

# Commercial Bank Profitability Analysis: Evidence from Croatia

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**Abstract** — Croatian financial system is dominantly bank centered. That give banks crucial role in functioning primary financial system and then in whole economic system. Very inconstant and insignificant past periods in economic activity in Croatia from 2008 to 2016 will be point of interest in this paper. The strong decrease in interest rates in recent period has lowered market interest rates close or even below zero. In such circumstances, banking sector profitability continues to be under the pressure, not least due to generally low lending activity. As commercial banks are not able to administer market interest rates, but rather take it as a given variable, the banks management boards are forced to find other mechanisms in order to defend/increase their profitability. In this paper, we will examine how banking sector profitability in Croatia depends on the selected microeconomic and macroeconomic variables which will be represented through the structure of overall loans, as well as size of total asset and capital with exchange rate and GDP growth yoy. As a dependent variable that represents profitability we will examine most commonly used accounting profitability indicators such as return on asset (ROA) and return on equity (ROE). After introduction, the paper will give the overview of literature regarding the issue as well as the main assumptions of this paper. The third part will give comparison of profitability of banking sectors in Southeastern Europe in aspect of historical movements and changes. After mentioned, the fourth part will examine econometric model with results and explanation. The concluding remarks gives the recommendations and explanations of given econometric results in order to improve bank profitability or increase their competitiveness.

**Keywords**—Commercial banking, profitability, competitiveness, Croatia

## I. INTRODUCTION

IN the less developed economies of the world, such as the Croatian economy, the banking sector is one of the main levers of economic development. This makes the banking business operations an extremely important area for both the owners and the society as a whole. Only a stable and profitable banking system can generate a quality economic advancement and provide prosperity to the society. Given the importance of profitability for the viability of banks, this paper will analyze

the selected profitability determinants of banks in Croatia. Profitability of the banking sector in the previous period will be in focus for several reasons: a constant pressure exerted on the banks' margins due to a continued decline in interest rates, a more intensive competition and changes in the legislative and regulatory framework. In this context, it is necessary to measure which determinants arise from the very operations of banks and their owners and which ones are under influence of the external business environment. Namely, banks can be differentiated according to a number of factors, like the size of their capital, the size of their assets, their financing resources, but also their business orientation. The usual meaning of the term "business orientation" is bank's focus on its business clients and/or private clients. For example, if we are talking about a dominant retail banking, we want to know whether the bank is mainly exposed through lending for the purchase of real estate, loans to buy cars, general purpose loans or granting overdrafts. Since the primary goal of all companies, regardless of the industry they are doing business in, is to maximize profits, the banks are no different. The importance of bank operations is emphasized by their role in the context of financial stability of the economy. The question of profitability is therefore not important exclusively for the owners or shareholders but also for the public in general, because a healthy and profitable banking system is a necessary precondition for an overall financial stability and progress. The banking system in Croatia, as in all countries with a bank-based financial system, holds the major part of the total national savings and therefore a reasonable expectation exists that the banking system should not only aim to take care of its owners' interests via its crediting and other activities, but also to take care of the public interest through efficient transmission of funds, i.e. allocation of resources to the most profitable and efficient business projects. Through this channel, banks achieve not only their primary objective, but also exert their transferring and allocative function, thus contributing to the development of the entire economy. With regard to the abovementioned, this paper aims to select the most representative determinants of banks' profitability in Croatia, measure their impact and direction on the three levels of reliability and assess the impact of macroeconomic variables on the selected dependent variables that present profitability.

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## II. LITERATURE REVIEW

The literature on bank performance is not conclusive on all the factors that contribute to the bank profitability and it is also inconclusive about the nature of the influence of those variables on bank performance [1]. However, the literature points on the factors which goes from microeconomic and macroeconomic perspectives. From the studies reviewed, it is evident that many research works on the determinants of bank profitability in various parts of the world have been carried out [2]. According to that point of view here is literature review on selected topic and comparable variables and methodology [1]. The issue of bank profitability and performance efficiency has been widely discussed in the scientific literature, it has also been considered in a number of theoretical and empirical researches of different kind. Return on assets (ROA) and return on equity (ROE) have always been mentioned among the main indicators characterizing bank performance and profitability [3]. Boyd and Runkle (1993) have discovered conclusion that the bank size is related to the concept of economics of scale which mean the large institutions can be more efficient as long as they could provide their services with lower costs incurred, in consequence, the bank would be able to increase its market share and increase its profitability [4]. Ramlall (2009) also has discovered a positive correlation between bank size and profitability. Also they have same conclusion: the bigger is the bank, the more profitable it is in comparison with a smaller bank due to economies of scale [5]. Kwast and Rose (1982) used operating efficiency ratio, as indicator of management efficiency and its relation to bank's profitability. They found that no evidence that highly profitable banks have a greater operating efficiency than their lower profitable counterparts [6]. Miller and Noulas (1997) used asset utilization ratio to evaluate asset management performance and its relationship with bank's profitability. They found that there is a positive relationship between asset utilization ratio and bank's profitability [7]. Beckmann (2007) analyses structural and cyclical determinants of banking profitability in 16 Western European countries. The data set comprises aggregate annual country data and banking group data over the period 1979-2003. The estimation results show that financial structure matters, particularly through the beneficial effect of the capital market orientation in the respective national financial system. Furthermore, higher diversification regarding banks' income sources shows a positive effect. The industry concentration of national banking systems, though, does not significantly affect aggregate profitability. Business cycle effects, in particular lagged GDP growth, display a substantial procyclical impact on bank profits [8]. Rasiyah et al. (2010) in his research list the following internal factors influencing profitability: asset portfolio mix, loans and interest income, investments, non-interest income earning assets, total expenses, operating expenses, personnel expenses, liability composition, deposit composition, liquidity ratios, capital structure. External factors comprise regulations, inflation, interest rates, short and long terms effects of interest rates on assets, market share, market growth, firm size [9]. Davydenko (2011) used fixed effects estimation technique and proved that both GDP and Inflation

have a positive relationship with ROA of Ukrainian banks [10]. Saksonova and Solovjova (2011) performed comparative analysis of five largest Latvian commercial banks during period of economic crises. GDP growth had positive contribution to profits, and inflation negatively affected ROA [11]. Staikouras and Steliaros (1999) examined the attributive profitability factors of 17 commercial Greek banks for the years 1991-1998. They used ROE and ROA ratios in relation to endogenous and exogenous variables. According to the results, the profitability of Greek banks is defined by the inflation rate, the proprietary regime, the ratio of reserve funds for borrowings to the total of granted debts and the ratio of debts to the total assets [12]. Athanasoglou et al. (2006) examine the profitability behaviour of bank-specific, industry related and macroeconomic determinants, using an unbalanced panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. The estimation results indicate that, with the exception of liquidity, all bank-specific determinants significantly affect bank profitability in the anticipated way. The macroeconomic environment has a direct impact on the aggregate performance of the industry. Concentration is positively correlated with bank profitability. With respect to the macroeconomic variables, inflation has a strong effect on profitability, while bank profits are not significantly affected by real GDP per capita fluctuations, probably owing to the small sample period. However, as financial systems develop and the reform process ends, both the current and future rates of economic growth are likely to have an enhanced impact on bank profitability [13].

## III. REVIEW OF BANKING CHARACTERISTICS IN SLOVAKIA, SLOVENIA, CROATIA AND SERBIA

The market structure and profitability of banks constitutes a strong element in the analysis of banking industry, especially in the countries in which the level of the banking industry represents the main component of the financial system what is clearly obvious in Southeastern Europe (SEE) countries what includes the Republic of Croatia [14]. Croatian financial system is still bank-based financial system with domination of credit institutions. There were 33 credit institutions, or 27 banks, one savings bank and five housing savings banks, operating in the country at the end of 2015. There were again no foreign bank branches, although almost a hundred EU (and EEA) credit institutions used the single passport privilege, thus paving the way for direct provision of services in the Republic of Croatia. The total assets of credit institutions went down in 2015 (HRK 393bn) from the end of 2014 (HRK 1.8bn or 0.5%) due to the influence of the decrease in bank assets. The key influence came from the changes in several banks leading in terms of asset size. In contrast, the assets of the two largest banks increased, which led to the rise in the system concentration measured by the size of the share of two leading banks in total assets, loans granted (net) and deposits of all banks. The assets of the top two banks accounted for 44.7 % of total assets, 45.4% of total loans and 45.1% of total deposits of all banks at the end of 2015. The values of all of these shares went up from 2014, which also contributed to a rise in these shares for the group of five largest banks. The assets of

the first five banks made up 74.5% of total assets of banks, while the share of assets of the first ten banks decreased slightly, amounting to 92.9% of total assets of banks [15]. That structure of financial system is known as bank-based financial system. Further, that part of Europe is synonym for changes in their banking industries which are effect of mutation at the level of the structure of shareholding as a result of bank privatization, then of the entry of foreign banks and of the increase of competition determined by the liberalization of the market and changes in supervision and regulation. The early stages of banking transition in South-eastern European countries consisted in the restructuring of state banks and in abandoning direct financing. Reconstruction leads to bank privatization and growth of financial markets. The period of transition of the banking industry included significant structural changes which had some basic features: 1. Entry of foreign capital; 2. Growth in domestic lending in particular for consumption primarily for consumption of foreign goods; 3. Increase in the exposure to foreign currency risk; 4. Increase in profitability and a satisfying rate of capital adequacy; 5. Implementation of international accounting standards; 6. Changes in the regulation and supervision; 7. Credit expansion and growth of risk assets [14].

TABLE 1  
MAIN INDICATORS OF BANKING SYSTEMS IN SELECTED SEE COUNTRIES  
(AMOUNTS IN EUR MLN) [16]

	Slovakia	Slovenia	Croatia	Serbia	
Total assets	55,775	45,600	55,137	90,925	2011
Total loans	36,624	33,000	38,930	52,125	
Total deposits	40,426	21,300	37,348	46,866	
Number of banks	31	25	32	40	
NPL	5,7	11,8	14,4	14,3	
Total assets	58,086	44,500	54,032	91,451	2012
Total loans	37,870	31,700	38,018	51,562	
Total deposits	42,980	20,900	36,157	47,612	
Number of banks	28	23	31	39	
NPL	5,3	15,2	13,9	18,2	
Total assets	59,554	39,600	53,116	91,139	2013
Total loans	39,909	26,400	37,901	49,077	
Total deposits	44,823	21,200	36,837	51,174	
Number of banks	28	23	30	39	
NPL	5,2	13,3	15,7	21,9	
Total assets	62,742	37,400	52,603	90,483	2014
Total loans	42,534	23,200	36,983	47,547	
Total deposits	46,668	22,100	37,459	55,225	
Number of banks	28	21	28	39	
NPL	5,4	11,7	17,1	20,7	
Total assets	67,546	35,500	52,560	92,194	2015
Total loans	46,383	21,900	36,593	48,671	
Total deposits	51,029	23,200	39,405	59,388	
Number of banks	27	19	28	35	
NPL	4,9	10,0	16,6	13,1	

In Table 1 we have observed the banking systems of Slovakia, Slovenia, Croatia and Serbia. It shows that during period (2011-2015) the characteristics of banking sectors in selected countries vary over period because each country pass through specific changes due to internal and external business environment. The biggest banking sector has Serbia with 92,194 EUR mln in 2015, but relative importance is smaller, indeed Serbia has the smallest share of total banking assets in percent of GDP (58,7% in 2015). In contrary, Croatia has the

biggest share of the banking assets in percent of GDP (120,1% in 2015) with 52,560 EUR mln, in same time Slovakia has 67,546 EUR mln, when Slovenia has just 35,500 EUR mln. According to the stability, non-performing loans are on the lowest point in the Slovakia with 5,3% share of bad loans in total loans what present stable banking system. Average NPL in observed period in other countries goes from 12,4% in Slovenia to 17,64% in Serbia. Among the observed economies, Serbia has the highest number of banks, standing at 35 at the end of 2015. In same period Slovenia has just 19.

It is obviously in previously Table and next Figure that Slovenian banking system gone through the banking crises which have three key segments which contributed to its development: 1. Rapid and unbalanced growth before the crisis; 2. Excessive debt of non-financial corporations and a privatization model financed through borrowing and the encumbrance of future monetary flows of acquired companies for the repayment of debts from privatization; 3. Factors leading to the accumulation of non-performing loans during the crisis [17]. Croatian fall in the balance sheet potential in 2015 was a result of continued trends that marked banking system developments in the past four years. Great caution of banks and their clients in assuming risks continued to be reflected in the absence of new lending, while banks predominantly directed funds raised in the domestic markets to deposits with foreign financial institutions. At the same time, for the purpose of the optimization of their operations banks continued to deleverage abroad. These developments were additionally underlined by the implementation of extraordinary regulatory measures that the Government of the Republic of Croatia proposed in 2015 to alleviate the position of debtors who borrowed in the Swiss franc and which resulted in the partial write-off of the principal of converted loans. These measures hit the operating results of some banks and resulted in current year losses and a reduction in total capital [15]. As a result of business initiatives and despite falling core margins, the Serbian banking sector posted a positive aggregate profit (Fig. 1). Concerning the restructuring processes, reportedly, a take-over process of Eurobank, the Serbian subsidiary of Greece's Eurobank, by Vojvodjanska Banka, part of National Bank of Greece (NBG), is "under way". The privatization of the second largest state-owned bank, Komercijalna banka, is also pending [16]. The profitability of the Slovak banking sector was strongly influenced by two counteracting trends: rising lending volumes and decreasing interest rate margins. The first outpaced the second in its net effect on the sector's financial results, resulting in an increase in profitability margins what also can be viewed in next Figure.

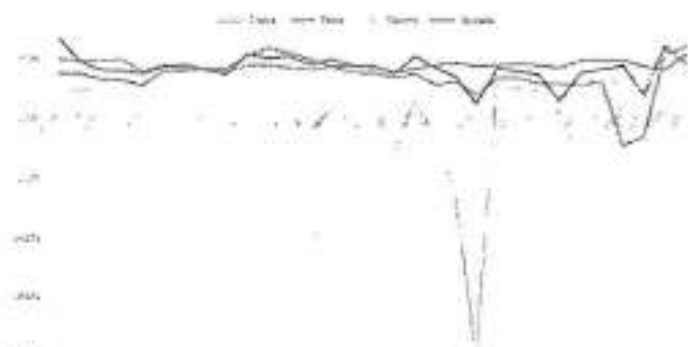


Fig. 1 Return of assets (ROA) in selected SEE countries [17]

#### IV. RESEARCH FRAMEWORK AND RESULTS

Based on the studies mentioned in second part of this paper next empirical study focusing on determinants bank performance. We use the detailed quarterly balance sheet and income statement information for a universe of Croatian banks. The sample period spans from fourth quarter 2008 to second quarter 2016.

TABLE II  
DEFINITION AND MEASUREMENT OF VARIABLES

Variables	Notation	Calculation method
<i>Dependent variable</i>		
Return on Assets	ROA	Net Income/Total Assets
Return on Equity	ROE	Net Income/Total Equity
<i>Independent variables</i>		
Capital Adequacy	CAR	Equity/Total Assets
General Purpose Cash Loans	Cash loans	General Purpose Cash Loans/Total Loans
Household Loans	Households	Household Loans/Total Loans
Total Credit	Total credit	Total Credits/Total Assets
Exchange Rate	Exchange	Real Exchange Rate
GDP growth	GDP growth	GDP growth yoy

The determinants of banks' profitability are usually assorted into internal and external factors. These studies specify return on asset (ROA) and return on equity (ROE) as the dependent variables and considering the internal and external factors as independent variables [18]. Return on assets is the net profit after tax divided by total assets and indicates the returns generated from the assets financed by the bank and return on equity is net income divided by shareholder equity. For independent variables we use internal indicators such as capital adequacy ratio, share of general purpose cash loans in total loans, share of household loans in total loans, share of total credit in total assets and external indicators which are represented with real exchange rate and GDP growth. All of it are given in Table 2. In next two tables we did the most common econometric method - the ordinary least squares (OLS) technique, which uses the least squares principle to fit a prespecified regression function through sample data. As shown by the Table 3 and Table 4 in first model we use ROA as dependent variable and in second model we use ROE.

TABLE III  
RETURN ON ASSETS (ROA) OLS METHOD

	Dependent variable:		
	Return on asset		
	(1)	(2)	(3)
Constant	0,28400 (0,17380)	0,08840 (0,22062)	-0,05985 (0,16597)
Cash loans	0,01501 (0,04319)	-0,00549 (0,04487)	-0,10038** (0,03886)
Households	-0,10582 (0,14529)	-0,04256 (0,14968)	-0,07421 (0,11074)
Total credit		0,17808 (0,12727)	0,11724 (0,09488)
CAR			1,26249*** (0,27010)
Exchange	-0,03082* (0,01581)	-0,02455 (0,01616)	-0,01823 (0,01201)
GDP growth	-0,00102 (0,00073)	-0,00026 (0,00090)	0,00197** (0,00082)
Observations	31	31	31
R2	0,30024	0,35106	0,56029
Adjusted R2	0,19258	0,22127	0,57537
Residual Std. Error	0,00625	0,00614	0,00453
F Statistic	2,78885**	2,70485**	7,77486***

Note: \*p<0,1; \*\*p<0,05; \*\*\*p<0,01

TABLE IV  
RETURN ON EQUITY (ROE) OLS METHOD

	Dependent variable:		
	Return on equity		
	(1)	(2)	(3)
Constant	2,12845 (3,33923)	0,58668 (1,69694)	-0,56449 (1,26588)
Cash loans	0,09423 (0,33278)	-0,06737 (0,34514)	-0,80415** (0,29629)
Households	-0,82449 (3,11960)	-0,32591 (3,15129)	-0,57160 (0,84632)
Total credit		1,40369 (0,97892)	0,93130 (0,72340)
CAR			9,80295*** (2,05944)
Exchange	-0,22913* (0,12185)	-0,17974 (0,12432)	-0,13065 (0,09158)
GDP growth	-0,00737 (0,00568)	-0,00137 (0,00694)	0,01592** (0,00624)
Observations	31	31	31
R2	0,28110	0,33573	0,65831
Adjusted R2	0,17050	0,20288	0,57289
Residual Std. Error	0,04818	0,04723	0,03457
F Statistic	2,54161*	2,52710*	7,70657***

Note: \*p<0,1; \*\*p<0,05; \*\*\*p<0,01

As it can be concluded analyzing the data in Table 3 and

Table 4 there is positive significant correlation both ROA and ROE with capital adequacy ratio and GDP growth, when negative correlation between variables is with share of cash loans in total loans. There is insignificant correlation between share of household credits, ratio of total credit on assets and exchange rate but with predicted sign and in correlation with scientific literature. Same results with both dependent variables are predictable, different results are given when basic OLS model is expanded. In first step with share of total credit in total assets and in second step with capital adequacy ratio.

#### V. CONCLUDING REMARKS

Slightly downward trend in size of Croatian banking sector is result of few characteristics. First of all, there is the absence of new lending and also implementation of extraordinary regulatory measures that the Government of the Republic of Croatia proposed in 2015 to alleviate the position of debtors who borrowed in the Swiss franc. Last one has major impact on negative financial result and a reduction in total capital in 2015. Despite that, Croatian national bank has provided stability of the banking sector what is so important especially in an environment of macroeconomic uncertainty. We also can conclude that CNB has a positive impact on banking profitability and stability.

In the paper the authors have found correlation between bank profitability (Return on Assets and return on equity) and share of general purpose cash loans in total loans, capital adequacy ratio and GDP growth in Croatia from 4Q 2008 to 2Q2016. The coefficient of cash loans is negative and significant at a 5% confidence level what can be interpreted in line with share of non-performing loans because loans for general purpose are one of source in NPL growth. The coefficient of capital adequacy ratio is positive and significant at a 1% confidence level which is in line with theory while GDP growth shown also positive and significant influence but at a 5% confidence level. Referring to the insignificant indicators, share of household credits in total credits and exchange rate have a negative impact while total credits on total assets has positive impact. Future research could include more internal and external variables as well as indicators of the quality of the bank services. Another possible extension could be different econometric model and technique such as General Method of Moments. Also, the authors intend to provide comparison of profitability of the banks in the entire Southeastern Europe (SEE) and its main determinants.

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