Profitability of selected commercial banks in Slovak republic in relation to increasing capital adequacy requirements

Natália ZELENKOVÁ

Abstract

Commercial banks in Slovak republic are supposed to meet the criteria determined by European and Slovak bank regulators and within the system of banking supervision accept Capital Requirements Regulation (CRR). This regulation is focused on minimum levels and optimal capital composition in comparison with risks of individual banks and bank system. One group of observed indicators includes capital adequacy ratios. Capital adequacy indicators are observed for their assumed impact on operations and performance of commercial banks, including profitability of commercial banks. Analysis on one hand searches for correlating relationship between capital adequacy indicators in selected Slovak banks and their profitability, on the other hand answers the question – if the change in profitability is adequate to change in ratios. The analysis includes 5 years data history of selected banks.

Abstrakt

Komerčné banky v Slovenskej republike musia plniť kritériá stanovené európskymi a slovenskými bankovými regulátormi a v rámci systému bankového dohľadu akceptujú reguláciu kapitálových požiadaviek (CRR). Táto regulácia je zameraná na minimálnu úroveň kapitálu a jeho optimálnu kompozíciu v porovnaní s rizikami jednotlivých bank a bankového systému ako celku.   Jedna skupina sledovaných indikátorov sú ukazovatele kapitálovej primeranosti. Tieto ukazovatele sú okrem iného sledované pre ich dopad na operácie a výkon komerčných bánk, vrátane rentability komerčných bánk. Analýza na jednej strane hľadá korelačný vzťah medzi ukazovateľmi kapitálovej primeranosti vo vybraných slovenských bankách a ich rentabilitou, na druhej strane zodpovedá otázku – či je zmena rentability

adekvátna zmene v kapitálových ukazovateľoch. Analýza zachytáva 5 ročnú históriu dát vo vybraných bankách.

Kľúčové slová

Kapitálová primeranosť, rentabilita, komerčná banka, kapitálový pomer, kapitál

Introduction

The calculation of capital adequacy ratios is inevitable part of financial reports in commercial banks in Slovak republic. Banks have long been reporting necessary and in some cases voluntary capital calculations according to recommendations of Basel Committee on Banking Supervision as a part of Bank for International Settlements in Basel. They have gradually changed over time as well as other regulation of banks' solvency and safety. There is a goal of commercial banks – to generate maximum profit but considering optimal realtionship between high profits and acceptable risk. The risk must be optimal not endangering the clients and the bank system. Therefore, required capital to cover risks represented by risk weighted assets, is one of instruments widely used by regulators in combination with other indicators (financial leverage, liquidity, debt to assets, debt to equity etc.)

Capital adequacy ratios are gradually being increased and there is a question of their general impact on profitability of banks. Slovak commercial banks must follow capital regulation and even though their profitability has been reaching values upon average in comparison with other economic regions in last decade, the trend is pushing the profitability indicators downwards opposing to previous more profitable years. The indicators of profitability are heading to minimum values (according to indicated boundaries for banking institutions in our conditions). The question is, if the banks can sustain current values or they will further continue to decrease profits.

Some studies pointed positive relationship between selected indicators in certain countries. According to Jayesh J Jadhav, Ashish Kathale and Shreeya Rajpurohit (2021) there is a positive correlation between net profits change and capital ratios but the degree of change is not equal in Indian banks.

According to Amahalu Nestor Ndubuisi Okoye , Emmanuel Ikechukwu,Nweze Chike Leonard there is a strong positive and statistically significant effect on capital ratios and profitability in Nigerian banks.

Methodology

This study will analyse the relationship between capital adequacy and profitability in 4 significant banks in Slovak republic. Selected four banks are in group of biggest banks in Slovakia. Their activities represent typical commercial bank business in region of CEE, with focus on individual and corporate segment services. They have similar composition of assets and liabilities, with dominant clients' credits on assets side and clients' deposits on liabilities side. Bank data have been collected from online sources. The collection of inputs combines mining in annual reports and other additional reports of banks according to each year's regulation. Data in processed period have been available in similar (or same) formats and in accordance with current financial reporting. Some figures are calculated and verified within more statistical sources and therefore valid in financial and regulation point of view.

The inputs for calculations and comparisons are following:

Common Equity Tier ratio (percentage of risk exposition value) - Vlastný kapitál Tier 1 (ako percentuálny podiel hodnoty rizikovej expozície) is indicator based on CRR (Capital Requirements Regulation) valid for commercial banks and being updated in order to meet rising capital need. Minimum values are set on European and national levels (including factors like size, relation to bank groups, regional or global importance etc.)

Total capital (percentage of risk exposition value) - Celkový kapitál (ako percentuálny podiel hodnoty rizikovej expozície) is total amount of acceptable capital needed to cover risks of weighted assets including Tier 1 and Tier 2

ROA – Return on assets = net profit / assets is indicator of profitability used in banking and in other industries, with specific limits for banking industry. It is widely used for comparison within banking institutions and has good informative value for external environment and statistics

ROE – Return on equity = net profit / equity has the same qualities as ROA for comparisons from outside the bank but serves as well to shareholders. They are naturally interested in relationship of invested capital and net profit.

The objective of the study is to find or reject statistical relationship between mentioned capital and profitability indicators in period 2016-2020 (2021 has not been included as complete reports are not published yet for all the banks) considering other conditions unchanged.

Data were analysed optically via charts creation and quantitatively using correlation analysis. The dataset was analysed separately for each bank and collectively with descriptive statistics.

Results

As first, charts for optical assessment of indicators values over time are created.
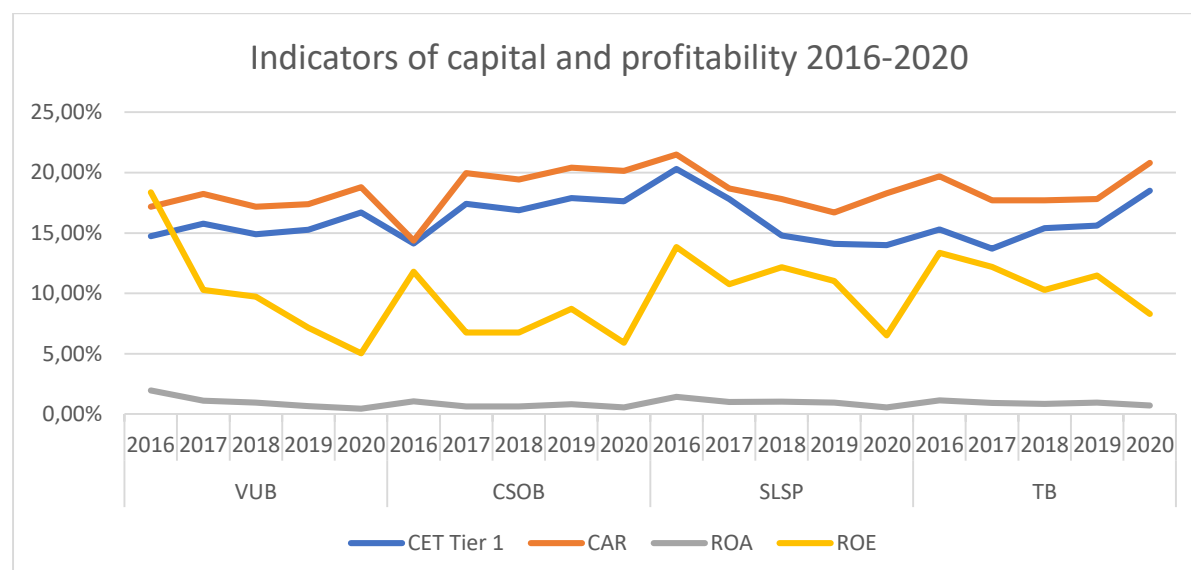

Figure 1 Indicators of capital and profitability

Figure 1 consists of collected data comparison. The trend in both profitability indicators is negative in all 4 banks. It is important to note that the level of net profit in 2020 was partially influenced by high creation of impairment losses as there was expectation of defaulting during COVID-19 crisis. This fact pushed the indicators down but on the other hand the profit for next year could be higher and therefore this trend could be reverted. Capital requirements are rising except Slovenská sporiteľňa. The difference could be caused by higher difference between CET 1 and Tier 1 than in other banks. The trend would be very similar to other banks in case of including value for Tier 1 ratio. It cannot be done for this moment as it is stated which part of capital is CET 1 and Tier 1.
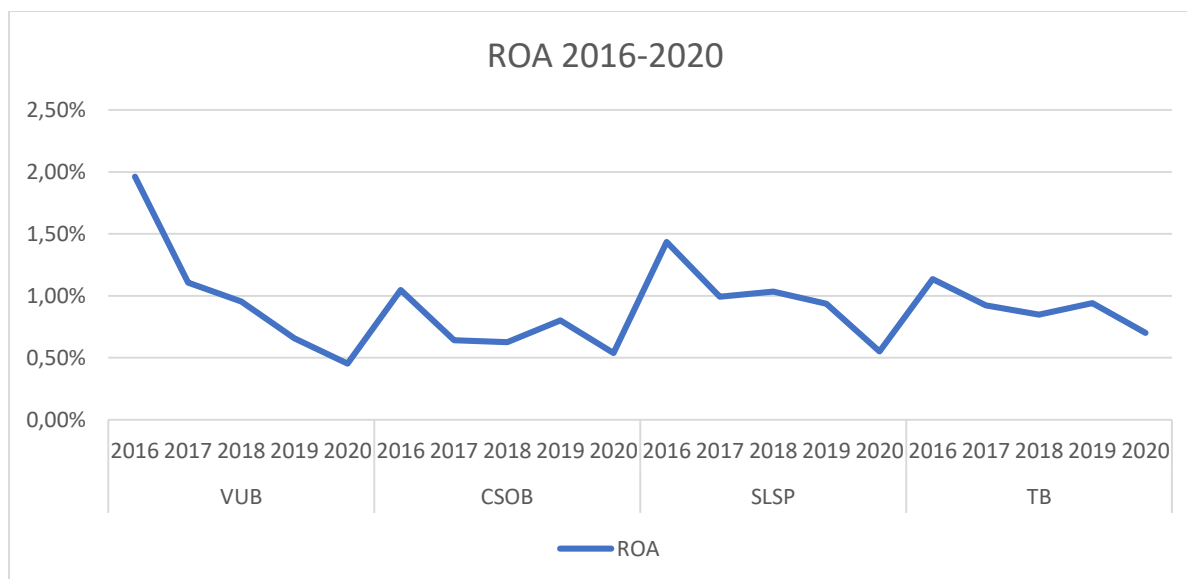
Figure 2 ROA 2016-2020

Return on assets reaches lower levels than return on equity so that optical comparison is optimal with inclusion of this indicator only. Even though this profitability indicator is not looking very differing in selected period, after detailed chart creation there is obvious decrease in period 2016-2020 in all 4 banks. The most obvious change is in VÚB as it reached quite high profit in 2016 – it influences positively also ROE and therefore shows quite high level as well. For ROA, there are some indicative limits for banking industry, and they recognize values over 1 as quite good going up to 2 as excellent and reaching values lower than 1 as mild going below 0,5 as very low. The trend of these 5 years is decreasing reaching low values, but it is necessary to mention that banking industry is very specific for doing business with finance of other subjects. This fact puts these indicators to another level, as they reflect also current monetary policy that has impact on results of banks (quantitative easing, low interest rates and unconventional instruments).

In next step, correlation of indicators in each bank has been performed. Naturally, indicators of profitability are highly correlated. The reason is net profit that was decreasing in observed period as input for both indicators and capital and assets that have been rising. This trend proves for capital ratios too, as total capital includes common equity and other capital items. Therefore, these pairs are not subject of observation.

Table 1 Correlation matrix Všeobecná úverová banka, a.s.

VUB		*CET 1*	*CAR*	*ROA*	*ROE*
	CET 1	1			
	CAR	0,97726374	1		
	ROA	-0,6779254	-0,5413091	1	
	ROE	-0,7099228	-0,5833978	0,99804276	1

In case of Všeobecná úverová banka, a.s. (VÚB), there is mild negative correlation between selected indicators of capital and profitability. It points to opposite relationship that seems to be similar for both pairs of compared indicators. On one hand, it does not provide evidence of impact but on the other hand, the pairs behave in opposite direction at similar pace. However, the change is not adequate.

Table 2 Correlation matrix Československá obchodná banka, a.s.

CSOB		*CET 1*	*CAR*	*ROA*	*ROE*
	CET 1	1			
	CAR	0,99464107	1		
	ROA	-0,803696	-0,84146	1	
	ROE	-0,8259579	-0,8633578	0,99794483	1

In Československá obchodná banka, a.s., there is strong negative correlation of capital ratios with profitability indicators in all cases. This relation could potentially serve as base for analysing impact inside the bank deeper with focus on separate capital items.

Table 3 Correlation matrix Slovenská sporiteľňa, a.s.

SLSP		*CET 1*	*CAR*	*ROA*	*ROE*
	CET 1	1			
	CAR	0,90211857	1		
	ROA	0,81819396	0,66278197	1	
	ROE	0,64638949	0,44043017	0,96034922	1

Correlations in Slovenská sporiteľňa, a.s. reported mild positive correlation and strong only in relationship of capital adequacy ratio and return on assets. The difference could be caused by

several factors. At first, it is important which components belong to Tier 1 and common equity Tier 1. SLSP had much higher percentages in Tier 1 (including common equity and additional Tier 1) while other banks had similar or equal values of CET 1 and Tier 1. In case we would include Tier 1, it is possible that the correlation would match the trend of others.

Table 4 Correlation matrix Tatrabanka, a.s.

TB		*CET 1*	*CAR*	*ROA*	*ROE*
	CET 1	1			
	CAR	0,78950989	1		
	ROA	-0,6261825	-0,2158621	1	
	ROE	-0,7991616	-0,3846033	0,95981511	1

In Tatrabanka, a.s. there is negative correlation in all cases, but it is mild and even in one case weak. Only in case of CET 1 and ROE is visible quite strong relationship.

The statistics for banks collectively for each year is depicted below. There is standard deviation that differs each year as well within observed pair of variables in each table. The correlation of pairs of variables changed within years and that is main evidence of other factors contributing to each year's profitability indicators.

Table 5 CAR vs ROA 2016-2020

AVG	0,18185	0,01394	0,18648	0,00916	0,18028	0,00865	0,18070	0,00835	0,19510	0,00561
STDEV	0,03105	0,00414	0,00960	0,00198	0,00974	0,00178	0,01618	0,00135	0,01159	0,00102
COV	0,00001		-0,00001		-0,00001		0,00000		0,00001	
COR	0,12834		-0,76704		-0,85791		-0,18401		0,70767	

Table 6 CAR vs ROE 2016-2020

AVG	0,18185	0,14333	0,18648	0,10001	0,18028	0,09734	0,18070	0,09589	0,19510	0,06437
STDEV	0,03105	0,02826	0,00960	0,02318	0,00974	0,02242	0,01618	0,02033	0,01159	0,01385
COV	0,00006		-0,00016		-0,00012		-0,00007		0,00007	
COR	0,09827		-0,95920		-0,74572		-0,29031		0,61980	

Table 7 CET1 vs ROA 2016-2020

AVG	0,16113	0,01394	0,16173	0,00916	0,15493	0,00865	0,15713	0,00835	0,16708	0,00561
STDEV	0,02833	0,00414	0,01869	0,00198	0,00962	0,00178	0,01587	0,00135	0,01949	0,00102
COV	0,00001		-0,00001		-0,00001		0,00000		0,00001	
COR	0,08073		-0,27833		-0,98049		-0,25796		0,42198	

Table 8 CET1 vs ROE 2016-2020

AVG	0,16113	0,14333	0,16173	0,10001	0,15493	0,09734	0,15713	0,09589	0,16708	0,06437
STDEV	0,02833	0,02826	0,01869	0,02318	0,00962	0,02242	0,01587	0,02033	0,01949	0,01385
COV	-0,00004		-0,00021		-0,00015		-0,00008		0,00007	
COR	-0,07281		-0,64359		-0,90416		-0,34755		0,32835	

For additional analysis, descriptive statistics for each indicator could be performed. Standard deviations of CET 1 and CAR are similar as well as pair of profitability indicators in observed period. Kurtosis results show various values for the indicators, mostly positive so that distribution is mostly leptokurtic but on the other hand the sample is not extensive. In case of ROA is the coefficient higher and according to some authors higher than acceptable value for this indicator (-3, 3). In case of CET 1, ROA and ROE the skewness is positive, only for CAR negative.

Table 9 Descriptive statistics for each indicator

Descriptive statistics							
CET Tier 1		CAR		ROA		ROE	
Mean	0,160395	Mean	0,18488	Mean	0,009142	Mean	0,10018781
Standard Error	0,00396659	Standard Err	0,00372087	Standard Err	0,00077239	Standard Error	0,00725724
Median	0,155	Median	0,1827	Median	0,0092934	Median	0,10283349
Mode	#N/A	Mode	0,1718	Mode	#N/A	Mode	#N/A
Standard Deviation	0,01773912	Standard Dev	0,016640237	Standard Dev	0,00345425	Standard Deviation	0,03245538
Sample Variance	0,00031468	Sample Varia	0,000276897	Sample Varia	1,1932E-05	Sample Variance	0,00105335
Kurtosis	-0,0293961	Kurtosis	0,685495981	Kurtosis	3,50201342	Kurtosis	0,76177634
Skewness	0,72278633	Skewness	-0,337393457	Skewness	1,48250784	Skewness	0,62621061
Range	0,066	Range	0,0714	Range	0,01509121	Range	0,13339183
Minimum	0,137	Minimum	0,1436	Minimum	0,00453749	Minimum	0,05022247
Maximum	0,203	Maximum	0,215	Maximum	0,0196287	Maximum	0,1836143
Sum	3,2079	Sum	3,6976	Sum	0,18284009	Sum	2,00375614
Count	20	Count	20	Count	20	Count	20

Conclusion

All 4 banks reached higher than minimum required levels of capital in 2016-2020 in each period. On the other hand, profitability indicators were decreasing significantly. In 2020, the profitability of banks was lower also in cause of preventive creation of impairment losses due to COVID-19 crisis. In partial results of banks, profit for 2021 is supposed to be more favourable so the trend could be reverted in following periods. Our results show that there is strong negative correlation between capital adequacy ratios and indicators of profitability in 3 selected banks. 1 bank does not follow the correlation relationship of others. The reason could be among others difference in CET 1 and Tier 1 values due to acceptance of common equity and additional Tier 1 capital. The assumption of capital requirements direct impact on profitability via adequate change of return on assets and return on equity indicators is not proved but the correlation indicates indirect relationship as banks must keep gradually higher volume of sources unprofitable over time. Earning profit is main goal of commercial banks and this goal could be harder to achieve with stricter capital ratios. The reason of inadequateness is

existence of many other factors influencing returns and net profit of banks, that could be a limitation of this study. There are a lot of overall studies in this topic, but the empirical studies should focus on country-specific behaviour of observed indicators and should more deeply observe the composition of Tier 1 ratios.

On the other hand, there is necessity to keep banks resilient in environment of increasing financial system interconnectedness. The more resilient banks, the safer environment for their entrepreneurship. From this point of view, in safe bank environment there is higher trust of bank clients in banking institutions. It can consequently lead to increased use of banking products.

Descriptive statistics is useful for extended comparison of bank sector including all the banks within country or larger region on base of each year (or more frequently). Selected data are interesting for representing large proportion of market but on the other hand there could be other factors included for more precise relationship and possible impact on profitability.

According to some studies in various monetary conditions and regions, the direct impact is not obvious, and the relationship of ratios and profitability can be positive and negative as well according to country-specific regulations and market practices as well as monetary policy application.

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Contact:
Natália Zelenková
University of Economics in Bratislava
Dolnozemská cesta 1
852 35 Bratislava
Slovak republic
natalia.zelenkova@euba.sk