Determinants of Banks' Profitability: Empirical Evidence from Vietnam

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Abstract. This paper aims at empirically examining the impact of bank-specific factors and macroeconomic variable on the Vietnam listed banks' profitability over the period for 2007–2016 by using the ratios return on assets (ROA) as a proxy of profitability. A total 80 listed banks' financial reports were analyzed and the statistical tool employed is the technique of linear multiple regression analysis. Empirical results found that bank-specific factors such as non-performing loan ratio, operating expenses to total assets ratio and total loan to total assets ratio have significant negative impact on the return on assets, while equity to assets ratio is found to have a positive significant impact. However, deposit to assets ratio and inflation ratio are found to be insignificant on affecting the profitability of banks.
Keywords: determinants; impact; profitability; commercial banks.

Детерминанты доходности банков: эмпирические данные из Вьетнама

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Аннотация. Целью данной статьи является эмпирическое изучение влияния специфических для банка факторов и макроэкономических переменных на доходность листинговых банков Вьетнама за период 2007–2016 гг. с использованием коэффициентов доходности активов (ROA) в качестве косвенного показателя доходности. Проанализировано 80 финансовых отчетов банков, включенных в перечень, с применением статистического инструментария в виде метода линейного множественного регрессионного анализа. Результаты эмпирических исследований показали, что такими специфическими для банка факторами, как доля неработающих кредитов, соотношение операционных расходов к общей сумме активов и соотношение общей суммы кредита к общей сумме активов имеют значительное негативное влияние на доходность активов, тогда как коэффициент обеспеченности собственными оборотными средствами показывает положительный эффект. Однако соотношение депозитов к активам и инфляция оказывают незначительное влияние на доходность банков.
Ключевые слова: детерминанты; влияние; рентабельность; коммерческие банки.

1. INTRODUCTION

In early 2007, Vietnam became an official member of the World Trade Organization. After 10 years of WTO integration, Vietnam's banking system has been improved. With the deepening involvement of foreign banks, the competition in banking sector has been increasing. This requires the domestic commercial banks to make changes in corporate governance, increase financial capacity, invest in technology and improve the quality of banking services in order to compete with international banks. After the financial crisis in 2008, the system of commercial banks in Vietnam was influenced with many consequences: arise of bad debt, lack of liquidity at some time. These problems have significantly affected the profitability of banks. Accordingly, the plan of restructuring the financial institutions for the period 2011–2015, issued in conjunction with Decision 254 of the Prime Minister (Project 254), is reforming financial institutions, increasing transparency through the application of new mechanisms of information disclosure, listing shares of commercial banks on the stock market. The banking system in Vietnam comprises of 4 State-owned commercial banks (the State holds more than 50% of charter capital), 31 commercial banks, 8 foreign banks, 2 Joint Venture Banks, 2 Policy Banks and 1 Central People's Credit Fund. (State Bank of Vietnam, 2016). Banking system in Vietnam is dominated by commercial banks, and 9 banks have listed their share on Stock Exchange. However, there is a difference of performance between listed banks. This study is intended to clarify factors affecting the profitability of the listed banks in Vietnam.

This paper is structured as follows: The next section is the literature review, followed by a section that outlines the research methodology. Section 4 presents the empirical result and discussion. Finally, section 5 is conclusion.

2. LITERATURE REVIEW

The determinants of bank profitability have become a major concern of bank manager, investor, policymaker. A variety of researches has been done in term of specific economy, notably such as:

Mamatzakis, et al. (2003) examined the determinants of the performance of Greek commercial banks over the period for 1989–2000 by using the ratios return on assets (ROA) and return on equity (ROE) as a proxy of the profitability of the commercial banks. This study found that the variables related to management decisions had a major impact on the profitability of Greek commercial banks.

Kosmidou, et al. (2008) investigates the impact of bank-specific characteristics, macroeconomic conditions and financial market structure on UK owned commercial banks' profits, during the period 1995–2002. The results show that the capital strength of these banks has a positive and dominant influence on their profitability, the other significant factors being efficiency in expenses management and bank size. This paper also found that the macroeconomic environment (proxy by GDP growth and inflation) has a positive impact on bank performance, as do concentration in the banking industry and stock market development.

Karimzadeh, et al. (2013) examine the most important factors that may stem from both internal and external factors, which affect profitability of Indian banking sector over the period 2003–2011. For this study, a balanced panel data set is used that is drawn from Indian banking industry. The result reveals that bank-specific determinants are able to explain significant part of bank profitability in India. A major outcome of this study is that size of the banks makes important contribution to their profitability. The study also verifies the fact that the deposit and loan asset ratios of banks also have a significant impact on profitability of banks in India.

Acaravci and Calim (2013) investigate the long-run relationship between the bank-specific and macroeconomic factors and the profitability of commercial banks in Turkish banking sector. The sample period spans from 1998 to 2011. In the study, return of asset, return of equity and net interest margin were used as proxy for profitability of banks. The results from this study showed that compared with internal factors, external factors have less impact on bank profitability.

Samad (2015) investigated the impact of bank-specific characteristics and macroeconomic variables in determining the banks' profitability of Bangladesh banking industry with a panel data and found that bank-specific factors such as loan-deposit ratio, loan-loss provision to total assets, equity capital to total assets, and operating expenses to total assets are significant factors. However, bank sizes and GDP show no impact on profits.

Duraj and Moci (2015) investigate the determinants of the profitability in Albania banking sector. The results suggest that the profitability of Albanian banks is influenced not only by factors related to their management decisions which are classified as internal factors, but also to changes in the external macroeconomic environment i.e. GDP, inflation which resulted as significantly related to profitability of the banks.

Rahaman and Akhter (2016) study the impact of some selected bank-specific factors on Islamic banks' profitability. The data for this study covering a period 2009–2013 is obtained from the annual reports of respective Islamic banks. The statistical tool employed is the technique of linear multiple regression analysis. The data-set used in this study involves eight Islamic banks operating in Bangladesh. Empirical results show that bank-size and deposit have significant negative impact on the return on assets (ROA) which is the proxy for Islamic banks' profitability, while equity is found to have positive significant impact. However, loan and expense management are found to be insignificant in affecting the profitability of the banks.

There are also some studies conducted to investigate the factors affecting the profitability of banks in a group of different countries.

Athanasoglou et al. (2006) examine the profitability behavior 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 results indicate that with the exception of liquidity, all bank-specific determinants significantly affect bank profitability in the anticipated way. A key result is that the effect of concentration is positive, which provides evidence in support of the structure-conduct-performance hypothesis, even though some ambiguity arises given its interrelationship with the efficient-structure hypothesis. In contrast, a positive relationship between banking reform and profitability was not identified, whilst the picture regarding the macroeconomic determinants is mixed.

Beakmann (2007) investigated structural and cyclical determinants of banking profitability in 16 Western European. This paper found 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 pro-cyclical impact on bank profits.

Flamini et al. (2009) analyze determinants of bank profitability in 41 sub-Saharan by using a sample of 389 banks. They found that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Moreover, bank returns are also affected by macroeconomic variables.

Shaher et al. (2011) analyze the factors that affect the commercial banks' performance in the Middle East Region. The empirical results have found bank-characteristic variables have the most significant impact on banks' performance.

In Vietnam:

Ngo (2012) analyzed and measured the performance of banking system in Vietnam by using DEA method. The research suggests that this performance is decreasing through the time as the size of the banking sector increases; financial market is more liberate, and when the World and regional economies are problematic. While the banking system is running at two-thirds of its capacity, it has limited contribution to the economy.

Vu and Nahm (2013) examines the factors that affect profit efficiency of banks in Vietnam over the period from 2000 to 2006. The effects of four groups of variables, including bank-specific characteristics, ownership, transitional environment, and macroeconomic conditions on the profitability of banks, are analyzed using a Tobit model to account for the censored nature of the efficiency scores. The findings show that the profit efficiency of a bank is enhanced by a larger size and better management ability, while it is hampered by low quality of assets and a too high level of capitalization. High growth in per-capita GDP and a low-inflation rate provide a favorable environment for banks to improve their profitability.

Son et al. (2015) used panel data from 2010–2012 from 44 banks in Vietnam to investigate the impacts of ownership structure on bank performance. Research results show that capital concentration and private ownership have positive impact on bank profitability; the non-performing loan ratio has negative relation with banks' profitability.

Nguyen & Bui (2015) investigate factors that impact on profitability of the commercial banks in Vietnam. This paper shows that the equity to total assets ratio, the loans to total assets ratio, the liquidity ratio and the economic growth rate have significant and positive impact on the profitability of commercial banks in Vietnam.

According to the literature review above, we can come to conclusion that:

Firstly, a large number of empirical studies covered developed and developing countries. And, in studying determinants of profitability of banking sector, researchers usually chose ROA, ROE or NIM as a proxy of profitability of banks.

Secondly, most of papers traditionally mentioned two types of factors (internal and external factors) in studying the factors that affect banks' profitability. Internal factors (bank-specific factors or bank-characteristic factors) are the factors influenced by the bank's management decisions. External factors, or uncontrolled factor, are factors being beyond the control of the bank such as economic growth, inflation, or operating rate of monetary policy of the central bank.

Thirdly: there is a little research on the determinants of banks' profitability in Vietnam, except Vu and Nahm (2013) and Nguyen and Bui (2015).

The paper contributed to the banking literature. First, the paper applies the quantitative estimate in determining profitability factors using panel regression. Second, the paper identifies the most significant factors on the profitability of listed banks in Vietnam. In compared with Vu and Nahm (2013), this paper covers latest data from banking sector. Moreover, this paper adds more variables such as: inflation rate and operating expense than Nguyen and Bui (2015). Third, the findings of this provides useful guide to bank management.

3. RESEARCH METHODOLOGY

This study aims to analyze the determinant of banks' profitability of all Vietnam Listed Banks. The study is based on panel dataset covering all listed banks of Vietnam over the period of 2007–2016. Because of insufficient data from a bank for 10 years from 2007 to 2016, therefore the study use data from 8 listed banks. Total assets of these 8 listed banks account for about 55 percent of total assets in banking sector as at the end of 2016. Data of all bank-specific variables such as Non-Performing Loan (NPL), operating expense, equity, asset, deposit, loan and ROA are obtained from bank's annual reports from 2007–2016. Data for macroeconomic variable inflation is obtained from Vietnam General Statistic.

According to literature review mentioned above, we use the following ratios to evaluate the banks' profitability.

- Return on Assets (ROA): ROA is the ratio of net income to total assets. This paper use ROA as a dependent variable. ROA is considered the best proxy of profit (Flamini et al., 2009 and Samad, 2015).
- Non-performing loan ratio (NPL): this ratio is measured by dividing the non-performing loan to total loan. This ratio is the main indicator of credit risk management. The lower non-performing loan ratio can lead to a reduction of the cost related to manage bad debt, therefore, higher profitability banks can make. Son et al. (2015) found that NPL has negative and significant impact on ROA and ROE. In this study, NPL is expected to have a negative relation with profitability of bank.
- Equity to Assets ratio: this ratio is measured by bank's equity capital as the percentage of total assets. Equity to total assets ratio reveals the capital adequate. Equity management is an important part of banking management, especially higher capital adequate helps the bank mitigate risks related to mass withdrawals. Higher this ratio, the lower the capital cost of the bank, thereby increasing profitability. Samad (2015) found that equity capital to total assets ratio have a significant and positive impact on ROA of Banks. Almazari (2014) found

Table 1. **Definition of variables**

Variable		Hypothesized relationship with profitability
The dependent variable		
ROA	The return on average total assets of bank	
The bank-characteristic variables		
NPL	Non-Performing Loan/ Total Loan	-
EQA	Equity/ Total Assets	+
OPEAS	Operating Expense / Total Assets	-
DPAS	Total Deposit/ Total Assets	+
LOANAS	Total Loan/ Total Assets	+/-
The macroeconomic variable		
INF	Inflation Rate (CPI)	+/-

Table 2. **Descriptive statistic of dependent and all independent variables**

	ROA	NPL	EQA	OPEAS	DPAS	LOANAS	INF
Mean	0.0127813	0.0197338	0.0838674	0.0150094	0.7846567	0.5719520	0.0911900
Median	0.0123000	0.0179500	0.0741814	0.0143183	0.8084192	0.5783061	0.759000
Standard Deviation	0.0070330	0.0151585	0.0360183	0.0046438	0.1222931	0.1212960	0.0644300
Minimum	0.0002000	0.0008000	0.0425558	0.0018269	0.3100068	0.3307789	0.0063000
Maximum	0.0330000	0.0880000	0.2662079	0.0270488	0.9237704	0.82070668	0.2297000
Count	80	80	80	80	80	80	10

that the profitability of Saudi banks and Jordanian banks has a positive and significant correlation with total equity to assets ratio. In this study, it is expected that Equity to assets ratio has positive impact on profitability.

• Operating Expense to Assets ratio: It is measured by bank's operating expense as the percentage of total assets. Athanasoglou (2006) studying determinants of bank profitability in the South Eastern European region found that operating expense to total assets has a negative and significant effect on profitability. A bank spends high operating expense the profitability could be reduced, therefore operating expense to assets ratio is expected to have negative impact on profitability.

• Deposit to Assets ratio. This ratio is considered as a main indicator of liquidity of bank. Zaman (2011) investigating determinants of top 10 banks' profitability in Pakistan over the period 2004–2008 found that deposit to assets ratio has positive and significant relationship with profitability indicator ROA. This ratio also was used by Karimzadeh et al. (2013) in studying correlation between internal factors and level of profitability in India and found that Deposit to assets ratio has a positive impact on the profitability of banks. It is expected that deposit to assets ratio has a positive relationship with profitability.

• Loan to Assets ratio: until now the impact of this variable on profitability of banks is

Tables 3. **Correlation coefficient between variables in the research model**

Independent variable	ROA	NPL	EQA	OPEAS	DPAS	LOANAS	INF
ROA	1						
NPL	-0.323045	1					
EQA	0.377236	0.01558	1				
OPEAS	-0.368787	0.109279	-0.127354	1			
DPAS	0.044663	-0.119814	-0.135368	0.241212	1		
LOANAS	-0.590158	0.038652	-0.30009	0.473071	0.258533	1	
INF	0.374358	0.046146	0.199398	0.056652	-0.135892	-0.432751	1

different. Research from Mamatzakis and Remoundos (2003), Hassan and Bashir (2003) and Staikouras and Wood (2003) found that Loan to assets ratio has positive impact on profitability of banks. However, the study from Vong (2005) and Vong and Chan (2009) found that is negative sign. The reason to explained the different results is that high competition in credit market lead to a reduction of loan even though that is the main income of banks, especially in the period after financial crises.

- Inflation ratio: Asthanasoglou et al. (2006) and Hefferman and Fu (2008) found that macroeconomic variable (inflation) had positive impact on profitability. Revell (1979) concluded that the level of inflation can be used to explain the changes of banks' profitability. In contrast, recently Dujai and Moci (2015) found that inflation rate had negative impact in the profitability of the banking sector. Especially, Demirguc-Kunt and Huizingga (1999) studying determinants of commercial bank interest margins and profitability in 80 countries found that in developing countries inflation and profitability tend to have negative relation. It can be explained that higher inflation leads to that the cost increase higher than the revenue.

Panel Ordinary least square (OLS) is applied for estimating the impact of bank-specific characteristics and macroeconomic variable on bank profitability.

We have model as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 NPL_{i,t} + \beta_2 EQA_{i,t} + \beta_3 OPEAS_{i,t} + \\ + \beta_4 DPAS_{i,t} + \beta_5 LOANAS_{i,t} + \beta_6 INF_t + \varepsilon_{it}$$

Where:

$ROA_{i,t}$: the profitability of bank i in year t

$NPL_{i,t}$: Non-performing loan ratio of bank i in year t

$EQA_{i,t}$: the equity total assets ratio for bank i in year t

$OPEAS_{i,t}$: the operating expense to total assets ratio for bank i in year t

$DPAS_{i,t}$: the deposit to total assets for bank i in year t

$LOAN_{i,t}$: the loan to total assets for bank i in year t

NPL_t: the inflation ratio in year t

Table 3 presents the correlation matrix for the variables. The correlation analysis show that Equity/asset ratio, Deposit/asset ratio and inflation have positive relationship with ROA, while Non-performing loan, Operating expense/asset ratio and Loan/asset ratio have negative relationship with ROA.

4. EMPIRICAL RESULTS AND DISCUSSION

In order to select the suitable model for our study, we run a Hausman Test before applying Random Effect Model. Table 4 shows that

Table 4. **Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq.d.f.	Prob.
Cross-section random	6.668203	6	0.3526

Table 5. **Random effect regression results**

Variable	Coefficient	Prob.
Constant	0.021106	0.0002
NPL	−0.101417	0.0062
EQA	0.061688	0.0006
OPEAS	−0.316914	0.0408
DPAS	0.011549	0.0552
LOANAS	−0.030008	0.0003
INF	0.014914	0.1438
R^2	0.593053	
Adjusted-R^2	0.559605	
F-statistic	17.73073	
D_W	1.412916	

P-value from Hausman Test is 35.26% (more than 5%) so we accept Random effect model as a suitable model.

The table 5 presents that the empirical results of regression of model using ROA as the profitability variable. The adjusted R-squared of 56% shows that the model is significant and the 56% of variability of the bank profitability measured through ROA is explained through the variance of the factor we took in this study as determinants in the bank profitability.

From the result of random effect regression, showing that the value for the F-statistic is 17.73 and is highly significant to show the appropriateness of the model.

Non-performing loan ratio: This variable has a significant and negative impact on profitability of the listed banks. This result is in line with prior studies by Son et al. (2015).

Equity to Assets ratio. The result shows that Equity to Assets ratio has significant and positive impact on ROA. This result is consistent with the conclusion of earlier studies of Mamatzakis and Remoundos (2003), Hassan and Bashir (2003), Bourke (1989), Zaman et al. (2011) and Almazari (2014).

Operating Expense to Assets ratio. This variable has significant and negative impact on profitability of banks. Same results have been found by Athanasoglou et al. (2006), Zaman (2011), Samad (2015). This result presents the difficult situation of the banking system in Vietnam during this period. The increase of bad debt forced banks to be more cautious about new lending, therefore, the cost of dealing with bad debts and the increase in pre-lending costs have eroded the banks' profits. This results also is supported by study from Mamatzakis and Remoundos (2003), this paper found that personnel expenditure over total asset has significant and negative relationship with profitability. The result is also in line with expected relationship.

Deposit to Assets ratio. This variable has positive impact on profitability but the statistic value is insignificant.

Loan to Assets ratio. This variable has significant and negative impact on profitability of banks. This result can be explained by that non-performing loan increased in the studied period. Another reason is that as a result from lack of liquidity the competition in lending market taking place among commercial banks lead to reduction of profitability of banks. This result also finds the similarity in the studies of Vong (2005), Vong and Chan (2009) and Acaravci and Calim (2013).

Inflation ratio: the sign for this macroeconomic factor, INF, is positive, but it is not a significant factor to Vietnam listed banks profitability. The impact of inflation on banks performance depends on the bank's management (Perry, 1992). By properly predicting inflation, the revenue can be made faster than cost. The reason to explain this result in Vietnam is that as an immature banking industry, this period witnessed a variety of problems such as: bad debts, lack of liquidity, high competition with foreign banks that make an insignificant impact of inflation on profitability though there is an improvement in forecasting inflation.

5. CONCLUSION

The main aim of the study is to examine the impact of bank-specific factors and macroeconomic variable on the Vietnam listed banks' profitability over the period for 2007–2016 by using the return on assets ratio (ROA) as a proxy of profitability. The previous findings in the literature are examined. The results from this study found that bank-specific factors such as non-performing loan ratio, operating expenses to total assets ratio and total loan to total assets ratio have significant negative impact on the return on assets, while equity to assets ratio is found to have a positive significant impact. However, deposit to assets ratio and inflation ratio are found to be insignificant an affecting the profitability of banks. It is a recommend for banks in Vietnam that in order to increase the profitability, bank management should quickly resolve the bank's bad debt, as well as improve asset quality management, enhance equity and implement modern technologies to reduce operating costs, increase operating efficiency.

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