

PalArch's Journal of Archaeology
of Egypt / Egyptology

CAMEL RATIO ANALYSIS OF BANKING SECTOR SHARE PRICE IN
INDONESIA STOCK EXCHANGE

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Haryadi Sarjono¹, Adi Teguh Suprpto^{2*}: Camel Ratio Analysis of Banking Sector Share Price-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(7), ISSN 1567-214x

Keywords: CAMEL ratios, stock quotes, stock exchange Indonesia

ABSTRACT

This study was conducted to analyze the influence of the CAMEL ratio (CAR, NPL, ROA, ROE NIM, OE, and LDR) on the stock price of the banks listed on the Indonesia Stock Exchange from 2005 to 2014. Management aspect is not included within the scope because of the limited data. This study uses the ratios that represent Capital, Assets, Earnings, and Liquidity. The conclusion of this research shows that R-Square = 0.567, which means 56.7% of the shares' prices from 11 banks can be explained by the independent variables. CAR and stock price are positively correlated. NPL and stock price are negatively correlated. ROA and stock price are negatively correlated. ROE and stock price are positively correlated. NIM and stock price are negatively correlated. Operating Expenses and stock price are negatively correlated. LDR and stock price are negatively correlated. Overall, there are three independent variables which are significantly correlated with the stock price based on 110 research data, namely: 1). LDR is negatively correlated with stock price, 2). NIM is positively correlated with the stock price, 3). ROA is positively correlated with stock price.

INTRODUCTION

Towards the end of the third quarter of 2008, the world economy experienced a global economic instability or collapse as the financial crisis spread to many countries. The bankruptcy of the largest US investment bank, Lehman Brothers, was associated with high-risk housing credit assets or subprime, followed by increasingly severe financial difficulties in a number of large-scale financial institutions in the US and Europe. The fall in US housing prices resulted in the home ownership takeover due to the inability of the debtor to make payments, making US and European consumers soon lost their purchasing power. Between 2008 and 2013, the Greek Gross Domestic

Product decreased more than 25%, while unemployment increased to 27% by 2013 (Hyz & Gikas, 2015).

A wave of defaults in the US and Europe occurs in securities linking to the US subprime mortgages, led to a severe crisis of confidence in global financial markets. Many businesses lost access to financing, either through banks or the capital market and other financings. Sluggish business activity led to a wave of layoffs on a large scale which further depressed purchasing power. In line with the weakening demand in advanced countries, the price of world commodities, including oil and non-oil and gas, continued to decline. The impact of the financial crisis in the US and Europe later spread throughout the world, including emerging markets like Indonesia, as reflected in the volatility of capital markets. Composite Stock Price Index (CSPI) in December 2008 was closed at 1355.4, down sharply from the beginning of 2008 which was at the level of 2627.3. The impact speed of the global financial crisis on the domestic financial market was supported by the structure of the domestic financial market integrated with global financial markets (Nasser, 2003; Abdullah & Suryanto, 2004; Kaur, 2010).

In addition, the turmoil in the stock market could not be separated from the fairly high proportion of foreign-owned shares on the Indonesia stock exchange. This means the wave of losses in the global financial markets led to a lot of foreign investors having liquidity problems to withdraw their funds from Indonesia. Investors then moved their assets considered the high risk to safer assets. Speaking about the domestic investments in Indonesia, one of them is investment banking. Unfortunately, banks are still experiencing a period of low tide and public trust in the banks is shaky, especially in private banks because of the cases like “Bank Century” case. Although that case is pretty old, there has been no clear direction regarding its settlement. Many people have questioned the consistency of the private banks’ existence, therefore government banks which are the alternatives become dominant. But, in addition to the existing problems, banks are still the mainstays or the driving motors for the economy in Indonesia (Suabawa & Wirawati, 2011). The role and importance of banking sector and the monetary mechanism cannot be underestimated in the development of a nation (Altan, Yusufazari, & Bedük, 2014). The banking sector’s performance is often perceived as the replica of economic activities of the economy. Banking system plays a role as the bedrock of the economy. Policymakers should aim to facilitate a banking system that supports both economic efficiency and stability. It means that banking sector has a large contribution to economic growth (Hyz & Gikas, 2015).

Assessing the performance of banking sector can be seen from the bank’s health as reflected by the ratio of CAMEL which is the abbreviation of the Capital, Assets, Management, Earnings, and Liquidity (Imamah, 2012; Fauziah, 2013). CAMEL ratio is used as a method to assess the health of the bank (Sochih, 2008; Yulianto & Sulistyowati, 2012) where the future of the bank will affect the development level of a bank’s stock price. This study was conducted to analyze the influence of the variables representing CAMEL ratios such as CAR, NPL, ROA, ROE, NIM, OE, and LDR on the stock price of banking listed on the Indonesia Stock Exchange in 2005 to 2014. Management aspect is not included within the scope because of the limited

data. This study uses the ratios that represent Capital, Assets, Earnings, and Liquidity.

LITERATURE REVIEW

Stock, as one of the securities traded on a stock exchange, is a certificate of proof of company ownership. Investors are willing to pay a stock at a certain price to obtain greater benefits than the previous capital stock purchases (Abdullah & Suryanto, 2004). Aside from gaining the distribution of dividends, investors can also obtain capital gain from investing in the fluctuating stock prices. The rise or fall of stock prices in the market is also influenced by many factors such as financial data or even rumors or issues as well as differences in the perception of individual investors on the company's performance. If investors expect the company's performance will improve in the future, then many investors will purchase the company's shares and then the price will go up, vice versa.

Financial ratios are used to compare the risks and returns of various companies to help investors and creditors make investment decisions and good credit. One of the objectives and advantages of the ratio is that it can be used to compare the risk and return relationship of companies of different sizes (Triady, Kurniasari, Utami, & Sofyan, 2016). Ratios can also show the profile, economic characteristics, competitive strategy and the unique characteristics of the operations, finance, and investment of a company.

Camel Ratio

The health of a bank is in the interest of all concerned parties, including the owners and managers of banks, public using bank services or Bank Indonesia as coach and supervisor of banks (Ruth & Armas, 2011). With the rapid development in the field of finance and banking, there have been considerable changes affecting the various aspects related to the health of banks. Theoretically, there are two kinds of approaches to assess the health of a bank, one of which is the ratio of Capital, Assets, Management, Earnings, and Liquidity or called CAMEL (Faizulayev, 2011). According to the Decree of Directors of Bank Indonesia No. 32/2/UPPB 30 April, 1997 on the Procedure for Assessment for Commercial Banks, the soundness of the bank assessed according to the CAMEL approach is to measure the quality of capital, asset quality, management, earnings and liquidity (Nasser, 2003).

CAR (Capital Adequacy Ratio)

The financial soundness of a Financial Institution (FI) is usually measured by the capital adequacy requirements set by the central bank. So, if the capital of the FI is impaired, it can be considered as failed (Yakob, Yusop, Radam, & Ismail, 2012). Capital is a source of funding which should be provided by the bank in sufficient quantities. In addition to functioning as an indicator of public confidence in the bank, capital also serves as one measure of the health of a bank. Bank for International Settlements (BIS) requires that every commercial bank provide a minimum capital of 8% of total risk-weighted assets (RWA).

The provision has been followed by Bank Indonesia as contained in the package of deregulation on 29 February 1991. The percentage of minimum capital requirement required for each commercial bank is often called Capital Adequacy Ratio (CAR). This ratio represents the degree of leverage of a bank

and indicates the relative proportion of shareholders' equity and debt used to finance a company's assets (Ferrouhi & Agdal, 2014). Capital adequacy reflects the overall financial condition of the bank and also the ability of the management to meet the need for additional capital (Kaur, 2010). The high CAR ratio indicates a stronger bank and a bigger protection to the investors. It is expressed as a percentage of a bank's risk-weighted credit exposure (Hyz & Gikas, 2015).

CAR is the ratio between bank-owned capital (core capital + Tier II capital) and total assets Risk According to Tier-weight. RWA is the sum of balance sheet assets (assets listed on the balance sheet) and RWA administrative assets (assets that are administrative). So, CAR is a measure of how far the bank's assets containing the risks involved are financed by bank's own capital in addition to obtaining funds from sources outside the bank. The higher CAR means the better solvency of banks since the capital is able to "cover" the risky assets. Under the terms of Bank Indonesia, the bank's capital is different between the banks founded and headquartered in Indonesia from the branch offices of Foreign Banks operating in Indonesia.

Operating Costs to Operating Income (BOPO)

The definition of Operating Expenses (OE) is the ratio between Operating Expenses and Operating Income (Imamah, 2012). The lower the OE ratio is, the better the performance of the bank's management becomes because the company is more efficient in using the existing resources. The OE ratio that can be tolerated by the Indonesian banks is 93.52%, in line with the provisions issued by Bank Indonesia. For example, if the known ratio level of the efficiency performance of a bank is 90% or nearly 100%, this means that the performance of the bank shows a very low efficiency. But if this ratio is low, for example, close to 75%, this means the performance of the bank shows a high degree of efficiency.

LDR (Loan to Deposit Ratio)

LDR (Loan Deposit Ratio) is mean to measure how far the bank's ability to pay all public funds as well as own capital by relying on loans which have been distributed to the public (Imamah, 2012). The higher the LDR ratio is, the lower the liquidity of the bank becomes because there is the too large amount of public funds allocated to the credit. The main objective behind this parameter is to assess the ability of a bank to meet the demand of the deposit holders at a particular time (Kaur, 2010).

ROA (Return on Asset)

To date, there is no standard definition of banking company's earnings. In many cases, the term of earnings and profits are used interchangeably (Yakob et al., 2012) to measure bank's assets ability in obtaining benefits. Return on Assets ratio is the net income (profit) generated by the bank on its total assets. This ratio evaluates the proportion of bad loans over total loans (Ferrouhi & Agdal, 2014). The higher the proportion of average earnings assets is, the better the resulting returns on total assets will be (Hyz & Gikas, 2015). The higher the ROA is, the better the productivity of assets in a net gain becomes. The ideal ROA figure is a minimum of 1.5%. Asset quality refers to the degree of financial strength and risk in a bank's assets, typically loans and investments (Kaur, 2010).

Some previous research about CAMEL ratios resulted in several results. Kaur (2010), using CAMEL – Capital Adequacy, Asset Quality, Management Quality, Earning Quality and Liquidity analysis, studied the profitability of 28 banks from the public sector, 26 banks from the private sector and 28 foreign banks. Among the public sector banks, the best banks are Andhra Bank and State Bank of Patiala. Among the private sector banks, Jammu And Kashmir Bank are in the first ranks followed by HDFC Bank. In the foreign sector banks category, Antwerp Bank is ranked the best followed by JP Morgan Chase Bank.

Another CAMEL study was conducted by Yulianto and Sulistyowati (2012) aiming to find the empirical evidence about the differences in the Capital Adequacy Ratio (CAR), Non-Performing Loan (NPL), Net Profit Margin (NPM), Return on Assets (ROA), Operating Expenses and Operating Income (BOPO), Loan to Deposit Ratio (LDR) and Interest Expense Ratio (IER) in accordance with the banks classification (healthy banks and unhealthy banks). The sample was 60 banks listed on the Indonesian Stock Exchange (IDX) in 2009 to 2011. The empirical results show that there were significant differences where CAR with Wilk's Lambda value of 0.927 was significant at 0.037 and Wilk's Lambda value of NPL amounted to 0.818 and significant at 0.001. This suggests that CAR and NPL can be used to form the discriminant variable. While the variables of NPM, ROA, LDR, and IER show no significant results.

Another study by (Yakob et al., 2012) aims at looking at the financial strength based on the CAMEL rating system for each of the conventional life insurance firm and takaful operator. The existing financial indicators present their own constraints in providing information concerning the financial position of the operators to the policyholders and the public. The data used for the twenty life insurance firms and takaful companies operating in 2003 to 2007 consist of twenty-three financial ratios. The factors (values) generated by factor analysis applied on twenty-three financial ratios reflect the five components in the CAMEL rating system. The results show that the CAMEL rating is a promising approach in providing an overview of the financial strength of the life insurer or takaful operator for the benefit of policyholders and the public.

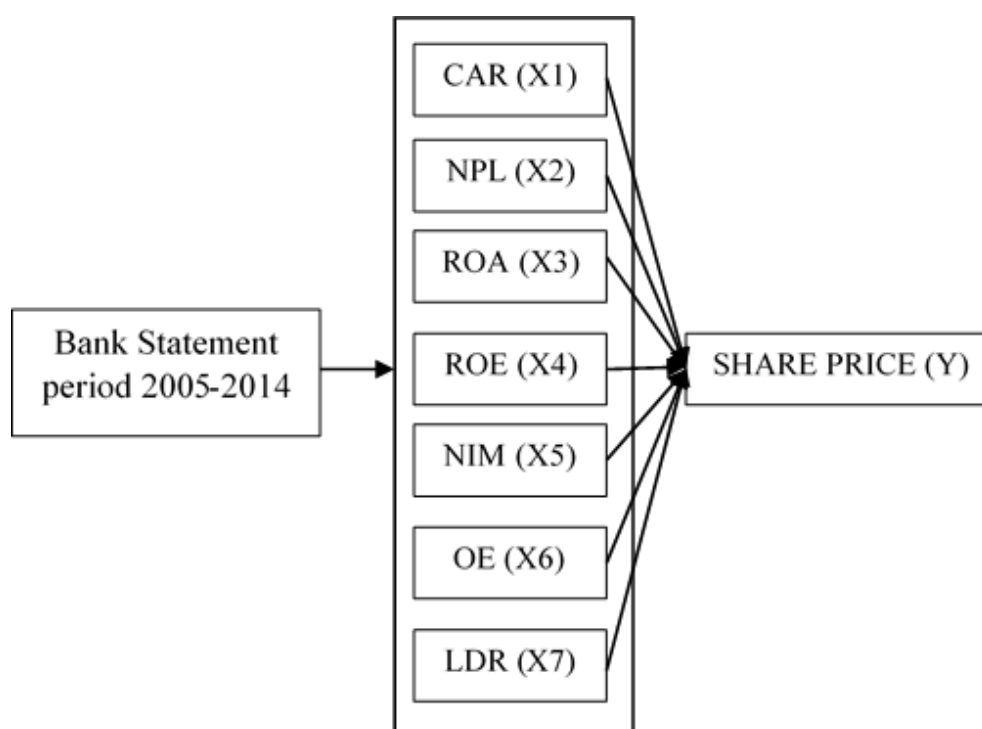
A study by (Fauziah, 2013) aims to analyze the performance of state-owned banking company in analyzing financial statements through CAMEL ratios and Altman method. Based on the assessment using CAMEL ratio during 2008-2011, it is shown that BRI Bank, BNI Bank, Mandiri Bank and BTN Bank generally were healthy. While the assessment using the Z-Score model, it is shown that there were four banks went bankrupt because based on calculation their score was below 1.81.

Altan et al. (2014) attempt to extensively investigate the performance and financial soundness of state-owned and private-owned banks in Turkish banks in 2005-2012. CAMEL approach was chosen as the most popular method for measuring banking performance. Evaluating data for eight years, they analyzed the data by calculating 23 ratios related to CAMEL Model. The results indicate that overall, the CAMEL rating model of Ziraat Bank was in the top position followed by Ak Bank and Vakif Bank. Tekstil Bank had the lowest rank in all positions. It was also observed that there is a

significant difference between the performance of state-owned and private-owned banks in Turkish banking system.

Hyz and Gikas (2015) aims to examine the performance of Greek banking sector and identify the main problems and prospects of Greek banks. The analysis uses the data from financial statements and statistical materials of four biggest commercial banks in Greece. The main methodology is CAMEL model. CAMEL approach is a significant tool to assess the relative financial strength of a bank and suggests the necessary measures to improve weaknesses of a bank.

Based on the literature review, the framework of CAMEL ratio influencing the share price of the banking sector on the IStock Exchange is seen as follows.



On the basis of the relationship contained in theoretical framework depicted in the figure above, we propose the hypotheses as follows:

H1: There is a correlation between the CAR and stock prices

H2: There is a negative correlation between the NPL and stock prices

H3: There is a correlation between ROA and stock prices

H4: There is a correlation between ROE and stock prices

H5: There is a correlation between NIM and stock prices

H6: There is a correlation between OE and stock prices

H7: There is a negative correlation between LDR and stock prices

MATERIALS AND METHODS

The data in this research are the secondary data obtained through the study of literature. The data are obtained from Bank Indonesia, PT. Bank Mandiri (Persero) Tbk. and several other sources such as the Indonesia Stock Exchange. With the limitations that we have, we use publicly available data in the period of 2005 to 2014. In detail, the data used in this study are CAR (Capital Adequacy Ratio), *BOPO* (ratio of Operating Expenses to Operating Income), LDR (Loan to Deposit Ratio), ROA (Return on Assets), NIM (Net Interest Margin), NPL (Non-Performing Loan), Stock prices and JCI (Joint Stock Price Index) in the period 2005 to 2014. The data collection method used in this research is purposive sampling.

No	Nama Bank	Kode
1	Bank Central Asia	BBCA
2	Bank CIMB - Niaga	BNGA
3	Bank Danamon Indonesia	BDMN
4	Bank Maybank Indonesia	BNII
5	Bank Mandiri	BMRI
6	Bank Mayapada	MAYA
7	Bank Negara Indonesia	BBNI
8	Bank Nusantara Parahyangan	BBNP
9	Bank OCBC – NISP	NISP
10	Bank Rakyat Indonesia	BBRI
11	Bank Swadesi	BSWD

The data of the bank obtained from Bank Indonesia and IDX are 15 banks. However, considering the completeness of the data, we only analyzed 11 banks started from December 2005 to December 2014.

To test the hypotheses in determining the effect (significance) of the independent variables on the dependent variables, either simultaneously or partially, we conducted F-test and t-test.

RESULTS AND DISCUSSIONS

To answer the problems, goals, hypothetical evidence, as well as to determine the significance of independent variables on the dependent variable, it is necessary to perform the t-test. The results of multiple regression analysis can be seen in Table II. Based on Table II, the regression equation obtained is as follows: $\text{Share Price} = 5,145.23 - 72.81 \text{ CAR} - 46.59 \text{ NPL} + 1,032.72 \text{ ROA} - 7.05 \text{ ROE} + 312.86 \text{ NIM} - 52.11 \text{ BOPO} - 16.53 \text{ LDR}$

Hypothesis 1

H₀: CAR and stock price are positively correlated. T-test with $\alpha = 5\%$ shows that t-table is -1.658 while the calculated t value is -1.408. As t-calculated > t table (-1.408 > -1.658), then H₀ is accepted. Therefore, the statistical conclusion is CAR and stock price are positively correlated. The large portion of CAR means the bank has enough capital so that the bank is

healthier. The market appreciates this condition so that the company's share price rises (positive correlation).

Hypothesis 2

H0: NPL and stock price are negatively correlated. T-test with $\alpha = 5\%$ shows that t-table is -1.658 while the calculated t value is -0.694. As the calculated t value $>$ t table (-0.694 $>$ -1.658), then H0 is accepted. Thus, it can be statistically concluded that NPL and stock price are negatively correlated. The smaller bank's NPL is, the healthier the condition of the bank becomes. This means that the bank can generate good profit and market appreciates this condition in the rising share prices (negative correlation or inverse).

Hypothesis 3

H0: ROA and stock price are positively correlated. T-test with $\alpha = 5\%$ shows that t table is +1.658 and the calculated t value is 2.161. As the calculated t value $>$ t table (2.161 $>$ 1.658), H0 is rejected and H1 accepted. Thus, the statistical conclusion is ROA and stock price are negatively correlated. ROA concept should be positively correlated to the stock price, but the results of this study show the opposite. Therefore, there is a need to deeply analyze other factors in the next-research.

Hypothesis 4

H0: ROE and stock price are positively correlated. T-test with $\alpha = 5\%$ shows that the table is -1.658 while the calculated t value is -0.110. As the calculated t value $>$ t table (-0.110 $>$ -1.658), then H0 is accepted. Therefore, the statistical conclusion is ROE and stock price are positively correlated. The larger the ROE is, the higher the stock price becomes because investors are increasingly interested in having the bank's shares.

Hypothesis 5

H0: NIM and stock price are positively correlated. T-test with $\alpha = 5\%$ shows that t table is +1.658 while the calculated t value is 2.616. As the calculated t value $>$ t table (2.616 $>$ 1.658) then H0 is rejected and H1 is accepted. So, it can be statistically concluded that NIM and stock price are negatively correlated. NIM concept should be positively correlated with the stock price, but the results of this study show the opposite.

Hypothesis 6

H0: OE and stock price are positively correlated. T-test with $\alpha = 5\%$ shows that t table is -1.658 while the calculated t value is -3.153. As the calculated t value $<$ t table (-3.153 $<$ -1.658), then is H0 rejected and H1 is accepted. So, statistical inference states that OE and stock price are negatively correlated. The smaller value of OE or operating expenses has an impact on the increased gross profit. This is appreciated by the rising stock price.

Hypothesis 7

H0: LDR and stock price are negatively correlated. T-test with $\alpha = 5\%$ shows that t table is -1.658. As the t calculated t value $>$ t table (-0.871 $>$ -1.658), then H0 is accepted. Thus, LDR and stock price are negatively correlated. The larger LDR means greater bank's cost of fund. This means the bank lends funds more than a number of funds collected. So that bank looks for other

funding sources which are more expensive. Thus, the profit generated becomes lower. This makes the stock price go down.

Overall, there are three independent variables which are significantly correlated to the stock price based on 110 research data, namely: 1). LDR which is negatively correlated to the stock price, 2). NIM which is positively correlated to the Stock Price, and 3). ROA which is positively correlated to stock price.

CONCLUSIONS

Based on the analysis and discussion in the previous chapter, it can be drawn a conclusion about the research results of CAMEL on share prices of banking. From the SPSS calculation about seven independent variables (NPL, LDR, NIM, ROA, CAR, ROA, and ROE), it is shown that R Square is 0.567, meaning 56.7% of the share price of 11 banks can be explained by those variables. While the rest ($100\% - 56.7\% = 43.3\%$) is explained by factors other than the independent variables in this study. Standard Error estimated is 1,911.52, meaning that it is the standard error in estimating the stock price as the dependent variable. From 7 variables (multiple regression equation results), there are 5 variables which are negatively correlated, they are NPL, LDR, ROA, CAR, and ROE, while other variables (NIM and ROA) are positively related.

Overall, there are three independent variables which are significantly correlated with the stock price based on 110 research data, namely: 1) LDR which is negatively correlated to the stock price, 2) NIM which is positively correlated to the Stock Price, and 3) ROA which is positively correlated to stock price.

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