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Framework for Performance Analysis of 10 Sharia Commercial Banks using CAMELS and PLS approaches compared to 10 Conventional Commercial Banks in Indonesia

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Abstract

Sharia Commercial Bank has a noble task of facilitating the public to be able to transact with banks in ways that are blessed by Allah Subhanahu wa ta'ala, which has justified the sale and prohibition of usury, as stated in His Word Al Qur ' an Al-Baqarah verse 275, this research will conduct an analysis of information related to the level of Performance Index of 10 Sharia Commercial Banks with CAMELS and PLS approaches compared to 10 Conventional Commercial Banks in Indonesia, and in this study will look for significant differences between bank performance Islamic banks and conventional commercial banks in Indonesia, and in particular significant differences between CAR, NPF / NPL, ROA, ROE, OER / BOPO and FDR / LDR in Islamic commercial banks and conventional banks in Indonesia, with a statistical least square approach (PLS) - structure equation modeling (SEM).

Keywords : Sharia Commercial Banks, Commercial Banks, CAMELS, PLS, Performance

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Introduction

Sharia Commercial Bank has a noble task of facilitating the public to be able to transact with banks in ways that are blessed by Allah Subhanahu wa ta'ala, which has justified the sale and prohibition of usury, as stated in His Word Al Qur ' an Surah Al-Baqarah verse 275:

ٱلَّذِينَ يَأْكُلُونَ ٱلرِّبَوٰا۟ لَا يَقُومُونَ إِلَّا كَمَا يَقُومُ ٱلَّذِى يَتَخَبَّطُهُ ٱلشَّيْطَٰنُ مِنَ ٱلْمَسِّ ۚ ذَٰلِكَ بِأَنَّهُمْ
قَالُوٓا۟ إِنَّمَا ٱلْبَيْعُ مِثْلُ ٱلرِّبَوٰا۟ ۗ وَأَحَلَّ ٱللَّهُ ٱلْبَيْعَ وَحَرَّمَ ٱلرِّبَوٰا۟ ۚ فَمَن جَآءَهُۥ مَوْعِظَةٌ مِّن رَّبِّهِۦ فَٱنتَهَىٰ فَلَهُۥ مَا
سَلَفَ وَأَمْرُهُۥٓ إِلَى ٱللَّهِ ۖ وَمَنْ عَادَ فَأُو۟لَٰٓئِكَ أَصْحَٰبُ ٱلنَّارِ ۖ هُمْ فِيهَا خَٰلِدُونَ ﴿٢٧٥﴾

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Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." But Allah has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah . But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein.

The Sharia Commercial Bank financial statements are a very important component in realizing the proper and good governance of Sharia Commercial Banks, to realize openness to the public and the government. Allah Subhnahu wa ta'ala instructs all of us to pay attention to what is right and good for what he has done, as in his words Al-Qur'an Surah Al-Ḥasyr verse 18:

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يَٰٓأَيُّهَا ٱلَّذِينَ ءَامَنُواْ ٱتَّقُواْ ٱللَّهَ وَلۡتَنظُرۡ نَفۡسٞ مَّا قَدَّمَتۡ لِغَدٖۖ وَٱتَّقُواْ ٱللَّهَۚ إِنَّ ٱللَّهَ خَبِيرُۢ بِمَا تَعۡمَلُونَ ١٨

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O you who have believed, fear Allah . And let every soul look to what it has put forth for tomorrow - and fear Allah . Indeed, Allah is Acquainted with what you do.

Although the format, components and layout have changed or increased, basically the components of the financial statements are compiled in particular the financial ratio statements are broadly the same from time to time. One of the most important components in financial statements, especially financial ratios, is the component of bank performance ratios, as follows:

1. CAR (Capital Adequacy Ratio), CAR by calculating the risk of financing and market risk or the Minimum Capital Requirement, *Capital* category
2. NPF (Non Performance Finance)/NPL (Non Performance Loans), NPF for Sharia Commercial Banks and NPL for Conventional Commercial Banks, Assets category
3. ROA (Return On Asset), *Earning* category
4. ROE (Return On Equity), *Earning* category
5. OER (Operational Efficiency Ratio) or Operational Costs Operating Income, *Earning* category
6. FDR (Financial Deposit Ratio)/LDR (Loans Deposit Ratio), FDR for Sharia Commercial Banks and LDR for Conventional Commercial Banks, *Liquidity category*
7. The performance of the Bank's minimum Financial Ratio is according to Bank Indonesia standards

In this study will look for significant differences between the performance of Islamic commercial banks and conventional commercial banks in Indonesia, and significant differences between CAR, NPF / NPL, ROA, ROE, OER / BOPO and FDR / LDR on Islamic commercial banks and conventional commercial banks in Indonesia in particular.

Framework of thinking

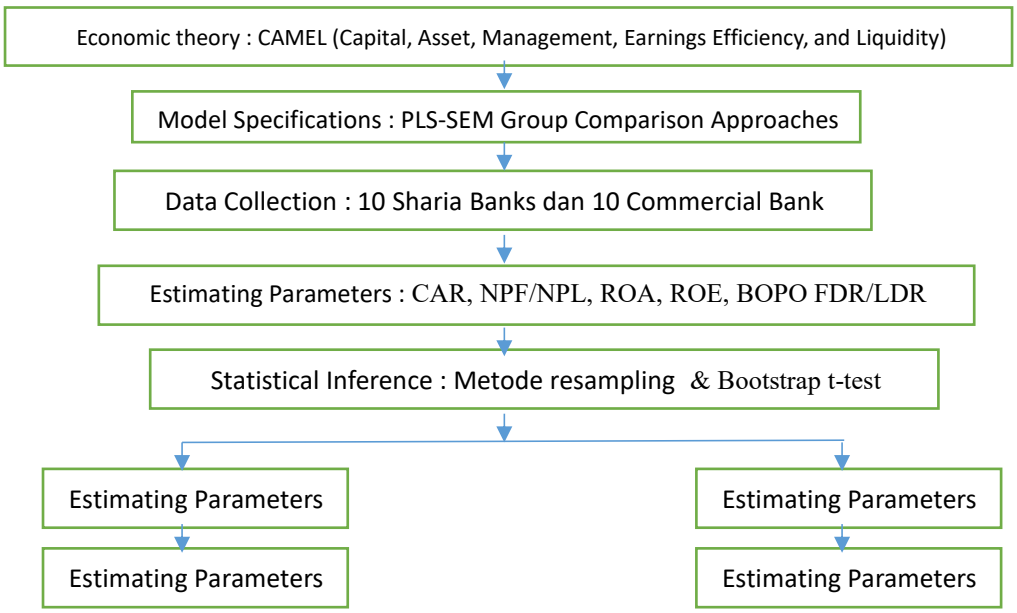

Figure 1. Econometrics Research Procedures (Gujarati & Aigner, 2003)

The steps in the econometrics research methodology are as follows:

Step 1: The model to be built must be based on economic theory (Microeconomic Theory, Macroeconomic Theory and Economic Development Theory), namely: CAMEL (Capital, Asset, Management, Earnings Efficiency, and Liquidity)

Step 2: Specifying the model, including:

a. Independent variables or explanatory variables or dependent variables that will be included in the model, namely CAR, NPF / NPL, ROA, ROE, BOPO FDR / LDR
b. A priori assumptions regarding the value and parameter markings of the model.

c. The mathematical form of the model, namely PLS-SEM Group Comparison Approaches

Step 3: Assess the model with the appropriate econometrics method, including:

a. Data collection, namely: 10 Sharia Banks and 10 Conventional Banks
b. Investigate whether there is a violation of classical assumptions.
c. Investigate identification requirements if the model contains more than one equation.
d. Choosing the right econometrics technique for model estimation.

Step 4: Evaluate or test to decide whether the estimates of the parameters are theoretically meaningful and statistically real, including:

a. A priori economic criteria
b. Statistical criteria
c. Econometric criteria

Step 5: Test the power of forecasting the model.

Step 6: Statistical Inference. Does the statistical and econometric test results support the theory, if it does not support repeat the data check again and give supporting reasons to achieve results not in accordance with the theory, using: Partial Least Square (PLS) - Structure Equation Modeling (SEM) with the method of resampling & Bootstrap t- test.

Hypothesis

1. The first hypothesis, states the exogenous / latent variable (exogenous / independent variable), the manifest indicator / variable, CAR, has a positive and significant effect on the endogenous / latent variable (endogenous / dependent variable) Performance of Islamic Commercial Banks and Conventional Commercial Banks.
   Ho : $\mu_1 = : \mu_2$, This means that there is no difference in the average CAR between Islamic commercial banks and conventional commercial banks.
   Ha : $\mu_1 = : \mu_2$, This means that there are differences in the average CAR between Islamic commercial banks and conventional commercial banks.
2. The second hypothesis, states the exogenous / latent variable (exogenous / independent variable), the manifest indicator / variable, NPF / NPL, has a positive and significant effect on endogenous / latent variables (endogenous / dependent variable) Performance of Islamic Commercial Banks and Conventional Commercial Banks.
   Ho: μ1 =: μ2, meaning that there is no difference in the average NPF / NPL between Islamic commercial banks and conventional commercial banks.
   Ha: μ1 =: μ2, meaning that there is a difference in the average NPF / NPL between Islamic commercial banks and conventional commercial banks.
3. Third hypothesis, states the exogenous / latent variable (exogenous / independent variable), the manifest indicator / variable, namely ROA, has a positive and significant effect on endogenous / latent variables (endogenous / dependent variable) Performance of Islamic Commercial Banks and Conventional Commercial Banks.
   Ho: μ1 =: μ2, meaning that there is no difference in the average ROA between Islamic commercial banks and conventional commercial banks.
   Ha: μ1 =: μ2, meaning that there is a difference in average ROA between Islamic commercial banks and conventional commercial banks.
4. The fourth hypothesis, states the exogenous / latent variable (exogenous / independent variable), the manifest indicator / variable that is ROE, has a positive and significant effect on the endogenous / latent variable (endogenous / dependent variable) Performance of Islamic Commercial Banks and Conventional Commercial Banks.
   Ho: μ1 =: μ2, meaning that there is no difference in average ROE between Islamic commercial banks and conventional commercial banks.
   Ha: μ1 =: μ2, meaning that there is a difference in average ROE between Islamic commercial banks and conventional commercial banks.
5. The fifth hypothesis, states the exogenous / latent variable (exogenous / independent variable), the manifest indicator / variable, OER, has a positive and significant influence on the endogenous / latent variable (endogenous / dependent variable) Performance of Islamic Commercial Banks and Conventional Commercial Banks.

Ho: μ1 =: μ2, meaning that there is no difference in the average OER between Islamic commercial banks and conventional commercial banks.
Ha: μ1 =: μ2, meaning that there is a difference in the average OER between Islamic commercial banks and conventional commercial banks.

6. The sixth hypothesis, states that exogenous / independent variables, namely manifest indicators / variables, FDR / LDR, has a positive and significant effect on endogenous / endogenous / dependent variables. Sharia Commercial Bank Performance and Conventional Commercial Banks
   Ho: μ1 =: μ2, meaning that there is no difference in the average FDR / LDR between Islamic commercial banks and conventional commercial banks.
   Ha: μ1 =: μ2, meaning that there is a difference in the average FDR / LDR between Islamic commercial banks and conventional commercial banks.
7. The seventh hypothesis states that exogenous / independent variables, namely Capital, Asset Quality, Earning, Liquidity have a positive and significant effect on endogenous / endogenous / dependent variables. Sharia Commercial Banks and Conventional Commercial Banks Performance.

Prior Research

Research has been carried out using CAMEL to examine the financial difficulties of Sharia banks in Malaysia, compiling more than 17 2006-2010 annual reports (Abdul Rahman & Masngut, 2014). Also a study carried out by Saif used CAMELS to research banks in Saudi Arabia, analyze the advantages of domestic and foreign banks in the 2000-2014 period using the pooled-ordinary-least-square and fixed-effect models (Saif-alyousfi et al., 2017).

Measuring the possibility of financial failure of Islamic banks and conventional banks by comparing the size of the banko-meters of 4 Islamic banks and 10 conventional banks in 2011-2014, this study produced no difference in financial success of Islamic and conventional banks (Laila & Widihadnanto, 2017).

The CAMEL model is also used to measure the performance, financial status, banking operations and health of commercial banks in Palestine in 2015 (Zedan & Daas, 2017). Other studies were also carried out using CAMEL classified into 3 categories, first comparing sharia banking and conventional banking with conventional measures, the second being a joint study (Hudaefi & Noordin, 2019).

Measuring the health of Islamic banking in the Gulf Cooperation Council region consisting of particularly the countries of Kuwait, Saudi Arabia, Qatar, Bahrain and the United Arab Emirates, using 2008-2014 data, using more than eleven Islamic banks in the region, using CAMEL models and models Multivariate Z-score, the result is that Islamic banks in this region have sufficient capital, quality assets and are able to generate income even in difficult situations in the year when this research was conducted (Kumar & Sayani, 2015, pp. 2008–2014).

This study measures the health of banks using the CAMELS model and PLS-SEM models, this study uses 17 manifest variables of 6 constructs of direct causes and 8 constructs of indirect causes (Ayadurai & Eskandari, 2018). Research using CAMELS and PLS-SEM is also used to measure the systemic risk of banks in Japan at the micro level and macro level, this study also uses a general structured component analysis, where the PLS-SEM results are confirmed by the GSCA (Avkiran, 2018).

Research on financial slowdown due to the influence of credit risk and worsening banking operations in 24 banks in Ghana-Africa, using PLS-SEM results in credit risk affecting financial performance (Gadzo et al., 2019). Also a study was conducted to measure the efficiency of Islamic banks in Indonesia using DEA, with data for 2010-2016 using PLS-SEM (Ali HT et al., 2018).

PLS-SEM is also used in research to measure shadow banking, the results of which can explain the transmission of systemic risk in the banking sector (Avkiran et al., 2018). The SEM model is also used to examine a worsening situation in the banking sector when banking profits decline, using data from 100 banks in the world in 2011-2015 (Gemar et al., 2019).

Brunei Darussalam has several Islamic banks, this study was conducted to examine the performance gap between the Islamic banks, using the Herfindahl-Hirschman Index and z-score analysis (Abduh, 2018, pp. 2011–20161).

AAOFII has financial accounting standards specifically for Islamic banking, which are used in Islamic banking in Bahrain and Qatar, this study was conducted to measure compliance with these standards, the results of research results in Islamic banking in Qatar have more compliance than in Bahrain (Al-Sulaiti et al., 2018).

Chapra in Islamic banking books (Chapra & Bank, 2008) states that in the Qur'an Al-Anbya verse 107 :

وَمَآ أَرۡسَلۡنَٰكَ إِلَّا رَحۡمَةٗ لِّلۡعَٰلَمِينَ ١٠٧

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And We have not sent you, [O Muhammad], except as a mercy to the worlds.

From this verse we can take wisdom, that Islam exists for blessing and prosperity, so that Islamic banking must be able to enforce these matters, nothing is harmed for every financial transaction in Islamic banking.

Research conducted by M. Aditya Ananda (Ananda, 2013) using the 7th quarterly data of Sharia Commercial Banks between 2010-2012 shows that CAR, NPF, FDR and OER have negative effect but FDR and OER have significant effect.

Another study by Tri Joko Purwanto (Joko Purwanto, 2011) states FDR and NPF have a positive effect on earnings. The same research was carried out by Yoyo Sudaryo and Nuri Haera (Sudaryo & Haera, 2018), that FDR has a strong relationship to ROA and NPF has a moderate relationship to ROA.

The same research was carried out by Rindang Nuri Isnaini Nugrohowati and Syafrildha Bimo (Nugrohowati & Bimo, 2019) that total assets and CAR negatively affect NPF, OER has a positive effect on NPF. Research was also carried out by Edhi Satriyo Wibowo and Muhammad Syaichu (Wibowo & Syaichu, 2013), that DER has a significant negative effect on ROA while CAR, NPF has no effect. Research was also carried out by R Ade Sasongko Pramudhito (Pramudhito, n.d.), that CAR, PER, FDR significantly influence ROA, while NPF is not significant towards ROA. Other research, Rr Sripancawatimartiningsih (Zakisamani et al., 2018), that CAR, NPF, OER significantly influence ROA, but FDR does not affect ROA. Research Didin Rasyidin (RASYIDIN, 2016) declared FDR as one of the Sharia Commercial Bank health assessments.

Similar research Zulfahmi Zulfahmi and Eka Rizqiana (Zulpahmi & Rizqiana, 2018), OER has a positive and significant effect on murabahah margins, and NPF has a negative and not significant effect on murabahah margins. Studies on predicting causality using panel data as in the research of Nikolaos Dritsakis and Pavlos Stamatiou (Dritsakis & Stamatiou, 2018), using data periods from 1970 to 2015 using panel analysis.

Other research was also carried out by Serguei Mikhailitchenko (Mikhailitchenko, 2016) to estimate share capital and consumption of fixed capital in Australia between 1990-2013. Other causality studies such as Arif Rahman Hakim and Sri Subanti (Subanti & Hakim, 2011), employment and income panel data in Indonesia 1995-2005 and in other studies economic forecasting (Hakim, 2019). The research was also carried out by Badi H. Baltagi (Baltagi, 2006), in the Econometrics Data Panel - theoretical contributions and empirical applications. Similar research to build modeling using panel data regression conducted by Imelda Maria Mayastuti, M Fathurahman, and Sri Wahyuningsih (Mayastuti et al., 2014). Other panel studies such as Andreas G. Georgantopoulos, Anastasios D. Tsamis, and Maria-Eleni K. Agoraki (Georgantopoulos et al., 2015), *the euro adoption effect and the bank*.

Literature review

Islamic economic principles (Alam Choudhury & Azizur Rahman, 1986) states that Islamic economics is not filled by conventional perspectives on economic analysis, but motivated by the principle of monotheism (tawheed), and brotherhood (brotherhood), the principle of work and productivity, the principle of equity distribution (zakat, sadaqah, ghanimah, fai, fidth, kharaj), in the Islamic economy in it teaches humans how to relate and relate to other humans in connection with Allah Subhanahu wa ta'ala.

The banking system cannot be denied having close links with the current International Monetary System (Samuelson & Nordhaus, 2009) is an institution that has a payment system that can cross national borders, how foreign exchange rates are determined and the government can influence the exchange rate. Among the exchange rate models, the model is set using the classic gold standard, maybe this is the model that we should follow in relation to sharia relationships with Islamic banks. Other models that are currently used by many countries are flexible or exchange rates that move according to the market or exchange rates are managed dynamically by the state, this model has evolved since The Bretton Woods System left gold as a reference exchange rate.

Indonesia has laws that regulate banking in general, which already regulate sharia principles (Undang-Undang Nomor 10 Tahun 1998 Tentang Perbankan, 1998), and this law was renewed in 1998 (Undang-Undang Nomor 7 Tahun 1992 Tentang Perbankan, 1992).

Law No. 21 of 2008 regulates in more detail about syairah banking and its business activities (Undang-Undang Nomor 10 Tahun 1998 Tentang Perbankan, 1998, p. 5).

Interest (interest / fa'idah) is an additional levied in money lending transactions (al-qardh) calculated from the loan principal without considering the utilization / yield of the principal, based on the time period, calculated with certainty in advance, and generally based on a percentage. Usury is an additional (ziyadah) without compensation that occurs due to a delay in the payment promised previously. And this is what is called usury nasi'ah (Bunga (Interest/Fa'Idah), 2004).

Law of Interest (Interest), the practice of flowering money today has met the criteria of usury that occurred during the time of the Prophet Muhammad, namely usury nasi'ah. Thus, the practice of flowering money is one form of usury, and usury is unlawful. The practice of flowering is legally prohibited, whether done by banks, insurance, capital markets, pawnshops, cooperatives, and other financial institutions or carried out by individuals. (Bunga (Interest/Fa'Idah), 2004, p. 11.).

Law bermu'amalah with Conventional Financial Institutions. For areas that already have Sharia Financial Institution offices / networks and are easily accessible, transactions are not allowed based on interest calculations. For areas where there is no office / network of Islamic Financial Institutions, it is permissible to conduct transaction activities in conventional financial institutions based on the principle of dharurat / hajat (Bunga (Interest/Fa'Idah), 2004, p. 12).

Financial statements are reports that show the company's financial condition at this time or in a certain period (2008, p. 7). Financial statements are an overview of the company's financial situation, where the balance sheet reflects the value of assets, debt and capital at a certain date, and the income statement describes the results achieved during a certain period, the statement of sources of use of funds and statements of cash flows (S, 2002, p. 4). Financial ratios are indices that connect two accounting numbers and are obtained by dividing one number by another (2008, p. 104.). Financial statements are an overview of the financial situation of a company in a particular (Harjito, 2008, p. 50).

Financial ratio analysis is the analysis of the relationship of various items in various financial statements which are the basis for being able to interpret the financial condition and results of operations of a company (2008, p. 64). Financial performance is an assessment of the level of efficiency and productivity that is carried out regularly on the basis of management reports and financial reports that reflect the achievements of the company, the notion of performance is a measure of how efficient and effective a manager or an organization is how well the manager or organization achieves adequate objectives (Indra, 2008, pp. 164–174). Performance is doing work and the results achieved from the work (2011, p. 7).

Analysis of Performance Index at Sharia Commercial Banks stated in Bank Indonesia Regulation Number 911 / PBI / 2007 dated January 24, 2007 concerning the Rating System for Commercial Banks Based on Sharia Principles (BI, 2007a) and Bank Indonesia Circular Number 9/24/DPbS Tanggal 30 Oktober 2007 (BI, 2007b). Analysis of Performance Index in Conventional Commercial Banks stated in PBI No. 13/1 / PBI / 2011 concerning Rating of Soundness of Commercial Banks (BI, 2011a), and Circular Letter SE BI N0.13 / 24 / DPNP / 2011 concerning Rating of Soundness of Commercial Banks (BI, 2011b), which replaces PBI No. 6/10 / PBI / 2004 concerning the rating system for commercial banks (BI, 2004a), and Circular Letter SE BI No. 6/23 / DPNP 2004, Regarding the Rating System for Commercial Banks (BI, 2004b).

There are 6 factors called CAMELS (Capital, Asset Quality, Management, Earnings, Liquidity and Sensitivity to Market Risks). The most recent PBI classifies assessment factors into 4 factors called RGEC (Risk profile, Good corporate governance, Earnings and Capital). Where Risk Profile consists of 8 types of risk, namely (a) credit risk, (b) market risk, (c) liquidity risk, (d) operational risk, (e) legal risk, (f) strategic risk, (g) risk compliance and (h) reputation risk. The "L" or Liquidity and "S" or Sensitivity to market risk factors in the previous PBI (CAMELS) merge into the "R" factor in the new PBI (RGEC).

The theory of econometrics is to determine the causal relationship between one variable with another variable, which is one of the characteristics of quantitative research with linear regression analysis (Tri Basuki, 2016). In this study the statistical tool used is the R Programming with PLS-PM library (Sanchez, 2013) to do partial least square (PLS) analysis and the version used in this statistical analysis is R Programming version 3.6 and gretl 2019a Linux x86_64 version.

Financial Ratios for Sharia Commercial Banks and Conventional Commercial Banks:

1. CAR (Capital Adequacy Ratio), Capital category, CAR taking into account financing risks and market risk or Minimum Capital Adequacy Requirements (CAR), Capital / Capital category
2. NPF (Non Performance Finance) or NPL (Non Performance Loans), used by NPF-Netto / NPL-Netto, the Productivity / Asset Activity category
3. ROA (Return On Asset), the category of Profitability / Earning

4. ROE (Return On Equity), Rentability / Earning category
5. OER (Operational Efficiency Ratio) or BOPO (Operational Costs Operating Income), the category of Rentability / Earning
6. FDR (Financial Deposit Ratio) or LDR (Loans Deposit Ratio), Liquidity / Liquidity category
7. Minimum Sharia Financial Ratios performance in accordance with Bank Indonesia standards

Weight of Bank Financial Performance Ratio

a) CAR (Capital Adequacy Ratio)

CAR provisions according to Bank Indonesia (BI), must have at least an 8% CAR. This variable has a weight value of 20%, the CAR value score:

1. Less than 8%, score = 0
2. Between 8% - 12%, score = 80
3. Between 12% - 20%, score = 90
4. More than 20%, score = 100

Example: Bank CAR value is 9%, final CAR score is 20% * 80 = 16

b) ROA (Return On Asset)

ROA provisions according to Bank Indonesia (BI) is 1.5%. This variable has a weight value of 15%, the ROA score:

1. Less than 0%, score = 0
2. Between 0% - 1%, score = 80
3. Between 1% - 2%, score = 100
4. More than 2%, score = 90

Example: Bank ROA value is 2.3%, final ROA score is 15% * 90 = 13.5

c) ROE (Return On Equity)

ROE provisions according to Bank Indonesia (BI) is 12%. This variable has a weight value of 15%, the ROE score:

1. Less than 8%, score = 0
2. Between 8% - 10%, score = 80
3. Between 10% - 12%, score = 90
4. More than 12%, score = 100

Example: Bank ROE value is 11.67%, final ROE score is 15% * 90 = 13.5

d) NPL (Non Performing Loan)

The best provision for NPF or NPL according to Bank Indonesia (BI) is if the NPF or NPL is below 5%. This variable has a weight value of 20%, NPF / NPL score:

1. More than 8%, score = 0
2. Between 5% - 8%, score = 80
3. Between 3% - 5%, score = 90
4. Less than 3%, score = 100

Example: Bank NPF / NPL value of 5.38%, final NPF / NPL score is 20% * 80 = 16.

e) FDR (Finance Deposit Ratio) atau LDR (Loan Deposit Ratio)

The best LDR requirement according to Bank Indonesia is 78% -100%. This variable is weighted 15%, the LDR score is:

1. Less than 50%, score = 0
2. Between 50% - 85%, score = 80
3. Between 85% - 110%, score = 100
4. More than 110%, score = 90

Example: Bank LDR value is 75.22%, final FDR / LDR score is 15% * 80 = 12

f) OER/ Operational Costs Operating Income

The best provisions for OER / Operational Costs Operating Income according to Bank Indonesia (BI) are 80%. This variable has a weighting value of 15%, the OER score:

1. More than 125%, score = 0
2. Between 92% - 125%, score = 80
3. Between 85% - 92%, score = 100
4. Less than 85%, score = 90

Example: Bank OER / Operational Costs Operating Income score of 89.26%, final score is 15% * 100 = 15

g) Bank Performance

To find the bank's performance, all of the bank's financial ratio variables are added to each other, so that the total score, like the previous data example, is CAR (16) + ROA (13.5) + ROE (13.5) + NPF / NPL (16) + FDR / LDR (12) + OER / Operational Costs Operating Income (15) = 86.

Research methodology

The research instrument, Framework for Performance Analysis of 10 Sharia Commercial Banks using CAMELS and PLS approaches compared to 10 Conventional Commercial Banks in Indonesia, as follows:

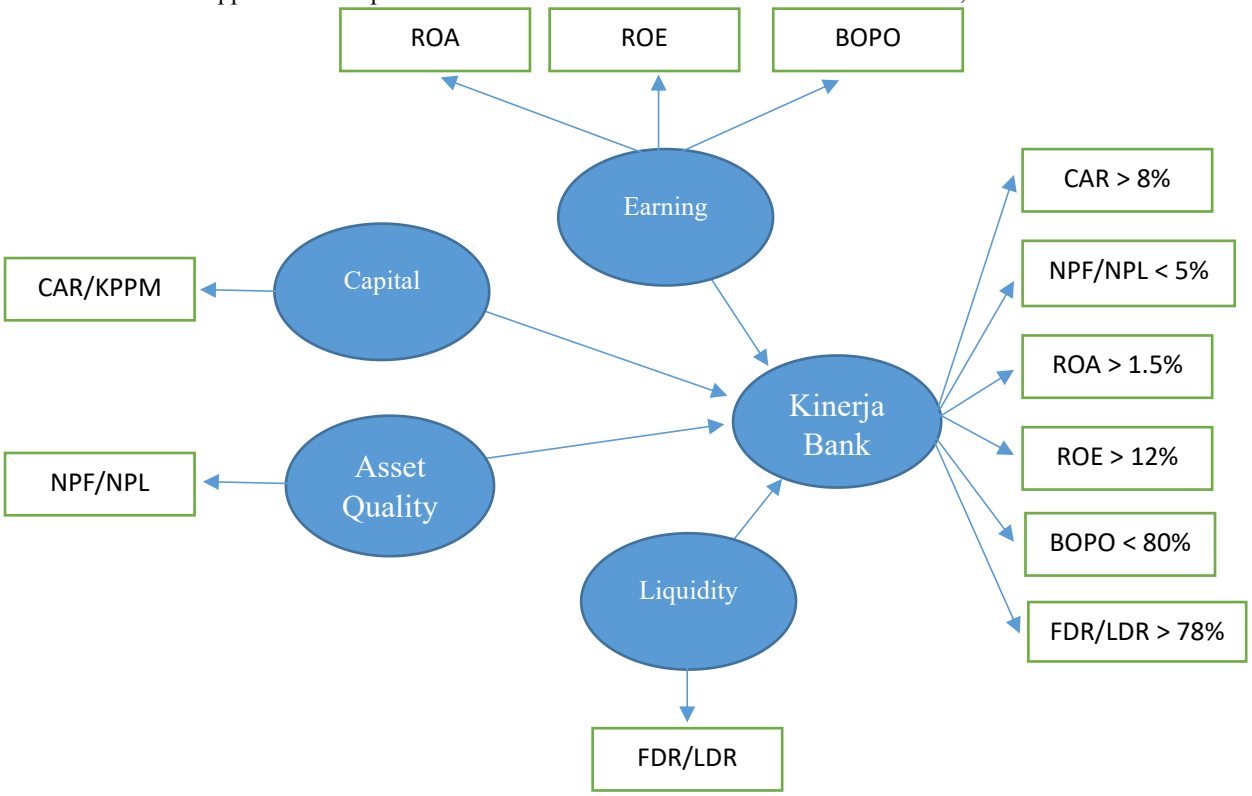

Figure 2. Research instrument model Framework Analysis of Performance Index of 10 Sharia Commercial Banks with CAMELS and PLS approaches compared to 10 Conventional Commercial Banks in Indonesia

The data model chosen for this study is the closest, there are 10 banks with each bank having 24 reports from 2013Q1 to 2018Q4.

Processing statistical data using Statistical R Programming software with Partial Least Square - PLSM library.

The version used in this statistical analysis Number of cross-sectional units = 10, is the data of ten (10) Sharia Commercial Banks and Conventional Commercial Banks used, and Number of time periods = 24, is the data used between 2013-2018.

There are six (6) years multiplied every year there are four (4) quarterly reports, (6) x (4) = 24 quarterly reports for 6 years for each Sharia Commercial Bank. There are six (6) years multiplied every year there are four (4) quarterly reports, (6) x (4) = 24 quarterly reports for 6 years for each Conventional Commercial Bank.

To make a suitable model specification for processing this data, if by: R Programming statistics with the PLS-PM library, four main ways can be found for Group Comparison Approaches between the financial ratio performance of Islamic Commercial Banks and Conventional Commercial Banks:

PLS Path Modeling approach for comparing groups (Sanchez, 2013) can be classified in two main categories:

1. Resampling methods and
2. Moderating effects.

The resampling method, as the name suggests, involves performing several types of resampling procedures to test the differences between groups. The most popular options are:

1. Bootstrap t-test dan
2. Permutation procedure

Moderating effects implies treating group variables (in this case the Sharia Commercial Bank group and the Conventional Commercial Bank group) as moderator variables and then applying one of the techniques used to test the moderating effects.

The resampling approach to comparing the Sharia Commercial Bank group and the Conventional Commercial Bank group, involves the use of: t-test based on bootstrap examples.

The procedure consists of separating the data into groups and then running a bootstrap sample with replacement for each group.

Path coefficients are calculated at each resampling and standard error estimates are treated in a parametric sense through t-tests.

Because it uses parametric t-tests and bootstrap examples, this method is also called the parametric resampling approach.

To illustrate the basic idea of a bootstrap t-test, suppose we have two groups, the Sharia Commercial Bank group and the Conventional Commercial Bank group with sample sizes of n1 and n2, respectively.

The two groups, the Sharia Commercial Bank group and the Conventional Commercial Bank group will be compared the path coefficient given between the two groups: βG1ji to βG2ji.

Then the path coefficient (path coefficient) in both groups Sharia Commercial Bank group and Conventional Commercial Bank group will be searched then concluded whether it is similar enough to be considered the same.

To find out if the path coefficient is similar, the following will be done:

1. Calculate the PLS path model for each group to get the path coefficients βG1ji and βG2ji.
2. Separate data into groups and run bootstrap samples for each group.
3. For each sample, calculate the PLS path model to get the resampling path coefficient.
4. After running all the examples (say 200 times), calculate the estimated standard error (calculate the standard error estimates).
5. Use standard error estimates in the parametric sense through t-tests.

The bootstrap procedure still depends on the t-test assumption which depends on two main conditions:

1. Data is normally distributed and
2. Similar group sample sizes.

It is true that the t (t procedures) procedure was chosen in this study in the practice of comparing Sharia Commercial Bank groups and Conventional Commercial Bank groups because of the robust statistical methods.

But if, the Sharia Commercial Bank group data and the Conventional Commercial Bank group, have a less symmetrical distribution, and the size of the group is very different, the application of the bootstrap test will be limited (bootstrap t-test will be limited).

To anticipate this, the data sample must be large enough, so that with 6 years of data from 2013-2018 it is expected that a comparison of the financial ratio performance of the two groups, the Sharia Commercial Bank group and the Conventional Commercial Bank group, can produce an accurate analysis.

This study attempts to perform an Analysis of the Performance Index of 10 Sharia Commercial Banks using CAMELS and PLS approaches compared to 10 Conventional Commercial Banks in Indonesia, in the period 2013 to 2018, with a statistical partial least square (PLS) approach - structure equation modeling (SEM).

Six (6) variables used in this study are:

1. CAR (Capital Adequacy Ratio), Capital category, CAR by calculating the risk of financing and market risk or the Minimum Capital Requirement, Capital Category
2. NPF (Non Performance Finance)/NPL (Non Performance Loans), NPF for Sharia Commercial Banks and NPL (Non Performance Loans) for Conventional Commercial Banks, Asset Category
3. ROA (Return On Asset), Earning Category
4. ROE (Return On Equity), Earning Category
5. OER (Operational Efficiency Ratio) or Operational Costs Operating Income), Earning Category
6. FDR (Financial Deposit Ratio)/LDR (Loans Deposit Ratio), Liquidity Category
7. The performance of the Bank's Financial Ratio is minimal according to Bank Indonesia standards

The data used in this study are 6 year periods, between 2013 and 2018. The data used six (6) years multiplied by four (4) reporting periods multiplied by nine (10) banks, a total of two hundred forty (240) lines data, because the

two groups of Sharia Commercial Banks and Conventional Commercial Banks are multiplied by 2, so that a total of 480 data lines. The number of cells in the panel data is seven (7) variables multiplied by six (6) years multiplied by four (4) reporting periods multiplied by ten (10) banks, a total of one thousand six hundred eighty (1680) cell data. Since there are two groups of Sharia Commercial Banks and Conventional Commercial Banks, it is estimated that the amount of data is 1680 cell data times 2, so the data will be processed by 3360 cell data.

Statistical inference analysis using Statistical R Programming software with PLSM Library. After ascertaining the model specifications are most suitable, a statistical inference process is performed with the model chosen

Interpretation of static inference results that are desired for:

1. Number of Observations, as follows:

- ✓ *Using 480 observations, i.e. 10 cross-sectional x 24 time series length x 2 groups (BUS & BU) = 480 observations, with 7 total data variables processed in a number of 3360 cell data.*
- ✓ *Included 10 cross-sectional units, namely 10 Sharia Commercial Banks and Conventional Commercial Banks*
- ✓ *Time-series length = 24, i.e. time series data used is quarterly data per each Sharia Commercial Bank and Conventional Commercial Bank.*
- ✓ *So that 1 year = 4 reports, the data used in 2013-2018 = 6 years, so that each Sharia Commercial Bank and Conventional Commercial Bank has a report = 4 x 6 = 24 time series reports.*

2. Identification of Variables

This study consists of 4 latent variables and 12 manifest / indicator variables, namely:

- ✓ Exogenous / independent variables, namely Capital, Asset Quality, Earnng and Liquidity
- ✓ Endogenous / latent variable (dependent variable) Bank performance with manifest indicators / variables namely Bank Financial Ratios Performance at a minimum according to Bank Indonesia standards.

Conclusion

In the formulation of the problem, are there significant differences between CAR, NPF / NPL, ROA, ROE, OER / Operational Costs Operating Income and FDR / LDR in Islamic commercial banks and conventional commercial banks in Indonesia and whether there are significant differences between the performance of Islamic commercial banks and conventional commercial banks in Indonesia. The purpose of this study is to create an analytical framework and comparison of CAR, NPF / NPL, ROA, ROE, OER / Operational Costs Operating Income and FDR / LDR financial performance ratios in Islamic commercial banks and conventional commercial banks in Indonesia in the period 2013-2018, and analyze and conclude in general the performance of Islamic commercial banks and conventional commercial banks in Indonesia in the period 2013-2018.

Theoretically or academically, researchers try to create an analytical framework and implement the CAMELS and PLS methodology (partial least square) to analyze sharia and conventional commercial bank data. And obtained the best model for the analysis and comparison of CAR, NPF / NPL, ROA, ROE, OER / Operational Costs Operating Income and FDR / LDR financial performance ratios on Islamic commercial banks and conventional commercial banks in Indonesia in the period 2013-2018.

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