Journal of Management and Technology

IDEAS: Journal of Management and Technology

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# POST HOC TEST OF INDONESIA DOMESTIC SYSTEMICALLY IMPORTANT BANKS PERFORMANCE AT THE ASEAN-5 LEVEL

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***ABSTRACT***

*This study aims to examine whether the existence of strong banking interconnectivity in ASEAN brings about equality in bank performance, especially for banks that are classified as Domestic Systemically Important Banks (D-SIB). This study traces the performance of D-SIB banks operating in Indonesia at the ASEAN-5 level (Indonesia, Malaysia, Thailand, the Philippines, and Singapore) in 2007-2019. ROA is used to indicate bank performance, especially related to bank profitability, which is an important aspect for bank sustainability. The research data was obtained from the official websites of financial organizations and institutions such as World bank, IMF, OJK, Bloomberg terminal, and financial statements of banks in ASEAN-5 with a sample of 31 D-SIB banks. By using descriptive analysis and ANOVA as well as post hoc tests and scatter diagrams, the results of the study show that D-SIB banks operating in Indonesia have an ROA performance that dominates D-SIB banks which are classified as top 10 average ROA. It can be seen that D-SIB banks operating in Indonesia are not inferior to DSIB banks operating overseas and even proven to be able to outperform D-SIB banks operating overseas.*

***Keywords****: Domestic Systemically Important Banks, ASEAN-5, Return on Assets, financial institution*

## 1. Introduction

Bank is a financial institution with the authority to collect funds from the public in the form of deposits and distribute them to the public in the form of credit and or in various other forms that can improve the standard of living of many people (Undang-Undang Republik No. 10 tahun 1998; Otoritas Jasa Keuangan, 2019a). Southeast Asian banks have proven themselves to play an important role in national economic development in the countries where they operate, with credit disbursement growing steadily (Ashraf, N & Butt, Q. T. A, 2019; Corbacho, A, & Peiris, S. J, 2018). The role of banks in Southeast Asian countries is crucial in moving the community's economy, especially because of the constraints faced by the fintech industry and the role of the capital market which has not been accessible to all people who need funds due to various capital market regulations (Pardo, R. P., & Rana, P. B, 2015; Bangko Sentral NG Pilipinas, 2020; de Leon, M. V, 2020)

In Indonesia, banks are still the biggest facilitators in channeling funds. Credit distribution grew by an average of 7.09% for Commercial Banks and 8.57% for Rural Banks. As much 46.48% of the total credit was used for working capital, 27.64% for consumption, and the rest for investment. The proportion of credit use has

experienced mixed growth over the last 5 years, but still recorded growth of above 10% and shows a resurgent growth credit in aggregate since 2018 (Otoritas Jasa Keuangan, 2019b).

Banks in ASEAN already have regional interconnectivity since the agreement of the ASEAN Free Trade Area (AFTA) which opens free flow of goods, services, products, skilled labor, and investment flows that increase the number of transactions between countries, expand the range of services to overseas in order to increase profit opportunities and facilitate the flow of capital inflows from abroad (Corbacho, A, & Peiris, S. J, 2018; Chae, S.S, *et al*, 2020). Economic integration in ASEAN countries encourages ASEAN economic growth, which is followed by the rapid growth of the banking industry which can be seen from the growth of ASEAN-5 bank assets which are classified as Domestic Systemically Important Banks (D-SIB) from 2007 to 2019 (Chae, S.S, *et al*, 2020). Local regulators from each country issue the D-SIB criteria by considering domestic risk exposure to the international economy. The positive side of inter-bank interconnectivity shows that an increasingly connected banking system can accelerate economic growth and the banking industry as a whole, which can be seen from the easier mobilization of funds at home and abroad (Sufian, F., & Habibullah, M. S, 2009). The negative side of interconnectivity between banks is that the failure of a bank, apart from having an impact on the domestic economy, can have an international impact, especially if the bank that fails is classified as a Domestic Systemically Important Bank (Bank for International Settlement, 2012; Bricco & Xu, 2019; Corbacho, A., & Peiris, S. J, 2018).

Considering the systemic impact of bank failures, the authorities must be able to maintain the stability of the banking industry through policies that can facilitate the financial system and bank health, improve the quality and performance of the banking system in order to create a healthy and efficient banking system (Bricco, J., & Xu, T, 2019; Demirgüç-Kunt, A, & Detragiache, E, 1998; Dietrich, A., & Wanzenried, G, 2014). On the other hand, banks are also obliged to maintain health and business continuity. As an intermediary institution, a bank is required to have good performance because its role as an intermediary institution forces it to become an agent of trust (Franklin, A, 1994). In the financial services industry, trust is the most important thing to support and expedite its business activities for the interests and welfare of all stakeholders (Rose P., & Hudgins S, 2013). Various measures can be used as indicators of bank health, such as profitability ratios, solvency ratios, and liquidity ratios. Of the various health measures that can be used, profitability is a very important factor in measuring the performance of a bank in maintaining its health and business continuity (Yüksel, S. et al, 2018; Jonathan Batten & Xuan Vinh Vo, 2019; Kohlscheen, Murcia, dan Contreras, 2018; Nguyen, T. H, 2020; Sugiarto & Nursiana, Adinoto, 2016).

Currently there are more than 100 banks operating in 10 countries in Southeast Asia (Pupik Damayanti & Dhian Andanarini, 2018). In this study, the researcher focuses on the countries that are members of ASEAN-5 because ASEAN-5 is the 5 founding countries of ASEAN and is considered to be a reflection of the ASEAN economy as a whole. It is interesting to examine whether the existence of strong banking interconnectivity in the ASEAN-5 brings about equality in bank performance, especially for banks that are classified as Domestic Systemically Important Banks? There is a view that banks operating in different countries have different performances (Claessens, S., Demirgüc, -Kunt, A., & Huiinga, H, 2001; Manlagnit, Maria Chelo V, 2011).In this case can banks operating in Indonesia that are classified as Domestic Systemically Important Banks keep pace with the performance of banks operating overseas who are members of the ASEAN-5 banking groups? To answer this question, the researcher will conduct research on the performance of the ASEAN-5 banking group which is classified as D-SIB. The focus of attention will be on banks that are ranked in the top 10 of the ROA.

## *Literature Review*

### *Financial Intermediary*

There are two theories or banking approaches, namely the production approach and the intermediary approach. The difference between these two approaches lies in the definition of the inputs and outputs used. The production approach sees the bank in its role as a producer so that the bank is considered as a company that provides services to customers. The intermediation approach sees the bank in its role as an intermediary institution, namely an agent who acts as an intermediary between borrowers and lenders (Franklin, A, 1994; Undang-Undang Republik Indonesia No. 10 tahun 1998).

In the intermediary approach, the bank is an institution that has a function as a financial intermediary in the economy. The main role of the bank is to collect funds from parties who have funds and channel these funds in the form of credit to parties who need funds (Undang-Undang Republik Indonesia No. 10 tahun 1998; Franklin, A, 1994; Diamond D,1984). Through the intermediary function, banking institutions can reallocate funds from two separate parties who do not know each other more effectively. Through this intermediation function, banking becomes a channel that determines the smooth circulation of funds which is the 'blood' in the economic development of a country (Fama E.F, 1980); Leland H., & D. Pyle,1977).

Banking operations are also inseparable from the intermediation function. When the bank collects funds from the surplus unit, the bank must pay interest on deposits to be given to the customer. On the other hand, when the bank provides funds to those who need funds, the bank will receive interest on the loan from the customer. In order to make a profit, the interest on the loan set by the bank should be greater than the interest on the deposit it provides. The income from the difference in interest on loans and deposits is known as spread base income. On the other hand, banks can also benefit from non-interest income, which consists of customer transaction fees, namely fee-based income and various other banking services, such as transactions in foreign currencies and sales commissions. The effectiveness of the bank in carrying out the intermediation function of the bank will have an impact on its profitability which will affect the health and sustainability of the bank (Batten & Xuun Vinh, 2017; Borio *et al*, 2017).

The theory of financial intermediary was first coined by Gurley and Shaw in the 60s, based on the informational asymmetry theory and agency theory (Gurley & Shaw,1960). The theory of financial intermediaries was born due to high transaction costs, lack of information when needed, and regulatory methods (Williamson, O, 1981). The theory deviation from the perfect market which resulted in the informational asymmetry theory explains that this transaction is more expensive than what was proposed in the perfect market theory, so that the introduction of the financial intermediary theory is here to help at least to cut transaction costs. In resolving the imbalance of information, Diamond, D., & Rajan, R. (2001) argues that banks can be considered as intermediaries who can work with depositors to ensure that their capital is safe against liquidity risk. Leland and Pyle (1977) argue that banks can also be intermediaries who provide information so that Diamond (1984) ends with a conclusion that banks as financial intermediaries can act as agents who have been given permission to save funds in order to achieve better economies of scale. This can happen due to the bank having sufficient information to channel these funds to projects that are considered optimal. As owners of sufficient information, banks are also considered to be careful enough to manage their funds so that depositors who wish to make withdrawals will not experience difficulties due to the loss of liquidity risk (Franklin, 1994 ; Warren, 1959).

The banking industry has an important task in moving the wheels of a country's economy. The activities carried out by banks will affect the bank's income from credit which is reflected in the level of banks's profitability (Le, TD, & Ngo, T, 2020). To carry out its role in the national economy, banks must be in a healthy condition so that their performance is at the level of optimal performance. Optimal performance is not only felt by the bank itself, but the bank will produce a multiplier effect that benefits various related parties such as the community and the government (Lohano, K., & Kashif, M, 2019).

*Profitability*

One of the parameters that is often used to measure the health of a bank is its ability to generate profits. The reason why profitability is often used as an indicator lies in the simple notion of the relationship between profitability and bank condition. Logically, if the bank continues to generate good profits and continues to grow, this indicates that the bank's revenue generator, which is its main line of business, is performing very well. If the bank can generate good profits, it can be ascertained that its internal conditions are in a healthy condition to support its activities.

As an indicator of the profitability of a bank, the profitability ratio can be used which measures the effectiveness of a bank in generating profits. The profitability ratio consists of Return on Assets, Return on Equity, Net Interest Margin, and Gross Profit Margin. Of the several profitability ratios, Return on Assets (ROA) is a ratio commonly used to measure a bank's ability to generate profits from its overall assets (Yüksel, S. et al, 2018; Kohlscheen, Murcia, and Contreras, 2018). The purpose of this ratio is to show the level of efficiency in asset management carried out by a bank (Sugiarto & Nursiana, Adinoto, 2016; Kohlscheen, Murcia, and Contreras,

2018; Jonathan Batten & Xuan Vinh Vo, 2019). Sugiarto and Nursiana, Adinoto (2016) found that ROA is the most significant variable affecting the price of public banks stocks in Indonesia.

## 2. Method

The population of this research are banks located in ASEAN-5 countries. The data was taken using a purposive sampling technique with the following criteria: a bank that has been listed on the stock exchange of each country, has complete financial statements for the period 2007 to 2019, classified as a systemic bank or Domestic Systemically Important Bank (D-SIB), operates in the ASEAN-5 region. Of the banks selected according to the criteria, the focus of attention will be given to banks that are ranked in the top 10 of ROA.

Researchers found that in ASEAN-5 countries there are a total of 87 banks that have IPOs on the stock exchanges of each country. In relation to the criteria for banks classified as Domestic Systemically Important Banks (D-SIB), banking authorities in Malaysia, Singapore, and Thailand disclose systemic bank information to the public so that banks that fall into the Domestic Systemically Important Bank criteria can be immediately identified (Monetary Authority of Singapore, 2015; Vejzagic, M., & Zarafat, H, 2014; Bank Negara Malaysia, 2020; Bank of Thailand, 2021). For Indonesia and the Philippines, the researcher uses bank data with the largest total assets specifically for 13 banks in Indonesia and 7 banks in the Philippines because systemic bank information from the two countries is not disclosed to the public (Otoritas Jasa Keuangan, 2018; Bangko Sentral NG Pilipinas, 2020). Further search results found that of the 87 banks that have IPOs on the stock exchanges of each country, there are 56 banks that are not classified as D-SIB banks which will then be eliminated. After eliminating banks that do not meet the D-SIB requirements, the researchers found 31 banks that could be used as research samples. In terms of the completeness of the required financial statements, the 31 banks have complete data for the period 2007 to 2019 to be used as samples. The researcher did not include banks in the other 5 ASEAN member countries because ASEAN-5 is the 5 founding countries of ASEAN and is considered to be a reflection of the ASEAN economy as a whole.

Table 1. Stages of Obtaining the Bank as the Research Sample

| Information | Number of Banks |
|---|---|
| The population of banks in the five countries that have IPO | 87 |
| 1. Banks that do not meet the D-SIB requirements (Singapore, Malaysia, and Thailand) | (56) |
| 2. The largest total assets (Indonesia and the Philippines) | |
| Sample to be used | 31 |

Source: researcher processed data

Table 2. List of Selected Banks According to Research Criteria

| No. | Bank | Country | Total Aset (Milion USD) |
|---|---|---|---|
| 1 | The Development Bank of Singapore (DBS) | Singapore | 430,571.20 |
| 2 | Oversea-Chinese Banking Corporation (OCBC) | Singapore | 365,677.90 |
| 3 | United Overseas Bank (UOB) | Singapore | 300,765.00 |
| 4 | Malayan Banking (MAY MK) | Malaysia | 203,988.00 |
| 5 | CIMB Malaysia (CIMB MK) | Malaysia | 140,140.70 |
| 6 | Kasikorn Bank (KBANK) | Thailand | 110,696.60 |
| 7 | Bangkok Bank Thailand (BBL) | Thailand | 108,104.00 |
| 8 | Public Bank Berhad (PBBANK) | Malaysia | 105,813.60 |
| 9 | Bank Rakyat Indonesia (BBRI) | Indonesia | 102,315.20 |
| 10 | Krung Thai Bank (KTB) | Thailand | 101,230.50 |
| 11 | Siam Commercial Bank (SCB) | Thailand | 99,601.60 |
| 12 | Bank Mandiri Indonesia (BMRI) | Indonesia | 95,200.90 |
| 13 | BANK OF AYUDYHA | Thailand | 79,298.00 |
| 14 | Bank Central Asia (BBCA) | Indonesia | 66,367.40 |
| 15 | BDO Unibank (BDO BANK) | Philippines | 62,894.10 |
| 16 | Bank Negara Indonesia (BBNI) | Indonesia | 61,067.76 |

| No. | Bank | Country | Total Aset (Milion USD) |
|---|---|---|---|
| 17 | Metropolitan Bank Trust n Co (MBT PM) | Philippines | 48,337.60 |
| 18 | Bank of the Philippine Island (BPI PM) | Philippines | 43,490.00 |
| 19 | Bank Tabungan Negara (BBTN) | Indonesia | 22,515.84 |
| 20 | CIMB Niaga (BNGA) | Indonesia | 19,821.40 |
| 21 | CIMB Bank Philippine (CHIB) | Philippines | 18,978.10 |
| 22 | Security Bank Corp (SECB) | Philippines | 15,640.50 |
| 23 | Bank Pan Indonesia (PNBN) | Indonesia | 15,258.70 |
| 24 | Union Bank of the Philippines (UBP PM) | Philippines | 15,202.30 |
| 25 | Rizal Commercial Banking (RCB) | Philippines | 15,129.20 |
| 26 | Bank Danamon (BDMN) | Indonesia | 13,976.60 |
| 27 | Bank Tabungan Pensiunan Nasional (BTPN) | Indonesia | 13,117.00 |
| 28 | OCBC NISP (NISP) | Indonesia | 13,050.30 |
| 29 | Bank Maybank Indonesia (BNII) | Indonesia | 12,210.80 |
| 30 | Bank Permata (BNLI) | Indonesia | 11,659.66 |
| 31 | Bank Pembangunan Daerah Jawa Barat dan Banten (BJBR) | Indonesia | 8,921.50 |

In this study, the variable used to express banking profitability is Return on Assets (ROA). To analyze the data, the researcher used descriptive statistics, in this case the mean of ROA for the measure of central tendency and the coefficient of variation for the measure of dispersion. To test differences in ROA performance between banks that are in the top 10 ROA ratings, Analysis of Variance (ANOVA) and post hoc tests are used. Post hoc tests are aimed at uncovering specific differences between three or more group means with respect to ROA performance between banks that are in the top 10 ROA ratings when the results of the F test on ANOVA are significant. To track the consistency of ROA performance, scatter diagrams are used.

For testing the hypothesis on ROA performance, at the level of significance 5%, the following hypothesis is set:

$H_0: \mu_1 = \mu_2 = \cdots = \mu_{10}$, mean ROA performance Domestic Systemically Important Banks that are in the top 10 ROA ratings are all the same

$H_1$ : The mean of ROA performance Domestic Systemically Important Banks that are in the top 10 ROA ratings are different from the others (at least a pair is different)

## 3. Results and Discussion

### *Bank Performance Evaluation Ordered on the Basis of the Mean of ROA*

In this analysis, the mean of ROA is used as a measure of the central tendency of the selected banks according to the research criteria. The higher the mean ROA obtained, the better the ROA performance of the bank in the research period. In the top 10 for the highest average ROA, 7 D-SIB banks from Indonesia were included. BBRI ranks first, BBCA ranks second. Furthermore, BTPN is ranked 3, BMRI is ranked 4, BDMN is ranked 6, BBNI is ranked 8 and BJBR is ranked 9. As many as 70% of the D-SIB banks that are ranked in the top 10 average ROA come from D-SIB banks operating in Indonesia. The Philippines has a representative of 20% and Thailand has a representative of 10%. This fact shows that D-SIB banks operating in Indonesia have an ROA performance that dominates D-SIB banks which are classified as top 10 average ROA. It can be seen that D-SIB banks operating in Indonesia are able to overcome the performance of D-SIB banks operating overseas.

Table 3. D-SIB Bank performance on the basis of the mean of ROA

| Bank | Country | Mean of ROA | Ranking |
|---|---|---|---|
| BBRI | Indonesia | 0.030235 | 1 |
| BBCA | Indonesia | 0.030117 | 2 |
| BTPN | Indonesia | 0.025582 | 3 |
| BMRI | Indonesia | 0.021525 | 4 |

| Bank | Country | Mean of ROA | Ranking |
|---|---|---|---|
| SECB | Philippines | 0.021442 | 5 |
| BDMN | Indonesia | 0.01985 | 6 |
| UBP PM | Philippines | 0.019158 | 7 |
| BBNI | Indonesia | 0.019154 | 8 |
| BJBR | Indonesia | 0.017433 | 9 |
| SCB | Thailand | 0.017317 | 10 |
| KBANK | Thailand | 0.0148 | 11 |
| CHIB PM | Philippines | 0.014158 | 12 |
| PBBANK | Malaysia | 0.0139 | 13 |
| BNGA | Indonesia | 0.013792 | 14 |
| BPI PM | Philippines | 0.013625 | 15 |
| OCBC NISP | Indonesia | 0.013417 | 16 |
| PNBN | Indonesia | 0.0134 | 17 |
| BBL | Thailand | 0.012492 | 18 |
| Bank Of Ayudhya | Thailand | 0.011242 | 19 |
| MBT PM | Philippines | 0.011233 | 20 |
| RCB | Philippines | 0.011042 | 21 |
| BDO Bank | Philippines | 0.011008 | 22 |
| BBTN | Indonesia | 0.010998 | 23 |
| UOB | Singapore | 0.0108 | 24 |
| CIMB MK | Malaysia | 0.010575 | 25 |
| KTB | Thailand | 0.010375 | 26 |
| MAY MK | Malaysia | 0.010267 | 27 |
| OCBC | Singapore | 0.010075 | 28 |
| DBS | Singapore | 0.009258 | 29 |
| BNII | Indonesia | 0.008683 | 30 |
| BNLI | Indonesia | 0.005314 | 31 |

***Bank Performance Evaluation Ordered on the Basis of Coefficient of Variation***

In this analysis, coefficient of variation (CV) is used as a measure of disperse data of the selected banks according to the research criteria. The coefficient of variation which states the variation of the data per unit of the average ROA describes the volatility of the ROA movement over the time of observation. The smaller the selected coefficient of variation, the better the stability of ROA performance of the observed bank. In the top 10 for the lowest coefficient of variation, there were 4 D-SIB banks from Indonesia that were included in it. BBCA is ranked second under PBBANK from Malaysia. Furthermore, BBRI is ranked 6$^{th}$, OCBC NISP is ranked 8$^{th}$ and PNBN is ranked 10$^{th}$. As many as 40% of D-SIB banks that are ranked in the 10 best CVs come from D-SIB banks operating in Indonesia. Singapore has 30% representatives, with dominance after Indonesia, Malaysia has 10% representatives, Thailand 10% and the Philippines 10%. This fact shows that D-SIB banks operating in Indonesia have a Coefficient of variation of ROA performance that dominates D-SIB banks which are classified as the top 10 lowest coefficient of variation of ROA performance. It can be seen that D-SIB banks operating in Indonesia are able to overcome the performance of D-SIB banks operating overseas.

Table 4. D-SIB Bank performance on the basis of coefficient of variation

| Bank | Country | CV | Ranking |
|---|---|---|---|
| PBBANK | Malaysia | 0.058366 | 1 |
| BBCA | Indonesia | 0.091514 | 2 |
| UOB | Singapore | 0.095982 | 3 |
| BBL | Thailand | 0.096877 | 4 |

| Bank | Country | CV | Ranking |
|---|---|---|---|
| OCBC | Singapore | 0.135507 | 5 |
| BBRI | Indonesia | 0.139092 | 6 |
| DBS | Singapore | 0.159905 | 7 |
| OCBC NISP | Indonesia | 0.160074 | 8 |
| BPI PM | Philippines | 0.16513 | 9 |
| PNBN | Indonesia | 0.167295 | 10 |
| SCB | Thailand | 0.167511 | 11 |
| KTB | Thailand | 0.169909 | 12 |
| BMRI | Indonesia | 0.182519 | 13 |
| KBANK | Thailand | 0.198252 | 14 |
| Bank Of Ayudhya | Thailand | 0.205891 | 15 |
| CIMB MK | Malaysia | 0.26138 | 16 |
| BJBR | Indonesia | 0.261955 | 17 |
| MAY MK | Malaysia | 0.262752 | 18 |
| CHIB PM | Philippines | 0.267623 | 19 |
| BDMN | Indonesia | 0.268519 | 20 |
| BBNI | Indonesia | 0.290087 | 21 |
| BTPN | Indonesia | 0.295246 | 22 |
| UBP PM | Philippines | 0.302408 | 23 |
| BDO Bank | Philippines | 0.303824 | 24 |
| MBT PM | Philippines | 0.303937 | 25 |
| RCB | Philippines | 0.310564 | 26 |
| BBTN | Indonesia | 0.346627 | 27 |
| BNII | Indonesia | 0.437698 | 28 |
| BNGA | Indonesia | 0.466733 | 29 |
| SECB | Philippines | 0.491241 | 30 |
| BNLI | Indonesia | 2.620901 | 31 |

***Evaluation of Bank Performance Stability on the Basis of ROA Performance in the Research Observation Period***

The measures of mean and coefficient of variation obtained are only able to show the central tendency and dispersion of the studied banks, however, they cannot show the stability of the ROA performance of the studied banks. For this reason, an additional device is used, namely a scatter diagram to track the trend of ROA movement in the time span of research observations. Of the 10 D-SIB banks that are ranked in the top 10 on the basis of average ROA, it can be seen that the trend of annual ROA movement in the research period spans 12 years as shown in the following figure. The trend of BBCA's ROA in the time frame observed shows an uptrend. BBCA's ROA performance shows the stability of BBCA's ability to maintain ROA growth from time to time in the period of observation. This condition is not seen in the performance of the other 9 D-SIB banks that are ranked in the top 10 ROA.

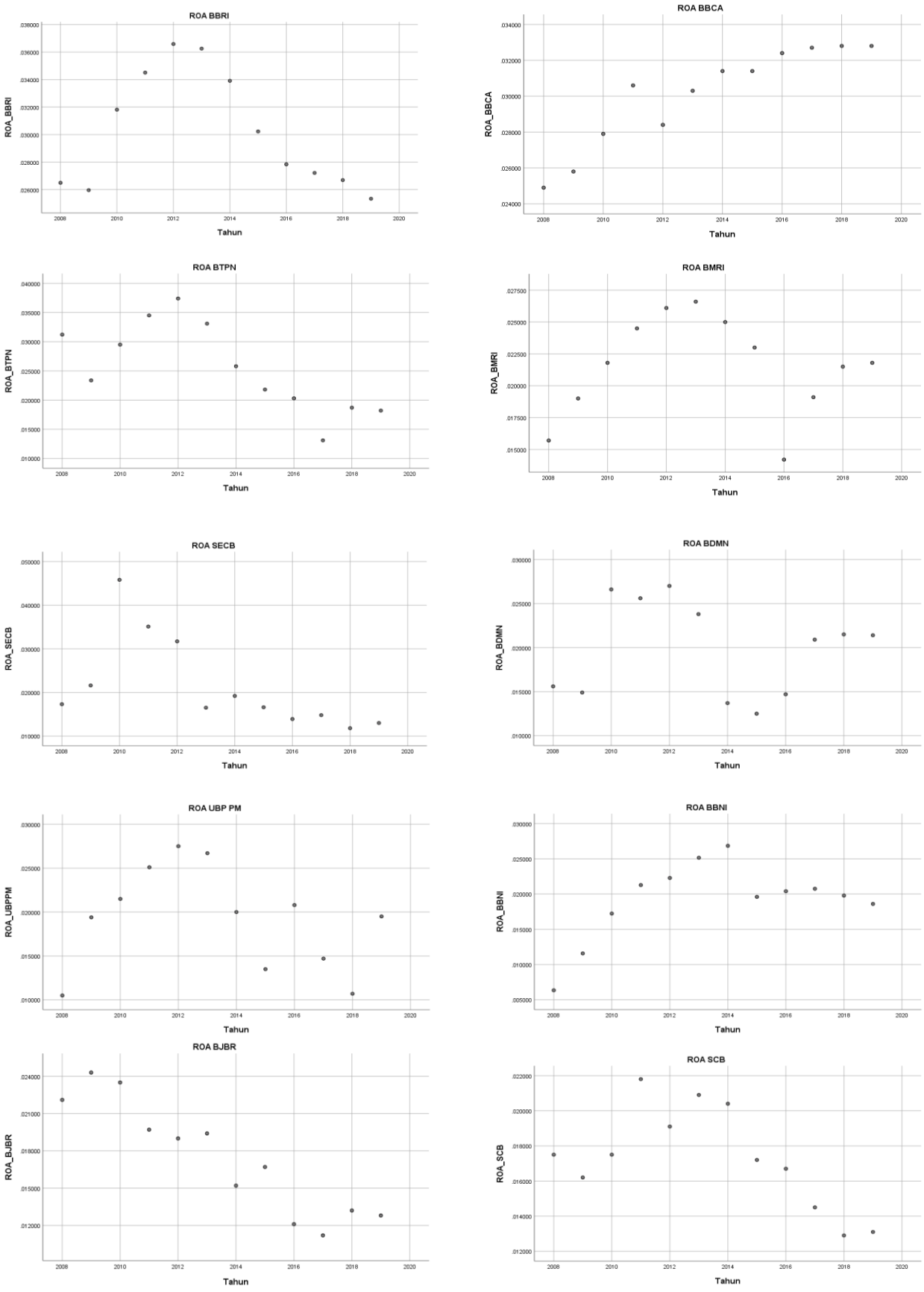


Figure 1. The trend of ROA movement of the studied banks

***Post Hoc Test and Multiple Comparisons***

For D-SIB banks that are ranked in the top 10 ROA will be tested for differences in their ROA performance in the research period using ANOVA and followed by a post hoc test. Tukey HSD's test was chosen in the post hoc test with the consideration that this test is a solid test to express significant differences in performance in extreme ways.

Table 5. ANOVA

| ROA | | | | | |
|---|---|---|---|---|---|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | .003 | 9 | .000 | 8.477 | .000 |
| Within Groups | .004 | 110 | .000 | | |
| Total | .006 | 119 | | | |

From the ANOVA results, it was found that there were significant differences in the ROA performance of the 10 D-SIB banks with ROA ratings that were included in the top 10. The value of F statistic generated from ANOVA as shown in Table 5 is 8.477 with a significance of 0.000 which means a significant result is obtained in the overall analysis of variance. Therefore Post hoc tests are used to uncover specific differences between three or more group means with respect to ROA performance between banks that are in the top 10 ROA ratings. Any absolute difference between ROA mean has to exceed the value of Tukey HSD to be statistically significant. The * sign in the Tukey HSD's post hoc test states that the mean difference from the ROA mean pair of the banks under concern is significant at the 0.05 level. BBRI's ROA performance which is ranked 1 is not significantly different from the ROA performance of BBCA which is ranked 2 and BTPN which is ranked 3. However, BBRI's ROA performance is significantly higher than other banks which are ranked 4 to 10.

Like BBRI, BBCA's ROA performance is also not significantly different from the ROA performance of BBRI and BTPN but significantly different from other banks which are ranked 4 to 10.

BTPN's ROA performance is not significantly different from the ROA performance of banks ranked 1 to 8 but significantly different from banks ranked 9 and 10, namely BJBR and SCB.

Outside of D-SIB banks with an ROA rating that is classified as the top 3, no significant differences were found in the ROA performance of banks with an ROA rating of 4 to 10. From this finding, it can be seen that banks that are classified as systemic banks or Domestic Systemically Important Banks (D-SIB) operating in Indonesia have an ROA performance that is not inferior to banks operating overseas in the ASEAN-5 Region.

Table 6. Multiple Comparisons

| Dependent Variable: ROA | | | | | | |
|---|---|---|---|---|---|---|
| Tukey HSD | | | | | | |
| (I) Bank | (J) Bank | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
| | | | | | Lower Bound | Upper Bound |
| 1.00 | 2.00 | .000118500 | .002348153 | 1.000 | -.00746514 | .00770214 |
| | 3.00 | .004652667 | .002348153 | .614 | -.00293097 | .01223630 |
| | 4.00 | .008710167* | .002348153 | .012 | .00112653 | .01629380 |
| | 5.00 | .008793500* | .002348153 | .010 | .00120986 | .01637714 |
| | 6.00 | .010385167* | .002348153 | .001 | .00280153 | .01796880 |
| | 7.00 | .011076833* | .002348153 | .000 | .00349320 | .01866047 |
| | 8.00 | .011080917* | .002348153 | .000 | .00349728 | .01866455 |
| | 9.00 | .012801833* | .002348153 | .000 | .00521820 | .02038547 |
| | 10.00 | .012918500* | .002348153 | .000 | .00533486 | .02050214 |
| 2.00 | 1.00 | -.000118500 | .002348153 | 1.000 | -.00770214 | .00746514 |
| | 3.00 | .004534167 | .002348153 | .648 | -.00304947 | .01211780 |
| | 4.00 | .008591667* | .002348153 | .014 | .00100803 | .01617530 |

| Dependent Variable: ROA | | | | | | |
|---|---|---|---|---|---|---|
| Tukey HSD | | | | | | |
| (I) Bank | (J) Bank | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
| | | | | | Lower Bound | Upper Bound |
| | 5.00 | .008675000* | .002348153 | .012 | .00109136 | .01625864 |
| | 6.00 | .010266667* | .002348153 | .001 | .00268303 | .01785030 |
| | 7.00 | .010958333* | .002348153 | .000 | .00337470 | .01854197 |
| | 8.00 | .010962417* | .002348153 | .000 | .00337878 | .01854605 |
| | 9.00 | .012683333* | .002348153 | .000 | .00509970 | .02026697 |
| | 10.00 | .012800000* | .002348153 | .000 | .00521636 | .02038364 |
| 3.00 | 1.00 | -.004652667 | .002348153 | .614 | -.01223630 | .00293097 |
| | 2.00 | -.004534167 | .002348153 | .648 | -.01211780 | .00304947 |
| | 4.00 | .004057500 | .002348153 | .777 | -.00352614 | .01164114 |
| | 5.00 | .004140833 | .002348153 | .756 | -.00344280 | .01172447 |
| | 6.00 | .005732500 | .002348153 | .312 | -.00185114 | .01331614 |
| | 7.00 | .006424167 | .002348153 | .173 | -.00115947 | .01400780 |
| | 8.00 | .006428250 | .002348153 | .172 | -.00115539 | .01401189 |
| | 9.00 | .008149167* | .002348153 | .025 | .00056553 | .01573280 |
| | 10.00 | .008265833* | .002348153 | .021 | .00068220 | .01584947 |
| 4.00 | 1.00 | -.008710167* | .002348153 | .012 | -.01629380 | -.00112653 |
| | 2.00 | -.008591667* | .002348153 | .014 | -.01617530 | -.00100803 |
| | 3.00 | -.004057500 | .002348153 | .777 | -.01164114 | .00352614 |
| | 5.00 | .000083333 | .002348153 | 1.000 | -.00750030 | .00766697 |
| | 6.00 | .001675000 | .002348153 | .999 | -.00590864 | .00925864 |
| | 7.00 | .002366667 | .002348153 | .991 | -.00521697 | .00995030 |
| | 8.00 | .002370750 | .002348153 | .991 | -.00521289 | .00995439 |
| | 9.00 | .004091667 | .002348153 | .769 | -.00349197 | .01167530 |
| | 10.00 | .004208333 | .002348153 | .739 | -.00337530 | .01179197 |
| 5.00 | 1.00 | -.008793500* | .002348153 | .010 | -.01637714 | -.00120986 |
| | 2.00 | -.008675000* | .002348153 | .012 | -.01625864 | -.00109136 |
| | 3.00 | -.004140833 | .002348153 | .756 | -.01172447 | .00344280 |
| | 4.00 | -.000083333 | .002348153 | 1.000 | -.00766697 | .00750030 |
| | 6.00 | .001591667 | .002348153 | 1.000 | -.00599197 | .00917530 |
| | 7.00 | .002283333 | .002348153 | .993 | -.00530030 | .00986697 |
| | 8.00 | .002287417 | .002348153 | .993 | -.00529622 | .00987105 |
| | 9.00 | .004008333 | .002348153 | .789 | -.00357530 | .01159197 |
| | 10.00 | .004125000 | .002348153 | .760 | -.00345864 | .01170864 |
| 6.00 | 1.00 | -.010385167* | .002348153 | .001 | -.01796880 | -.00280153 |
| | 2.00 | -.010266667* | .002348153 | .001 | -.01785030 | -.00268303 |
| | 3.00 | -.005732500 | .002348153 | .312 | -.01331614 | .00185114 |
| | 4.00 | -.001675000 | .002348153 | .999 | -.00925864 | .00590864 |
| | 5.00 | -.001591667 | .002348153 | 1.000 | -.00917530 | .00599197 |
| | 7.00 | .000691667 | .002348153 | 1.000 | -.00689197 | .00827530 |
| | 8.00 | .000695750 | .002348153 | 1.000 | -.00688789 | .00827939 |
| | 9.00 | .002416667 | .002348153 | .990 | -.00516697 | .01000030 |
| | 10.00 | .002533333 | .002348153 | .986 | -.00505030 | .01011697 |
| 7.00 | 1.00 | -.011076833* | .002348153 | .000 | -.01866047 | -.00349320 |
| | 2.00 | -.010958333* | .002348153 | .000 | -.01854197 | -.00337470 |
| | 3.00 | -.006424167 | .002348153 | .173 | -.01400780 | .00115947 |

| Dependent Variable: ROA | | | | | | |
|---|---|---|---|---|---|---|
| Tukey HSD | | | | | | |
| (I) Bank | (J) Bank | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
| | | | | | Lower Bound | Upper Bound |
| | 4.00 | -.002366667 | .002348153 | .991 | -.00995030 | .00521697 |
| | 5.00 | -.002283333 | .002348153 | .993 | -.00986697 | .00530030 |
| | 6.00 | -.000691667 | .002348153 | 1.000 | -.00827530 | .00689197 |
| | 8.00 | .000004083 | .002348153 | 1.000 | -.00757955 | .00758772 |
| | 9.00 | .001725000 | .002348153 | .999 | -.00585864 | .00930864 |
| | 10.00 | .001841667 | .002348153 | .999 | -.00574197 | .00942530 |
| 8.00 | 1.00 | -.011080917* | .002348153 | .000 | -.01866455 | -.00349728 |
| | 2.00 | -.010962417* | .002348153 | .000 | -.01854605 | -.00337878 |
| | 3.00 | -.006428250 | .002348153 | .172 | -.01401189 | .00115539 |
| | 4.00 | -.002370750 | .002348153 | .991 | -.00995439 | .00521289 |
| | 5.00 | -.002287417 | .002348153 | .993 | -.00987105 | .00529622 |
| | 6.00 | -.000695750 | .002348153 | 1.000 | -.00827939 | .00688789 |
| | 7.00 | -.000004083 | .002348153 | 1.000 | -.00758772 | .00757955 |
| | 9.00 | .001720917 | .002348153 | .999 | -.00586272 | .00930455 |
| | 10.00 | .001837583 | .002348153 | .999 | -.00574605 | .00942122 |
| 9.00 | 1.00 | -.012801833* | .002348153 | .000 | -.02038547 | -.00521820 |
| | 2.00 | -.012683333* | .002348153 | .000 | -.02026697 | -.00509970 |
| | 3.00 | -.008149167* | .002348153 | .025 | -.01573280 | -.00056553 |
| | 4.00 | -.004091667 | .002348153 | .769 | -.01167530 | .00349197 |
| | 5.00 | -.004008333 | .002348153 | .789 | -.01159197 | .00357530 |
| | 6.00 | -.002416667 | .002348153 | .990 | -.01000030 | .00516697 |
| | 7.00 | -.001725000 | .002348153 | .999 | -.00930864 | .00585864 |
| | 8.00 | -.001720917 | .002348153 | .999 | -.00930455 | .00586272 |
| | 10.00 | .000116667 | .002348153 | 1.000 | -.00746697 | .00770030 |
| 10.00 | 1.00 | -.012918500* | .002348153 | .000 | -.02050214 | -.00533486 |
| | 2.00 | -.012800000* | .002348153 | .000 | -.02038364 | -.00521636 |
| | 3.00 | -.008265833* | .002348153 | .021 | -.01584947 | -.00068220 |
| | 4.00 | -.004208333 | .002348153 | .739 | -.01179197 | .00337530 |
| | 5.00 | -.004125000 | .002348153 | .760 | -.01170864 | .00345864 |
| | 6.00 | -.002533333 | .002348153 | .986 | -.01011697 | .00505030 |
| | 7.00 | -.001841667 | .002348153 | .999 | -.00942530 | .00574197 |
| | 8.00 | -.001837583 | .002348153 | .999 | -.00942122 | .00574605 |
| | 9.00 | -.000116667 | .002348153 | 1.000 | -.00770030 | .00746697 |
| *. The mean difference is significant at the 0.05 level. | | | | | | |

## 4. Conclusion and Implications

This study traces the performance of D-SIB banks operating in Indonesia at the ASEAN-5 level in 2007-2019. ROA is used to indicate bank performance, especially related to bank profitability, which is an important aspect for bank sustainability. By using descriptive analysis and ANOVA as well as post hoc tests and scatter diagrams, the results of the study show that banks operating in Indonesia which are classified as systemic banks or Domestic Systemically Important Banks have an ROA performance that is not inferior to D-SIB banks operating abroad incorporated in the ASEAN-5 Region.

In the top 10 of D-SIB banks with the highest ROA average, 7 D-ISB banks from Indonesia were included. As many as 70% of the D-ISB banks that are ranked in the top 10 average ROA come from D-ISB banks operating

in Indonesia. This fact shows that D-SIB banks operating in Indonesia have an ROA performance that dominates D-SIB banks which are classified as top 10 average ROA. It can be seen that D-SIB banks operating in Indonesia are able to overcome the performance of D-SIB banks operating overseas.

In the top 10 for the lowest coefficient of variation (CV), there were 4 D-SIB banks from Indonesia that were included in it. As many as 40% of D-SIB banks that are ranked in the 10 best CVs come from D-SIB banks operating in Indonesia.

Of the 10 banks classified as Domestic Systemically Important Banks with the highest ROA rating, BBCA is the bank that has the ability to maintain ROA growth from time to time in the period of observation. This condition is not seen in the performance of the other 9 D-SIB banks that are ranked in the top 10 ROA.

***Research limitations***

A healthy bank is not only measured by profitability indicators, especially ROA. For further research, various indicators relevant to bank health such as solvency ratios, liquidity ratios can be used to obtain a more comprehensive conclusion.

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