Research Article

# The Most Important Factors Affecting Profitability of The Top 10 Commercial Banks in Asean

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**ABSTRACT:** The purpose of this study is to find the most important factors affecting profitability of the top 10 commercial banks in ASEAN over the period 2012 to 2016. Panel data regression employed to identify factors affecting the banks profit. The data consist of macroeconomic indicators and bank financial statements which are collected from various sources. Data analysis was statistically conducted by using Eviews-9 statistical software based upon a fixed effect regression models. The study concluded that bank profitability (ROA) is significantly and positively affected by equity to asset (ETA), but it is not significantly affected by loan to deposit (LTD), investment to asset (ITA) and gross domestic product (GDP), eventhough these three variables have a positive patterns of influence on ROA. Approximately 87.03% of the bank's profitability (ROA) explained by *Loan to Deposit* (LTD), equity to asset (ETA), investment to asset (ITA) and gross domestic product (GDP).

**Keywords: equity to asset, gross domestic product, investment to asset, loan to deposit, and return on asset.**

## INTRODUCTION

Forbes Global 2000 magazine has launched a list of the world's largest publicly listed companies in 2017. The ratings are based on the calculation of sales, profit, assets and market value of 2,000 public companies in the world from various industry sectors. Among a number of global public companies in the various industry sectors, there are 8 companies in the banking sector listed in the top 10 largest publicly traded companies in the world. Data on the largest banks are presented in Table 1.

**Table 1: The eight Banks placed in the top 10 list of public companies in the world**

| Rank | Company | Country | Sales (in billion) | Profits (in billion) | Assets (in billion) | Market Value (in billion) |
|------|---------|---------|--------------------|----------------------|---------------------|---------------------------|
| 1 | ICBC | China | US$ 151.4 | US$ 42.0 | US$ 3,473.2 | US$ 229.8 |
| 2 | China Construction Bank | China | US$ 134.2 | US$ 35.0 | US$ 3,016.6 | US$ 200.5 |
| 4 | JPMorgan Chase | USA | US$ 102.5 | US$ 24.2 | US$ 2,513 | US$ 306.6 |
| 5 | Wells Fargo | USA | US$ 97.6 | US$ 21.9 | US$ 1,943.4 | US$ 274.4 |
| 7 | Bank of America | USA | US$ 92.2 | US$ 16.6 | US$ 2,196.8 | US$ 231.9 |
| 8 | Bank of China | China | US$ 113.1 | US$ 24.9 | US$ 2,611.5 | US$ 141.3 |

Source : Forbes magazine

Observing further from the list of top banking sectors in ASEAN, Singapore and Indonesia each succeeded in placing 3 banks in the 10th largest group in ASEAN. Malaysia and Thailand each put 2 banks in the group. Data on the 10 largest banks in ASEAN are presented in Tabel 2.

**Table 2: The 10 largest banks in ASEAN**

| Rank | Company | Country | Sales (in billion) | Profits (in billion) | Assets (in billion) | Market Value (in billion) |
|------|---------|---------|--------------------|----------------------|---------------------|---------------------------|
| 245 | DBS Group | Singapore | US$ 10.3 | US$ 3.1 | US$ 333.5 | US$ 34.4 |
| 301 | Oversea-Chinese Banking | Singapore | US$ 8.6 | US$ 2.5 | US$ 283.7 | US$ 28.8 |
| 332 | United Overseas Bank | Singapore | US$ 8.2 | US$ 2.2 | US$ 235.4 | US$ 25.6 |
| 386 | Bank Rakyat Indonesia | Indonesia | US$ 8.3 | US$ 2.0 | US$ 74.5 | US$ 24.2 |
| 390 | Maybank | Malaysia | US$ 7.6 | US$ 1.6 | US$ 164.1 | US$ 20.7 |
| 494 | Bank Mandiri | Indonesia | US$ 7.5 | US$ 1.0 | US$ 77.1 | US$ 21.4 |
| 564 | Bank Central Asia | Indonesia | US$ 4.8 | US$ 1.5 | US$ 50.2 | US$ 32.1 |

| 616 | Siam Commercial Bank | Thailand | US$ 4.9 | US$ 1.3 | US$ 81.3 | US$16.1 |
| 632 | Public Bank | Malaysia | US$ 4.5 | US$ 1.3 | US$ 84.7 | US$ 17.4 |
| 642 | Kasikornbank | Thailand | US$ 5.4 | US$ 1.1 | US$ 79.5 | US$ 13.4 |

Source : forbes magazine

Based on that information, the bank's profitability is measured by the ratio of ROA that is comparing earnings to total assets. Bank ICBC (China) has a ROA rate of 1.21%. China Construction Bank (China) has a ROA rate of 1.16%. JP Morgan Chase (USA) has a ROA level of 0.96%. Wells Fargo (USA) has a ROA rate of 1.13%, and Bank of America (USA) has a ROA rate of 0.76%.

Interestingly, some of the banks in the 10th largest group in ASEAN are able to achieve better profitability compared to the world's highest-ranked banks. Bank Central Asia (Indonesia) has a ROA of 2.99%. Siam Commercial Bank (Thailand) has a ROE rate of 1.60%. Public Bank (Malaysia) has a ROA rate of 1.53%. Bank Rakyat Indonesia (Indonesia) has a ROA rate of 2.68%, and Kasikornbank (Thailand) has a ROA of 1.38%.

The high level of profit achieved by banks in ASEAN is a major concern for conducting this research. The topics to be discussed in this study concerning with the main factors affecting earnings in the 10 largest banks in ASEAN period 2012-2016. Year 2012 was chosen as the initial period to be studied with the consideration that Indonesian banks are beginning to implement IFRS-based Accounting Standards this year. Thus, all bank reports under study have applied IFRS-based Accounting Standards.

Another factor to be considered for this research is considering the limited previous research that discusses the factors that affect the bank's profit regionally. In addition, this study specifically examines the factors that affect the bank's profit entity only. So it reflects the factors that affect the bank's profit. This may be different from previous studies that examined the factors affecting bank consolidated earnings.

**LITERATURE REVIEW**

A number of previous studies have tested various factors that affect earnings. Bank earnings are proxied in various ways such as ROA, ROE, ROI and NIM. Various internal and external factors are put forward to test its influence on bank earnings. However, some of them also only test the influence of internal factors alone. Muhammad Sajid Saeed (2014) investigated the impact of bank-specific, industry-specific, and macroeconomic variables on bank profitability of 73 UK commercial banks for the period 2006 to 2012. There are two ratios which represent profitability measures are return on assets (ROA), and return on equity (ROE). The results of this research found that the log of total assets, total assets to total assets, total deposit to total assets, net loan to total assets, and interest rate have positive impact on ROA and ROE while GDP and inflation rate have negative impact.

Ahmad Aref Almazari (2014) investigated the internal factors that affecting profitability on 23 Saudi and Jordanian banks for the period 2005 to 2011. The main objective was to compare the profitability of the Saudi and Jordanian banks by using the internal factors for estimations. The results indicated that there is a significant positive correlation between ROA of Saudi banks with Total Equity to Assets Ratio (TEA), Total Investment to Total Assets Ratio (TIA) and Liquid assets to assets ratio (LQR) variables, as well as a negative correlation with Net Credit Facilities to Total Assets Ratio (NCA), Net Credit Facilities to Total Deposits Ratio (CDR), Cost to Income Ratio (CIR) and Bank Size (SZE) variables. Meanwhile, there is a significant positive correlation between ROA of Jordanian banks with LQR, NCA, TEA and CDR variables, also there is a negative correlation of ROA with CIR, TIA and SZE.

Ong Tze San and Teh Boon Heng (2013) investigated the impact of bank-specific characteristics and macroeconomic conditions on profititability of 20 commercial banks operating in the Malaysian for the calendar year 2003 to 2009. There are three ratios which represent profitability measures are return on assets (ROA), return on equity (ROE) and net non-interest margin (NIM). Results of this study indicated that ROA is the best profitability measures. All bank-specific characteristics (Equity to asset ratio, Cost to income ratio, Loan loss reserves to gross loans, Liquid assets to deposit and short-term funding) significantly affect bank profitability in the anticipated way. However, no evidence is found in support of the macroeconomic variables (inflation and GDP growth) have an impact on profitability.

Usman Dawood (2014) evaluated the internal and external factors that affect the profitability of the 23 commercial banks operating in Pakistan for the period of 2009 to 2012. The empirical findings that total cost to total income and Liquid assets to Customer deposits and Short term borrowed fund show significant negative impact on ROA. Total equity to Total assets show significant impact on ROA. Other variables like Total Deposits to Total Assets, and Log of total asset did not demonstrate any impact on ROA.

Abdus Samad (2015) examined the impact of bank specific characteristics and macroeconomic variables in determining the banks' profitablity of 42 Bangladesh commercial banks for year 2009 and 2010. Results indicate 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 on ROA. Bank sizes, GDP, and Inflation, variables show no impact on ROA.

Zawadi Ally (2014) investigated the effects of bank specific and macroeconomic factors on banks' profitability in Tanzania. The fixed effects regression model was used on a panel data obtained from 23 banks from 2009 to 2013. The empirical results show that bank-specific factors (log of total asset, total equity to total assets, non-performing loan to total loan ratio, non-interest expenses to average assets, loans to deposits) significantly affect on ROA. However, macroeconomic factors (inflation, interest rate) do not seem to

significantly affect on ROA.

Nguyen Thi My Linh and Bui Ngoc Toan (2015) examined the factors that affect the profitability of commercial banks in Vietnam. The data are based upon the financial reports of 22 commercial banks in Vietnam during the period 2007 to 2013. The results Bank profitability is measured by indicators such as: return on assets (ROA), return on equity (ROE), and net interest margin (NIM). The research result shows that the equity to total assets ratio (CAP), the loans to total assets ratio (LOAN), liquid assets to total assets (LA), and the economic growth rate (GDP) have an impact on the profitability of commercial banks in Vietnam.

Shoaib Nisar, Wang Susheng & Jaleel Ahmed (2015) investigated how bank-specific, industry-specific and macroeconomic factors affect the profitability of banking sector of Pakistan over the period 2006 to 2013. The empirical results show that ROA of Pakistani banking sector is negatively affected by Interest Expenses to Total Deposits and Borrowing, Liquid Assets to Total Assets, Non- Performing Loan to Gross Advances, and Administrative Expense to Total Assets, and positively affected by Non-Interest Income to Total Income, Shareholders' Equity to Total Assets, Log of Total Assets to Log of GDP, and Log of GDP.

Mohammad Abdelkarim Almumani (2013) investigated the factors that determine bank's profitability of the Jordanian commercial banks listed in Amman Stock of Exchange (ASE). Thirteen Jordanian commercial banks listed in ASE since 2000 were selected (91 observations) over the 2005 to 2011. The factors taken into consideration are ROA, total cost to total income, Liquid Asset to Customer Deposit and Short Term Borrowed Funds, Net Credit to Total Assets Ratio, Provision for Credit Facilities and Interest in Suspense to Credit Facilities, Total equity to total assets and log of total assets. The major outcome of this study is that the total cost to total income is the major endogenous factors under the control of management that determines the profitability of the commercial banks in Jordan. Other variables, such as Liquid Asset to Customer Deposit and Short Term Borrowed Funds, Net Credit to Total Assets Ratio, Provision for Credit Facilities and Interest in Suspense to Credit Facilities, Total equity to total assets and log of total assets did not show any statistical effect on ROA.

Deger Alpera & Adem Anbar (2011) examined the bank-specific and macroeconomic determinants of 10 commercial banks profitability in Turkey over the time period from 2002 to 2010. The bank profitability is measured by return on assets (ROA) and return on equity (ROE) as a function of bank-specific and macroeconomic determinants. The results show that log of total asset and non-interest income to total asset has a positive and significant effect on bank profitability. However, Loans to Total Assets, and loans under follow-up to total loan, have a negative and significant impact on bank profitability. With regard to macroeconomic variables (GDP growth, Inflation, real interest rate) only the real interest rate affects the performance of banks positively.

Lucky Anyike Lucky and Nwosi, Anele Andrew (2015) examined the relationship between asset quality and the profitability of the fifteen (15) quoted commercial banks in Nigeria from 1980 to 2013. The result show that non-performing loans to Total Loans and nonperforming Loans to Total Customers Deposit have positive relationship with ROI while Loan Loss Provision to Total Loans and Loan Loss Provision to Total Asset have negative relationship with ROI.

Sehrish Gul, Faiza Irshad, & Khalid Zaman (2011) examined the impact of internal factors and external factors on profititability of top fifteen Pakistani commercial banks over the period 2005 to 2009. There are four ratios which represent profitability measures are return on asset (ROA), return on equity (ROE), return on capital employed (ROCE) and net interest margin (NIM). The empirical results have found strong evidence that both internal (log of total asset, loans to total asset, equity capital to total assets, total deposits to total assets) and external factors (GDP, Inflation, Market capitalization) have a strong influence on the profitability.

Pooran Lall (2014) examined the effects of bank specific factors and external factors on bank profitability in the United States during the 2007 to 2013. The result shows that Total Deposit to Total Asset; Net loan to total asset; Non-Interest Income to Total Income; Net Interest Income to Total Asset; Equity to Total Asset had a positive effect on ROA, while Loan Loss Allowance to Total deposit; Loan Loss allowance to Loan; had a negative effect on ROA.

Sabina Yesmine & Mohammad Saif Uddin Bhuiyah (2015) identified the factors having impact on the financial performance of 10 local private commercial banks (PCB) and 4 nationalized commercial banks (NCB) in Bangladesh for period 2008 to 2014. The result in case of PCB, total operating income to average total assets; and total interest income to total operating expense have significant positive impact on ROA, whereas loan loss provision to loan has significant negative impact. In case of NCB, only loan loss provision to loan has significant positive impact on ROA. On the other hand, this study finds insignificant negative relationship between Liquidity and ROA both in case of PCB and NCB.

Muhammad Ashraf, Zeeshan Haider, Muhammad Bilal Sarwar (2017) examined the bank-specific and macroeconomic determinants impact on bank's profitability of 10 commercial banks in Asian countries for period 2008 to 2015. There are three ratios which represent profitability measures are return on assets (ROA), return on equity (ROE) and earnings per share (EPS). The results of this study are that bank specific and macroeconomic determinants have strongly influence on bank's profitability. Bank specific determinants; Log of total assets, Liquid asset to total asset, Total debt to Total Equity, Total liability to total asset, Total equity to total asset, influence positively and macroeconomic determinants; inflation and GDP, influence negatively on banks profitability.

Beenishameer M. Ameer (2015) examined the relationship between bank-specific and macro-economic indicator on bank performance of ten Pakistani banks over the period 2010-2014. There are two ratios which represent bank performance measures are return on assets (ROA) and the bank performance. The empirical results have found that both

internal and external factors have a strong influence on the performance. A result of study denotes that total non-performing loan to total loan, total expense to total asset, and inflation have indirect link with the bank performance, whereas log of total asset, total equity to total asset, Short term and fixed Deposit to sum asset, and Short term and long term loan to sum asset have a significant positive relation with bank's performance and current asset to current liabilites have insignificant positive relation with Performance of bank. This study reveals the positive insignificant relation between GDP and performance but significant relation between Foreign Direct investment and performance and indirect relation between inflation and profitability.

Sardar Shaker Ibrahim (2017) examined the influence of liquidity on the profitability of Five commercial banks in Iraqi over the period 2005 to 2013. The study observes that ROA is positively affected by loan and advances to total deposit, total deposits to total assets, and cash & equivalent cash to total assets.

Md. Tamim Mahamud Foisal, Anamul Haque & Md. Ashraful Alam (2016) investigated the impact of bank-specific and economy-specific determinants on the performance of 3 State-owned Commercial Banks (SCB) in Bangladesh over periode 2007 to 2014. The results showed that ROA has positive relationships with Capital Required to Risk Weighted Assets (CAR), Cost of Liabilities to Total Liabilities (COF), cost to income ratio (CIR), Total Loans to Total Deposits, Log of Total Assets, GDP growth ratio (GDPR) and negative relationship with total non-performing loan to Total Loans (CLTL), and inflation (INFL). Among them, CAR and GDPR are the significant determinants on ROA.

## DATA, DEFENITION and VARIABLES

### Data

Data used to examine the factors affecting the earnings of the 10 largest banks in ASEAN are panel data comprising audited financial statements of banks and GDP growth data for the period 2012-2016. Financial audit reports from the 10 largest banks in ASEAN studied, obtained through the site of each bank. The ten banks are DBS Bank, Oversea-Chinese Banking, United Overseas Bank, Bank Rakyat Indonesia, Maybank, Bank Mandiri, Bank Central Asia, Siam Commercial Bank, Public Bank and Public Bank. Meanwhile, GDP growth data was obtained through the World Bank website.

### Variables definition

For the empirical analysis, five variables have been included; one variable is dependent and four variables are independent. Dependent variable denoting bank profitability and independent variable denoting factors that affecting bank's profitability.

### Dependent variable

In this research used Return on Asset ratio (ROA) as dependent variable. ROA is defined as the ratio of net income to total assets (Sabina Yesmine & Mohammad Saif Uddin

Bhuiyah, 2015, Abdus Samad, 2015, Mohammad Abdelkarim Almumani, 2013, Usman Dawood, 2014). In this study, ROA is defined as the ratio between comprehensive earnings to total assets. Along with the development of financial reporting standards, comprehensive profits become a key financial component that represents net income.

### Independent variables

Some bank financial ratios are used as independent variables. These financial ratios are calculated by comparing the most important financial data of the bank financial statements examined during the period 2012-2016. The observation result shows that the most important financial data from bank funding source is deposit from customer, and equity. Meanwhile, the most important financial data from the use of funds is loan and advance, and investment in securities. Thus, it is determined that the most important bank financial ratios during the period 2012-2016 are total loan and advance to deposit (LTD), total equity to assets (ETA), Total Investment to Assets (ITA).

### Total Loan to Deposit (LTD)

LTD is defined as the ratio of total loans to total deposits (Sabina Yesmine and Mohammad Saif Uddin Bhuiyah (2015), Zawadi Ally (2014), and Abdus Samad, 2015, Md. Tamim Mahamud Foisal, Anamul Haque & Md. Ashraful Alam (2016); Sardar Shaker Ibrahim (2017) In this study, LTD is defined as the ratio of total loan and advance to total deposits.

### Total Equity to Asset (ETA)

ETA is defined as the ratio of total equity to total assets (Sehrish Gul, Faiza Irshad & Khalid Zaman, 2011, Usman Dawood, 2014, Muhammad Sajid Saeed, 2014, Pooran Lall, 2014, Zawadi Ally, 2014, Ahmad Aref Almazari, 2014, Shoaib Nisar, Wang Susheng & Jaleel Ahmed; 2015, Muhammad Ashraf, Zeeshan Haider, Muhammad Bilal Sarwar; 2017, Beenishameer M. Ameer; 2015).

### Total Investment to Asset (ITA)

ITA is defined as the ratio between total investments to total assets (Ahmad Aref Almazari, 2014). The use of ITA ratios is still very rare. In this study, the ratio of ITA is defined as the ratio between investments in securities to total assets.

### Gross Domestic Product Growth (GDP)

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period. The GDP growth rate is the most important indicator of economic health.

### Hypothesis

LTD, ETA, ITA and GDP are thought to be the main factors affecting ROA. With regard to it, then the hypothesis presented in this study is stated as follows.

### Impact of LTD toward to ROA.

LTD reflects the extent of loan and advance disbursement rates with the support of deposit from customers collected by

banks. The higher the LTD level, the higher the ROA rate can be achieved. Based on these statements can be formulated hypothesis as follows:

H1:  There is a positive effect of LTD on ROA.

**Impact of ETA toward to ROA.**

H2:  There is a positive effect of ETA on ROA.

**Impact  of ITA towad to ROA.**

ITA reflects the level of investment in securities to gain potential profit in the form of dividends or capital gains. The higher the ITA level, the higher the level of ROA that can be generated. Based on these statements can be formulated hypothesis as follows:

H3:  There is a positive effect of ITA on ROA.

**Impact  of GDP toward to ROA.**

Gross Domestic Product Growth (GDP) reflects the macroeconomic conditions that may affect credit and investment demand. The higher the GDP, the higher the demand for credit and investment, and the higher the ROA will be. Based on these statements, the hypothesis is formulated as follows:

H4:  There is a positive effect of GDP on ROA.

**METHODOLOGY**

**Model estimation and selected model**
To determine the effects of LTD, ETA, ITA and GDP on ROA, we use panel data regression models. Estimation of panel data regression model is as follows:

$$ROA_{it} = \alpha_0 + \beta_1\ (LTD)_{it} + \beta_2\ (ETA)_{it} + \beta_3\ (ETA)_{it} + \beta_4\ (GDP)_{it} + e_{it}$$

Where;
ROAit represents ROA of bank i in year t
$\beta_1\ (LTD)_{it}$ represents LTD of bank i in year t
$\beta_2\ (ETA)_{it}$  represents ETA of bank i in year t
$\beta_3\ (ETA)_{it}$  represents ITA of bank i in year t
$\beta_4\ (GDP)_{it}$  represents GDP of bank i in year t
$e_{it}$  represents standard error of bank i in year t
$\alpha_0$ = intercept coefficients
$\beta$ = slope coefficients.

In estimating the data panel, there are three methods that can be used namely; common effect model, random effect model,

and fixed effect model. From these three methods, we selected a method capable of producing the best data panel model to be used as an analytical tool. Determination of the best method among the three is done based on Chow Test, Hausman Test, and Legrange Multiplier Test.

**Test for the classical panel data regression assumption**
The panel data of the regression model have to pass the classical regression assumption test to be used as an appropriate interpretation tool. Tests of classical assumptions performed include; Test for heteroscedasticity, multicollinearity, autocorrelation, and normality.

**RESULTS AND DISCUSSION**

GDP growth data for each ASEAN country obtained from World Bank sites is presented in Table 3.

**Tabel 3. GDP Indicator, 2012-2016**

| Country | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Indonesia | 6.0% | 5.6% | 5.0% | 4.9% | 5.0% |
| Malaysia | 5.5% | 4.7% | 6.0% | 5.0% | 4.2% |
| Singapura | 3.9% | 5.0% | 3.6% | 1.9% | 2.0% |
| Thailand | 7.2% | 2.7% | 0.9% | 2.9% | 3.2% |

Sumber: http://databank.worldbank.org/data/reports.aspx?

Based on the above data, it is known that Indonesia and Malaysia have relatively more stable GDP growth rate compared to Singapore and Thailand. Indonesia has a GDP rate between 4.9% - 6.0% during 2012 to 2016. Malaysia has a GDP rate between 4.2% - 6.0% in the same period. The financial data of banks used in this study consisting of financial data presented on the basis of the same accounting principles. So, the results of the calculation of the financial ratios have the same level of quality among the studied banks. The calculation of financial ratios from each bank is presented in Table 4.

**Tabel 4. ASEAN Banks' Financial Ratios**

| Bank | Tahun | ROA | LTD | ETA | ITA | GDP |
|---|---|---|---|---|---|---|
| Bank Central Asia | 2012 | 2.78% | 69.33% | 11.58% | 19.14% | 6.00% |
| Bank Central Asia | 2013 | 2.67% | 76.28% | 12.83% | 18.66% | 5.60% |
| Bank Central Asia | 2014 | 2.91% | 77.46% | 13.59% | 18.55% | 5.00% |
| Bank Central Asia | 2015 | 2.90% | 81.91% | 14.92% | 9.45% | 4.90% |
| Bank Central Asia | 2016 | 4.00% | 78.52% | 16.46% | 17.67% | 5.00% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Bank Rakyat Indonesia | 2012 | 3.45% | 79.85% | 12.08% | 10.38% | 6.00% |
| Bank Rakyat Indonesia | 2013 | 3.26% | 88.54% | 13.01% | 10.25% | 5.60% |
| Bank Rakyat Indonesia | 2014 | 3.14% | 81.68% | 12.49% | 16.32% | 5.00% |
| Bank Rakyat Indonesia | 2015 | 2.93% | 86.88% | 13.29% | 14.94% | 4.90% |
| Bank Rakyat Indonesia | 2016 | 4.23% | 87.77% | 15.09% | 13.50% | 5.00% |
| Bank Mandiri | 2012 | 2.56% | 78.07% | 12.55% | 15.71% | 6.00% |
| Bank Mandiri | 2013 | 2.51% | 83.44% | 12.74% | 14.88% | 5.60% |
| Bank Mandiri | 2014 | 2.67% | 82.46% | 12.86% | 13.91% | 5.00% |
| Bank Mandiri | 2015 | 2.40% | 87.42% | 13.84% | 15.23% | 4.90% |
| Bank Mandiri | 2016 | 4.18% | 86.15% | 15.69% | 13.74% | 5.00% |
| DBS Bank | 2012 | 1.23% | 84.28% | 10.98% | 24.49% | 3.90% |
| DBS Bank | 2013 | 0.70% | 86.61% | 9.69% | 22.03% | 5.00% |
| DBS Bank | 2014 | 0.96% | 90.29% | 8.86% | 20.79% | 3.60% |
| DBS Bank | 2015 | 0.94% | 92.79% | 9.13% | 22.90% | 1.90% |
| DBS Bank | 2016 | 0.89% | 94.70% | 9.66% | 22.60% | 2.00% |
| Oversea-Chinese Banking | 2012 | 1.34% | 91.31% | 10.62% | 21.24% | 3.90% |
| Oversea-Chinese Banking | 2013 | 1.12% | 88.40% | 8.64% | 19.97% | 5.00% |
| Oversea-Chinese Banking | 2014 | 0.99% | 84.88% | 10.30% | 21.82% | 3.60% |
| Oversea-Chinese Banking | 2015 | 0.95% | 84.35% | 11.53% | 20.83% | 1.90% |
| Oversea-Chinese Banking | 2016 | 0.95% | 85.78% | 11.89% | 21.61% | 2.00% |
| United Overseas Bank | 2012 | 1.42% | 85.75% | 11.05% | 15.98% | 3.90% |
| United Overseas Bank | 2013 | 0.96% | 84.87% | 10.15% | 13.00% | 5.00% |
| United Overseas Bank | 2014 | 1.27% | 84.83% | 10.37% | 11.38% | 3.60% |
| United Overseas Bank | 2015 | 1.13% | 84.53% | 10.33% | 12.07% | 1.90% |
| United Overseas Bank | 2016 | 0.76% | 87.85% | 10.33% | 11.48% | 2.00% |
| Maybank | 2012 | 1.35% | 92.37% | 10.77% | 23.17% | 5.50% |
| Maybank | 2013 | 1.03% | 88.56% | 10.19% | 24.00% | 4.70% |
| Maybank | 2014 | 1.42% | 87.61% | 10.20% | 25.78% | 6.00% |
| Maybank | 2015 | 1.46% | 88.05% | 10.48% | 24.87% | 5.00% |
| Maybank | 2016 | 1.39% | 89.34% | 11.49% | 24.13% | 4.20% |
| Public Bank | 2012 | 1.63% | 90.34% | 7.39% | 19.87% | 5.50% |
| Public Bank | 2013 | 1.48% | 90.93% | 7.44% | 19.02% | 4.70% |
| Public Bank | 2014 | 1.42% | 89.80% | 9.05% | 21.93% | 6.00% |
| Public Bank | 2015 | 1.41% | 93.42% | 9.56% | 17.36% | 5.00% |
| Public Bank | 2016 | 1.34% | 96.60% | 9.80% | 16.20% | 4.20% |
| Siam Commercial Bank | 2012 | 1.85% | 95.63% | 9.42% | 17.46% | 7.20% |
| Siam Commercial Bank | 2013 | 2.02% | 95.12% | 9.78% | 16.62% | 2.70% |

| | | | | | | |
|---|---|---|---|---|---|---|
| Siam Commercial Bank | 2014 | 2.02% | 93.80% | 10.55% | 14.36% | 0.90% |
| Siam Commercial Bank | 2015 | 1.58% | 96.86% | 11.18% | 14.11% | 2.90% |
| Siam Commercial Bank | 2016 | 1.58% | 95.51% | 11.62% | 14.27% | 3.20% |
| Kasikornbank | 2012 | 1.69% | 94.53% | 9.15% | 13.50% | 7.20% |
| Kasikornbank | 2013 | 1.84% | 93.08% | 9.89% | 16.11% | 2.70% |
| Kasikornbank | 2014 | 1.91% | 92.68% | 11.21% | 17.11% | 0.90% |
| Kasikornbank | 2015 | 1.52% | 93.09% | 11.74% | 10.13% | 2.90% |
| Kasikornbank | 2016 | 1.62% | 93.13% | 11.93% | 13.63% | 3.20% |

Source: Secondary data were processed

The data in Table 4 shows that the largest banks in ASEAN have different characteristics. Each bank selects policies against the different levels of LTD, ETA and ITA, which impact on the ROA level achieved. During the period 2012-2016, Siam Commercial Bank has the highest average LTD rate of 95.38%. Bank Central Asia has the highest average ETA rate of 13.87%. Maybank has the highest ITA rate of 24.39%.

In principle, the bank will select a policy at the LTD, ETA and ITA levels with a composition that enables it to achieve the best ROA level. This is achieved by Bank Rakyat Indonesia with the highest average ROA rate of 3.40%. This condition is achieved at the average level of the LTD composition of 84.94%, the average ETA rate of 13.19%, and the ITA average rate of 13.08%.

**Discussion**

**Descriptive Statistics**

Table 5 shows descriptive statistics for all of the studied variables. The mean and median value of ROA are 1.87% and 1.54 %. The mean and median value of LTD are 87.74% and 87.94%. The mean and median value of ETA are 11.18% and 10.87%. The mean and median value of ITA are 17.36% and 16.86%. The mean and median value of GDP are 4.26% and 4.90%.

Among the four independent variables observed, LTD had the highest standard deviation coefficient of 5.906822. This indicates that the LTD, has the highest data dispersion size among other variables. Other variables also have a relatively high standard deviation. There are no variables that have a standard deviation close to zero. That is, data in each group of variables tends to vary. LTD and GDP have their respective skewness values of -0.709921 and -0.423035. The negative skewness value indicates that the distribution of the LTD and GDP data tends to the left of the symmetrical form. Meanwhile, other variables have a data distribution tend towards the right of the symmetrical shape because it has a positive skewness value.

**Tabel 5. Descriptive Statistics**

| | ROA (in %) | LTD (in %) | ETA (in %) | ITA (in %) | GDP (in %) |
|---|---|---|---|---|---|
| Mean | 1.875358 | 87.74858 | 11.18731 | 17.36324 | 4.266000 |
| Median | 1.546587 | 87.94865 | 10.87669 | 16.86258 | 4.900000 |
| Maximum | 4.234228 | 96.86296 | 16.46179 | 25.78313 | 7.200000 |
| Minimum | 0.696280 | 69.33007 | 7.391415 | 9.450194 | 0.900000 |
| Std. Dev. | 0.925038 | 5.906822 | 1.961475 | 4.419311 | 1.536310 |
| Skewness | 0.982866 | -0.709921 | 0.607377 | 0.100427 | -0.423035 |
| Kurtosis | 3.085186 | 3.466231 | 3.274108 | 1.991859 | 2.479769 |
| Jarque-Bera | 8.065339 | 4.652753 | 3.230760 | 2.201439 | 2.055158 |
| Probability | 0.017727 | 0.097649 | 0.198815 | 0.332632 | 0.357872 |
| Sum | 93.76790 | 4387.429 | 559.3657 | 868.1620 | 213.3000 |
| Sum Sq. Dev. | 41.92908 | 1709.637 | 188.5218 | 956.9854 | 115.6522 |
| Observations | 50 | 50 | 50 | 50 | 50 |

Source: Secondary data were processed using Eviews 9

**Selected models**

Table 6 below presents the results of Chow Test. Based on the Chow Test results proven that Fixed Effect Model is better to use. This is indicated by the probability value of 0.0000 which is lower than significant level at alpha 0.05.

**Tabel 6. Results of Chow Test**

Redundant Fixed Effects Tests

Equation: Untitled
Test cross-section fixed effects

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 6.828494 | (9,36) | 0.0000 |
| Cross-section Chi-square | 49.794331 | 9 | 0.0000 |

Source: Secondary data were processed using eviews 9

Table 7 below presents the results of Hausman Test. Based on the Hausman Test results proven that Fixed Effect Model is better to use. This is indicated by the value of probability of 0.0003 which is lower than significant at alpha 0.05.

**Tabel 7. Result of Hausman Test**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 21.003942 | 4 | 0.0003 |

Source: Secondary data were processed using eviews 9

Based on the Chow test and Hausman test obtained the same conclusion that the better fixed effect model is used for the purpose of analysis. Thus, the lagrange multiplier test is not necessary.

**Results of Test for the classical assumption of the regression panel data**

**Test for Multicollinearity**
Multicolinearity test is done to determine whether or not perfect correlation between independent variables. It is expected that there is no perfect correlation between independent variables (no multicollinearity). The multicollinearity test results are presented in Table 8.

**Tabel 8. Results of Multicolinearity Test**

| | LTD | ETA | ITA | GDP |
|---|---|---|---|---|
| LTD | 1.000000 | -0.495843 | 0.041466 | -0.333019 |
| ETA | -0.495843 | 1.000000 | -0.381904 | 0.126123 |
| ITA | 0.041466 | -0.381904 | 1.000000 | 0.024136 |
| GDP | -0.333019 | 0.126123 | 0.024136 | 1.000000 |

Source: Secondary data were processed using Eviews 9

As shown in Table 8, the correlation coefficient among the variables are lower than 0.80. Dapat disimpulkan, tidak terjadi multikolinearitas dalam model regresi ini (there is no multicollinearity in this regression model).

**Test for Heteroscedasticity**

Test for Heteroscedasticity is performed to determine whether the error variance of each independent variable in the regression model is constant or not. It is hoped that the variance error of each independent variable is constant (no heteroscedasticity). The heterocedasticity test in this study was conducted by Glejser method.

As shown in Table 9, the probability values of the variables are greater than significant level at alpha 0.05. It could be concluded that there is no heteroscedastisity probrem on this regression model.

**Tabel 9. Results of Heteroscedasticity Test**

Dependent Variable: RESABS
Method: Panel Least Squares
Date: 03/27/18   Time: 21:16
Sample: 2012 2016

Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 2.971994 | 1.521891 | 1.952829 | 0.0586 |
| LTD | -0.023739 | 0.015488 | -1.532741 | 0.1341 |
| ETA | 0.004763 | 0.041507 | 0.114752 | 0.9093 |
| ITA | -0.016471 | 0.020890 | -0.788465 | 0.4356 |
| GDP | -0.063409 | 0.033769 | -1.877704 | 0.0685 |

Effects Specification
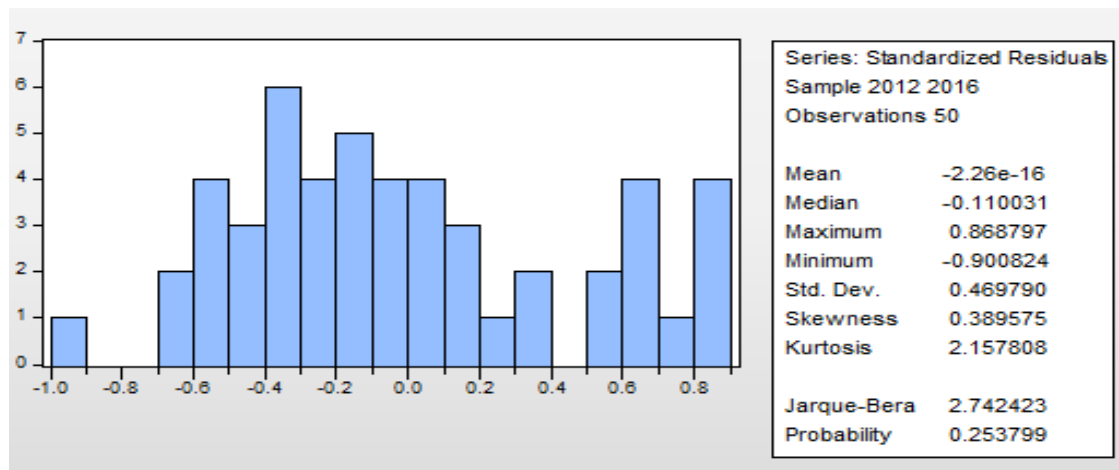
Cross-section fixed (dummy variables)

| | | | | |
|---|---|---|---|---|
| R-squared | 0.277719 | Mean dependent var | | 0.385706 |
| Adjusted R-squared | 0.016895 | S.D. dependent var | | 0.262482 |
| S.E. of regression | 0.260255 | Akaike info criterion | | 0.377190 |
| Sum squared resid | 2.438385 | Schwarz criterion | | 0.912557 |
| Log likelihood | 4.570248 | Hannan-Quinn criter. | | 0.581061 |
| F-statistic | 1.064777 | Durbin-Watson stat | | 2.207241 |
| Prob(F-statistic) | 0.417483 | | | |

Source: Secondary data were processed using Eviews 9

**Test for normality**

The normality test is performed to determine whether the residual variable is normally distributed. It is expected that the residual variable is normally distributed. The results of the standardized residual data analysis in Table 10 show that the value of Jarque-Bera (JB) is 2,742423 with probability value equal to 0.253799 is greater than significant level at alpha 0.05. It could be concluded that the data used in this study is normally distributed.

**Tabel 10. Results of normality test**



| Series: Standardized Residuals | |
|---|---|
| Sample 2012 2016 | |
| Observations 50 | |
| | |
| Mean | -2.26e-16 |
| Median | -0.110031 |
| Maximum | 0.868797 |
| Minimum | -0.900824 |
| Std. Dev. | 0.469790 |
| Skewness | 0.389575 |
| Kurtosis | 2.157808 |
| | |
| Jarque-Bera | 2.742423 |
| Probability | 0.253799 |

**Test for Autocorrelation**

The autocorrelation test is intended to determine whether the inter-residual variables are correlated. In other words, inter residuals are independent. No autocorrelation is expected.

Based on the Panel Data Regression Test Results as presented in table 11, it is known that the calculated value of Durbin Watson is 1.985171. In order to find out whether there are symptoms of autocorrelation between the variables analyzed in the regression model, it needs to compare between the calculated value and the table value of Durbin Watson.

Durbin-Watson table value at the level of n = 50 and k = 4 shows the value dL = 1.3779 and the value dU = 1.7214. Based on the provision that when dU <DW <(4 - dU) there is no autocorrelation problem, then the regression model in this study is free from autocorrelation problem because the DW coefficient is in between DU and 4-DU, that is (1.7214 <1.985171 <2.2786).

**Results of Panel Data Regression**

Berdasarkan hasil Chow Test dan Hausman Test, diperoleh

kesimpulan yang sama yaitu bahwa estimasi model yang lebih baik untuk digunakan dalam menguji hipotesis adalah Fixed Effect Model. Table 11 presents the outcomes of Fixed Effect Model.

**Tabel 11. Regression Results Based on the Fixed Effect Model**

Dependent Variable: ROA

Method: Panel Least Squares

Date: 03/27/18   Time: 20:57

Sample: 2012 2016

Periods included: 5

Cross-sections included: 10

Total panel (balanced) observations: 50

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -1.450105 | 1.947960 | -0.744422 | 0.4615 |
| LTD | 0.007369 | 0.019824 | 0.371705 | 0.7123 |
| ETA | 0.172488 | 0.053128 | 3.246669 | 0.0025 |
| ITA | 0.032198 | 0.026739 | 1.204181 | 0.2364 |
| GDP | 0.044567 | 0.043223 | 1.031100 | 0.3094 |

Effects Specification

Cross-section fixed (dummy variables)

| | | | |
|---|---|---|---|
| R-squared | 0.904725 | Mean dependent var | 1.875358 |
| Adjusted R-squared | 0.870320 | S.D. dependent var | 0.925038 |
| S.E. of regression | 0.333117 | Akaike info criterion | 0.870848 |
| Sum squared resid | 3.994800 | Schwarz criterion | 1.406214 |
| Log likelihood | -7.771188 | Hannan-Quinn criter. | 1.074718 |
| F-statistic | 26.29638 | Durbin-Watson stat | 1.985171 |
| Prob(F-statistic) | 0.000000 | | |

Note: $t_{table}$ (df= 45, $\alpha$=0.05 one tail): 1.67943
Source: Secondary data were processed using Eviews 9

The regression results presented in Table 11 show the value for the adjusted-R squared statistics of the model was 0.8703. It means that 87.03% variation in ROA is contributed by LTD, ETA, ITA, dan GDP, while the remaining of 12.97% is explained by other variables that have not been considered in this study. The probability (F-statistics) value of 0.0000 which is lower than significant level at alpha 0.05 indicated that it is a good model to measure banks profitability.

There is an evidence that LTD has a positive effect but not significant on ROA by the regression coefficient of 0.007369. This indicates that with more LTD the chances of ROA will be slightly increase. The coefficient of this variable is consistent in the patterns of influence as it is expected in the model. This result is also consistent in the patterns of influence to previous findings of Mohammad Abdelkarim Almumani (2013), Nguyen Thi My Linh & Bui Ngoe Toan (2015), Sehrish Gul, Faiza Irshad and Khalid Zaman (2011), Sardar Shaker Ibrahim (2017), and Md. Tamim Mahamud Foisal, Anamul Haque & Md. Ashraful Alam (2016).

There is an evidence that ETA has a positive and significant effect on ROA at the regression coefficient of 0.172488. It indicates that with more ETA the chances of ROA will be

higher. The coefficient of this variable is consistent as it is expected in the model. The result is consistent as well to the previous findings of Abdus Samad (2015), Usman Dawood (2014), Zawadi Ally (2014), Shoaib Nisar, Wang Susheng & Jaleel Ahmed (2015), Beenishameer M. Ameer (2015), Muhammad Ashraf, Zeeshan Haider, Muhammad Bilal Sarwar (2017), dan Ahmad Aref Almazari (2014). Inconsistent result has been found by Sehrish Gul, Faiza Irshad & Khalid Zaman (2011), dan Mohammad Abdelkarim Almumani (2013).

There is an evidence that ITA positively affects ROA but not significant at the regression coefficient of 0.032198. This indicates that with more ITA the chances of ROA will be slightly higher. The coefficient of this variable is consistent in the patterns of influence as it is expected in the model. The result is also consistent in the patterns of influence to the previous findings of Ahmad Aref Almazari (2014) who investigated on Jordanian banks.

There is an evidence that GDP positively affects ROA but not significant at the regression coefficient of 0. 044567. This indicates that with the increase in GDP would affect the higher ROA. This finding is consistent in the patterns of influence as it is expected in the model. The result is consistent as well in the patterns of influence to the previous findings of Shoaib Nisar, Wang Susheng & Jaleel Ahmed (2015), Sehrish Gul, Faiza Irshad & Khalid Zaman (2011), Ong Tze San & Teh Boon Heng (2013), Beenishameer M. Ameer (2015), Md. Tamim Mahamud Foisal, Anamul Haque & Md. Ashraful Alam (2016), dan Abdus Samad (2015). However, this finding is inconsistent to the result that has been found by Muhammad Sajid Saeed (2014), Muhammad Ashraf, Zeeshan Haider, Muhammad Bilal Sarwar (2017), dan Deger Alper & Adem Anbar (2011).

## CONCLUSION AND LIMITATION

### Conclusion

Based on the results of regression analysis on panel data of financial performance of the 10 largest banks in ASEAN, this study concludes that ROA of the 10 largest banks in ASEAN during the period 2012-2016 positively and significantly affected by the change of ETA. Although this study also found that the changes of LTD, ITA, and GDP have a positive effect on ROA, the effect of these three variables changes on ROA is not significant. Moreover, approximately 87.03% of the variation in ROA could be explained by LTD, ETA, ITA, GDP, and the remaining of 12.97% reflects the contribution of other variables that have not been considered in this study.

### Limitation

The main limitation of this study is not examining the effect of efficiency ratios on the banks' earnings. This is because the operating expenses and operating income of the studied banks are presented differently. So it is difficult to determine the ratios of efficiency with equal quality for all of the studied banks.

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