

THE MEASUREMENT OF FACTORS AFFECTING RATE OF RETURNS OF JOINT-STOCK COMMERCIAL BANKS LISTED IN VIETNAM STOCK MARKET

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Abstract

The paper confirms that rate of returns of the banking sector has been affected by many factors. Internal issues are asset size, equity, scale of debts, credit risk, scale of deposits, diversification of business, and operating costs. Outside factors are GDP, inflation, and stock market cap. The paper verifies and identifies factors that affect rate of returns of commercial banks listed in Vietnam stock market. Regression models used in this paper are Finite Element Model (FEM) and Random Effects Model (REM).

Key words: *commercial banks listed, rate of returns of Vietnam banks, ROA and ROE of Vietnam banks*

1. THE PREVIOUS EXPERIMENTAL RESEARCHES OF FACTORS AFFECTING RATE OF RETURN OF BANKS

Munyam Bonera (2013) used regression model REM to examine factors which had affected 224 commercial banks from 42 Africa countries in 1996-2006. The target of his paper was to answer why although financial factors of Africa countries had been improved in returns and productivity from 1990s, their profits were still low. Basing on previous studies, the author focused on typical elements such as low quality debts, bad debts, liquidity risks, low equity, high operating costs. Dependent variables in his model were ROAA and NIM. Independent variables were logarithm of total assets, equity/total assets, credit loss provision, cost/revenue, Credit outstanding balance/total assets, annual GDP growth, and inflation. Especially, the paper used a delay variable of dependent ones as an independent variable in order to measure sequence of returns of Africa banks every year. If the coefficient before the delay variable had been as close as zero, bank's high return in the previous year would have not repeated. That meant market was highly competitive, and vice versa. Research results confirmed that the internal factors such as scale, performance, liquidity, capital adequacy levels, and macroeconomic factors affected the profitability of commercial banks. Particularly, delay variable influenced profitability of commercial banks strongly, and that coefficient was close to zero showed a highly competitive Africa banking market

Derger Alper and Adem Anbar (2011) studied ROE, and ROA of 10 commercial banks listed in Istanbul stock market in 2002-2010 in order to learn about what affected them after 2001. The model chosen is the FEM based on Hausman test. Independent variables in the research are log of total assets, equity/total assets, debt/total assets, liquidity, deposits/total assets, structure of costs and revenue, GDP growth rate, annual inflation rate, real interest. The authors proclaimed that scale of bank, and non-interest income had positive impacts, in the other hands, debt ratio had negative impacts on banks's profit. There were only one macroeconomics elements (interest) that had positive impacts on ROE of banks. Typical factors of banks such as capital adequacy, liquidity, deposits / assets, and macroeconomics ones (real GDP growth, and inflation) had not important impacts on profitability of banks.

Fadzlan Sufian (2011) studied Korea commercial banks in 1992-2003. His research used unbalanced panel data models with FEM and REM. The number of banks varied from 11 ones in 1992 to 29 ones in 2000. A total sample included 251 observations. In 1992-2003, after Asian financial crisis, Korea changed very much. To recover the economy, Korea did many innovations and restructuring with the support of its government and International Monetary Fund (IMF). So, the main goal of the paper is to measure impact of elements before, in, and after the crisis 1997. This study applied linear regression with FEM model. Dependent variables were ROA and ROE. Independent variables included 2 groups. Group 1 were typical for banks: asset size, scale of deposit, book value of equity, scale of debt, credit loss provision, total operating costs, and non-interest income. Group 2 were macroeconomics elements: GDP, inflation, concentration ratio of three largest asset banks, stock market cap, and dummy variables. The result showed that credit risk and costs always had negative impact on banks profits. Business cycle had a significant impact on banks gains. Concentration of local banking system and stock market cap had much and positive impact. Effects of GDP and inflation were underfined because signs changed in models. Especially, Asian financial crisis had negative impact.

Serish Gul, Faiza Irshad và Khalid Zaman (2011) did research on how banking and macroeconomics indicators affected rate of return of 15 commercial banks in 2005-2009. The model OLS was used. All banks in the paper accounted for 80% total assets of Pakistan banking system. Period 2005-2009 was very important to Pakistan banks because the process of banking system privatization, M&A went strongly. Because there hadn't been any detailed study in Pakistan banking system before, the authors expected results of their paper would help the globalization process of Pakistan banking system and the development of South Asia Free Trade Agreement (SAFTA). The paper used 4 dependent variables: ROA, ROE, NIM, and ROCE. Beside 4 independent variables representing internal banks's

characteristics were logarithm of total assets, equity/total assets, debt/total assets, deposits/total assets, macroeconomics variables were GDP growth, inflation, stock market cap. The study showed that asset size, scale of deposits, and inflation rate had a positive correlation with profitability, but scale of equity had a negative correlation. Other variables explained positive or negative correlation which relied on their independent variables in the model

2. THE PAPER MODEL

Until now, there are 9 joint-stock commercial banks listed in Vietnam stock market (*Table 1*). Because Hanoi Building Commercial Joint Stock bank (Habubank) formally merged into Saigon – Hanoi commercial joint stock bank (SHB) in 2012, data don't include Habubank. Data of internal factors are taken from consolidated financial statement which were audited of 9 banks in 2008-2015. We collect financial statements of banks in their websites. Data of external factors are gotten from World Bank's website (<http://data.worldbank.org/indicator>) in 2008-2015.

| No | Bank name | Stock Code | Stock Exchange | First trading day |
|----|--|------------|----------------|-------------------|
| 1 | Asia Commercial Bank | ACB | HNX | 21/11/2006 |
| 2 | Bank for Investment and Development of Vietnam | BID | HOSE | 24/01/2014 |
| 3 | Vietnam Bank for Industry and Trade | CTG | HOSE | 16/07/2009 |
| 4 | Vietnam Export Import Bank | EIB | HOSE | 27/10/2009 |
| 5 | Military Bank | MBB | HOSE | 01/11/2011 |
| 6 | National Citizen Bank. | NVB | HNX | 13/09/2010 |
| 7 | Saigon – Hanoi Bank | SHB | HNX | 20/04/2009 |
| 8 | Saigon Thuong Tin Bank | STB | HOSE | 12/07/2006 |
| 9 | Bank for Foreign Trade of Vietnam | VCB | HOSE | 30/06/2009 |

Table 1: The joint-stock commercial banks listed in Vietnam stock market on 31/12/2014

Source: www.cophieu68.vn

Because NIM doesn't reflect profitability of banks, this paper focus on analyzing ROA and ROE of listed joint-stock commercial banks. To test the relationship between rate of return of bank and factor above, the paper applied the below model. Our research used 2 methods to

estimate the model: FEM and REM

$$\begin{aligned} \text{ROA}_{it} &= \beta_1 + \beta_2(\text{IA})_{it} + \beta_3(\text{EA})_{it} + \beta_4(\text{DA})_{it} + \beta_5(\text{LoA})_{it} + \beta_6(\text{LLP})_{it} \\ &\quad + \beta_7(\text{NIIA})_{it} + \beta_8(\text{CIR})_{it} + \beta_9(\text{GR})_t + \beta_{10}(\text{INF})_t + \beta_{11}(\text{MC})_t + e_{it} \\ \text{ROE}_{it} &= \beta_1 + \beta_2(\text{IA})_{it} + \beta_3(\text{EA})_{it} + \beta_4(\text{DA})_{it} + \beta_5(\text{LoA})_{it} + \beta_6(\text{LLP})_{it} \\ &\quad + \beta_7(\text{NIIA})_{it} + \beta_8(\text{CIR})_{it} + \beta_9(\text{GR})_t + \beta_{10}(\text{INF})_t + \beta_{11}(\text{MC})_t + e_{it} \end{aligned}$$

We used Hausman test with following assumptions:

H_0 : REM model is more suitable than FEM model

H_1 : FEM model is more suitable than REM model

| No | Symbol | Formula | Expected |
|---------------------------------------|--------|---|----------|
| Biến phụ thuộc | | | |
| 1 | ROA | Return / Asset | |
| 2 | ROE | Return / Equity | |
| Internal independent variables | | | |
| 1 | IA | Lg (total assets) | + |
| 2 | EA | Equity / Total assets | +/- |
| 3 | DA | Deposits / Total assets | + |
| 4 | LA | Credit outstanding balance / Total assets | +/- |
| 5 | LLP | Credit loss provision / Credit balance | - |
| 6 | NIIA | Non-interest income / Total assets | + |
| 7 | CIR | Operating costs / Operating Income | - |
| External independent variables | | | |
| 1 | GR | GDP growth | +/- |
| 2 | INF | Inflation rate | +/- |
| 3 | MC | Stock market cap / GDP | +/- |

Table 2: Variables used in regression model

Results of the regression model determines levels of factors affecting returns of commercial banks listed on Vietnam stock market are shown in Table 3.

In FEM, except for EA, LoA having no statistical significance for ROA, and GR having no statistical significance for ROE, the remaining variables have, In REM, all variables are statistically significant, and the correlation coefficients marked as assumptions

| Independent variable | ROA | | ROE | |
|-----------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | FEM | REM | FEM | REM |
| IA | 0,4987762 (0,2036419)** | 0,3909844 (0,1558353)** | 8,230187 (2,865432)*** | 6,474061 (1,954825)*** |
| EA | 1,707049 (1,032585) | 1,632992 (0,9595869)* | -56,18686 (14,52944)*** | -61,21302 (13,20371)*** |
| DA | 0,9182973 (0,4188086)** | 1,01178 (0,3736198)*** | 11,96161 (5,893029)** | 11,74669 (5,024567)** |
| LoA | -0,7747623 (0,678457) | -1,052153 (0,5540869)* | -20,9726 (9,546527)** | -21,34151 (7,108874)*** |
| LLP | -31,28866 (5,660572)*** | -30,79731 (5,345706)*** | -341,4251 (79,64955)*** | -328,9777 (74,3078)*** |
| NIA | 24,36304 (8,787459)*** | 20,52238 (7,469946)*** | 221,6954 (123,6478)* | 190,23 (99,85471)* |
| CIR | -1,97979 (0,3259063)*** | -2,024628 (0,3040773)*** | -22,78671 (4,585807)*** | -22,19833 (4,21153)*** |
| GR | -0,057336 (0,342022)* | -0,068333 (0,0306993)** | -0,7732258 (0,4812564) | -0,8569557 (0,4214994)** |
| INF | 0,0173126 (0,0052151)*** | 0,0152571 (0,0045435)*** | 0,2164241 (0,0733816)*** | 0,2002634 (0,0616137)*** |
| MC | 0,0135515 (0,0038268)*** | 0,01272 (0,0035406)*** | 0,2100111 (0,053847)*** | 0,1982409 (0,491486)*** |
| cons | -2,308079 | -1,188841 | -33,38951 | -17,66218 |
| R² | 0,6199 | 0,7038 | 0,8354 | 0,8503 |
| F | 19,7 | 220,32 | 16,21 | 189,2 |
| Prob | 0,0000 | 0,0000 | 0,0000 | 0,0000 |
| Hausman (Prob) | 0,9999 | | 0,9995 | |

Table 3: Summary of results of regression models

Notes: *, ** and *** mean that factors are statistically significant in the level 10%, 5% and 1%, respectively; Number in parenthesis is standard error of each coefficient.

Test Hausman shows that: to ROA and ROE, p-value>0,05. So, we should accept Ho assumption, and the more suitable model is REM.

3. EXPLAINING RESULTS OF THE MODEL

The estimation results show that rate of returns of join-stock commercial banks listed in

Vietnam stock market do not only depend on internal factors in the banks, but also rely on macroeconomics factors outside the banks.

The correlation coefficients between the dependent and independent variables in the model shows the positive or negative impacts of each factor on the profitability of banks, as following:

3.1 Internal factors:

- **Lg (assets of bank) (IA):** it has a positive correlation with rate of returns of join-stock commercial banks listed in Vietnam stock market. That means the more scale banks increase, the more rate of returns raises. This result is consistent with the expectations of previous studies of Alper and Anbar (2011), Gul, Irshad and Zaman (2011). It also fits practices of listed Vietnam commercial banks, such as VCB, CTG and BIDV
- **Equity / Total assets (EA):** it has a positive correlation with ROA. This result support studies of Bourke (1989). Molyneux and Thornton (1992), Demiruguc Kunt and Huizinga (2000). A good capital structure is necessary for developing economies because it's a protective shield against financial crises and it improves safety for deposits in unstable macroeconomics. However, the higher EA is, the more decreasing ROE is. Negative correlation fits original expected. It means risk-return tradeoff. This outcome is consistent with not also previous studies of Berger (1995), Ali, Khizer, Akhtar, Farhan and Zafar (2011), but also Vietnam banking's reality.
- **Deposits / Total assets (DA):** Capital structure of Vietnam banks focuses mainly on customer deposits. That DA is higher means profitability is better. This rule is shown by a positive regression correlation between scale of deposits and rate of returns of listed Vietnam banks. Estimated results matchs studies of Gul, Irshad and Zaman (2011), Naceur and Goaid (2008). The positive correlation is suitable with Vietnam fact because customer deposits are believed to be more stable than other funding sources in our country. In 2010-2011, when ratio loans/deposits of commercial banks reached more than 100%, many small banks faced liquidity risk. To deal that, they must borrow in interbank market with excessively high interest rates. In the other hand, big banks which had large scale of deposits got significant profits from lending small banks
- **Credit outstanding balance / Total assets (LoA):** In REM models with ROA and ROE, coefficients are negative and statistically significant. It means that a negative correlation between credit outstanding balance/total assets with rate of returns of listed commercial banks. The higher ratio 'credit outstanding balance/total assets' is, the lower rate of return is. This result is compatible with studies of Sufian and Razali (2008), Syfari (2012). In the hot growth phase of Vietnam banking sector, because listed banks lent customers who couldn't

afford the payment, bad debts increased and banks had to suffer losses due to bad debts. Certainly, rate of returns would decrease.

- **Credit loss provision / Credit balance (LPL):** This research has found a negative correlation between credit risk provisions and rate of returns of listed banks with a high level of significance. Banks which have high credit risk will get low return. In the period of credit boom some years ago, Vietnam commercial banks lent massively without control and this made serious consequences in overdue and bad debts. Of course, credit loss provisions must have increased, returns declined seriously, and the potential of capital loss would be much more higher. In that period, a regression economy pushed more and more companies to go broke so that debt collection was harder. Financial status of banks was worse than ever before. The estimation result is consistent with almost studies of Miller and Noulas (1997), Athanasoglou et al (2008), Sufian (2009), Sufian (2011). The negative correlation between profitability with LPL of commercial banks listed in stock market made a challenge for Vietnam banks to have solutions dealing with credit growth and managing credit risk

- **Non-interest income / Total assets (NIIA):** The regression results do support the view that income diversification is positively correlated with rate of returns of listed commercial banks with a high level of significance. Bank which earns high non-interest income, such as stock investment and service providing, has got high profitability. Recent studies also concluded that income diversification helps banks to increase of their profits significantly, such as those of Sufian (2011), Alper and Anbar (2011), Syfari (2012). The correlation coefficient reflect the true state of listed commercial banks in recent years when credit growth has been slower, net interest income has decreased, but non-interest income has increased made gross income of banks maintained and not fall too much.

- **Operating costs / Operating Income (CIR):** Operating expenses are related inversely to rate of returns of listed banks. With high statistical significance level, this relationship is expressed in sign (-) of variable CIR in the equation of ROA, ROE. Clearly, the increase of operating costs makes profitability of banks decline. It's true for Vietnam banks now. Previous studies of Guru et al (2002), Bourke (1989), Syfari (2012) also supported that. The conclusion in this case: if commercial banks would like to raise their profits, they need control operating costs totally, especially general and administrative expenses.

3.2 External factors:

- **GDP growth (GR):** GR has have a negative correlation with rate of returns of listed joint-stock commercial banks. The problem is that GDP increasing having negative impact on ROE and ROA of banks is quite different from some previous theories, but it doesn't conflict with study of Ayadi and Boujelbene (2011). Vietnam economy fact in 2007-2014 proved this

problem. The more GDP of Vietnam went up, the lower profits of banks were. The reason was that our banking system suffered the pressure of the integration process from joining WTO in 2007, especially competitive pressure from either local banks or foreign powerful banks having experiences, large capital and various high-quality products

- **Inflation rate (INF):** Inflation affects well to rate of returns of listed banks in both ROA and ROE equation, indicating administrators of banks have predicted the expected inflation rate, and adjusted rates to achieve higher profits. This result was supported vigorously by papers of Sufian (2011), Gul, Irshad and Zaman (2011). In period of high inflation rate, especially 2008 (23%), 2010 (9,2%) and 2011 (18.7%), Vietnam banks actively raised deposit rates higher than inflation in forms of promotional costs, marketing expenses, brokerage commissions. So, output rate was increased by 20%-23% in 2011 to compensate for input rate. Therefore, inflation improved operational efficiency of banks in this period.

- **Stock market cap / GDP (MC):** it has positively correlated with rate of returns of commercial banks listed in Vietnam stock market. This result was resolved well by studies of Naceur & Goaid (2008). Positive correlation indicates that listed commercial banks have chances to get bigger profits when Vietnam stock market runs well. In that good condition, banks can easily increase equity to support their business and long term strategies, as well as find partners, foreign investors. Thereby, they can make financial state much more better.

4. CONCLUSION AND POLICY SUGGESTION

By measuring the impact of factors from 2008 to 2015, and using regression models FEM and REM, this paper have identified factors affecting rate of returns of joint-stock commercial banks listed in Vietnam stock market. Positive impact factors are: Lg of total assets, equity/total assets, deposits/total assets, non-interest income/total assets, inflation rate, and stock market cap/GDP. Negative impact are: Credit outstanding balance/total assets, credit loss provision/credit balance, operating costs/operating income, GDP growth. Particularly, equity/total assets has positive effect on ROA, but negatively impacts on ROE. Basing these results, we would like to suggest some solutions to improve rate of returns of listed banks:

(1) Firstly, widening business network and supply chains, providing more new products and services. This way will help banks to save money, decrease costs, and serve more customers in order to improve revenue sources, and increase profits.

(2) Secondly, banks should have good ways to use capital effectively. In the formula for ROE, equity lies in the denominator. So, when raising equity, banks need good plans to use capital increasing, not to decrease ROE.

A typical example is the case of NVB in 2011. This bank announced to increase charter capital by over 3000 billion VND. But its ROE declined from 7,76% (year 2010) to 5,17% (year 2011). That outcome said that NVB couldn't make capital increasing profitable.

Hence, Vietnam commercial banks should have invested in depth, such as developing new services, diversifying and improving advanced technology in order to reach higher profitability and sustainable development.

(3) *Thirdly, credit growth must accompany by enhancing risk management for financing customers.* We should know that credit boom can push our banking system into crisis. Under the pressure of growth, especially in the period of overheating, that banks didn't appraise some loans carefully led to bad debts, increasing provisions for credit risks. Therefore, it significantly reduced profits of banks.

(4) *Fourthly, if join-stock commercial banks want to raise revenue, they should control operating costs, especially general and administrative expenses.* Because, this kind of cost accounts for the highest proportion of total cost.

(5) *Lastly, government should force more commercial banks to list in Vietnam stock market.* Until 2014, there were only 9 commercial banks listed. Although, Central Bank and State Security Commission of Vietnam had advocated to make many public banks listed in 2015, banks have tried to evade to be listed. Their motivation might have withheld negative information. For developing Vietnam banking system and eliminating asymmetric information in financial market, Government, Central Bank, and Security Commission should have strong sanctions to force the banks listed

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