50th PROCEEDING
THE 14th MIICEMA CONFERENCE
MALAYSIA-INDONESIA INTERNATIONAL CONFERENCE ON ECONOMICS, MANAGEMENT AND ACCOUNTING

ASEAN Economic Community 2015:
Issues and Challenges

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Botani Square, Bogor, West Java - Indonesia

Wednesday - Thursday
October 9 - 10, 2013

Organized by:
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Bogor Agricultural University
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MESSAGE FROM DEAN
Faculty of Economics and Management-Bogor Agricultural University

First and foremost, the best gratitude is gratefully bestowed upon the Supreme God, Allah SWT, because of His priceless blessings that the 14th Annual Conference of MIICEMA (Malaysia-Indonesia International Conference on Economics, Management and Accounting) can be organized at Bogor Agricultural University (Institut Pertanian Bogor or IPB) at October 9-10, 2013.

I would like to welcome all participants to our Green Campus of IPB on the occasion of the 14th MIICEMA Annual Conference 2013 organized by the Faculty of Economics and Management (FEM) IPB. FEM IPB is grateful to MIICEMA Board of Committee for choosing our campus for this event. This occasion is timely since in 2013, IPB is celebrating her 50th Anniversary, golden jubilee celebration, 1963-2013. In addition to the Annual Conference, there are two other activities in this event: Dean and Departmental Chair Forum of the State University Council of the Western Indonesia Region (Badan Kerja Sama Perguruan Tinggi Negeri Wilayah Indonesia bagian Barat – BKSN Barat) and MIICEMA Board of Committee meeting.

Theme of this year congress is “ASEAN Economic Community 2015: Issues and Challenges”. This theme is one of the issues at the global and, of course, ASEAN. It is currently utmost important among ASEAN countries and communities, since the ASEAN Economic Community (AEC) will begin in 2015. AEC is the goal of ASEAN regional economic integration by 2015 and marks the start of free trade liberalization between the members of ASEAN countries. AEC envisages four key characteristics, including: (1) A single market and production base, (2) A highly competitive economic region, (3) A region of equitable economic development, and (4) A region fully integrated into the global economy. Within the overall context of economic and political integration, the ASEAN countries are pursuing an ambitious agenda of creating a single market and production base based on five core elements: free flow of goods, free flow of services, free flow of investment, and a free flow of capital and free flow of skilled labour.


MIICEMA Board of Committee meeting conducted in the Universiti Kebangsaan Malaysia (UKM) – Malaysia in 2012 has assigned me to be the coordinator in preparing journal to be published by MIICEMA i.e., ASEAN Journal of Economics, Management and Accounting. We have worked hard to prepare this journal. Alhamdulillah, thanks to Allah, the inaugural edition of the ASEAN Journal of Economics, Management and Accounting (AJEMA) can be softly launched at the Opening Ceremony of the 14th MIICEMA Conference, October 9, 2013. I hope this journal could: (1) provide a forum for academicians, researchers and practitioners who are interested in discussing new knowledge, ideas and issues in the field of economics, management, business and accounting in the ASEAN region, (2) strengthen academic cooperation among MIICEMA university members and other universities in Southeast Asia region.

Many parties are involved and supported this MIICEMA Conference. On this special occasion, I would like to express my appreciation to the organizer of the congress, the rector of IPB, Deans of FE/FEBS/FEM of the MIICEMA University members, keynote speaker, invited speakers, distinguished participants and other contributors.

I do hope this conference would be successful with obvious contribution for strengthening ASEAN solidarity in achieving ASEAN Economic Community 2015. I wish all participants to have fruitful discussion and successful conference and enjoy your stay in Garden City of Bogor.

Yusman Syaukat, PhD
Dean
Faculty of Economics and Management
Bogor Agricultural University

The 14th MIICEMA Conference, ASEAN Economic Community 2015: Issues and Challenges
October 9-10th, 2013, Bogor, Indonesia
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1. INTRODUCTION

Stock market volatility has been a subject of interest for a number of years, which impacts financial

The Marroemacine Cause of stock Market Volatility: Empirical Study based on Malaysian and Indonesian Data

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ABSTRACT

This study aims to examine the relationship between stock market volatility and economic factors in Malaysia and Indonesia. Monthly data from 1990 to 2003 of stock indices and macroeconomic variables are used in the analysis, in order to determine the conditional volatility of stock return. We employed the standard GARCH(1,1) model to analyze the conditional volatility of the stock return and the macroeconomic variables under consideration. Specifically, a regression of conditional stock market volatility on the dependent variable against predetermined explanatory variables, which were found to be statistically significant. The result of this study shows some results on the existence of feedback effects between the volatility of stock return and economic variables, which are important for managers, investors and policymakers.

The 14th MIICEMA Conference (Malaysia-Indonesia International Conference on Economics, Management and Accounting), ASEAN Economic Community 2015: Issues and Challenges October 9-10th, 2013, Bogor, Indonesia

The 14th MIICEMA Conference, ASEAN Economic Community 2015: Issues and Challenges October 9-10th, 2013, Bogor, Indonesia
The Investigation of Fundamental Effects, Interest Rate, Exchange Rate and Inflation on Stock Return of Banking Sector in Indonesia Stock Exchange

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Abstract

The objective of the study is to examine the effect of financial fundamentals proxied by the CAMEL ratio and to examine macroeconomic variables on stock returns. CAMEL ratio measurements use several aspects such as, capital, assets, management, earnings and liquidity. The five aspects are measured by using several indicators: CAR, NPL, ROE, NIM, BOPO and LDR. In the other hand, the macroeconomic variables consist of interest rate, exchange rate and inflation. Samples used in this study were obtained by applying the purposive sampling method. The research sample consists of sixteen companies that engage in the banking sector during period 2002 to 2011. The hypothesis testing conducted by using panel data regression, (10-year time series and 16 cross section). Furthermore, this analysis technique requires an appropriate model in order to obtain an efficient estimation results and also BLUE criteria (Best, Linear, Unbiased, and Estimator). Based on the results of testing with chow test, it was determined that the model estimate used in this study is common effect model or also called as PLS (Pooled Least Square). The estimation results by using common effect model reveals that some of financial ratios show a bit contrary to the theory, in which the ratio of CAR shows positive sign but does not have a significant effect on stock returns. Furthermore, the ratio of NPL does not affect the return. ROE and LDR show positive and significant effect on return, meanwhile NIM and BOPO show negative sign and significant impact on return. The further macroeconomic variables, interest rate, exchange rate and inflation consistent with the theory, which are negative and significantly effect on stock return companies belonging to the banking sector.

Keyword: CAMEL, Interest rate, exchange rate, inflation

INTRODUCTION

Research Background

Investigating the influence of financial statements of the company's value could be done with various measurements. CAMELS analysis (Capital, Assets, Management, Earnings, Liquidity and Sensitivity to Market Risk) are kind of measurements that usually used in order to measure
the performance in banking sector. This analysis can be performed by using data obtained from financial statements. Furthermore, Sensitivity to market risk is not analyzed in this study because it is related to broader market factors, and it is including various industries circumstances. Specifically, this research is focused on determining, whether a bank is in the healthy category, fit enough or vice versa (Bank Indonesia Regulation (PBI) No. 15/2/PBI/2013).

Micro variables used to measure the ratio of CAMEL by using measurement indicators that consists of CAR (Capital Adequacy Ratio), NPL (Non Performing loans), NIM (Net Interest Margin), BOPO (Operating Expenses to Operating Income), ROE (Return on Equity) and LDR (Loan to Deposit Ratio). Several variations of the measurement indicators derived from the ratio of CAMEL is a handful of the many micro indicators that might have impact on stock returns.

In addition, the measurement indicators derived from micro factors or fundamental financial ratios are also influenced by macro variables. In accordance with the Arbitrage Pricing Theory which said that the stock returns of a company is not only explained by a single factor beta, but also influenced by many other factors. That way, it is possible that the macro variables partially influenced stock returns. The kind of Macro variables that can affect the market performance are interest rate, exchange rate, and inflation.

This study focuses on the investigation of financial ratios influence that proxy with CAMEL analysis, as well as the effect of some macro variables, such as the interest rate (BI rate), exchange rates, and inflation on stock returns in banking sector. In line with theory, the value of company reflects the soundness of a company, which the healthy firms tend to be valued by investors and vice versa. Further objectives of this study concentrated on investigating the influence of independent variables on the dependent variable that is proxied by stock returns in banking subsector industry. The banking sector was chosen as sample due to the high volatility of stock return, during the observation period from 2002 to 2011. Picture 1 below shows the stock performance of companies belonging to the financial sector in the last ten years.

**Picture 1**
Stock Price Movement in Financial Sector (2002-2011)
Sources: E-Trading HOTS, 2012.

Figure 1 above informs us that the financial sector is made up of sub-banking finance companies such as leasing, securities, and insurance showed positive trend in price movement. This indicates that the financial performance of each sub-sectors, especially the financial sector growth to improve. Stock prices that be plotted in the Picture 1 above provide information about the level of return that is in upward trend. In addition, volatility return also influenced by many factors, such as the information that goes to market (financial statements, announcement actions) and also the effect of various macroeconomic variables.

In line with the investment theory that says that investment activity is always contains the element of "high risk high return ", the wise investors always considering the risks that may be encountered themselves. One way that can be done to minimize these risks is to study the performance and the outlook of earnings growth in every company. This circumstance can be done by using CAMEL ratio in order to classify the firm condition. Many studies conducted in advanced markets and emerging market relatively use the same measurement method.

Study conducted by Kouser & Saba (2012) showed that the assessment of company's stock, especially stock prices in banking sector tend to be equal to its intrinsic value. It provides an opportunity for investors to re-evaluate their investment decisions so as not to get caught for buying overvalued stocks. Wrong purchase will result in loss that will be borne by the investor. Furthermore, losses due to low performance and less healthy banks can trigger the causes of the financial crisis.

Financial ratios provide information about the company's growth prospects in the future. Assessment is important to do good performance by management, shareholders, government, and other interested parties. The use of CAMEL ratios as a tool for evaluating the performance and soundness of banks, is based on Bank Indonesia Circular Letter No.6/23/DPNP/dated 31 May 2004 on Bank Health Assessment Procedures and regulations No.6/10/PBI/2004 BI on Banking Rating System.

There have been many studies undertaken research on the assessment of this aspect, Nurazi (2003) and Nurazi & Evans (2005) examined the effect of CAMEL Ratio, CAR, NPL, LDR and other variables on stock returns. They found that CAR has positive effect on stock returns, while the NPL and LDR have negative effect. Furthermore, Chen (2011) found similar results, in which the use of variables in CAMEL Ratio Analysis shows that in line with the theory developed in corporate finance.

Beside the micro variables, this study also identified the influence of macroeconomic variables on stock returns. Such study conducted by Choi & Elyasiani (1997), who found that changes in interest rates and exchange rates affect the market value of bank. Choi & Elyasiani examined 59 existing commercial banks in the United States during the time period 1975-1992. The research
results reveal that during the period of observation, there is strong correlation between the variable interest rates and exchange rates on the market value of the banks.

**Problem Formulation**

Specifically, this study focuses on the investigation of financial ratios (microeconomic) and macroeconomic variables on stock returns in banking sector of Indonesia Stock Exchange. Based on the research backgrounds, that is grounded in research gap and theoretical gap above, the research problem is formulated as follows;

1. Are the CAMEL ratios that consist of CAR, NPL, ROA, ROE, NIM and LDR have effect on stock returns in banking sector?
2. Are the macroeconomic variables that consist of BI Rate, Exchange Rate and Inflation have effect on stock returns in banking sector?

**Research Objectives**

General purpose of this study is to investigate, testing and do the explanatory research, which is focused on the effect of independent variables on the dependent variable. Specifically, the purpose of this study is formulated as follows.

1. Examined the effect of CAMEL ratios that proxy by CAR, NPL, ROA, ROE, NIM and LDR on stock returns in banking sector.
2. Examined the effect of macro variables that proxy by BI rate, exchange rate and inflation on stock returns in banking sector.

**THEORITICAL STUDY AND HYPOTHESIS DEVELOPMENT**

**Arbitrage Pricing Theory**

APT (Arbitrage Pricing Theory) is a theory that explains the relationship between risk and return levels, that lowered as result of the absence of arbitrage in major capital markets. APT was created in hopes of covering weaknesses assumptions of CAPM (Capital Asset Pricing Model), which only use one risk factor (beta) as a tool to calculate the volatility return of individual stocks (Shanken, 1992).

The emergence of APT concept as alternative for the assessment of Capital Asset Pricing Model (CAPM) led to the emergence of multifactor models that developed with reference to the concept of APT. The assumption of this model is the economic factor that could affect stock returns. In this case, the factors that could affect stock returns not only the market index, but these effects can be produced by various macroeconomic variables such as inflation, changes in exchange rates and interest rates. The number of factors that can affect the stock return can be more than one, and these factors must be addressed through empirical research (Tandelilin, 2010).

**CAMEL Ratios**
CAMEL ratio is a financial ratio analysis tool that is used as a performance measurement tool, and has been prescribed by Bank Indonesia (Siamat, 2005; Taswan 2010). Using this CAMEL analysis is necessary to determine the soundness of the bank concerned. In addition, various aspects assessed the effect on banking conditions obtained through various indicators of measurement that can be used as proxy of each aspect.

**The Linkage of CAMEL Ratio with Stock Return**

Fundamental measurement tool is one way that can be used by investors in assessing the company's growth prospects. Investor information obtained through the company's financial performance is closely associated with the company's stock market performance. The higher the information held by investors, indicating that the companies open about the activities. So that, there is no other information which is covered (Hays et al., 2011).

Financial information obtained from the statement of financial performance (CAMEL Ratio) is an alternative way to reduce the high level of asymmetry information. By doing so, the theory proposed is in line with previous research, which found that there is correlation and causality relationship between financial information (CAMEL ratio) with market value or the value of company stock (Gunsel, 2007).

**Linkage of Macroeconomic Variables with Stock Return**

Many studies are conducted to ascertain the relationship between the stock market and macroeconomic variables that exist in the country. Arbitrage Pricing Theory says that the micro variables have contributed to stock returns and risks that can result in the company's capital markets. In addition to measure the market performance, many researchers are doing by using the value of beta. As the result, the growing number of emerging debate arises among academics and practitioners. This debate arises because most academics and practitioners think beta was no longer able to explain stock returns.

To anticipate the pros and cons regarding the ability of beta in predicting stock returns, then a new theory emerged as concept of the Arbitrage Pricing Theory. This concept appears to anticipate the weaknesses of beta. The theory says that the market not only can be predicted by using one risk factor beta, so it has begun to doubt the validity of the CAPM (Aga, & Kocaman, 2008). Thus the arbitrage pricing theory attempted to cover up the weaknesses, in which many factors can affect the return and in which the size, book to market ratio, and macroeconomic variables such as exchange rate, inflation and interest rates.

**Research Framework**

This study aims to investigate the influence of financial ratios and macroeconomic variables on stock return in banking sector especially in Indonesia from 2002-2011. Picture 2 below describes the analytical framework used in the design of this study.
RESEARCH METHODS

Data Collection

The populations in this study are the stocks that incorporated in Indonesian Stock Exchange, especially in time observation 2002 to 2011. While the sample is company stock that incorporated in banking sector. The samples used in this study were as many as 16 companies and is taken by using purposive sampling method with the following criteria:

1. The company incorporated in banking sector and actively traded in Indonesia Stock Exchange during the time period 2002-2011.
2. The companies that publishes their financial reports in the time period of 2002 to 2011.
3. The companies that do not experience temporary suspension or termination during the period of observation.

Based on the above criteria, it is expected that all stocks in this study have number of observations in the same period, in order to obtain fairly accurate results. In addition, the use of sectoral indices, namely the banking sector as the sample is because it is incorporated into the index that has grown in significant trading activity (E-trading Hots 2012).

Operational Definition
To understanding the concepts of research, then we set up an operational definition. The operational definition is measurement that is given to the variable in order to give meaning or specify them (Hartono, 2007).

### Table 1

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<th>No</th>
<th>Variables</th>
<th>Measurements</th>
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<tr>
<td>1</td>
<td>CAR</td>
<td>$CAR = \frac{\text{Total Capital (Tier 1 - Tier 2)}}{\text{Total Risk - Weight Asset}}$</td>
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<tr>
<td>2</td>
<td>NPL</td>
<td>$NPL = \frac{\text{Loans Sub - Standard + Doubtful + Loss} - \text{(Allowance for Earning Assets Losses)}}{\text{Total Loans}}$</td>
</tr>
<tr>
<td>3</td>
<td>BOPO</td>
<td>$BOPO = \frac{\text{Operating Expense}}{\text{Operating Income}}$</td>
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<td>4</td>
<td>ROE</td>
<td>$ROE = \frac{\text{Net Interest Income}}{\text{Shareholder's Equity Growth Rate}}$</td>
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<tr>
<td>5</td>
<td>NIM</td>
<td>$NIM = \frac{\text{Net Interest Income}}{\text{Average Earning Assets}}$</td>
</tr>
<tr>
<td>6</td>
<td>LDR</td>
<td>$LDR = \frac{\text{Total Loan}}{\text{Total Deposit}}$</td>
</tr>
<tr>
<td>7</td>
<td>RET</td>
<td>$RET_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}$</td>
</tr>
<tr>
<td>8</td>
<td>BI Rate</td>
<td>Interest rate obtained in units of percent as issued by Bank Indonesia as the financial authorities (consistently and gradually in multiples of 25 basis points).</td>
</tr>
<tr>
<td>9</td>
<td>KURS</td>
<td>comparison of the Rupiah (Rp) against certain currencies. In this case, the value of the Euro compared to the Dollar ($).</td>
</tr>
<tr>
<td>10</td>
<td>INFLASI</td>
<td>Inflation measured by the CPI (Consumer Price Index). The indicator is based on best practices, the WPI (Wholesale Price Index) and GDP (Gross Domestic Product Deflator).</td>
</tr>
</tbody>
</table>

Source: Data processed (2013).

### The Analysis Method

Specifically, the analysis of the data used in this study refers to a technique called as regression analysis with panel data regression model. The regression model by using OLS method is also known as the Gaussian method, and the main foundation in econometric theory. The following regression equation models were applied in this research.

$$RET_{i,t} = \alpha + \beta_1 CAR_{i,t} + \beta_2 NPL_{i,t} + \beta_3 BOPO_{i,t} + \beta_4 ROE_{i,t} + \beta_5 NIM_{i,t} + \beta_6 LDR_{i,t} + \beta_7 BI\_RATE_{i,t} + \beta_8 KURS_{i,t} + \beta_9 INFLASI_{i,t} + \beta_{10} SP_{i,t} + \varepsilon$$

Equation model by using panel data used many independent variables, so it can be traced which variables have the dominant influence beside the other independent variables. We also used control variables “stock price” (SP) to clarify the effects produced by the main variable. The above statistical model used in testing hypotheses.

### Models Selection
According Winarno (2009), there are three techniques or approaches that can be used in estimating the output results. Firstly, we can use OLS approach (common effect). Secondly, the approach using fixed effect models, and lastly, approaches by using random effects models. To determine which model will be used in conducting panel data estimation, we used the Chow test. Chow test is used to compare the common effect model with fixed effect models. Furthermore, to compare the approaches of fixed effect model and random effect model, we use the Hausman test.

**Classical Assumption Testing**

Testing the classical assumptions in regression analysis needs to be done in order to meet the criteria BLUE (Best, Linear, and Unbiased Estimator). Classical assumption made in this study consists of the Autocorrelation test, Heteroscedasticity test, Multicollinearity test and Normality test (Gujarati, 1995; Gujarati & Porter, 2009; Baltagi, 2005; Widarjono, 2009; Winarno, 2009).

**RESULTS AND DISCUSSION**

**Description of Research Variables**

This section discusses the descriptive statistics of the data. In addition, this section will outline the descriptive information of macroeconomic variables, inflation (INFLATION), exchange rate (RATE), and interest rates (BI_RATE).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Cross sections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Dependent Variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RET</td>
<td>0,590</td>
<td>0,107</td>
<td>24,000</td>
<td>-0,875</td>
<td>2,483</td>
<td>16</td>
</tr>
<tr>
<td><strong>Panel B: Independent Variables (CAMEL Ratio)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>16,509</td>
<td>15,415</td>
<td>41,420</td>
<td>-51,67</td>
<td>8,854</td>
<td>16</td>
</tr>
<tr>
<td>NPL</td>
<td>3,712</td>
<td>2,385</td>
<td>62,190</td>
<td>0,000</td>
<td>6,069</td>
<td>16</td>
</tr>
<tr>
<td>BOPO</td>
<td>91,497</td>
<td>85,770</td>
<td>1226,280</td>
<td>41,500</td>
<td>92,885</td>
<td>16</td>
</tr>
<tr>
<td>ROE</td>
<td>6,782</td>
<td>11,620</td>
<td>474,210</td>
<td>-644,3</td>
<td>73,018</td>
<td>16</td>
</tr>
<tr>
<td>NIM</td>
<td>4,968</td>
<td>5,255</td>
<td>11,100</td>
<td>-1,41</td>
<td>1,952</td>
<td>16</td>
</tr>
<tr>
<td>LDR</td>
<td>78,756</td>
<td>70</td>
<td>1211</td>
<td>18</td>
<td>114</td>
<td>16</td>
</tr>
<tr>
<td><strong>Panel C: Independent Variables (Macroeconomics)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI_RATE</td>
<td>8,73</td>
<td>8,47</td>
<td>13,12</td>
<td>6,5</td>
<td>2,145</td>
<td>16</td>
</tr>
<tr>
<td>KURS</td>
<td>7515</td>
<td>7360</td>
<td>9154</td>
<td>5037</td>
<td>1202</td>
<td>16</td>
</tr>
<tr>
<td>INFLASI</td>
<td>7,64</td>
<td>6,59</td>
<td>17,11</td>
<td>2,78</td>
<td>3,96</td>
<td>16</td>
</tr>
<tr>
<td>SP</td>
<td>1203</td>
<td>637</td>
<td>8000</td>
<td>10</td>
<td>1636.101</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Data processed (2013).
Table 2 above provides information regarding the descriptive statistics of each study variable. It can be seen that the number of variables used in this study were eleven variables. These variables were divided into three panels, namely the independent variables (CAMEL ratios in Panel B and macroeconomics in Panel C) and the dependent variable in Panel A.

**The Testing of Classical Assumptions**

Multicollinearity test results by using common effect model in each equation regression models. The output suggesting that the residual correlation matrix of the independent variables did not contain symptoms of Multicollinearity. The absence of these symptoms can be seen in the residual value, where the correlation matrix does not indicate the number or value of the residue is higher than 0.80.

Furthermore, the data used in this study has not been free from Heteroscedasticity symptoms. It can be identified with the number of variables that are not significant, while the $R^2$ value is high. Heteroscedasticity problems that occur in the common effect model approach in this study overcome by choosing White Heteroscedasticity, that has consistent covariance or perform weighting (cross section weight) at the time of estimation period. By doing so, Heteroscedasticity problem in this study has been resolved.

The outputs estimation by using common effect model approach in this study did not contain symptoms of Autocorrelation. It can be seen from the Durbin Watson value that lies between 1.46 -2.46. Based on the results, we obtained the Durbin Watson value as 2.34. That way it can be concluded that the results do not contain symptoms of Autocorrelation.

**Troubleshooting Regression Analysis**

Research model used in the study must have property that is in BLUE criteria (Best, Linear, Unbiased and Estimator). The explanation of this characteristic is that the regression variant has a minimum value. Minimum variants consistently produce estimation outputs that far from the value of the population parameter. The value will be close to zero along with the addition of the sample. If there are problems during the estimation process to get the output that has the BLUE criteria, then the problem can be resolved by GLS (Widarjono, 2009).

GLS or Generalized Least Square is a treatment used in this study. The goal is to minimize the risk of violation of the classical assumptions. Accordance with the opinion of Gujarati & Porter (2009) the resulting estimator by using GLS method is BLUE. So that, problems encountered such as the presence of symptoms Heteroscedasticity, Autocorrelation and Multicollinearity can be overcome. The data used in this study is a panel data, which consists of sixteen cross section data and ten years time series data from 2002 to 2011.

**Panel Data Analysis and Hypothesis Testing**
Before performing the estimation of the model that has been prepared, we must first run proper model selection procedure, in order to estimate and obtain the efficient outputs. In the first phase, the examination is carried out using fixed effect model approach. Then we used Chow test for subsequent comparison with the common effect model approach. Chow test output for the first regression equation model is as follows.

**Table 3**

**Chow Test Outputs**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool: BANKING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test cross-section fixed effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-section F</td>
<td>0.7486</td>
<td>(15,134)</td>
<td>0.7312</td>
</tr>
</tbody>
</table>

Source: Data processed (2013).

Chow test outputs for the first regression equation above shows that both F value and Chi square value were not significant (p-value 0.7312 is less than 5%) so that H0 (Pooled Least Square) supported and H1 (fixed effect model) not supported. That way, the Chow test outputs indicate that the model used in the study followed the common effect model or Pooled Least Square. Thus regression testing can be done directly without Hausman test to compare the fixed effect model with random effect model.

According to the information in Table 4 above, it is known that the recommended model approach is to use common effect models. Then we performed the testing by using panel data regression analysis as follows.

**Table 4**

**Hypothesis Testing Results**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.4792</td>
<td>0.8301</td>
<td>2.9864</td>
<td>0.0033</td>
</tr>
<tr>
<td>CAR</td>
<td>0.0037</td>
<td>0.0094</td>
<td>0.4000</td>
<td>0.6897</td>
</tr>
<tr>
<td>NPL</td>
<td>0.0160</td>
<td>0.0109</td>
<td>1.4676</td>
<td>0.1443</td>
</tr>
<tr>
<td>BOPO</td>
<td>-0.0009</td>
<td>0.0002</td>
<td>-4.3637</td>
<td>0.0000</td>
</tr>
<tr>
<td>ROE</td>
<td>0.0013</td>
<td>0.0001</td>
<td>7.4516</td>
<td>0.0000</td>
</tr>
<tr>
<td>NIM</td>
<td>-0.0157</td>
<td>0.0270</td>
<td>-0.5832</td>
<td>0.5606</td>
</tr>
<tr>
<td>LDR</td>
<td>0.0043</td>
<td>0.0010</td>
<td>4.1363</td>
<td>0.0001</td>
</tr>
<tr>
<td>BL_RATE</td>
<td>-0.0696</td>
<td>0.0313</td>
<td>-2.2235</td>
<td>0.0277</td>
</tr>
<tr>
<td>KURS</td>
<td>-0.0002</td>
<td>7.0964</td>
<td>-3.2800</td>
<td>0.0013</td>
</tr>
<tr>
<td>INFASLI</td>
<td>-0.0256</td>
<td>0.0087</td>
<td>-2.9297</td>
<td>0.0039</td>
</tr>
<tr>
<td>SP</td>
<td>5.6778</td>
<td>2.4087</td>
<td>2.3571</td>
<td>0.0197</td>
</tr>
</tbody>
</table>

Weighted Statistics

R-squared | 0.1998 | Mean dependent var | 0.7077 |
Adjusted R-squared | 0.1461 | S.D. dependent var | 1.8758 |
Based on information obtained from Table 4 above, we can conduct investigation on the effect produced by each independent variable on the dependent variable. Independent variables consisting of CAMEL ratios and macroeconomic variables value is also supported by a control variable, the value of the shares (SP). Shares Price (SP) entered as control variable because of the higher prices would indicate the higher returns that can be obtained by investors. That way, the intended use of the stock price as a control variable is to clarify and clean the error term influences derived from other variables that are beyond the research model.

Independent variables that tested by using panel data analysis showed quite varied results. The aspects of capital that proxied by CAR showed the positive coefficients variable, but not significantly affect the stock return. The obtained results are less consistent with the theory that is used when we developed hypotheses. Further aspects of the asset that is proxied by NPL ratio also showed similar results with CAR. This result is contrary to the theory, in which banks that are in healthy category tend to have low value of NPL. However, the NPL ratio had no significant effect on stock returns.

The third aspect of the CAMEL ratios management proxied by ROA showed the consistent results. From the estimation results, we can obtain that BOPO has negative and significant effect on stock returns. The next aspect which is proxied by earnings ratio NIM and ROE showed conflicting results. ROE has a positive and significant impact on stock returns in banking sector, while NIM on the contrary, have no effect on stock returns. The last aspect of the liquidity ratio is LDR. The estimation results indicate that the LDR positively and significantly affect the stock returns.

Furthermore, the macroeconomic variable that proxied by BI_RATE showed negative and significant effect on stock return. This is consistent with the theory and previous research that has been done before. Other variable is the exchange rate (RATE). It has negative and significant effect on stock returns. It means that the higher exchange rate indicates the weakening of Rupiah (Rp) against the US Dollar ($). This will result in a decrease in stock returns. Finally, the variable inflation has a negative and significant effect on stock returns in banking sector during the observation period from 2002 to 2011.

When we seen the results of research model simultaneously by using the F test, it can be concluded that the F statistic > than the F table. This is also evidenced by the F statistic Prob value that is equal to 0.0001. Significance value is much smaller than the specified alpha of 0.05. It can be concluded that simultaneously or at least there is one of the nine independent variables used in this study, affect the stock returns.

**Discussion**
The outputs of panel data in Table 4 above are obtained by using statistical model of research as follows:

\[ RET_{i,t} = \alpha + \beta_1 CAR_{i,t} + \beta_2 NPL_{i,t} + \beta_3 BOPO_{i,t} + \beta_4 ROE_{i,t} + \beta_5 NIM_{i,t} + \beta_6 LDR_{i,t} + \beta_7 BI\_RATE_t + \beta_8 KURS_t + \beta_9 INFLASI_t + \beta_{10} SP_{i,t} + \varepsilon \]

If the value of each independent variable on-plot based on the statistical model, it will obtain the following mathematical functions.

\[ RET = 2.4792 + 0.0037\text{CAR} + 0.0160\text{NPL} – 0.0009\text{BOPO} + 0.0013\text{ROE} – 0.0157\text{NIM} + 0.0043\text{LDR} – 0.0696\text{BI\_RATE} – 0.0002\text{KURS} – 0.0256\text{INFLASI} + 5.6778\text{SP} + \varepsilon \]

Stock returns in the state of the banking sectors are fixed or constant at 2.4792. In the event of an increase in CAR by 1 unit, there will be an increase in stock return of 0.0037. This is consistent with the results of research conducted by Nurazi (2004), and Kouser & Saba (2012) who found that the coefficient values will show a positive sign on stock return. Furthermore, if an increase in NPL by 1 unit, it will increase the stock return as much as 0.0160. However, the second hypothesis is not supported because it does not fit with the theory and previous research, in which the increase in NPL should be a negative effect on stock returns. Furthermore, if an increase in BOPO of 1 unit would lead to a decrease in return of 0.0009. This is consistent with the theory because the higher BOPO ratio indicates the amount of income used to finance the company’s operations. These findings confirm the conclusion of a study written by Aurangzeb & Afif (2012) who found that the efficiency ratio has significant and negative effect on stock returns in banking sector.

Furthermore, if there is an increase of one unit ROE, it will increase the return as much as 0.0013. ROE indicates that the higher performance of the bank is getting better at utilizing its equity. Furthermore, if there is an increase in NIM, it will lower stock return as much as 0.0157. These results are not consistent with the hypothesis that has been developed, so the hypothesis five is not supported. When there is an increase as much as 1 unit in LDR, it will lead to an increase in stock return as much as 0.0043. This is consistent with theory and the previous research, which found that the higher LDR ratio, it will be the more third-party funds disbursed in form of loans, so that stock returns will increase as will the higher the income to be derived from the distribution of funds. These findings also confirm the previous findings as practiced by Nurazi (2003), Nurazi & Evans (2005), Sangmi (2010), Laghari et al., (2011), Christopolous (2011), Kouser & Saba (2012).

The testing of macroeconomic variables on stock returns showed consistent results with the theory and previous research. BI rate showed a coefficient of -0.0696. This means that in the event interest rates rise by 1 unit, it will lower the value of stock return as much as -0.0696. Coefficient of the variable exchange rate also showed negative sign that is equal to -0.0002. If there is an increase in the exchange rate of Rupiah, it will result in a decrease in stock return of -0.0002. The last independent variable used in this study is inflation. Coefficient values obtained from this variable is equal to -0.0256. In the event of an increase in inflation by 1 unit, it will
lead to a decrease in stock return of -0.0256. While the control variable used in this study showed positive sign. This result is consistent with the theory, because the stock price will be closely associated with stock returns. With a coefficient value as much as 5.667, it was explained that if the stock price increases by one unit, it will increase the value of the stock return as much as 5.677. This finding supports the findings of previous studies, namely by increasing the BI rate, exchange rate and inflation, it will have negative impact on stock returns (Faff et al., (2005); Al-Abadi & Al Sabbagh, (2006); Verma & Jackson (2008); Kanas, (2008); Czaja & Scholz, (2010); Christopolous et al., (2011); Jawaid & Ui Haq, (2012).

Furthermore, in accordance with the purpose and title of the study, it was determined that the variable that has the most dominant influence on stock return in banking sector is variable BI rate, with the coefficient value as much as 0.0696. This circumstance could happen due to the high increase in interest rates, it will lead to financial instruments in the capital markets such as stocks and bonds become less attractive. This has led to the depositors or capital owners to shift their funds into money market.

**CONCLUSION**

This study tested the Arbitrage Pricing Theory which reveals that there are other variables that can be used to predict stock returns. In accordance with the results, it can be inferred some of the following conclusions:

1. There is no significant impact of CAR on stock returns of banking sector in Indonesia stock exchange.
2. There is a negative and significant effect of NPL on stock returns of banking sector in Indonesia stock exchange.
3. There is a negative and significant effect of BOPO on stock returns of banking sector in Indonesia stock exchange.
4. There is a positive and significant impact of ROE on stock returns of banking sector in Indonesia stock exchange.
5. There is a positive and significant effect of NIM on stock returns of banking sector in Indonesia stock exchange.
6. There is a positive and significant effect of LDR on stock returns of banking sector in Indonesia stock exchange.
7. There is a negative and significant effect of BI_RATE on stock returns of banking sector in Indonesia stock exchange.
8. There is a negative and significant effect of EXCHANGE RATE on stock returns of banking sector in Indonesia stock exchange.
9. There is a negative and significant effect of INFLATION on stock returns of banking sector in Indonesia stock exchange.

**Recommendations**
The research that has been done is not out of the limitations caused by several constraints and conditions in some cases. Limitations were found during a study investigator, can be considered scientific for further research to develop similar research. Not only in terms of empirical, but also in terms of the longitudinal and methodological studies. The limitations in this study are as follows:

1. Sample selection was limited to a single industry subsectors, with period studies in a certain time period. This in turn will lead to the incompleteness of the data on the variables to be studied, so that takes some adjustment on several data.
2. The research was only conducted in the Indonesian capital market, even though many capital markets in Asia are interrelated, correlated and integrated with the Indonesian capital market, so it is still possible and there will be a lot of differences that still have not been studied in the banking sector.

References


Nurazi, R. (2003) Investigation of the Use of CAMELS Ratios as Good Predictors in Predicting Bank Failure (Indonesian Case), A Dissertation for the Degree of Doctor of Business Administration at Southern Cross University, New South Wales, Australia.


