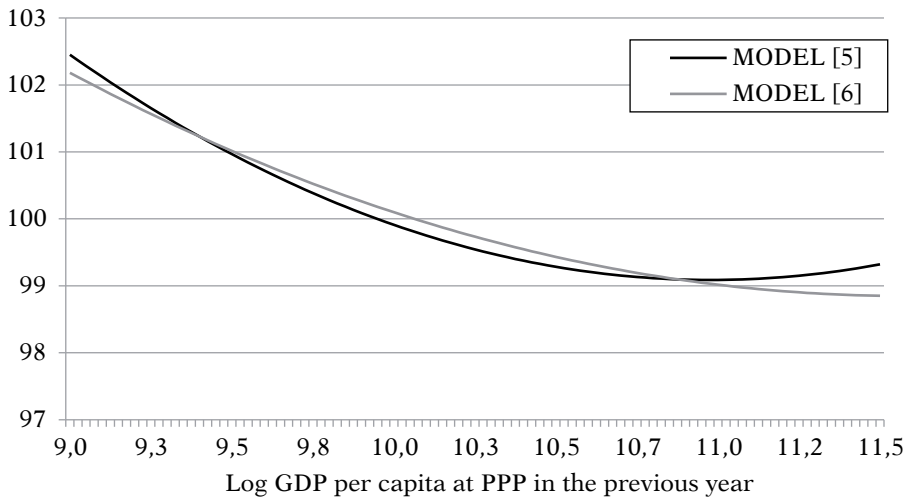Source: own calculations.

Figure 2. The impact of lagged GDP per capita on nominal effective exchange rate
Source: own calculations.

All the estimated models generally indicate that the nonlinear impact of inflation is not statistically significant. It means that the econometric study does not confirm that there is an 'optimal' level of inflation from the point of view of financial sector stability.

5. Conclusions

This study analyzes the relationship between macroeconomic performance and financial system stability in the theoretical and empirical perspective. On the basis of the newest literature review, the paper presents, among others, the main channels through which general economic condition of the country affects the financial sector. The empirical part verifies the impact of a few variables representing macroeconomic performance (GDP per capita and GDP growth rate, public debt, general government balance, and inflation) on financial system stability proxied by the following four variables: bank nonperforming loans to total gross loans, absolute change in the index of nominal effective exchange rate, return on assets for deposit takers, and return on equity for deposit takers. The analysis includes 28 EU countries and the 1996–2015 or 2006–2015 period (depending on the variable). The results indicate that the increase in the GDP per capita level and the acceleration of economic growth both lead to greater

stability of the financial sector. The increase in financial stability is also driven by good fiscal stance (low public debt and low budget deficit). The study confirms that the impact of GDP per capita on financial stability is nonlinear.

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Wpływ sytuacji makroekonomicznej na stabilność systemu finansowego w krajach UE

Streszczenie

Badanie dotyczy zależności między sytuacją makroekonomiczną a stabilnością systemu finansowego na gruncie teoretycznym i empirycznym. W części empirycznej jest weryfikowany wpływ kilku zmiennych makroekonomicznych na stabilność systemu finansowego, mierzoną udziałem kredytów zagrożonych w całości kredytów, zmianami (w wartości bezwzględnej) nominalnego efektywnego kursu walutowego oraz wskaźnikami ROA i ROE dla sektora bankowego. Analiza obejmuje 28 krajów

UE i okres 1996–2015 lub 2006–2015. Wyniki sugerują, że wyższy poziom PKB *per capita*, przyspieszenie tempa wzrostu gospodarczego oraz dobra sytuacja fiskalna prowadzą do większej stabilności sektora finansowego.

Słowa kluczowe: rozwój finansowy, stabilność finansowa, sektor finansowy, wzrost gospodarczy, dane panelowe

Zgodnie z oświadczeniami autorów, udział każdego z nich w tworzeniu artykułu jest równy.