Teguh Sugiarto
Ahmad Subagyo

Basic Research for Modelling

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Iin Rosini and Irwan Setiawan

Preface

This book is about how basic and modeling studies to conduct quantitative research, using econometric modeling techniques. By reading this book, the reader is expected to understand and know about bagaimaa applying econometric modeling techniques in a simple study. The author hopes that the book can be explained easily, quickly and understand how simple research models are done. Some models of analysis in econometric modeling simple in use as an example and will be made as further reference material.

By reading this book, there are 8 models of analysis of econometric modeling simple with simple forms of research as well. Among the models of econometric modeling analysis contained in this study, using the model of analysis of time series data, panel data analysis of both the econometric modeling of time series data and panel data econometric modeling. Thus this book to appear, in order to give a different nuance in the world of research and academia.

Author

1.Financial Ratio Using Data Panel

By
Teguh Sugiarto

1.Introduction

In the Indonesian capital markets is a market that is used to make transactions of various long-term financial instruments in the form of equity and debt with maturities of more than one year. By doing transactions in the capital market, investors are expected to have the advantage of its investments, namely in the form of dividends and capital gains. Sebgaian other investors have the primary goal in placing investments in such companies to seek income or rate of return on investment (return) he has done, whether in the form of dividends (dividend yield) as well as income from the difference between the selling price of the share purchase price (capital gain). But on the other hand, the company will pay dividends faced with a wide range of considerations, among others, as quoted from the author (Brigham and Gapenski, 1996): the need to withhold part of the profit for re- investment may be more profitable, financing needs, the liquidity of the company, the nature of the shareholders, certain targets relating to the dividend payout ratio and other factors relating to the dividend policy.

According to (Jensen et al., 1992) provides an understanding of the dividend is a distribution which may take the form of cash, other assets, letter or other evidence that states the company's debts to the shareholders of a company as a proportion of the number of shares held by the owner. As for the dividend policy (dividend policy), (Sartono, 2010) mean that the dividend policy is a decision whether the profits from the company will be distributed to shareholders as dividends, or will be detained in the form of retained earnings to finance future investment.

This research was done by using several variables financial ratios and using panel data test on 25 companies listed on the Indonesian stock exchange during the financial period 2005-2014. The authors assume that the financial ratios is the result of a comparison of items in the financial statements in a given period. Financial ratios are used, among others, is the liquidity ratio as measured by cash ratio, leverage ratio as measured by the ratio of debt to equity ratio ,dan profitability as measured by return on assets.

2. Literature Review

Theory dividend policy

Dividends are payments from the company to shareholders on profits earned. According Sutrisno (2001) dividend policy is a policy relating to the payment of dividends by the company, such as determination of the amount of dividends to be distributed and the amount of the balance of retained earnings for the benefit of the company. Yet another case with Gitman (2003) which gives the definition of the dividend policy as a plan of action that must be followed when a company dividend decisions must be made. While Lee and Finerty (1990) defines the dividend policy as a company's decision whether to distribute earnings generated to shareholders or will hold earnings for reinvestment in the company activities.

According to Weston, Brigham and Gapenski (1996) optimal dividend policy is a dividend policy that creates a balance between current dividends and accretion in the future so as to

maximize the company's stock price. Prosentasee profit paid sabagai dividend will fluctuate from one period to another in line with the number of opportunities received persahaan. By pays dividends it is expected that the company will have a high value in the eyes of investors. In addition to the continuous dividend payments, the company is able to face the economic turmoil and capable of delivering results to shareholders.

Several theories relating to the dividend policy and the underlying assumptions, among others.

a. Dividends are not relevant

According to Modigliani and Miller (1961) in Sartono (2010) dividend payout ratio has no effect on the company's stock price or cost of capital. Modigliani and Miller stated that the dividend payout ratio is not relevant, then the value of a company is determined by the earning power of the company's assets. While the decision whether the profit earned will be distributed in the form of dividends or detained will not affect the value of the company. To prove his theory, Modigliani and Miller (1961) suggests the following assumptions.
1. There are no personal taxes and corporate income tax
2. No cost or emissions flotation costs and transaction costs
3. The capital budgeting policy independent company dividend payout ratio
4. Investors and managers have the same information about investment opportunities in the future
5. The distribution of income among early dividend retained earnings does not affect the level implied by the investor profits

b. Bird in the hand theory

This theory proposed by Gordon and Lintner (1956) in Ambarwati (2010) which considers the dividends received is something that is definitely on hand so that it has a low risk leboh compared to capital gains. Gordon and Lintner (1956) also found investors prefer dividends because more certain revenue than expected return is uncertain when reinvesting dividends on certain investments.

c. Tax preference theory

Capital gains taxed at lower rates than the tax on dividends, the shares have become more attractive high growth Conversely, if the capital gain is equal with income taxed on dividends, capital gains, the profits to be reduced, however, the tax on dividends as a tax on capital gains paid after the sale of new shares, while the tax on dividends to be paid each year after the payment of dividends. Investment period also affect the income investor if investors only buy shares for a period of one year, then there is no difference between the tax on capital gains and taxes on dividends. Iinvestor will ask for the rate of profit after tax was higher against the stocks that have a dividend yield that is higher than the stock with a low dividend yield. Therefore, this theory suggests that the company should determine the dividend payout ratio is low or even no dividends (Litzenberger and Ramaswamy, 1979) in Puspita (2009).

Ratio of cash (Cash Ratio)

Cash ratio is one measure of the liquidity ratio (liquidity ratio) which is the ability of the company meet its short-term liabilities (current liability) through a number of cash (and cash equivalents, such as current accounts or other savings in the bank that can be withdrawn at any time) owned by the company. The higher cash ratio shows the company's ability to meet cash (pay) short-term liabilities (Brigham and Gapenski, 1996).

Cash and cash equivalents in the equation indicates the amount of cash and cash equivalents (current accounts and other deposits that uptake is not limited by time) which is reflected in the balance sheet (the assets / current assets). Current liabilities indicates the number of short-term liabilities are reflected in the balance sheet (liabilities / current liability).
Mollah and Keasen (2000) showed that the ratio of cash position is an important variable to be considered by management in dividend policy. Payment of the dividend is a cash outflow, high free cash flow will enable the company to focus more on dividend payments or settle debts to reduce agency costs (Mollah and Keasen, 2000). So the company is getting stronger cash ratio, means the greater the ability to pay dividends.

Debt to equity ratio (DER)

Debt to Equity Ratio (DER) reflects the company's ability to meet all its obligations, which is shown by how much a part of their own capital is used to pay the debt. According to RJ (2000), one of the ratios that are included in the solvency ratio or leverage is debt to equity ratio. This ratio is used to determine what proportion of any capital itself is used as collateral for the overall corporate debt or to assess the amount of debt that is used by the company. Debt to equity ratio is calculated by the total debt divided by total equity (Jensen et al., 1992).

Return on asset

ROA is a profitability ratio, ie the ratio that indicates how effectively the company is operating so as to produce profit / loss for the company. Ang (1997) mentions that the ROA ratio is used to measure the effectiveness of the company in generating profits by exploiting its assets. This ratio is an important ratio between profitability ratio that exists. According to Ang (1997).

ROA higher value would indicate that the company is able to generate a profit versus a relatively high asset. Investors would like companies with high ROA, because companies with high ROA is able to generate the level of profits greater than firms with lower ROA.

Previous research

Research conducted by **Chang and Ree (1990),** which examines the effect of Growth, Earnings variability, Nondebt Tax Shields, Firm Size and Profitability of the House of Representatives. The conclusion that the variable Growth in this study had no significant effect, but still negatively affect the Dividend Payout Ratio, while variable Earning variability, Nondebt Tax shields, and Firm Size positive effect on Dividend Payout Ratio. In the study conducted by **Jensen et al. (1992)** concluded that the policy of insider ownership, debt, and dividend associated with the characteristics of the company has a relationship of interdependence.

Research by **Mahadwartha and Jogiyanto (2002),** examines the effect Investment Opportunity Set (IOS), managerial ownership, firm size, and debt policies towards DPR. The conclusion of the results of these studies is, debt policy, investment as opportunity set, has a positive influence on the House of Representatives. In the variable managerial ownership and size of the company has a negative influence on the House of Representatives.

Ismiyanti and Hanafi (2003) conducted a study that examines the effect of the debt policy, managerial ownership, risk, institutional ownership, return on assets, and fixed assets are measured on dividend policy with a dividend payout ratio of companies engaged in the

manufacturing sector on the JSE between 1998 -2001. Ismiyanti research results and Hanafi (2003) is that risk and fixed asset has a negative effect on the dividend payout ratio.

While **Damayanti and Achyani (2006)** conducted a study of all manufacturing companies listed in Jakarta Stock Exchange 1999-2003 period to test the influence of the independent variable investment company, liquidity, profitability, growth, size of the company and the dependent variable dividend payout ratio. The results showed that all of these variables did not significantly influence the dividend payout ratio.

Research by **Andriyani (2008),** which analyzes the effect of the cash ratio, debt to equity ratio, insider ownership, investment opportunity set, and the profitability of the dividend policy is done on automotive companies listed in Indonesia Stock Exchange in the period 2004-2006. Research results stated that the cash ratio, debt to equity ratio, investment opportunity set, and return on assets partially significant effect on the dividend payout ratio, while insider ownership no significant effect on the dividend payout ratio

Amidu and Abor (2006) examine the factors that affect the dividend payout ratio at 22 companies listed on the Ghana Stock Exchange in the period 1998-2003. The variables used for predicting the House is profitability, cash flow, tax, risk, insider ownership, growth, and market to book value. Research results indicate that profitability, cash flow, and tax positive significant effect on the DPR, while the risk, insider ownership, growth, and market to book value significant negative effect on the DPR. And **Anil Kapoor (2008)** investigated the factors that affect dividned payout ratio on IT companies in India. The variables that allegedly affect dividend payout ratio in these studies is earnings before interest and taxes / total assets, cash from operations, corporatetax ./ profit before tax, annual sales growth, and market to book value.

Gill et al. (2010) examined the factors that affect the dividend payout ratio at 266 manufacturing and service company in the United States. The variables used in predicting the DPR is corporate profitability, cash flow, tax, sales growth, market to book value, and the debt to equity ratio. Results from this study indicate that the service companies, DPR paid significantly affected by the variable profit margin, sales growth and the debt to equity ratio, while the cash flow variables, tax and market to book value does not affect the DPR. In the manufacturing variables that affect the House is the profit margin, tax and market to book ratio, while the cash flow variables, sales growth and the debt to equity ratio does not affect the DPR.

Appannan and Sim (2011) examined the factors that influence the dividend policy at five companies that enter into the food processing industry category (consumption) which is listed on the Kuala Lumpur Stock Exchange. The variables used to predict the DPR is profit after tax, cash flow, debt to equity ratio, past dividend per share, sales growth, the size of the firm and outstanding shares of the firm. Results of the study showed that the variable debt to equity ratio and past dividend per share is the most powerful variable influence on the House while the variable profit after tax, cash flow, sales growth, the size of the firm and outstanding shares of the firm is not too significant effect on DPR

3.Research Hypothesis

According to the book Stice (2004) in Puspita (2009) defines as return on assets ROA (return on assets). ROA is a financial ratio used to measure the rate at which the asset was used to generate a profit. The greater the ROA shows a company's performance is getting better, because the greater the return on investment. Thus increasing ROA will also increase dividend income. The company's ability to earn profits is a key indicator in the company's ability to pay dividends, so the profitability as the most important determinants of the dividend. Amidu

research and Abor (2006) show the positive influence of ROA to the House.

Based on the above explanation authors formulate hypotheses as follows.

H1: There is a positive relationship between the cash ratio, return on assets, debt to equity ratio and dividend payout ratio using panel data test OLS models.

H2: There is a positive relationship between the cash ratio, return on assets, debt to equity ratio and dividend payout ratio by using the test panel data models MET.

4.Research Methods

Study Design

The study design is a plan of the structure that directs the process of research and research results as far as possible be valid, objective, efficient and effective (Jogiyanto, 2007). This study aims to determine the effect of the cash ratio, debt to equity ratio and return on assets in the dividend payout ratio. There are four variables used in this study is the cash ratio, debt to equity ratio, return on assets and dividend payout ratio. Population in this research are manufacturing companies listed on the Stock Exchange in the year 2005-2014. The sample was selected by purposive sampling method. After the sample set, followed by collecting data through non-participant observation method, that is by reading, observing, recording and studying the description of books, journals and business accounting, Indonesian Capital Market Directory (ICMD) as well as accessing Internet sites that relevant. The hypothesis of this study will be analyzed using panel data regression analysis to examine the relationship of cash ratio, debt to equity ratio, return on assets and dividend payout ratio. Results of the analysis are then interpreted and followed by making the conclusion of the study.

Location and Time Research

The study was conducted at the time of March-May 2015 at the Jakarta by downloading data from the official website of the Indonesian Stock Exchange (BEI) is www.idx.co.id and Indonesian Capital Market Directory (ICMD). The unit of analysis in this study is an organization in the form of companies listed on the Stock Exchange in the year 2005-2014.

Types, Sources and Data Research

The type of data

Based on the type, the data used in this research is quantitative data that is data in the form of figures or qualitative data diangkakan (Sugiyono, 2008). Quantitative data in this research is financial statements and summary of the performance of companies listed on the Stock Exchange in 2005-2014.

Data source

Based on the data source, the data used in this research is secondary data, ie data obtained from sources that do not directly provide the data to the data collector (Sugiyono, 2008). In this study the data obtained from the website of the Stock Exchange and ICMD. Secondary data used in this research is financial statement data and company profile manufacturing companies listed on the Stock Exchange in 2005-2014.

Research Data

Data in this study were selected by purposive sampling method using the following criteria: 1)

The company listed on the Stock Exchange in succession from 2005 to 2014 year, 2) the Company publishes its financial statements for the period ended December 31 and 3) Companies dividends ten consecutive years from 2005 to 2014 year.

Data Analysis Techniques

According Widarjono (2007, 251), to estimate the parameters of the model with panel data, there are three techniques (models) are often offered, but I only used two models to answer the hypothesis in this study, namely:

1. Model Common Effect
This technique is the simplest technique to estimate parameters of panel data models, which combine cross section data and time seriessebagai one entity without notice of the time difference and entities (people). Where is the approach that is often used is a method of Ordinary Least Square (OLS). Model commen Effect ignore individual differences in dimensions or time or in other words, the behavior of the same data among individuals in different periods.

2. Fixed Effects Model (Fixed Effect)
Fixed Effect model approach assumes that the intercept of each individual is different among individuals while the slope is fixed (same). This technique uses a dummy variable to capture the differences between individual intercepts.

5.Results And Discussion

When we create a set of panel data, and we want to make the model, then of course the question will arise whether a suitable method for the data available? Common? MET? Or MER ?.

H1 : Effect of cash ratio, debt to equity ratio, return on assets and dividend payout ratio by using the test model OLS panel data

With us choose common means we want to estimate the model by OLS, or in other words we use intercept fixed for each individual, is mathematically written by ait = 0. In order to answer the research hypothesis, then we will choose the model common that the results can be seen in the picture below this:

Dependent Variable: CR?

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER?	-0.175804	0.053056	-3.313535	0.0011
ROA?	3.998004	0.437530	9.137659	0.0000
DPR?	0.181908	0.063403	2.869081	0.0045

R-squared	-0.074512	Mean dependent var	0.707610
Adjusted R-squared	-0.083212	S.D. dependent var	0.855203
S.E. of regression	0.890074	Akaike info criterion	2.616903
Sum squared resid	195.6813	Schwarz criterion	2.659161
Log likelihood	-324.1129	Hannan-Quinn criter.	2.633911
Durbin-Watson stat	0.453091		

Sources : Proceed by author

Seen that the numbers R ^ 2 is relatively small, and three independent variables was significant for DER, ROA and DPR. Determinant coefficient values indicate that the model describes the relationship between CR, ROA, ROE, and the DPR of 7.45%. So that we can interpret common models slope above that with every change of one point to be able to reduce

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2. Structural VAR Modeling In Stationary

By
Teguh Sugiarto

I.INTRODUCTION

Since the 1980's, and leading until now, many researchers have focused on finding a superior and alternative framework to the model developed by Mundell-Fleming-Dornbusch regarding whether or not, simultaneously, monetary policy, exchange rate policy, and trade fiscal policy can be used to benefit an economy. Then, in the last two decades, a number of studies have been moving toward the so-called 'intertemporal approach ', which is based on a micro-foundation model that optimizes the dynamic, fluctuating conditions of the economy, where preferences, technology, and financial capital markets are directly modeled. International asset market plays a central role in this framework, for they allow nations' economies to trade consumer goods from time to time by allowing various individuals, states, and firms to borrow from and lend to each other (Obstfeld & Rogoff, 1996).

Recently, researchers have moved away from the use of the present value approach to the use of structural vector autoregresion (SVAR) analysis to examine the implications of the intertemporal, time-changing model. As mentioned before, the main implication of this is that the intertemporal model has effects upon firm balance sheet transactions that are driven primarily by temporary, country-specific shocks, which are short-term in duration and are not permanent. Therefore, in order to test the adequacy of the intertemporal model, based on time, one should be able to decipher between a system of temporary economic shocks to an economy and more permanent conditions, for which, for the purpose of conducting in-depth research, the structure of the SVAR methodology is naturally suited.

An abundance of recent research has been performed by using VAR models developed, more commonly referred to as an analysis using structural vector-autoregression (SVAR). This methodological approach analyzes an economy particularly in regards to the analysis of monetary policy carried out by national central banks, in adjusting nation's interest rates. Many researchers and academics have the assumption that nation's central banks, or so-called national "Monetary Authorities," have more valuable information than private firms. This includes observations that they can work in the negative interest of the variable goods markets. On that note, one model portrays an economic triangle structure based on the Cholesky decomposition, where the model was adopted to obtain a better identification than one developed by Christiano et al. (2005). But in terms of different perspectives, there are several other models, such as those initiated by authors Kim and Roubini (2000). Kim and Roubini argue that a set of information before a Monetary Authority is very dependent on the availability of data in terms of the frequency with which it is collected and used, but better yet it depends crucially on whether the current data is the present instrument of policy. This can be compared to adopting structural decomposition models, which in terms of the form of its matrixes, gain identification of interacting variables using a relationship in terms of time.

Within this framework, there are several kinds of models used, one of which is called

Graphic Modeling (GM). This tool is still considered relatively new. Many researchers believe that graphical modeling can gain something over the identification of results of using SVAR modeling, as discussed in a 2009 paper by Oxley et al. Graphic Modeling is a data-oriented method based on an analysis of partial correlation between the variables. In the second step of this unique methodology, all of the information contained in the relationship between random variables in the system take advantage of the other variables, to obtain the identifying relationship. This so-called graphic modeling procedure is conducted to reduce the number of potential SVARs originating from the diminished form. But, it needs to be underlined that the objectives of this research conducted is to provide information about a perspective upon the form of the data contained in the research, oriented to the presence of a debate discussed later on. However, this approach in total does not allow occurrence of an identification. Identifying occurrences will provide some form of support to choose which analytical approach of the literature should be followed, or which research method will serve as the main basis of the model used.

II.LITERATURE ON SVAR

In the SVAR modeling experience, progress is rapidly being made in use, although it is still advancing in modeling theory. It is a way of testing models empirically that continues to grow at all times. An empirical study of the SVAR model comes from, to start of our review with, researchers like Campbell (1987), and Campbell and Shiller (1987). Meanwhile, SVAR models in the form of present value-based consumption began to be used by scholars as Sheffrin and Woo (1990a, b), Otto (1992), and Gosh (1995). A number of these research studies, particularly the earliest, used a model form of a model limiting identification, which arose due to the fact that the SVAR model theory applied to the basic model representation. This is such that beyond the SVAR model, VAR has been used to go with it, so that tests for accuracy and truth can be made. Some researchers also approach the question with nearly the same method used by Bergin and Sheffrin (2000). They use a form of quarterly data starting from the 1960s: 1 until 1996: 4 comparing countries deemed to have minor issues such as the countries of: Australia, Canada, and United Kingdom. In the study, they concluded that with the model used, the use of time can be used to reduce the aberrations in the data from the actual consumption path, with significantly, optimum results for some countries that the research is undertaken upon. In their notes, these authors also provide an explanation that the shape or structure of the economy of the country require that very careful they match the displayed form because of the use of the exchange rate variable in the model.

Further studies are also mentioned in Ahmed and Park (1994), which adopted the model of the SVAR long-term by using four variables to examine the macroeconomic fluctuations in seven countries who are members of the OECD countries (the Organization for Economic Cooperation and Development), whereas the average structure and shape of the country's economy is both small and open. Using the method of identification' of Blanchard and Quah (1989), a study conducted by Ahmed and Park was able to identify four of the structural shocks: first, the existence of external shocks, second of all, the presence of domestic supply shocks, and third, the occurrence of shocks to domestic absorption of such activities. Finally, a fourth implication considered was how such shocks to an economy can affect domestic price levels. These studies show that countries can domestically absorb such shocks, commonly referred to a minor shocks, for it is namely the major shocks that explain large movements in trade balances. These large external type shocks, conversely, do not seem to be trivial in explaining fluctuations in the balance of trade in the country.

Subsequent research conducted by Lane (2001b) and Lee & Chinn (2006) provide an accepted conclusion that, if a country is in a reasonably good economic condition in terms of net foreign assets stocks, which is established as constant and stable variable, then the occurrence of is of an order that is both real and monetary, after which it can cause the onset of long term effects on the economy of a country. As an example of the occurrence is the effect of transactions working against the GDP (Gross Domestic Product). From research done by Lee, Lane and Chinn, in total, we can draw a conclusion from the studies they are doing that they are consistent with most of the previously existing theoretical models, as the onset of permanent shocks, according to the authors, can have long-lasting effects that large enough to affect real exchange rates, but have a relatively small effect on the balance of the transactions that the country is running. While they are happening, economic shocks can have considerable impact, and would be noticeable on a firm's balance sheet in term of transactions, as runs on currency and currency exchange rates move in a state short term volatility, but in the long term for both variables there may be more stability.

The conclusions of the studies mentioned above are summarized by Canoe (2008) using the SVAR models with three variables, where the SVAR consists of variables: interest rates of the real-world economy, changes in domestic output, and checking or money market accounts, expressed as a percentage of the net result. Lane in the research identified three basic structural shocks in the economy of a country, which are split into a 3 model system: the first, global shocks, the second that are temporary country-specific shocks, and for a third and final factor, that can also hastily affect an economy, permanent country-specific shocks.

III.RESEARCH METHOD

Research conducted used four of Indonesia's macroeconomic variables for the SVAR. Although the larger models for modeling SVAR, such as variable SVAR, that uses eleven variables as conducted by Dungey and Pagan (2000), we will allow for a complete set of interactions, using a set of variables and economic conditions that can be justified on several grounds. First, smaller models are used, that can capture key relationships, although they can be more stingy, relying on degrees of freedom available, which is more conducive to parameter estimation. Second, several extant variables can cause effects for select sectoral variables of the economy, without contributing to the key macro-economic interaction.

Time and Research

This research was conducted by the author across the time: September-December 2014. The data used in this study consisted of four variables i.e. domestic GDP, inflation, exchange rate Indonesia U$D, and domestic interest rates during the long period from January 1984 to December 2012. Data was obtained by the author and was first processed after collection.

Stationarity Test

In Statistics and Econometrics, the unit root test can be used to test for the existence of a presumption that a time series data is not stationary. A commonly used test is the test of augmented Dickey – Fuller. Other similar tests are the Phillips – Perron. Both indicated the presence of a null hypothesis of the unit root as. Please take note here that the data is said to be stationary if the data is spatially flat, second, if the data does not contain components of the trend, third, if it has a diversity that is constant, and if there are no periodic fluctuations,

lastly. Coefficient ρ will be worth 0, and in this case a hypothesis will be rejected so that the model becomes and is considered stationary.

Hypothesis used in testing augmented dickey fuller can be summarized as:

H0 : ρ = 0 (***unit roots***, variable Y is not stationary)

H1 : ρ ≠ 0 (no ***unit roots***, variable Y is stationary)

Conclusion: the results of the root test is obtained by comparing the t-value calculate with a t-chart on the chart of Dickey-Fuller.

Granger Test

Granger is a long-term test between the links of a few independent variables, which, although individually is not stationary, can, through a linear combination between the chosen variables, indeed be stationary (Thys and Michels, et al. 2012). Granger tests can be used to determine whether two or more variables, economic or financial in this case that is used, have a relationship of long-term balance. However, if, through the testing, the data variables have been stationary, it means that between the variables there can be cointegration, or that they have a long term relationship.

According to Gujarati (1995) and later, 2010, work, if two variables have the Granger, then generated regression will not spurious and the result of t-test and F-test will be valid. To see if the variables are cointegrated, one can move between allowing for the data to be stationary or to be changing. If the data is stationary then it can be said to be, between the variables, cointegrated, indicating that the fewer chosen variables are potentially meaningful.

Identification of the SVAR

Assume the economy is described by a form of structural equation (ignoring constants):

$$B(L)x_t = u_t$$

$$Eu_t u_t' = D$$

$$Eu_t u_{t+s}' = 0, \forall s \neq 0 \qquad (1)$$

Whereas the sequence of matrix polynomial is in the lag with Operator L, a non-singular matrix is normalized such that it contains this on the diagonal and describes relationships between the variables in the model that are contained in the vector, which is a vector (Nx1) variable. After this, there is a vector (Nx1) of mean zero, and a series of disturbances that are correlated. It is the matrix of the variance, which is a diagonal matrix, where the elements of the diagonal is the variance of each of structural disorder. The structural model is associated with a form of decreasing VAR, which first had to be estimated in the following way:

$$A(L)y_t = \varepsilon_t, \quad E\varepsilon_t\varepsilon_t' = \Sigma$$

$$E\varepsilon_t\varepsilon_{t+s}' = 0, \forall s \neq 0 \qquad (2)$$

Where Σ is the covariance matrix of the reduced form, and is the matrix of the polynomial

in the lag operator, so that the

$$A(L) = B_0 \quad B(L) = I^2 - A_1L - A_2L - \ldots A_pL_p \qquad (3)$$

and is the vector of the reduced form of the disorder correlated series, so
In order to obtain estimates of the parameters of a structural VAR defined in Equation (1), it is necessary for the model to be either identified exactly, or, in a similar but extreme case, to be over identified. Proper identification requires the same numerical or conceptual amount in the parameters, because there is a reduced form of the model. In other words, it should be possible to recover the structural parameters of the model in reduced forms. This is the order condition. Condition ratings also must be met for the estimation, which is yet more difficult to achieve. Combining equations (3) and (4), the relationship between the structure and the shape of the parameters, which are reduced, can be expressed by using the following equation:

$$\sum = (B_0^{-1})D(B_0^{-1}) \qquad (4)$$

With the normalization of the n diagonal, which can be done as is so needed, in a structural approach, any structure can be put in place as long as it has enough limitation (Buckle et al. 2002, p.6). One can use the method of estimation in the study of non-recursiveness to enact long-term restrictions on the matrix, which is a little different with the consistency of approaches used by Bernanke (1986) and Sims (1986). This is used as the main focus of this research in order to look at the long-term relationship between macroeconomic variables. In addition, a block exogeniety not used on one of the foreign variables, or considering it outside the structural system, is used to obtain the truth in identifying a monetary shock. An alternative approach used, such as in works by Shapiro and Watson (1988), and Blanchard and Quah (1989), is not applied in this case.

IV.RESULTS OF THE RESEARCH AND DISCUSSION

From the economic point of view, if the joint dynamics of a set of given variables can be represented by models of the VAR, then the structural form is therefore a depiction of the underlying, "structural", economic relations. Two features of the structural form make the variables more likely and favored to represent the underlying relationships:

1. Error Terms are not correlated. Structural economic shocks that drive the dynamics of the economic variables are assumed in this research to be independent of each other, which means zero correlation between error terms as the desired property. It is useful to separate the effects of the influence of economically unrelated aspects in VAR. For example, there is no reason why the oil price shocks (for example, the impacts shocks offer) should be related to a shift in consumer preference towards clothing style (for example the surprise request). It is therefore expected that these factors are statistically independent.

2. Variables can have an impact on other contemporaneous variables. This is a most desirable feature, especially when one is using low-frequency data. For example, a rise in indirect tax rates will not affect the tax revenue of the day the decision was announced, but people can find an effect on the data of that quarter.

To achieve a data modeling the SVAR to see if it is integrated or not, then we performed a test of the condition of the stationerity over all of the data, followed by a test of Granger and SVAR Modeling.

Stationarity Test

Unit root tests conducted on macroeconomic variables, exchange rate of real GDP, inflation, and interest rates, are effective. The order of integration is studied using the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) test. The second test is usually done starting from a different model (having the trend and constant, with no trend but with a constant, with no trend or constant). Because some of these trials are the most commonly used, this study does not try to introduce new tests. By using these four concise variables, it can result in domestic outcomes as in show in the table below:

Table 1: Result Unit root test

Null Hypothesis: D(RESID01) has a unit root

Lag Length: 0 (Automatic - based on AIC, maxlag=6)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.256259	0.0000
Test critical values: 1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Sources: Proceed by author

From the table above we can observe how the values of the probabilities generated offer very significant levels of confidence intervals of 5% that are used. Thus, it can be concluded from the research process that the data are stationary for a variable, in this case.

Cointegration Test

For additional details about testing (non) Granger causality in context of whether the data is stationary or non-stationary, the procedure is to test the Granger causality. If we check and see the basis of this research, we will find some of the other approaches that can be taken to ensure that the test of causality that we do might be cointegrated). For example, see in Lütkepohl (2007, Ch. 7). Here we see the test results for Granger:

Table 2: Result Cointegration test

Series: US_$_RP PDB INF__IND_ BI_RATE

Lags interval (in first differences): 1 to 1

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.445188	35.76507	47.85613	0.4083
At most 1	0.369144	19.85865	29.79707	0.4324
At most 2	0.156419	7.420329	15.49471	0.5293
At most 3	0.099430	2.827637	3.841466	0.0927

Trace test indicates no cointegration at 0.05 level

* denotes rejection of hypothesis at 0.05 level

Sources : Proceed by author

We can see in the table above that the test result from Granger on this research shows that data between the macroeconomic variables is not cointegrated at significant p levels of 5%. (Trace test indicate no cointegration 0.05). Also, we can see from these results, the resulting probabilistic value is not significant at the 5% level of alpha.

SVAR Modelling

Vector Autoregressive (VAR) and Structural Vector Autoregressive (SVAR) models can be described in total as models that explain relationships, at least in part from the values of a set of variables, based on the values of the past over the entire variable set. Over the past few decades, the SVAR model has increased the importance of its use in the field of economic analysis. This study show how an approach between the techniques of system dynamics methodology, and econometrics, can be used. By showing that the use of elements that are commonplace in the model of the dynamics of the system, consequently, we can carry out a simulation model of the SVAR. Here we see the results of the SVAR Modeling using a matrix of slightly different restrictions.

Table 3: Result SVAR Modelling

Structural VAR Estimates

Structural VAR is over-identified (6 degrees of freedom)

Model: Ae = Bu where E[uu']=I

Restriction Type: long-run text form

Long-run response pattern:

C(1)	0	0	0
0	C(2)	0	0
0	0	C(3)	0
0	0	0	C(4)

Coefficient	Std. Error	z-Statistic	Prob.
C(1)	9.637928	1.311556	7.348468	0.0000
C(2)	7.98E+08	1.09E+08	7.348469	0.0000
C(3)	22.34808	3.041188	7.348468	0.0000
C(4)	2.255591	0.306947	7.348466	0.0000

Log likelihood -751.3134

LR test for over-identification:

Chi-square(6) 776.6652 Probability 0.0000

Estimated A matrix:

1.000000	0.000000	0.000000	0.000000
0.000000	1.000000	0.000000	0.000000
0.000000	0.000000	1.000000	0.000000
0.000000	0.000000	0.000000	1.000000

Estimated B matrix:

4.281432	-149195.7	-8.131680	6.641867
370.7373	1.23E+08	4310.949	-1267.829
-0.506192	411826.3	15.83257	-2.053036
-1.112103	81910.94	1,024073	0.511721

Sources : Proceed by author

Restriction 1. Matrices A and B are square and can be reversed. This means that the amount of the underlying shocks (ui) is equal to the number of endogenous variables that we used. This implicitly assumes there are any uniquely identifiable fundamental surprises with the endogenous variables. For a given number of endogenous variables in the system, there is

no a priori reason to assume that the underlying shocks are equal in number and effect. For example, it may be easier to assume that there are a quantity of less fundamental shocks to the economy, though in practice most researchers assume that the two are the same.

Restrictions 2. Identify restrictions that can be long-term, marked by similarities in part 3, or any type of long term restriction marked by similarities in part 3 as well, but not both. By enacting restrictions on the long run (in the matrix C described above) we conclude the restriction on values of matrix A and matrix B, even though such restrictions may not be simple. We often find that a combination of economic theory to infers from the short term and the long term relationship between a set of variables that are given. Incorporating short-term and long-term restriction involves complex matrix algebra because we need to ensure that it does not conflict with one another.

LR test for over-identification

$$LR = 2(l_u - l_r) = T(trP - \log|P| + k) \quad \text{where} \quad P = A'B^T B^{-1} A\Sigma$$

If null hypothesis: restrictions are valid when $LR \sim \chi^2(q-k)$ where q = # restrictions. Here we get to the value $\chi^2(10) = 776.6652 > 42.557$ with alpha and n levels used each of the percentage 5% and 29 do not reject the null hypothesis, with the multitude of the significant coefficients, therefore we do not have to repeat and refine the restrictions / restrictions, since many variables are significant.

V.CONCLUSION

From the study of SVAR, one can determine if they wish to perform this type of restriction which, in the short term or long term, each various type of method have the pros and cons mentioned here for use by its researchers. In order to estimate the dynamic consequences of, for instance, consumer income on the demand for money, we must take into account various historical factors, each represented by variables, such as that when income rises, further changes in income and interest rates lasts. One should use the flow of time, along with the assumptions about it, to assess all of the consequences affecting the demand for money at time t + s from changes of income at time t, whatever that may be in the example that is chosen. With VAR, we can use the time line that would be historically predictable following unexpected changes in revenue.

Consequently, it can be concluded, that from the relationships between the variables that we have tested, data between the economic variables are stationary but not cointegrated, with the test results indicating that significant SVAR modeling in the long term need not to be done to restart the process of restriction, in which case, by definition, only a handful of variables are needed to obtain a complete and useful economic picture.

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3.Financial Ratio Relationships

By
Teguh Sugiarto

1. Introduction

If we look at the financial performance is one important factor for investors in choosing which investment he will use, whether they are going to invest in shares or in the form of loans and term loan in particular. Financial ratios and financial performance is a measurement tool in assessing the success of a company's business activities or an organization with legal status for a certain period. Usually, financial analysts give some recommendations commonly used to measure financial performance, among other is financial ratios such as liquidity ratios, activity ratios, leverage ratios, profitability ratios (return on assets and return on equity) and the ratio of stock market prices, for example.

Although it has been widely used by investors as one of the bases in making investment decisions because the value contained in the financial statements, the use of financial ratio analysis as a measure of accounting has a major drawback, namely ignore their capital costs making it difficult to know whether a company has managed to create value or no. To overcome such drawbacks developed a new concept of Economic Value Added (EVA), which attempts to measure the value-added (value creation) generated a company by reducing the burden of the cost of capital (cost of capital) incurred as a result of investments made are done.

EVA method was first proposed by G. Bennett Stewart and Joel M. Stern, in 1991. In Indonesia, a method known as a method NITAMI EVA (Economic Value Added). According to G. Bennett Stewart, III (The Quest for Value, 1999: 2): "EVA is operating profits less the cost of all of employed to produce Reviews those earnings". EVA is a measure of corporate performance that emphasizes the use of the cost of capital used in the operation of the company. EVA is the profit (loss) is obtained after reducing the operating profit after tax to the cost of capital where the entire equity capital and liabilities included therein. EVA ways to measure the performance of the company is to reduce the operating profit after tax burden of capital costs (Cost of Capital), where the burden of the cost of capital reflects the level of risk companies. EVA is the company's goal to increase the value or the value added of capital that has been invested shareholders in the company's operations. Therefore, EVA is the difference between operating profit after tax (Net Operating Profit After Tax or NOPAT) and capital costs (Cost of Capital).

Conceptually, EVA is profit remaining (residual income) profits from the company after deducting the cost of capital (Cost of Capital) is invested to generate such profits. Companies that have a positive EVA value indicates that the company is able to increase the wealth of its shareholders because it produces a rate of return that exceeds the rate of cost of capital. Conversely, a negative EVA indicates the value of the company decreased

due to a lower rate of return than the cost of capital.

EVA concept is a concept of fairness in assessing the performance of the company. Fair here implies that the concept of EVA, capital or operating funds is calculated based on the funds obtained by the company from several sources. So that the EVA, the amount of capital (Cost of Capital) multiplied by the funds raised. The weighted capital calculation is to determine the degree of fairness for providers of funds (creditors and shareholders) such as Billy Widayanto opinion."Economic value added is based on the concept that the measurement of a company's profit, we must fairly consider the expectations of each fund provider (creditors or shareholders) ". Justice degree is expressed by the size of the weighted (Weighted Average Cost of Capital or WACC).

Alternative methods offered by Stern Stewart EVA Co. seems to promise many advantages that its use has been so widespread in the United States. Fortune magazine annually lists companies in the United States are considered to create additional wealth for shareholders based on the EVA achieved by these companies. Application of EVA in Jakarta Islamic Index to assess financial performance is a rare thing done by a couple of researchers because during the performance measurement Jakarta Islamic Index (JII) is done by comparing the average stock returns generated by JII with market return.

From the above it can be seen that the application of EVA in assessing financial performance has a very important role as a source of information that can be used for analysis using financial ratios. Thus, this study attempts to explore the method's ability financial ratios (ROA and ROE) and EVA positive effect. Besides, the research is intended to carry out further testing of previous empirical findings on the application of EVA and financial ratios consistent effect on stock prices of some companies listed on the Jakarta Islamic Index "(now Indonesia Islamic Index). This study is a replication of previous studies but nothing to distinguish from this study, which is the object of the sample as well as the timing of the price of existing shares.

The object of this research companies listed on the Jakarta Islamic Index (JII); (Now Indonesia Islamic Index) during the years 2004 to 2014, it is intended to facilitate researchers in pengelolahan the data with the time constraints that exist and in order to be more specific in the study. Based on the description above as well as thinking writers interested in researching about researching on the effect of financial ratios (ROA and ROE) and EVA in a company registered in JII (now Indonesia Islamic Index) in the period 2004-2014.

2. Literature Review

Some research about the company's financial performance measurement method has been carried out in Indonesia, among others: Miranda, Yuliana, and Thio test whether the method of measurement of financial performance EVA, ROI and OCF significant effect on the Rate of Return on the 50 companies listed on the JSE in 2001 and we concluded that the measurement of performance with the conventional concept and the concept of Economic Value Added has a significant effect on the rate of return on investment, with a significance level of ROI, OCF, EVA respectively by 6.7%, 0.4%, 8.8%, far below the 10% significance level. This shows the EVA has a correlation with stock returns

slightly better than ROI and OCF.

Pradhono and Julius, analyze the influence of Economic Value Added, Residual Income, Earnings and operating cash flow to the return earned by shareholders on consumer goods manufacturing companies listed on the JSE in 2000-2002 with a sample of 34 companies. The results obtained showed that the only variable earnings and operating cash flow effect on stock returns received by shareholders with a significance level of 0.046 and 0.025 t and r2 respectively by 3.9% and 4.9%. While the variable EVA and Residual Income does not affect the stock return.

Solikhah Nur Rohmah and Rina Trisnawati (2005) examine whether there is influence jointly profitability (ROA, ROE, ROS) and EVA (Economic Value Added) company to return shareholder tobacco companies from 1994-1999 and the conclusion that the vari- The variables do not have a significant influence. That is, changes in shareholders' returns are influenced by other factors not included in other EVA penelitian. Research was also conducted by Surifah and Nuri Hidayah, namely on "The Effect of accounting information companies are air-conditioned EVA-positive and negative EVA on stock price changes ". This paper was published in the journal study published Business School of Economics Widya Wiwaha. However, in contrast to previous studies, this study showed no significant effect between EVA and stock prices.

The research which examines EVA and profitability ratios is the research conducted by Noer Saso and Nila Wulandari, entitled "Effect of EVA and Ratios Profitability on stock price". The results showed that EVA and profitability ratios have no effect on stock prices. Stock prices are influenced by other factors not included in the study.

3. Research Hypothesis

Based on the formulation of the above problems, as a temporary answer research hypotheses can be formulated as follows:
Ha1: ROA, ROE and EVA have a positive effect by using a common model of panel data.
Ha2: ROA, ROE and EVA have a positive effect by using panel data models MET.

4. Data and Methodology

Time Research

This research was conducted by the author at the time of March to June 2015.

Types of Research

The type of research to be conducted in this research is
applied research with quantitative approach based on secondary data explanatif the form of financial statements of public companies listed on the Jakarta Islamic Index as well as the annual stock price data. Environmental research is in the form of a field study.

Sampling Techniques

This sampling technique is purposive sampling or sampling techniques with particular consideration. Only elements of the population who meet certain criteria of research that could be used as a sample. Therefore, a sample of companies included in JII must meet the following criteria:

a) Companies listed on the JSE that have financial data are complete and reliable truth from the period 2004 to 2014.
b) These companies are not delisting on the Stock Exchange during the study period.
c) Companies whose shares are actively traded on the Stock Exchange in 2004 until 2014.
d) The Company does not include in a state of loss.
e) Companies, is consistently included in the list of JII during the study period.

Sources of Data

The data is set value of facts or objects believed to be correct. The data used in this research is secondary data. This secondary data in the form of annual financial statements and stock price information from the company sample obtained through the Jakarta Stock Exchange Corner UII and Indonesian Capital Market Directory (ICMD). Data after the can first processed by author.

Data Analysis Techniques and Definitions Variable

Operational Research

Data Analysis Techniques Research

In panel data, the same cross section is observed by time (Gujarati, 2004). Panel data is a combination of types of data time series and cross section so that the panel data is the data that has dimensions of time and space. Other names such data panel: Pooled Data, combination of time series and cross section data, the micropanel the data, longitudinal data, the event history analysis, or cohort analysis. Some of the advantages in using panel data include: Heteregonity, more informative, varied, a greater degree of freedom and more efficiently, avoiding multicollinearity problems, excelled in studying the dynamic changes, it can detect and measure the effects of which can not be observed in the data cross section of pure or pure time series, can be used to study behavioral models, and minimize bias. While the general shape of the panel regression model data can be defined by the following equation

$$ROA_{it} = \beta_1 + \beta_{2ROE2it} + \beta_{3EVA3it} + U_{i\,(1)}$$

Where:
i = 1,2,3, ..., N (dimensional cross section)
t = 1,2,3, ..., T (dimension time series)
Yit = variable dependent on the unit i and time t

= constant
= constant of the independent variable at time t and unit I
uit = error

If any cross unit has a number of observation time series are the same then referred to as a balanced panel. Conversely, if the number of different observations for each cross section unti called unbalanced panel.

Difficulties that may be found in estimating panel data is in identifying t - rations or f - stat from the regression models that can occur when only seditkit number of observation cross section with plenty of time series data. It can be done several approaches in the calculation mengefiensikan panel data regression model. These approaches are (1) Method of Common-constant or The polled OLS method (2) Method of Fixed Effect or Fixed Effect Model and (3) Method or Random Effect Random Effect Model.

Common methods-Constant (Pooled Ordinary Least Square)

The modeling approach with the usual OLS method is the simplest method to estimate the method assumes every company have the same slope and coefficient (there is no difference in the dimensions of the cross section). So it can be said that the constant alpha value and the same data for each cross section data means data panel regression results produced will apply to every company.

Fixed Effect Method (Fixed Effect Model)

In the method of fixed effect, intercept in the regression model can be distinguished between individual because each individual cross section is deemed to have its own characteristics. In interceptnya can be used to distinguish a dummy variable so that this method is also known as the least square dummy variable (lSDV) Model. However, the disadvantage of this method while the greater number of cross section data will make greater degress of freedom to introducc N dummies. There are several possibilities in this method, namely (1) All constant coefficients according to time and individual (2) Slope coefficients fixed, but the intercept to vary between individuals (3) Slope Intercept coefficient fixed but vary between individuals across time (4) all coefficient (slope and intercept) differ between individuals (5) All coefficient (slope and intercept) differ between individuals inter intercept time between different individuals, it can be used a dummy variable differential. Then to rewrite the equation in the early models of data panel above equation can be written as:

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_2 X_{2it} + \beta_3 X_{3it} + U_{it\,(2)}$$

Due to the data owned by having the amount of time (T) is greater than the number of individuals (N) it is advisable to use common models and MET. Mathematically general and MET models in panel data model expressed as follows:
a) The dependent variable is denoted as a variable Y for the i-th individual and wktu all t.

a. The independent variable is denoted as a variable X for the individual all-i and time to t:

1 ROA (*Return on Asset*) = Y_1
2 ROE (*Return on Equity*) = X2
3 EVA (*Economic Value Added*) = X_3

5. Results and Discussion

Summary Statistic

In accounting and finance research, the model is very much a model financial ratios used mainly to examine the relevance of the data value and financial accounting data. The first results of the manufacturing of panel data regression with the variables using the ROE and EVA as variables affecting ROA as follows :

Table 1 : Panel Data Model With OLS

Variable Dep : ROA	Coefficient	Std. Error	t-Statistic	Prob.
ROE	0.373244	0.006221	59.99422	0.0000
EVA	5.952010	1.090109	0.547885	0.5838

R-squared	0.312477	Mean dependent var	0.120377
Adjusted R-squared	0.312107	S.D. dependent var	0.092730
S.E. of regression	0.076910	Akaike info criterion	-2.291290
Sum squared resid	10.98439	Schwarz criterion	-2.285343
Log likelihood	2131.754	F-statistic	844.0012
Durbin-Watson stat	0.418705	Prob(F-statistic)	0.000000

Table 1 shows the results of analysis models using OLS test panel data models that describe the relationship between the ROA, ROE and EVA, by using signifika α level of 5%.

With the OLS model turns R^2 in the can is equal to 31.24. Watson durbin Statistics figures showed 0.41, which means there is positive serial correlation in the equation ROA, ROE and EVA. Besides, we also can see that the sum of square residual (SSE) of the OLS amounted to 10.9843. ROE value of the independent variable is statistically significant at α = 5%. That is, ROE has a significant effect on ROA. For EVA independent variables were not significant, of the model above we can conclude several things, among others: OLS model indicates a positive relationship between changes in ROE and ROA EVA with changes. Any change 1 point ROE will increase the value of ROA by 0.3732 points. Any change 1 point EVA will increase the value of ROA amounted 5.952.

Table 2 : Panel Data Model With MET

Variable Dep : ROA	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045471	0.003097	14.68244	0000

ROE	0.285373	0.008409	33.93580 0000	
EVA	-4.910209	1.100109	-4.471575 .0000	
R-squared	0.384440	Mean dependent var		0.120377
Adjusted R-squared	0.379766	S.D. dependent var		0.092730
S.E. of regression	0.073030	Akaike info criterion		-2.387866
Sum squared resid	9.834665	Schwarz criterion		-2.343263
Log likelihood	2234.521	F-statistic		82.26032
Durbin-Watson stat	0.375883	Prob(F-statistic)		0.000000

Table 2: shows the results of the model analysis using panel data test MET models that explain the relationship between the ROA, ROE and EVA, by using signifika α level of 5%

By using the model of the MET value of R^2 turns 38,44%, if we compare it with the value of R^2 with 31,24 OLS models, greater R^2 with MET models. MET models but not necessarily better than the OLS model. If we look at the value of ROE and EVA turns a significant probability, which means that the ROE and EVA have a significant effect on ROA. Based on the second research hypothesis that the ROA, ROE and EVA have the positive relationship, but from the display output to the value of EVA has a negative correlation to the ROA.

Judging from the results of the model of the MET value of the independent variable ROE and EVA statistically significant at $\alpha = 5\%$. That is, ROE and EVA have a significant effect on ROA. From the model above we can conclude several things, among others: by using a model of MET showed a positive correlation between the change in ROA and ROE to change negative correlation between changes in EVA with changes in ROA. Any change 1 point ROE will increase the value of ROA by 0.2853 points. Any change 1 point EVA will reduce the value of ROA of - 4.9102.

6. Concluding Comments

It can be concluded that between ROE and EVA have a positive relationship with the OLS models and negatives with MET models. If there is an increase of 1,000 will raise ROE, ROA amounted to 3,732.44 with OLS models. If there is an increase in ROE by 1000 it will raise the ROA amounted to 2,853.73. This paper discusses the relationship of financial ratios in existing companies in Indonesia. To investigate the relationship between ROA, ROE and EVA author uses panel data tests test, to see the relationship between financial ratios. There are positive and negative relationship between financial ratio variables studied. Finally, this study suggests is based on financial statement data is used at December 31, 2004 to 2014, the presence of these relationships indicate that the financial ratio used component can be used as a measuring tool in assessing the relationship between the increase and decrease of the variable. Research shows that the relationship between financial ratios are used, there is a positive impact and negative. Results can only be applied to a particular sample and are inconclusive for other research. Follow-up studies may be able to extend to the various models of financial ratios sharing.

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4.Application SVAR and DSVAR Modelling

By
Qodariah & Teguh Sugiarto

I.PRELIMINARY

Some debate about economic problems in Indonesia that highlights many important areas of success where a study, which is explicitly aimed at a literary: sectoral effects of monetary policy. The research was done on the assumption that the economic problems in Indonesia is considered as an important issue for several reasons. First, the impact of monetary policy on sectoral output presenting other macroeconomic challenges in the form of the Indonesian economy, given the Indonesian state has an uneven geographical distribution in the economy and other sectors. Second, heterogeneity if significant in sensitivity is the foreign exchange reserves and the exchange rate, then the capacity of monetary policy to effectively and evenly to stabilize overheating or economic slowdown, which in turn will depend on the relative size of the rate sensitive sectors such as the interest rate as one the proportion of Gross Domestic Product (GDP) and regional concentration. Third, the future is expected to examine the degree of dispersion in the sensitivity of the exchange rate and foreign reserves in sectors that are likely to explain the nature of the transmission mechanism, which should things are still in a 'black box', although many facts that monetary policy in developed countries is considered a line next in a macroeconomic management.

As was said above that monetary policy is the front line of a macro-economic management in Indonesia. It is therefore understandable that the monetary policy transmission mechanism generates a lot of interest. However, for the most part, research has concentrated on the economic monetary aggregates and ignores important differences that can occur at different levels. Although the primary objective of monetary policy in Indonesia is to achieve the inflation rate of 2-3 percent, and expects the exchange rate under $ 6,000 over the medium term, but a secondary objective remains important to keep output near a more 'natural'. Although monetary neutrality

implies that the monetary variables do not affect real variables in the long term (Lewis and Mizen 2000, P.18), it is widely accepted that changes in monetary variables can affect the real economy in the short term.

II. LITERATURE REVIEW

Vector autoregressive models (VAR) was first introduced by C.Sims (1980), which is an alternative model for a form of economy that the traditional large-scale air. VAR model is an econometric model that is widely used in order to capture the dynamics and interactions between multiple time series. All variables are treated symmetrically, while the dependent variable in each equation described by equation form lags of all variables in the model, the dependent variable is no exception itself. VAR was developed in response to the argument Sims (1980) 'that there is no a priori guide or great economic reasoning to justify treating certain variables as exogenous variables in the modeling process, and therefore all should be treated as an endogenous variable.

This is reflected in the fact that the dynamics of the VAR model is driven by unexpected changes, or shocks, the endogenous variables. In contrast, the dynamics of the traditional large-scale macroeconomic models tend to be a lot to bring the results of changes in exogenous variables. In Lenz et al, (2000) who conducted the research VAR, shocks are identified by applying the 'recursive' structure in contemporary interactions between variables using the decomposition Choleski lower triangular. The impact of economic shocks can then be summarized neatly through the impulse response function and the estimation error variance decomposition. While the impulse response is used to interpret the wide dynamic behavior of the economic system, the estimated error variance decomposition indicates the importance of the different shocks to determine the proportion of variation in each variable associated with shock.

There are some important things, which can distinguish between use of a VAR model and the structural VAR. Although the standard reduced form VAR model is a useful tool to describe the stylized facts about the data, the lack of structure makes it difficult to interpret their results. Cooley and LeRoy (1985) criticizes atheoretical recursive identification scheme used in most of the initial VAR model, they noted that the estimated responses to shocks will vary based on the sequence of variables, most of which can be considered something that is arbitrary. A particular weakness with

recursive VAR models is their inability to identify the 'right' of monetary policy shocks, because they do not differentiate between endogenous and exogenous components of monetary policy.

In some other cases, the occurrence of a monetary authority endogenous reaction to changes in other variables that can not be controlled, and the possibility of there being some reverse causation between the use of variables such as interest rates, output and prices. To overcome these problems, in a study done by Bernanke (1986) and Sims (1986) enforces identification scheme non-recursive on the interaction of contemporary between variables, it will allow the model 'structure' to be imposed on the model and wider consistent with existing economic theory. In the model, the non-recursive impose restrictions on short-term, so-called non-recursive structural VAR (Hamilton, 1994, p.330). Actually in the VAR model and svar has been used extensively to model the impact of monetary policy in the context of a closed economy in (Sims, 1986; Gali, 1992; Gordon and Leeper, 1994; Bernanke and Mihov, 1995; Christiano, Eichenbaum and Evans, 1996, and Sims and Zha, 1998a, b) and an open economy context (Sims, 1992; Eichenbaum and Evans, 1995; Cushman and Zha, 1997; Kim and Roubini, 2000). A structural VAR models allow for examination shocks 'large', such as unexpected changes in the monetary policy stance. However, to do this, need to make an imposition of restriction rules that will catch on the occurrence of a shock. The purpose of the monetary policy shocks reveal something specification rules generally require a broader systematic policy, which reflects the behavior of the monetary authority, as proposed by Taylor (1993). Given this opens the door to a number of literature on the policy rules, which will reflect the behavior of a central bank that is more systematic. If we see in Brischetto and Voss (1999, p.6), indicating the restrictions imposed on the SVAR contemporary relationships that may be more accurate if they are taken from the scale or in the context of perekonmian large, in terms of macroeconomic models is entirely determined by policy makers.

Very often in practice, the restrictions imposed are generally based on intuition are largely consistent with conventional macroeconomic theory and adjusted to produce a model of the dynamics that makes sense. In a study done by Leeper, Sims and Zha (1996) argues that this approach is justified as long as the reasons that underlie

specification of the model that will be explained and must be disclosed. Nevertheless, it is still a little difficult to distinguish between the characteristics of the model are determined by the restrictions imposed and defined as form data used in Uhlig, (1997, p.383).

In Brunner (2000) and Rudebusch (1998) questioned whether the model svar adequate to be able to see the impact of monetary policy shocks, and therefore whether this approach is useful for policy analysis. There are two main criticisms that continue to challenge the VAR literature. The first criticism involves the need to specify restrictions on the central bank's policy reaction function, where there is little agreement. While the VAR model successfully isolate the components 'exogenous' monetary policy (in order to remove the reverse causality between variables that can lead to changes in interest rates) that exogenous shocks monetary policy is actually produced within the framework of svar which reflects an unexpected, systematic changes to monetary policy, which is not always an accurate reflection of the central bank's policy decisions. While in another study conducted by Brischetto and Voss (1999), Dungey and Pagan (2000), Bruney and Rudenbusch and Berkelmans (2005) provide guidance on how to avoid the 'puzzle' - the results of SVAR are not in accordance with conventional theory or empirical observation. Four puzzles commonly observed in models svar: influence liquidity puzzle, puzzle discounts, price index, exchange rate, and the puzzle of foreign reserves and the rate of bias in Kim and Roubini (2000). According to Leeper, Sims and Zha (1996), the abolition of the two puzzles are generally regarded as the minimum requirement for a justification process that identifies a monetary policy shock. Puzzle liquidity refers to the unexpected relationship between the money supply and interest rates. Assumptions, when the monetary policy shock is identified as an innovation in the money supply, a contractionary policy will result in lower, not higher, to interest rates.

In another study, however discussed the price puzzle that occurs when the contraction of monetary policy shocks in inflation rates higher despite reasonable response of output and money supply. Incident in terms of price exchange puzzle manifests itself as the depreciation of the domestic currency immediately after the contractionary monetary shock in the country. Advanced puzzle discounts occur when the exchange rate moves in the direction anticipated following a monetary policy shock, but the changes are far

more persistent than expected under uncovered interest parity. In another study using the model SVAR showed that the variables that control for the central bank's expectations of future inflation help to reduce the 'price puzzle'. In foreign research, oil prices are often used for that purpose in Kim and Roubini (2000). But in SVAR other models in offering an alternative, using a broad index of commodity prices in Christiano, Eichenbaum and Evans (1998); Hayo and Uhlenbrock, (1999); Suzuki, 2004; Berkelmans, (2005).

Actually there are two models of popular approach to identify a reaction on economic policy in a country, but rather to look at the elements of monetary policy (i) following the policy rules, such as the 'Taylor Rule' (Taylor, 1993) or (ii) allowing the central bank to Concurrent respond as much relevant information as possible at the time of their decision Zha, (1997). The main advantage of using SVAR models is the ability to define both types of policy reaction function in contemporary matrix, which can be controlled for the relationship between endogenous prices, output and interest rates. To model SVAR literature in Indonesia have not been many highlights the inclusion of many different variables that interest rate, exchange rate, foreign exchange reserves are very influential for economic activities. For example, Brischetto and Voss (1999) felt the need to incorporate the exchange rate and the federal funds rate. They also include oil prices and monetary aggregates, and opted to exclude output and the price level, although conformity to the economy by targeting inflation. Instead, Berkelmans (2005) enables simultaneous monetary policy to respond to commodity price, credit and exchange rate, while Dungey and Pagan (2000) only include the Gross National Expenditure (GNE) and inflation in a policy reaction function.

III.RESEARCH METHOD

Time and Data Research

The research was conducted by the author at the time in August-October 2015. The data in this study using a variable foreign exchange reserves and the exchange rate in Indonesia period in 1982; IV until 2012; IV. Data once in the can by the authors first

processed, before analyzed using a statistical assisted.

Research Data Analysis Techniques

The model used in this research is the development of models SVAR and DSVAR in the short-term models SVAR contained in the matrix, but before the model is done first conducted test data using a test root and Cointegration Test. SVAR early models possess equation form as follows: (1). As emphasized by Levy-Yeyati and Sturzenegger (2004), the exchange rate and foreign reserves are included in the model to conclude setting the exchange rate. Although the foreign exchange reserves are the most important policy instrument to control the exchange rate, other important policy instruments, interest rates, are also often used to control the exchange rate. As a result, past studies such as Calvo and Reinhart (2001) also examined the ordinary bunga.Seperti rate changes in the structural VAR analysis, structural representation identified by imposing some restrictions on the estimated reduced form. VAR equations reduced form (for models that include the exchange rate (F) and reserves (FR).

$$\begin{bmatrix} \Delta F_t \\ \Delta FR_t \end{bmatrix} = \begin{bmatrix} A_{11}(L) & A_{12}(L) \\ A_{21}(L) & A_{22}(L) \end{bmatrix} \begin{bmatrix} \Delta F_{t-1} \\ \Delta FR_{t-1} \end{bmatrix} \begin{bmatrix} \varepsilon_{E,t} \end{bmatrix} \quad (1)$$

$$+\begin{bmatrix}\varepsilon_{FR,t}\end{bmatrix}$$

Let where F is the log of the exchange rate, FR is the log of foreign exchange reserves, A (L) 's is a polynomial in the lag operator L, eE and EFR is a residue in each equation, e is 2 by 1 vector of residuals, ie, e = (eE EFR) ', and var (e) = S. For simplicity of exposition, the constant term was dropped in equation (1). I use pure preliminary data of each variable (not the log-level) for the following reasons. First, most past studies, for example, Calvo and Reinhart (2002), Levy-Yeyati and Sturzenegger (2004), Hernandez and Montiel (2003), Baig (2001) and Reinhart and Rogoff (2003), using the percentage change is not level or log-level, and would like to have better results as compared to previous studies.

Two variables in the model, we can achieve the goal by separately identifying two orthogonal structural shocks namely the (structural) shocks the exchange rate (that react foreign exchange reserves to stabilize the exchange rate) and (structural) shocks reserves (which affects the exchange rate). However, the identification method popular impose zero restrictions on the parameters of contemporary structure (developed by Sims (1980, 1986), Bernanke (1996), and Blanchard and Watson (1996)) and imposed restrictions to zero in the long term effect (developed by Blanchard and Quah (1989)) it is difficult to apply in this case. Structural equation shape in the form of vector moving average is:

$$(2)\quad \begin{bmatrix}\Delta F_t\\ \Delta FR_t\end{bmatrix} = \begin{bmatrix}C_{11}(L) & C_{12}(L)\\ C_{21}(L) & C_{22}(L)\end{bmatrix}\begin{bmatrix}e_{E,t}\\ e_{FR,t}\end{bmatrix}$$

where C (L) 's is a polynomial in the lag operator LeE and EFR is a surprise structural exchange rate and shocks structural reserves, respectively, e is 2 by 1 vector shocks structural, ie, e = (eE EFR) 'var (e) = W, and W is a diagonal matrix. The sign restrictions in wear on this model is the C11 (0) ³0, C12 (0) ³0, C21 (0) £ 0, and C22 (0) ³0.

To conclude the level of stabilization of the exchange rate, I calculate dynamic policy reaction function, which shows the reaction of foreign exchange reserves at the rate from time to time in the presence of exchange rate shocks. From equation (2), the impulse response of the exchange rate and foreign exchange reserves against exchange rate shocks:

(3) $\Delta F_t(e_E) = C_{11}(L)e_{E,t}$

(4) $\Delta FR_t(e_E) = C_{21}(L)e_{E,t}$

Where and are defined as the exchange rate and foreign exchange reserves before the change in the exchange rate shocks only. By combining (3) and (4),

(5) $\Delta FR_t(e_E) = \dfrac{C_{21}(L)}{C_{11}(L)} \Delta E_t(e_E)$

The coefficient on DET (eE), Det (eE), DET-1 (eE), DET-2 (eE), ... this (5) shows how much percentage of the foreign exchange reserves of exchange rate changes over time in response to a 1% depreciation the exchange rate in the face of exchange rate shocks. Equation shape of the structure in the form of auto-regression vector is:

(6) $$\begin{bmatrix} B_{0,11} & B_{0,12} \\ B_{0,21} & B_{0,22} \end{bmatrix} \begin{bmatrix} \Delta F_t \\ \Delta FR_t \end{bmatrix} = \begin{bmatrix} B_{11}(L) & B_{12}(L) \\ B_{21}(L) & B_{22}(L) \end{bmatrix} \begin{bmatrix} \Delta F_{t-1} \\ \Delta FR_{t-1} \end{bmatrix} + \begin{bmatrix} e_{E,t} \\ e_{FR,t} \end{bmatrix}$$

where B0 is a constant and B (L) 's is a polynomial in the lag operator L. The shape of the structural coefficient vector moving average shape (2) and form auto-regression vector (6) associated with C (L) = (B0 - B (L) L) -1. It can be shown that the restriction sign on impulse responses also imply restrictions as marked on the contemporary structure parameters, namely B0, 11 ³ 0, B0, £ 12 0, B0, 21 ³ 0, and B0, 22 ³ 0. The restrictions on the structural parameters contemporary B0 can easily be interpreted as follows. Increased foreign exchange reserves depreciate in value, while the authority to mitigate foreign exchange reserves policy as a reaction to the depreciation of the exchange rate to stabilize the exchange rate (in the policy reaction function). From the second equation (6) :

$$(7)\quad B_{0,22}\Delta FR_t = -B_{0,21}\Delta F_t + B_{21}(L)\Delta F_{t-1} + B_{22}(L)\Delta FR_{t-1} + e_{FR,t}$$

Reorganization of the equation (7),

$$(8)\quad \Delta FR_t = \left(B_{0,22} - B_{22}(L)L\right)^{-1} \left[\left(B_{0,21} - B_{21}(L)L\right)\Delta E^t + e_{FR,t}\right]$$

In the model above, imposing restrictions that positive surprises with rate decrease reserves devisar (assuming if due to an increase in foreign exchange reserves could make the domestic currency more attractive), while positive shocks to the exchange rate increase international reserves (assuming if for policy authorities to try to stabilize the exchange by lowering the exchange rate). That is, in the form of vector moving average:

$$(9)\quad \begin{bmatrix}\Delta E_t\\ \Delta R_t\end{bmatrix} = \begin{bmatrix}C_{11}(L) & C_{12}(L)\\ C_{21}(L) & C_{22}(L)\end{bmatrix}\begin{bmatrix}e_{E,t}\\ e_{R,t}\end{bmatrix}$$

where R is the foreign exchange reserves, ER and ER was a surprise structural exchange rate and shocks structural against reserves, respectively, and restriction signs are imposed on this model is the C11 (0) ³ 0, C12 (0) £ 0, C21 (0) ³ 0 and C22 (0) ³ 0. this limitation also implies some limitations marks on the contemporary parameters in structural equation like equation (6), namely B11 (0) ³ 0, B 12 (0) ³ 0, B21 (0) £ 0, and B22 (0) ³ 0. Policy reaction function that is built based on impulse responses to shocks to the exchange rate as in the first model.

IV.RESULT AND DISCUSSION

Usually when will do an analysis of time series data, a set of values of a variable are taken at different times. Any data collected periodically at different intervals, it is necessary to test and cointegration stationeritas over the data on the data, but the author considers the data that is in use already meet both the proficiency level test, so the test can be carried SVAR and DSVAR.

SVAR and DSVAR Short Run Model

Here there are two SVAR model results are displayed, SVAR restriction model with short-run and short-run capital DSVAR the restriction as well. Here's how it looks:

Table 1 : SVAR Test with short run model

Structural VAR Estimates

	Coefficient	Std. Error	z-Statistic	Prob.
C(2)	0.687795	1.200114	0.573108	0.5666
C(1)	1352.255	184.0185	7.348469	0.0000
C(3)	8432.627	1147.535	7.348469	0.0000
Log likelihood	-515.3563			

Estimated A matrix:	
1.000000	0.000000
-0.687795	1.000000
Estimated B matrix:	
1352.255	0.000000
0.000000	8432.627

Sources : Proceed by author

B0 test results of the VAR model of the model matrix Bernanke and Mihov (BM) presented in the table above. Seen on the table that some variables that are used as the innovation of the restriction in the model BM SVAR significantly, include the impact of foreign exchange reserves and the exchange rate with a coefficient of -0.6877. While the coefficient 1 shows the form of a matrix that is used. Here we see the results for the model DSVAR.

Table 1 : DSVAR Test with short run model

Structural VAR Estimates				
	Coefficient	Std. Error	z-Statistic	Prob.
C(2)	0.578322	1.337382	0.432429	0.6654
C(1)	1358.371	188.3722	7.211103	0.0000
C(3)	9263.191	1284.573	7.211103	0.0000
Log likelihood	-498.8288			
Estimated A matrix:				
1.000000	0.000000			
-0.578322	1.000000			
Estimated B matrix:				
1358.371	0.000000			

0.000000	9263.191

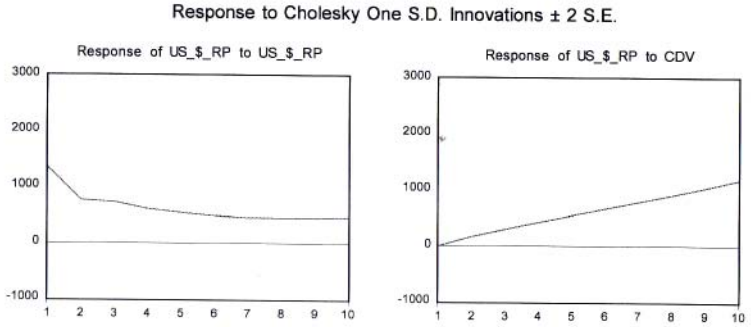
Sources : Proceed by author

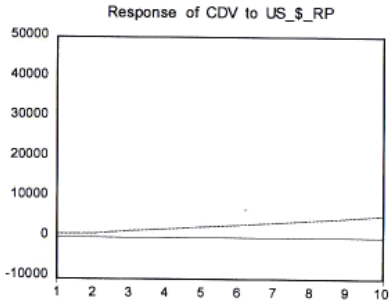
Similarly, the VAR model, to a model SVAR also use matrix short run, the exchange rate ranged at -0.5783, this figure is slightly higher than the svar models that we use in the beginning.

If we look at where is the foreign exchange reserves and exchange rate, eE and ER was a surprise structural exchange rate and shocks structural against reserves, respectively, and restriction signs are imposed on this model is the assumption C11 (1.00000) ³ 0, C12 (-0.578322) £ 0, C21 (0) ³ 0 and C22 (1.00000) ³ 0 for the coefficient matrix A. It can be concluded that the shock or the influence of foreign exchange reserves and the exchange rate in describing the shape and the result of matrix A and matrix multiplication.

Impulse response function (IRF) SVAR Model

SVAR can also be used to look at the impact of the changes of the variables in the system of the other variables in the system dynamically. The trick is to give a shock (shock) on one of the endogenous variables. Shocks are given usually by one standard deviation of the variables or commonly called innovation. Search the effect of one standard deviation shock experienced by a variable in the system against the values of all variables current and future periods as a technique called Impulse Response Function.:




Response of CDV to US_$_RP
50000
40000
30000
20000
10000
0
-10000
1 2 3 4 5 6 7 8 9 10

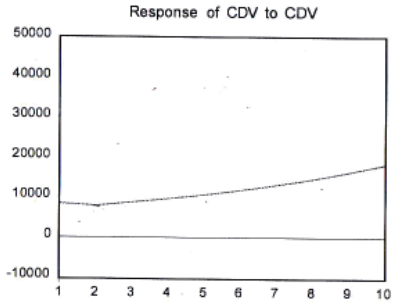

Response of CDV to CDV
50000
40000
30000
20000
10000
0
-10000
1 2 3 4 5 6 7 8 9 10

Figure1 : Impulse Response Function

We can see how the response to the foreign exchange reserves and exchange rate, and vice versa response to the exchange rate of foreign exchange reserves during the period of approximately 10 years. In the first movement, the response rate and foreign exchange reserves away from the balance point, toward the tenth year approaching the point of balance, so does the response of foreign exchange reserves against exchange rate initially approached the balance point, then away from equilibrium.

Varianes error factor decomposition (FEVD) SVAR Model

Analysis FEVD in the SVAR Model aims to predict the contribution percentage of the variance of each variable due to changes in certain variables in the VAR system and SVAR or DSVAR. Pada previous impulse response function analysis is used to look at the impact of shocks from one variable to another variable. Due to the presence of orthogonal innovation which consists of several components, donated by shock. On variance decomposition is called the variance decomposition of the forecast error variance. The following matrix multiplication result F EVD of foreign reserves and exchange rate.

Variance Decomposition of US_$_RP:

Period	S.E.	US_$_RP	CDV
1	1352.255	100.0000	0.000000
2	1563.730	98.82730	1.172696
3	1752.790	96.07062	3.929379
4	1903.033	91.61557	8.384427
5	2052.763	85.69734	14.30266
6	2213.121	78.69228	21.30772
7	2393.327	71.08090	28.91910
8	2599.168	63.32627	36.67373
9	2835.225	55.81367	44.18633
1	3105.444	48.81679	51.18321

Variance Decomposition of CDV:

Period	S.E.	US_$_RP	CDV
1	8483.763	1.201871	98.79813
2	11622.94	1.419806	98.58019
3	14677.84	2.304487	97.69551
4	17695.08	3.124165	96.87584
5	20827.54	3.943539	96.05646
6	24148.71	4.690975	95.30903
7	27723.03	5.358450	94.64155
8	31607.16	5.940594	94.05941
9	35856.85	6.440940	93.55906
10	40529.23	6.865993	93.13401

Cholesky Ordering: US_$_RP CDV

Figure 2 : FEVD

Based on the picture above shows that an important source of variation of foreign exchange reserves are reserves itself shocks, exchange rate shocks while relatively smaller. In the first occurrence of shocks, variations in reserves 0% and contributed by the exchange rate of 100%, in the second month variase predictive value of 98% was contributed by the exchange rate amounted to only 1.172% and so on until the tenth month.

V.CONCLUSION

Research carried propose a structural approach to estimate the Structural VAR on foreign exchange reserves and exchange rate. This definition is different from the traditional to the feedback between foreign exchange reserves and exchange rate. Another advantage of this approach is that both the reserves and the exchange rate can be estimated simultaneously. Estimates in the study of foreign reserves and the exchange rate is based on the following assumptions: there are two correlated interference that can be distinguished by the possibility of the effects on foreign exchange reserves in the first interruption panjang. Possibility term does not have long- term effects on the foreign exchange reserves, but in the

short term can The second variable is cointegrated ascertained, while the latter may be. Estimated reserves should relate to the first interruption in this case the exchange rate. This study provides some insight into the movement of foreign exchange reserves and exchange rate. Seen that the response to the foreign exchange reserves and exchange rate, and vice versa response to the exchange rate of foreign exchange reserves during the period of approximately 10 years. In the first movement, the response rate and foreign exchange reserves away from the balance point, toward the tenth year approaching the point of balance, so does the response of foreign exchange reserves against exchange rate initially approached the balance point, then away from equilibrium. From the test results used models svar seen that some variables that are used as the innovation of the restriction in the model of the model used svar significant influence, including the effect of exchange rates and foreign exchange reserves with a coefficient of -0.6877 and -0.578322 for variable exchange rate to foreign exchange reserves.

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5.Asymmetrics Exchange Rate Currency

By
Teguh Sugiarto

1.Introduction

Circumstances and economic conditions in the country of Malaysia has still not stabilized until today. The presence of the low incidence of global commodity prices, and coupled with the weakening of economic growth in China as one of the countries that claim to have the power in Asia, hit the economy and the exchange rate of the neighboring country. Currency exchange rate Malaysian Ringgit against the US dollar (USD) until now approaching its lowest level in 17 years, nearly the same as the value of the rupiah against the US dollar (USD). Not only that, Ringgit, Bath and philipinies peso also weakened against the dollar merica (USD).

As preached by Thestar, Ringgit exchange rate has now hit a RM 4.339 per USD. Against the Singapore dollar, ringgit touched a RM 3.056 per dollar Singapore. "This is due to a mixture of political uncertainty, weak data out of China and the decline in commodity prices," said a currency trader as reported by the media Thestar in Jakarta, Wednesday (09.09.15). While the exchange rate is also experiencing the same thing, there is no indication pengutannya against the US dollar.

Moody's Investors Service said in a report yesterday has cut its forecast for economic growth in China and many countries in the Asia Pacific region. "We had previously been expected to raise regional output of the economy this year. Now we expect to slow but sure for 2015 and 2016." Moody's has revised the economic growth of Malaysia from the previous 5 percent to 4.5 percent next year. China's growth has also been trimmed to 6.3 percent from 6.5 percent and India 7.5 percent to 7.6 percent. "The sharp decline in energy prices hurt Malaysia, where the state revenues from oil and gas reached 30 percent and more than 20 percent was from exports." And to forecast the growth of Indonesia previously in figure 6-7%, to below 5-4% in the last quarter in 2015.

Malaysia has been a trading partner of China since 2008, as well as the state of Indonesia. With the incidence of China's economic slowdown will adversely affect Malaysia and Indonesia, the other not being in the same region. "Now the private consumption slowdown in

domestic and external demand (from China) were also down."

2.Excahnge Rate Theories

Theory 1 - Determination of exchange rates

The occurrence of a process of the exchange rate is the price - which is exactly the same as the other prices - where the amount we have to submit / pay to get something else - in this case on purpose by the author is the currency of another. So that we can draw a conclusion that the occurrence of a process of the exchange rate when the price of one currency with another currency. With the exchange rate of the process can be made a determination in many ways. The provision could also be done by the government or may be biased also by external parties outside the government - as an example of the determination of the price of gold. Then a price can occur in because the process of buying and selling, or usually we call in terms of the economy with demand and supply. The author uses the following example, if there are a number of values of supply and demand for sterling traded on the Foreign Exchange market and the number of pounds in circulation are not in the know ! Rising demand for sterling currency will force the price up to the equilibrium exchange rate. Where the supply of the same between the purchase and sale occurred or demand and supply, the price of the currency exchange rate will reach a point of equilibrium exchange rate, as shown in the following diagram.

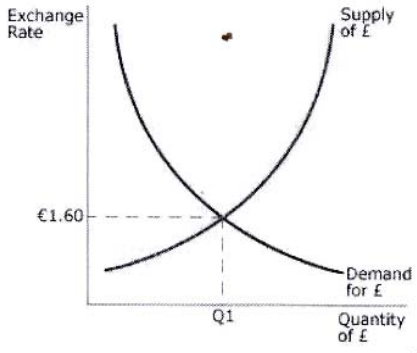

Figure 1. Graph the balance of supply and demand exchange rate POUND

The existence of demand in the currency £ derived from the people who invest in the country from abroad, so they require a lot of pounds, or from companies that buy exports from the

country in the country which require £. There are others who need a pound of investors or the company in terms of pay for the goods as a result of trade transactions using the £. The occurrence of a process of supply coming from domestic selling pounds. This can allow them to make purchases of goods from abroad (imports) by currency £, or it may just be that they are investing in the UK and so the country needs to currency £. To get it they have to sell the pound in the exchange of other currencies.

The occurrence of a point of balance between supply demand made, and this will change as demand and changes. For example, that the interest rate increases. This will tend to attract foreign investment (when using the pound currency as a whole) into the country. To carry out these investments, the company will require nvestor or pound, making the demand for the pound to rise. We can see this in the diagram below:

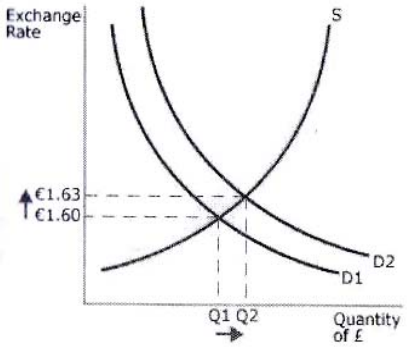

Figure 2. Graph the effect of the increase in demand for the price of the currency exchange rate

If we look at the picture above, the increase in the exchange rate may cause the volume of currency will spend also increased. The incidence of this effect is considered uncertain as any other factors that influence the exchange rate at the same time.

Theory 2 - Fixed v. floating

There are several ways that can be used to determine the exchange rate, the two were in the know is the first to make improvements to the exchange rate it self, by intervening against other currencies, and the second to apply the exchange rate system to a currency exchange rate. There are two models of exchange rate system that we know is the system of fixed exchange rates and floating exchange rate system.

Fixed interest rate

For currency exchange rates that are fixed on the mark with an increasing demand for the currency as shown in the graph below. A shift from D1 to D2 will cause an increase of the exchange rate it self. In this case the policies that can be done is to have to fight the effects of increased demand. Thus the perpetrators will provide more of the currencies traded. Such as the sale and purchase of currency ponud another currency as the pound currency substitute. The implication is a shift in the supply curve to S2, and conduct a policy of maintaining a fixed rate.

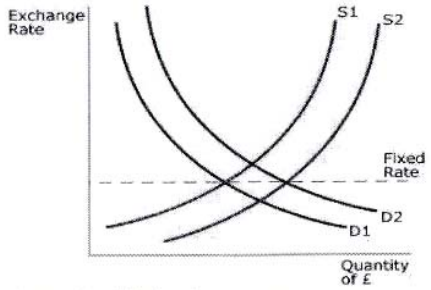

Figure 3. Graph fixed exchange rate system

In order to maintain the exchange rate, one of the market participants to sell the pound currency and buying foreign currency, so that the things done that can increase their holdings of foreign currencies.

Floating rate

Floating exchange rate system is a system of exchange rates on the basis of the strength of the influence of supply and demand. The model for the level of the balance of this system will be achieved if there is a place that is considered the same supply with demand will be undertaken, on these events will be able to change some of the demand and the occurrence of some changes. It can be seen from the figure below. In the image seen an increase in demand for the pound resulting in a shortage on the pound is needed in the market, so as to make the exchange rate to rise, settling at a new equilibrium level of € 1.65.

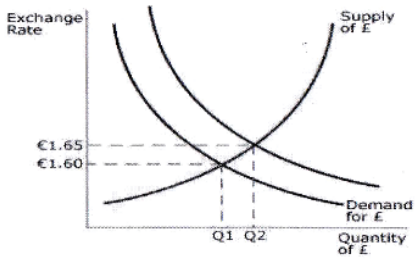

Figure 4. Graph floating exchange rate system

Theory 3 - Market intervention

For this third theory of government intervention is very or could determine once, but it's not necessarily have an impact on the market have a major influence. We take one example, if exchange rate has been depreciating for some time due to the sale of one currency is the pound, with this incident the government intervention measures by conducting a policy to make a slow pace over the fall of the currency. Then it will create increased demand for the currency, so that market participants do this by buying pounds and selling other currencies. These events can be seen in the figure below : the pound currency sales events will encourage the supply curve to the right (S1 to S2) and force the exchange rate down.

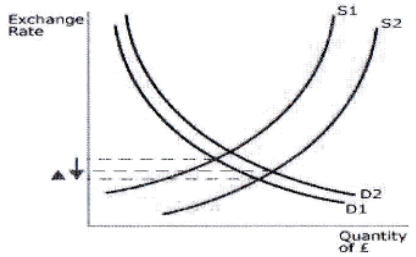

Figure 5: Graph the market intervention by government

In the events as described above, the government will carry out an action by selling the currency (perhaps the dollar, euro or yen) and buy a pound in the currency market. This can create an increasing demand for the currency pounds, boosting the demand curve D2. Pound Currency exchange rates are going to fall slowly, but the actions taken by the government has been able to make the currency exchange rate pound fall slowly. Conversely, when the value of the pound to rise, then the government will have intervened by buying foreign currency and

selling the pound which is owned. This action may cause the supply of pounds and can help slow the appreciation of the exchange rate of the currency.

Theory 4 - Effects of exchange rate changes

The increase and decrease in the exchange rate of the currency of a country could cause significant impact to the economy. As the following example: If the exchange rate of a currency in a country experiencing a significant decline it could lead to a change in price relative to the value of imports and exports. The possibility of the value of exports will be much reduced compared to the exchange rate of other currencies, while the value of imports will rise more expensive. This is where the cause of inflation in a country, or even vice versa for example the same case can be deflation.

In the image below we may be seeing a shift in aggregate demand (AD1 to AD-2) draw up price levels occur.

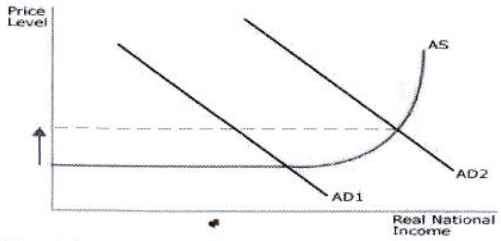

Figure 6. Graph of changes in currency exchange rates

Over the long-term impact of the decline in the exchange rate on the balance of payments nearing definitely worth it depends on how big the changes will be demand for imports and exports. It depends on the elasticity of demand for imports and exports. When the exchange rate falls imports get more expensive and exports cheaper.

To describe it, for example : the exchange rate between £ and € £ 1 = € 2. Prices of goods, X, in the UK is £ 5. The value exchange rate at that time to 100 products to be purchased from abroad will make the entry - export earnings of £ 500. While separately a product Y in European countries are rewarded € 5, those products in the UK when purchased will be

Figure 7: Graph balance of payment within the time scale

Theory 5 - Exchange rate jargon

There are several terms used, relating to the exchange rate. In this section we can see some of these terms and will know what it means.

Place Exchange Rates

Usually for this case is called the spot rate, or in other words the exchange rate occur at levels that are on the market at any given moment. This incident can be said that the exchange rate can be interpreted as a currency for immediate delivery. The value in spot rate will change according to the change of the supply and demand for the currency in the market.

The exchange rate ahead

The purpose of the forward exchange rate is a price level of the exchange rate for a specific time in the future. Usually, many companies use forward exchange market to protect themselves against the impending risk of a currency exchange rate. They know they can buy at a rate guaranteed for the future, and so it can plan ahead. Usually this is called 'hedging' against a risk of currency values. The existence of developed markets could also create a potential for the occurrence of speculation. All of it depends on the reason whether consumers will buy or sell the currency to the dealer, could end up better or worse.

Purchasing Power Parity

The process of purchasing power parity exchange rate is the exchange rate between two currencies, which will allow exactly the same basket of goods to be purchased. Or in other words, the rate at which the purchasing power will be the same in both countries could occur. For example, a basket of goods in the amount of $ 50 purchase in the United States, and one basket that is equal to the amount of purchase £ 25 in the UK. The occurrence of a PPP where the rate between £ and $ it will be £ 1 = $ 2.

3.Variables Used and Methodology

3.1.Time & Data Research

The research was conducted by the author during the months of August - October 2015. The data used in this research is data exchange rates that exist in the east and southeast asia against currency U $ D. Research Data used Data Stream data base Obtained from Bank Indonesia (BI), the Central Bureau of statistics (BPS) and from other sources Blomberg example during the period January 1, 2004 to December 31, 2014.

Variables & Model

Variables used in the study is the currency exchange rate in the east and southeast asia against the dollar in the united states asymmetrics, using several models econometric approach. This study aimed to identify empirically the use of econometric methods of analysis in currency exchange rates, particularly in the area east and southeast asia. Thus the model to be estimated as follows:

IDR = F (H$K, JPN, WON, YUAN, BRUNEI$, RINGGIT, BATH, SNG$, PESO)

Because the data analysis framework as stationary, Cointegration, VAR, ECM, VECM and ARDL can be used for the estimation of the empirical model above.

3.2.Analisys Data Tehnique

The first method in the analysis of time series that many in doing that stationarity test. Series called for a non-stationary if the mean, variance, and autocovariance time keeps changing with time.

The Augmented Dickey-Fuller Test

Depending upon the nature of the time series it may be represented as in the equation (1) or equation (2) or equation (3).

$\Delta Yt=\delta Y_{t-1}+ut$ ... (1)

$\Delta Yt=\beta_1+\delta Y_{t-1}+ut$ ... (2)

2 t-1+ut ... (3)

The Augmented Dicky Fuller (ADF) test under the null of non stationarity can be conducted to test whether a given series is stationary or not. This test is conducted by augmenting either of the above three equations by adding the lagged value of the dependent variable ΔYt. Thus each of the above equation will be as follows :

$\Delta Yt=\delta Y +\alpha \quad m \Delta Y +et$ ... (4)

$\Delta Yt=\beta t- \quad i+\alpha \quad m \quad \Delta Y +et$ ... (5)

$1+\delta Y_{t-1}\Sigma \quad i \; i=1$

$\Delta Yt=\beta_1+\beta_2 t+\delta Y_{t-1}\Sigma+\alpha_i \; m\sum$

$\Delta Y_{t-i} + et$ ... (6)

Where e_t is a pure white noise error, and the number of lagged difference term to include is determined empirically (Gujarati, 2005). In each of the above equations if $\delta=0$ the series is non stationary. The Dicky Fuller tables can be used to test the significance of the hypothesis.

Cointegration test

There are two models for testing Cointegration popular in the analysis of economic data, namely:

1. The method of Engle Granger (1987)

2. The method of Johansen and Juselius (1990)

This study uses a methodology Johanson maximum likelihood method to estimate the cointegrating relationships in multivariate systems. So, if Y vectors have n time series, each of which is I (1) and if the vector can be expressed as where, π_1 are NxN matrices of unknown constants and the error term ε_t has the multivariate normal distribution N(0, Σ). The equation (7) can be converted into the following equation:-

Johansen (1988), Johansen and Juselius (1990), shows that the rank of π r in equation (8) is equal to the number of cointegrating vectors in the system (Nachane, 2006).

Error Correction Model

The existence of a process of data analysis Cointegration is an analysis of the data to see how the variables can be viewed as a long-term relationship. In Engle and Granger (1987), shows that the balance of the specification can occur when variables in the analysis do cointegrated have felt represented in vector Autoregression specifications, but with the pace imbalance makes the explanation that the variables in the model must be determined. Usually this model is called the error correction model, because this model has a self-regulating mechanism in which the deviation from the long-term equilibrium may occur after the automatic correction (Shivam & Jayadev, 2004).

Vector Error Corection Model

VECM offers the possibility to apply vector autoregressive model (VAR) integrated multivariate time series. In some lessons they provide labels such as some problems in applying VAR for a unified series, but the important thing is how much the regression false or commonly called (t-statistics are very significant and R ^ 2 high even though there is no correlation between the variables).

To make the model VECM in need of the following three steps: first do the specification and estimation of the VAR model for integrated multivariate time series, which both Calculating likelihood ratio test to determine the amount of cointegration relationship and latter determines the amount cointegrations.

Autoregression Distributed Lags

"ARDL" stands for "Autoregressive- Distributed Lag". Data analysis model has been widely used for decades, it has been proven that the current model of ARDL can provide proof of vehicle testing for the presence of long-term relationships between economic time series data.

Meanwhile, ARDL regression model can be seen as follows:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \ldots\ldots + \beta p y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \ldots\ldots\ldots + \alpha_q x_{t-q} + \varepsilon_t$$

where ε_t is a random "disturbance" term.

Model "autoregressive", in the sense that Yt "described (in part) by the lagged values of it self. It also has a component of "distributed inside lag", in the form of successive delays variable explanation" X ". Sometimes, the current value xt it self excluded from the distributed lag model is structured.

4.Results of Empirical Estimation

Several stages of data analysis and regression model done to answer these results:

I. Cointegrated system by using Cointegration test.

II. Stationarity tests on data using the ADF test.

III. Testing VECM using VECM Model Test.

IV. To estimate the ECM model equations error correction mechanism.

V. To estimate ARDL test models Autoregressive model with distributed lags.

Cointegration test

Some tests must be done before the application of cointegration tests conducted, assumptions must be made about the presence of a deterministic trend in the data, for example. Cointegration test is repeated with or without allowing for linear trend in the data, and the results can be shown in the number of cointegration vectors that exist at the output. Look to the model equations are made, the results of cointegration test using unit root in get the following results :

Table 2. Result Cointegration Test

Series: BRUNEI_$ CHINA_YUAN HONGKONG_$ PHILIPPINE_PES MALAYSIA_RINGGIT KOREAN_WON JABAN_YEN INDONESIA_RUPIA SINGAPORE_$ THAI_BAHT				
Lags interval (in first differences): 1 to 2				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.255029	1275.046	239.2354	0.0001
At most 1 *	0.078047	484.5549	197.3709	0.0001
At most 2 *	0.032990	266.3700	159.5297	0.0000
At most 3 *	0.022549	176.2985	125.6154	0.0000
At most 4 *	0.014301	115.0625	95.75366	0.0012
At most 5 *	0.010971	76.38846	69.81889	0.0136
At most 6	0.008868	46.76990	47.85613	0.0630
At most 7	0.005090	22.85438	29.79707	0.2533
At most 8	0.003231	9.153924	15.49471	0.3514

*Sources proceed by author

Stationerity test

From table 1 below clearly that all the variables under study are non-stationary in levels of alpha that is in use and stationary in differences:

Table 1. Result test of unit root

Foreight Exchanga	Max Lags	ADF Test	1% Level	Value Prob.	Condition
D(CHINA_YUAN)	axlag=27	-52.21675	-3.432592	0.0001	Stationerity
D(HONGKONG_$)	axlag=27	-20.15129	-3.432605	0.0001	Stationerity
D(INDONESIA_RUPIAH)	axlag=27	-10.60408	-3.432608	0.0000	Stationerity
D(JAPAN_YEN)	axlag=27	-52.34069	-3.432592	0.0001	Stationerity
D(KOREAN_WON)	axlag=27	-10.76599	-3.432616	0.0000	Stationerity
D(MALAYSIA_RINGGIT)	axlag=27	-13.31260	-3.432604	0.0000	Stationerity
D(PHILIPPINE_PESO)	axlag=27	-12.68359	-3.432611	0.0000	Stationerity
D(SINGAPORE_$)	axlag=27	-11.84561	-3.432610	0.0000	Stationerity
D(THAI_BAHT)	axlag=27	-9.521975	-3.432617	0.0000	Stationerity
D(BRUNEI_$)	axlag=27	-34.51664	-3.432594	0.0000	Stationerity
Sources proceed by author					

On the results of the above output, using a significance level used turned out to trace the

statistical value much greater than the critical value at the level of confidence being used, so it can be concluded that many variables between mutually cointegrated. If we see there are six variables are mutually cointegrated with a confidence level of 5%. Thus in this study accept that there are six variables are mutually cointegrated exchange rate, while the rest do not.

Statistically coefficient ut-1 is very significant, this indicates that the error can be said to affect the balance of variable currency exchange rates. This may imply that the rupiah exchange rate to adjust to the changes in exchange rates in other Asian currencies during the same period. Or in other words, can we explain the adjustment of the exchange rate to adjust the Asian region in the next period to get the balance of the long term it is so meaningful, because the coefficient of 5%.

If we look again at the above output results also provide information that short-term changes to the currency exchange rate asian region has a positive impact on short-term changes in the exchange rate. Thus the results of the study received a given hypothesis, which says that the exchange rate cointegrated Asian region over the long term and adjust in the short term.

VECM Model

We must use VECM if variable 1) non- stationary and 2) find a general trend among the variables (Cointegration). If the previous tests are assumptions no.2 and no.1 assumptions are met, in other words VECM models can proceed.

Vector Error Correction Estimates										
Cointegrating Eq:	CointEq1									
BRUNEI_$(-1)	1.000000									
CHN_YN(-1)	-0.000108	HKG_$(-1)	-0.001846	IND_IDR(-1)	-1.690007	JPN_YEN(-1)	1.640005			
	(0.00070)		(0.00330)		(1.40007)		(1.20005)			
	[-0.15372]		[-0.55882]		[-1.19527]		[1.34928]			
KRAN_WON(-1)	1.310006	MYS_RGT(-1)	-0.000493	PLP_PSO(-1)	6.430005	SGD_$(-1)	-1.000035			
	(1.40006)		(0.00126)		(4.90005)		(0.00389)			
	[0.92967]		[-0.39171]		[1.30208]		[-257.317]			
THAI_BAHT(-1)	-3.910005									
	(8.90005)									
	[-0.43863]									
C	0.013779									
Error Correction:	BNEI_$)	D(CHN_YN)	D(HKG_$)	D(IND_IDR)	D(JPN_YEN)	D(KRN_WON)	D(MLS_RGT)	D(PLP_PSO)	D(SINGAPORE_$)	D(THA)
CointEq1	-0.927065	0.019353	0.086101	327.8219	-0.903644	-42.22227	-0.036867	-1.553711	0.084219	0.595
	(0.06327)	(0.07060)	(0.20752)	(704.359)	(7.19810)	(102.185)	(0.19143)	(4.34920)	(0.05324)	(2.819
	[-14.6534]	[0.27412]	[0.41491]	[0.46542]	[-0.12554]	[-0.41319]	[-0.19259]	[-0.35724]	[1.58196]	[0.211
D(BRUNEI_$(-1))	-0.015635	0.025362	0.047736	147.5075	-1.677069	31.43837	0.043293	0.726650	-0.022743	0.563
	(0.05163)	(0.05762)	(0.16935)	(574.825)	(5.87434)	(83.3929)	(0.15623)	(3.54937)	(0.04345)	(2.300
	[-0.30282]	[0.44020]	[0.28187]	[0.25661]	[-0.28549]	[0.37699]	[0.27711]	[0.20473]	[-0.52346]	[0.244
D(BRUNEI_$(-2))	0.041794	0.005076	0.014705	94.03570	-4.088556	31.70070	0.014441	0.004273	-0.047079	-0.573

VECM (or Vector Error Correction Model) is a derivative of the VAR method. Assuming that need to be filled the same as those in the VAR model, except the stationary problem. In contrast to the VAR, VECM must be stationary on the first differentiation and all variables must have the same stationary, are differentiated in the first instance. In the table we can see the value of AIC and SIC to amounted -13 401 and -12 896, almost all the variables was significant relationship with VECM models. So it can be concluded for data analysis in this study the changing balance of errors in variables in doing research in the long term will adjust his fault correction process, along with significant results for the relationship between variables.

ECM Model

Statistically, cointegration vector is not defined individually, only the space spanned by these vectors which are described by the test results. Thus, to identify the individual cointegration equation, cointegration vector should be normalized. Usually the relationship between the exchange rate variable region economically asia macro to do the examination and be a normalization process by using test Error Correction Estimate. Here we can see for ECM test results on currency exchange rates at the east and southeast asia region:

Table 3 . Result ECM Model

Dependent Variable: D(INDONESIA_RUPIAH)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CHINA_YUAN)	-10453.79	4.670011	-2.240014	0.0000
D(HONGKONG_$)	4561.059	1.730011	2.630014	0.0000
D(JAPAN_YEN)	-49.63122	3.240013	-1.530014	0.0000
D(KOREAN_WON)	-14.84298	5.580014	-2.660014	0.0000
D(MALAYSIA_RINGGI	-972.3277	1.240011	-7.840013	0.0000
D(PHILIPPINE_PESO)	226.0981	8.830013	2.560014	0.0000
D(SINGAPORE_$)	42131.85	1.410010	2.980014	0.0000
D(THAI_BAHT)	-114.0409	7.640013	-1.490014	0.0000
D(BRUNEI_$)	2391.109	4.530011	5.270013	0.0000
D(RESID01)	10453.79	3.510011	2.980014	0.0000
C	-3.45E-15	1.950013	-0.017681	0.9859
R-squared	1.000000	Mean dependent var		-1.438779
Adjusted R-squared	1.000000	S.D. dependent var		64.41712
S.E. of regression	1.000011	Akaike info criterion		-47.81232
Sum squared resid	2.680019	Schwarz criterion		-47.78819
Log likelihood	64246.86	Hannan-Quinn criter.		-47.80359
F-statistic	1.110028	Durbin-Watson stat		2.934805
Prob(F-statistic)	0.000000			

*Sources proceed by author

ARDL Model

ARDL model is an of the data analysis popularized by Pesaran et al. (2001), to include the I (0) and I (1) variables in the same ballpark so that if the variables that we have stationary I (0), the OLS right and if all the free stationary I (1), so it is recommended to run VECM (Johanson approach) because many models are simple. Here we refer to test results ARDL :

Table 5. Result ARDL Model

Dependent Variable: BRUNEI_$(-1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CHINA_YUAN(-1)	0.003685	0.009468	0.389234	0.6971
HONGKONG_$(-1)	8.520005	0.002583	0.032967	0.9737
INDONESIA_RUPIAH(-1)	5.930007	1.030006	0.577182	0.5639
JAPAN_YEN(-1)	0.000110	9.430005	1.164108	0.2445
KOREAN_WON(-1)	3.740006	6.600006	0.566592	0.5710
MALAYSIA_RINGGIT(-1)	0.003549	0.003668	0.967568	0.3333
PHILIPPINE_PESO(-1)	5.220005	0.000154	0.338245	0.7352
SINGAPORE_$(-1)	0.958594	0.015873	60.39308	0.0000
THAI_BAHT(-1)	7.110005	0.000202	0.351839	0.7250
BRUNEI_$	-0.002591	0.019348	-0.133936	0.8935
CHINA_YUAN	-0.003551	0.009438	-0.376234	0.7068
HONGKONG_$	4.600007	0.002582	0.000178	0.9999
INDONESIA_RUPIAH	-4.690007	1.030006	-0.456166	0.6483
JAPAN_YEN	-0.000121	9.410005	-1.285619	0.1987
KOREAN_WON	-4.630006	6.660006	-0.695092	0.4871
MALAYSIA_RINGGIT	-0.003366	0.003665	-0.918390	0.3585
PHILIPPINE_PESO	-0.000128	0.000154	-0.830079	0.4066
SINGAPORE_$	0.043986	0.024872	1.768522	0.0771
THAI_BAHT	-7.750006	0.000203	-0.038154	0.9696
R-squared	0.999650	Mean dependent var		1.427608
Adjusted R-squared	0.999648	S.D. dependent var		0.162793
S.E. of regression	0.003056	Akaike info criterion		-8.736174
Sum squared resid	0.024922	Schwarz criterion		-8.694482
Log likelihood	11756.05	Hannan-Quinn criter.		-8.721093
Durbin-Watson stat	1.998797			

*Sources proceed by author

In an event when the value of Y and X are stationary and cointegrated, it will produce a good regression. ARDL so that the model can be used. If we see from the results above display output, obtain it looks at the long-term effects of changes in the exchange rate variable that is in use. It concluded that in the long term between the exchange rate for the model that created ARDL k = -0 / p = - (31.67 / - 12.38) = - 2:56. If we see if there is a constant change in the form of changes in currency exchange rates one of the country by 1%, then the value of currency of

one country will again be decreased by 2:56%.

5.Conclusion

From the research that has been done can be concluded that the data exchange rates in the region east and southeast asia is stationary, for 6 variables from 10 variables exchange rate used cointegrated in the long term, and with a model of ECM are applied exchange rate currency in the short term have a positive impact of exchange against the dollar the United States, with a model VECM almost entirely variable benefit significantly corrected to do in the short term as well as with models ARDL the changes that occur in the short term and in the long term by 1%, then it will have changes in decline in the exchange rate of 2:56%. So that the econometric models that created asymmetrics can explain how changes in currency exchange rates in the region east and southeast asia in the short term and long term, during the period of research data by the authors do it.

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6.Application Correlation and Cointegration

By
Teguh Sugiarto

1.Introduction

In a country Indonesia is no exception, there are some indicators of economic conditions that could affect the economy negaar include national income, per capita income, inflation, unemployment, and poverty. However, generally speaking, in this matter will address national income indicator (Gross Domestic Product). In Indonesia national income could mean an analysis of an earned income in the country as a whole. This understanding is much related to the national income is not only gross domestic product, but also to the Gross National Product, Net National Product, Net National Income, Personal Income, Disposable Income and Gross Regional Domestic Product. Many economists and decision-makers are very concerned at the output of goods and services in the country in total, but also the allocation of this output among the various alternatives. In general for the equation of a national income divide GDP into several posts including: 1. Consumption (C), 2. Investment (I), 3. Government Spending (G), 4. Net exports (NX).

The encouragement of consumption or by the private sector that is strong enough and the investment performance improved, the Indonesian economy is considered able to maintain their resilience and even scored a higher growth in 2010 upwards. This was revealed from the recent report of the Asian Development Bank (ADB) recently. In a major annual economic report ADB, Asian Development Outlook (ADO 2013) containing predictions of economic trends in the Asian region in particular, projected that Indonesia would grow by 6.4% in 2013, and drove to a level of 6.6% in 2014, the figure is The highest growth rate in the last 15 years. These projections assume private consumption will rise in 2013, driven by rising employment, the average minimum wage and civil servants' salaries. Spending ahead of legislative and presidential elections in 2014 is also expected to start contributing to the increase of consumption in the second half of 2013.

Presence existence investment, both private and public, tend to show a healthy expansion. This projection is supported by an increase in credit rating by an independent agency, declining

interest rates, the increased allocation for infrastructure, and a record of strong economic growth. "Backed by the high consumption, increased investment and trade between countries is increasingly improved, the growth momentum in Southeast Asia will continue to strengthen. Indonesia is now well on track for long-term growth, "according to Jon D. Lindborg, ADB's Country Director for Indonesia.

Still in that capacity Jon D, Lindborg menatakan "However, this should not make us complacent. Still required a constant effort to improve the investment climate, as well as reducing regulatory uncertainty and bureaucratic ". ADO 2013 notes that Indonesia grew by 6.2% in 2012, as a result of the level of domestic consumption and investment continued to strengthen. Figures private consumption grew by 5.3%, which is the highest figure in the last four years and contributed to nearly half of the total growth in gross domestic product (GDP) in terms of expenditure. This was driven by the increasing number of jobs, rising wages, and low levels of inflation. Meanwhile the Government's efforts to encourage public sector investment can be seen from the increasing capital expenditure in this sector.

With the increase in the investment rate of 9.8% in 2012, it is in because of the encouragement, with the improvement of the investment climate in Indonesia in particular, the highest investment value sepnjang history of Indonesia can push record numbers of strong economic growth in recent years, as well as the credit enhancement. Results of this analysis makes the investment to GDP ratio increased to 33.2% in a period of at least the last 20 years. But the Government's efforts to encourage public sector investment can be seen from the increasing capital expenditure in this sector. In addition, exports are expected to increase again in 2013, which was boosted by stronger growth in the People's Republic of China (PRC) and other countries. This figure is projected to continue to rise in 2014, due to the improvement in growth opportunities in other industrial countries.

Do not forget when we look at the poverty rate decreased by 0.7 points to 11.7% in the 12 months up to September 2012. It is considered as the improvement caused by rising wages for workers in agriculture and construction, as well as the higher the income of farmers , Quality of work continues to experience growth: Last year, there were 2.7 million new jobs in the formal sector, while the decline in employment in the informal sector as much as 1.5 million.

On the other hand, the average inflation rate is predicted to be at a reasonable level, namely 5.2% in 2013 and 4.7% in 2014. This projection is based on the assumption there will be no rise in fuel prices in the next two years. The inflation rate will be higher if the government wants to reduce the burden of subsidies by raising fuel prices. One of the major challenges for

development in Indonesia is how to ensure that economic growth is felt by all parties. ADO 2013 notes that despite the economic growth during the last six years has been alleviating 6.4 million people out of poverty, there are still 29 million Indonesian people who live below the poverty line set by the Government. In the event of a decrease in income levels only slightly, then there will be 30 million Indonesian people who are poor.

To face these challenges, there needs to be a policy that focused on efforts to reduce the gap, including an ongoing effort to improve public infrastructure, especially transport and electricity. Weak infrastructure in rural and eastern Indonesia has hindered the growth of economic activity and new jobs. As disclosed in ADO 2013, the Indonesian government has made important changes to reduce barriers to the development of infrastructure.

2.Literature Review

In a study conducted by Still and Still (2007), Chen et al. (2007) and Tang (2009) showed relationship causalit y between energy consumption and gross domestic product (GDP) in Malaysia. revea ls that there is a unidirectional causality of electricity consumption to GDP in Malaysia, while the last stud indicates that there is a two -way causality between electricity consumption and income in Malaysia.

In (Still and Still, 2007; Yoo, 2006; Ho, 2007; Chandran, 2010; Bekhet and Yusof, 2009, Hondroyiannis, et al (2002), as well as Halicioglu (2007) most of the research has focused on the causal relationship between electricit y consumption (energy consumption) and economic growth that are used in energy consumption (in general), real GDP and price developments. use residential energy, income, price and urbanization. From the best of our knowledge, only examine the causal relationship between FDI and consumption electricity. By testing the causal relationship between electricity consumption and the other independent variables. Based on the above reasons, this research tries to re-examine the causal relationship between electricity consumption and real GDP. Also, the relationship between electricity consumption, total expenditure, GDP and FDI, will investigated in Tang (2009).

The relationship between electricity consumption and economic growth has been researched by Jumbe (2004), Narayan and Smyth (2005), as well as Mozumder and Marathe (2007) discusses the empirical findings that many found to be consistent across the country and included the methodology used. By using causality between electricit y consumption, agricultural income and

non-farm incomes. Some empirically using error correction models (ECM) and Granger causality analysis for 1970 to 1999. The period in Malawi Granger causality analysis shows that agriculture and agriculture cause income to electricity consumption of non and at the same time electricit y consumption caused total revenue. ECM analysis results indicate the direction of causality of agricultural and non- agricultural income for electricity consumption. using the same methodology to the countries of Australia and discovered that affects the growth of electricity consumption and employment in the short term. using Granger causality analysis to analyze the direction of causality between GDP and electricity consumption. Last empirically discovered that the GDP affects electricity consumption and there is no causality is found from electricity consumption to GDP.

The study, done by Asafu (2000), Still and Still (2007) study the causality between energy consumption, income and prices for a number of developing countries of Asia such as India, Indonesia, the Philippines and Thailand. He us es Granger causality analysis of the data for the period 1971 to 1995. The results showed that the direction of causality is different for different countries in Asia. They found unidirectional causality from energy consumption to income in India and Indonesia, while the two-way causality between energy consumption and income are found in the Philippines and Thailand. Similarly, with the use of models to study the causality between energy consumption and GDP in Asian countries by using vector error correction model (VECM) and VAR analysis. They use the data for the 1955 annual period of 1999. They drew the conclusion that there is no causal link between energy consumption and GDP in Malaysia, Singapore and the Philippines. They also found that there is a two -way causality between energy consumption and GDP in Pakistan, unidirectional causality from energy consumption to GDP in India and unidirectional causality from GDP to energy consumption in Indonesia. In contrast to the study done by Ciarreta, et al. (2010) which uses panel data from 1970 to 2007 to analyze the causal relationship between electricity consumption, real GDP and energy prices. They reveal the long-term equilibrium relationship between the variables. The causal relationship runs from electricity consumption to GDP revealed. Also, they found the two -way relationship between energy prices and GDP. Similarly Apergis et al. (2011) also uses panel data from 1990 to 2006 for 88 countries. They found the two-way relationship between electricity consumption and growth in the short term and long term.

Research undertaken by Chen et al. (2007), Still and Still (2007), and Chandran (2010) used various types of energy consumption (electricity) to test the causal relationship to the GDP in the countries of Asia. They use data for the period 1971 to 2001 concluded that there is a

unidirectional causality from GDP to electricity consumption in the short term in Malaysia. In addition, they found different results compared to. They also found unidirectional causality of electricity consumption to GDP in Indonesia. The results of research done in the Philippines was opposed by Still and Still (2007). The big difference in the results of research done by Lean et al. (2010), Lang (2010) in Taiwan. They found unidirectional causality from GDP to electricity consumption. Causal relationship between electricity consumption and other variables in Malaysia found to conflict with. In the study they found the two-way causality between aggregate output and electricity consumption period 1971-2006 with two-way causality test between the total consumption of electricity, industrial electricity consumption and real GDP in Taiwan.

When Yoo (2006), Tang (2009) conducted a study using different types of methodologies (Granger causality) to examine the causal relationship between electricity consumption and growth in Asian countries for the period 1971 to 2002. He found a two-way causality between variables. These results are consistent with those using the same methodology for the period 1970 to 2005. Subsequently, he found unidirectional causality from growth in electricity consumption in Indonesia and Thailand, which is consistent with Still and Still (2007) results. But Ho (2007) and Shiu and Lam (2004) examined the causal relationship between electricity consumption and GDP in China. He uses the ECM analysis for the period 1966 to 2002 and found unidirectional causality of electricity consumption to GDP. using the same method in China and also obtained the same results. While Tang (2009) using a model of ECM and Granger causality analysis to examine the causality between electricity consumption, income, population and FDI. Tang (2009) using data for the period 1970 to 2005. He found a two -way causality between electricity consumption, revenue and FDI in the short term. On the other hand, Chandran (2010) using ARDL analysis to measure the relationship of causality in the same variable that he found the same results.

3.Research Method

Time and Data Research

This research was conducted by the authors of the start time in January-February 2016. The research data were used by the authors consists of variable consumption, direct investment and GDP of Indonesia during the period 1967 - 2014. Research data uploaded by the authors of the

World Bank website, but before analyzing the data first processed by the author.

Data Analysis Techniques Research

In this study the authors used data analysis correlation and cointegration. The authors use the analysis techniques for correlation data as to determine the value that indicates the strength and direction of a linear relationship between the variables that are being researched or two random variables (random variable), what is the relationship between

variables that are being undertaken research direction or relationship a. Positive (coefficient 0 s / d 1), b. Negative (coefficient 0 s / d -1) c. Nil (coefficient 0). While cointegration analysis techniques used by the author as the author would like to see and to know whether two or more economic variables are being researched have a long-term equilibrium relationship.

4.Result and Discussion

Testing For Correlation

In some software mathematical or statistical is provide several methods of testing for the presence of partial correlation, it is done to check for residue existing in the model correlation in shape. One of these test Durbin Watson (DW) statistics as part of a standard regression output. The Durbin-Watson statistic is a test for first-order mathematical or statistical correlation serial. To give several methods of testing for the presence of partial correlation, it is done to check for residue existing in the model correlation in shape. One of these test Durbin Watson (DW) statistics as part of a standard regression output. The Durbin-Watson statistic is a test for first-order serial correlation. More formally, the DW statistic measures the linear association between adjacent residuals from a regression model. The Durbin-Watson is a test of the hypothesis $\rho = 0$ in the specification:

$$u_t = \rho u_{t-1} + \epsilon_t \qquad (1)$$

If there is no correlation biserial, statistics will be around 2 DW DW statistics will fall below 2 if no positive serial correlation (in the worst case, it will be close to zero). If there is a negative correlation, the statistics will be located somewhere between 2 and 4. In Johnston and DiNardo (1997, Chapter 6.6.1) positive serial correlation is the form most commonly observed dependence. As a rule of thumb, with 50 or more observation and a few independent variables, DW statistic below about 1.5 is a strong indication of the positive first order serial correlation. As an of the application of serial correlation testing procedures, consider the following results

from estimating a simple consumption function by ordinary least squares using data in the workfile "CSMPT, DRINVST, GDP":

Table 1 : Result regression Consumption, Direct Invetsment, and GDP
Dependent Variable: CSMPT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.82E+09	1.48E+09	1.909161	0.0629
DRINVST	1.612134	0.733424	2.198091	0.0334
GD	0.652783	0.024101	27.08515	0.0000
CSMPT(-1)	0.046812	0.037217	1.257793	0.2153
R-squared	0.998614	Mean dependent var		1.49E+11
Adjusted R-squared				
S.E. of regression				
Sum squared resid	1.86E+21	Schwarz criterion		48.29086
Log likelihood	-1127.135	Hannan-Quinn criter.		48.19265
F-statistic	10330.25	Durbin-Watson stat		1.320080
Prob(F-statistic)	0.000000			

Sources : Proceed by author

From the results [Table 1] The above results show that the coefficient is statistically significant and very tight fit. If the error term serial correlation, OLS estimates of standard errors are not valid and the est imated coefficients will be biased and inconsistent because of the lagged dependent variable on the right side. The Durbin-Watson statistic is not appropriate as a test for serial correlation in this case, because there are lagged dependent variable on the right side of the equation. Here we can see the test results korrelogram in [Table 2] for the variable that is in use:

Table 2 : Result correlogram Consumption, Direct Invetsment, and GDP
Date: 01/18/16 Time: 02:07

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. |** .	. |** .	1	0.339	0.339	5.7669	0.016
. |** .	. |*. .	2	0.273	0.179	9.5878	0.008
. |** .	. |** .	3	0.326	0.221	15.156	0.002
. |. .	**| . .	4	-0.059	-0.299	15.341	0.004
. |. .	. |. .	5	0.036	0.035	15.413	0.009
. |*. .	. |*. .	6	0.151	0.171	16.686	0.011
.*|. .	.*|. .	7	-0.139	-0.170	17.794	0.013
. |. .	. |. .	8	0.060	0.067	18.010	0.021
. |*. .	. |*. .	9	0.153	0.144	19.424	0.022
.*|. .	**| . .	10	-0.195	-0.250	21.789	0.016
. |. .	.*|. .	11	-0.030	-0.076	21.847	0.026
.*|. .	.*|. .	12	-0.135	-0.115	23.052	0.027

Sources : Proceed by author

Correlogram have spikes on trailed by three and eight solid lag. Q-statistically significant on all flags, show significant serial correlation in the residuals. At probabilistic value [Table 2] can we look for a model that is created. But for the LM test can be used to reject hiotesis that there is no correlation, as in [Table 3] below :

Table 3 : Result LM Test Consumption, Direct Invetsment, and GDP

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	4.406982	Prob. F(4,39)	0.0049
Obs*R-squared	14.63081	Prob. Chi-Square(4)	0.0055

Sources : Proceed by author

At [Table 3] Test accept the hypothesis on the serial correlation to order four. Q-statistics and the LM test three variables showed that the residual serial correlation and equations must be re-determined before using it to test hypotheses and forecasting. Seen from the significant probability of F statistics.

Testing for Cointegration

In the setting of a single equation, some software mathematical and statistical many who advocate for using test Engle and Granger (1987), Phillips and Ouliaris (1990) residual-based test, or Hansen instability tests (Hansen 1992 b), and Park $H(p, q)$ added test variables (Parks 1992). Engle-Granger and Phillips-Ouliaris residue tests based cointegration only the unit root tests applied to the residuals obtained from the estimation SOLS. Based on the assumption that the series are not cointegrated, all of the linear combinations of (y_t, X_t'), including residuals from SOLS, is a unit root nonstationary. Therefore, test the null hypothesis of no cointegration against the alternative of cointegration in accordance with the unit root test of the null of nonstationarity against stationary alternatives. Two tests differ in method of accounting for serial correlation in the rest of the series; Engle -Granger test using a parametric, plus Dickey-Fuller (ADF) approach, while Phillips-Ouliaris test using nonparametric methodology Phillips-Perron (PP). The Engle-Granger test estimates a p -lag augmented regression of the form :

$$\Delta u_{1t} = (\rho - 1) u_{1t-1} + \sum_{j=1}^{p} \delta_j \Delta u_{1t-j} + v_t \qquad (2)$$

The number of lagged differences p should increase to infinity with the (zero-lag) sample size T but at a rate slower than $T^{1/3}$. We consider the two standard ADF test statistics, one based on the t-statistic for testing the null hypothesis of nonstationarity $(\rho = 1)$ and the other based directly on the normalized autocorrelation coefficient $\hat{\rho} - 1$

$$\hat{\tau} = \frac{\hat{\rho} - 1}{se(\hat{\rho})}$$

$$z = \frac{T(\hat{\rho} - 1)}{\left(1 - \sum_{j} \hat{\delta}_j\right)} \qquad (3)$$

where $se(\hat{\rho})$ is the usual OLS estimator of the standard error of the estimated $\hat{\rho}$

$$se(\hat{\rho}) = s_e \left(\sum_{t} x_{1t-1}^2\right)^{-1/2} \qquad (4)$$

In Stock (1986), Hayashi (2000). Unlike the Engle-Granger test, test Phillips-Ouliaris obtain estimates by running regressions augmented Dickey-Fuller.

$$\Delta x_{1t} = (\rho - 1) x_{1t-1} + u_t \qquad (5)$$

and use the results to calculate the estimate of the long-term variance and variance rigorous long-term one side of the residual. By default, the software will perform mathematical or statistical-df or correct the variance estimates of both the long term, but correction can be turned off. (Correction df used in tests Phillips-Ouliaris slightly different from those in FMOLS and CCR estimates since the former applies to both the variance estimator of the long-term, while the latter only applies to long-term conditional variance estimation). If there is a bias corrected autocorrelation coefficient is then given by:

$$(\hat{\rho}^* - 1) = (\hat{\rho} - 1) - T\hat{\lambda}_{12}\left(\sum_{t} x_{1t-1}^2\right)^{-1} \qquad (6)$$

Here we can see the test results Engle-Granger in [Table 4] which in divided into three different parts. The first section displays the test specifications and settings, along with test values and corresponding p-values:

Table 4 : Result Engle-Granger Consumption, Direct Invetsment, and GDP

Date: 01/18/16 Time: 02:19
Series: CSMPT DRINVST GDP
Automatic lags specification based on Schwarz criterion (maxlag=9)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
CSMPT	-4.173806	0.0289	-25.97748	0.0211
DRINVST	-1.480362	0.9016	-14.95567	0.2449
GDP	-4.278025	0.0227	-27.05768	0.0156

*MacKinnon (1996) p-values.
Sources : Proceed by author

It can be seen from the results of the probability values derived from the equation MacKinnon response simulation results are made. In a setting in which to use the results MacKinnon may not be appropriate, for example when cointegration equation contains user-defined deterministic regressors or when there are more than 12 stochastic trends in the asymptotic distribution, mathematical or statistical software will display a warning message at the bottom of the results normally. See description of the test, we first make sure that the test statistic calculated using C and TREND as deterministic regressors, and note that the option to include a single difference lags in the ADF regression is determined by using an automatic lag selection criteria and maximum lag Schwarz 9. While the test it self, Engle-Granger tau-statistics (t-statistics) and normal autocorrelation coefficient (which we refer to as the z - statistic) either reject the null hypothesis of no (unit root in the residuals) cointegration at the 5% level. Tau - statistical rejected at a significance level of 1%. On balance, the evidence clearly shows that CSMPT and GDP are cointegrated. The middle section of the output displays the results of which are used in constructing test statistics that may be of interest [Table 5]:

Table 5 : Result Rho statistic Consumption, Direct Invetsment, and GDP

Intermediate Results:
Intermediate Results:

	CSMPT	DRINVST	GDP
Rho - 1	-0.552712	-0.528460	-0.575695
Rho S.E.	0.132424	0.356981	0.134570
Residual variance	3.36E+19	8.06E+17	.38E+19
Long-run residual variance	3.36E+19	4.24E+17	.38E+19
Number of lags	0	8	0
Number of observations	47	39	47
Number of stochastic trends**	3	3	3

**Number of stochastic trends in asymptotic distribution
Sources : Proceed by author

Most of the results are shown quite clearly in [Table 5], although some decent little discussion. First, the "Rho SE" and "residual variance" is (perhaps) df corrected coefficient and standard error squared standard error of regression. Furthermore, the "Long-run residual

variance" is a long-term estimate of the residual variance based parametric model estimation. The estimation results obtained by looking at the residual variance and dividing it by the square of one minus the amount of lag coefficient difference. This long-term residual variance and the variance is used to get the denominator of the z-statistics. Finally, "The number of stochastic trend" entry reported $k = n_2 + 1$ value is used to obtain p-values. In the leading case k, only the number of cointegration variables (including dependent) in the system, but generally have to take into account the value of the deterministic trend in the system that are excluded from the cointegration equation. With time series data that there is a change in use Options dialog to show a single button to control the variance estimation of long-term ω_{ij} and one long-term variant hand tight λ_{ij}. The test results provided by Z-statistic [Table 6].

Table 6 : Result Z-statistic Consumption, Direct Invetsment, and GDP
Date: 01/18/16 Time: 02:20
Series: CSMPT DRINVST GDP
Long-run variance estimate (Bartlett kernel, Newey-West fixed bandwidth) No d.f. adjustment for variances

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
CSMPT	-4.283354	0.0224	-27.23472	0.0149
DRINVST	-3.911655	0.0517	-28.19021	0.0113
GDP	-4.404228	0.0168	-28.67113	0.0099

Sources : Proceed by author

At the top of the output [Table 6] outputs noted that, the results of long-term variance estimates and the long-term side variances using Bartlett kernel bandwidth and the number of observations. More importantly, the statistical testing showed that, as with the Engle-Granger tests, tests Phillips-Ouliaris accept the null hypothesis of no cointegration (unit root in the residuals) at approximately 1% significance level. Among the results is given by [Table 7]:

Table 7 : Result Rhos statistic Consumption, Direct Invetsment, and GDP

Intermediate Results:

Rho - 1	-0.552712	-0.548694	-0.575695
Bias corrected Rho - 1 (Rho* - 1)	-0.579462	-0.599792	-0.610024
Rho* S.E	0.135282	0.153335	0.138509
Residual variance	3.29E+19	1.31E+18	7.22E+19
Long-run residual variance	3.51E+19	1.45E+18	7.82E+19
Long-run residual autocovariance	1.09E+18	6.69E+16	2.98E+18
Bandwidth	NA	NA	NA
Number of observations	47	47	47
Number of stochastic trends**	3	3	3
**Number of stochastic trends in asymptotic distribution			

Sources : Proceed by author

In the output results [Table 7] look there are some new results. The "Bias corrected Rho - 1" reports the estimated value and "Rose". The "Long-run residual variance" and "Long-run residual autokovarian" are approximate ω_{uc} and respectively. It should be noted $\hat{\omega}_{uc}^{1/2}$ that the ratio to S.E. regression, which is a measure of the amount of residual autocorrelation in the long term variants, is the scale factor used in adjusting the raw t-statistic for forming tau.

5.Conclusion

From the research that has been done using a variety of models and cointegration correlation to economic variables consumption, direct investment and GDP Indonesia, it can be concluded that among the variable consumption, investment and GDP correlate directly in the hose do that research data. While the results of cointegration test can be concluded that that the variable consumption, direct investment and GDP mutually cointegrated in the long term at the time do that research, these results are strengthened by the existence $\hat{\omega}_{uc}^{1/2}$ to SE regression, which is a measure of the number of autocorrelation residual in variants of long-term, is the scale factor used in adjusting the raw t-statistic for forming tau [Table 7] and tests Phillips-Ouliaris accept the null hypothesis of no cointegration (unit root in the residuals) to guess -kira significance level of 1% [Table 6], as well as accept the hypothesis is no serial correlation to order four. Q-statistics and the LM test three variables showed that the residual serial correlation [Table 3].

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Additional Website :

http://www.adb.org/id/news/investment-and-private-consumption-boost-indonesias-growth

7.SVAR MODEL THE SHORT AND LONG TERM

By
Teguh Sugiarto

1.Introduction

Some of the results of empirical research on the impact of monetary policy could be erratic. On the one hand Parado (2001) says, in the form of a large closed economy context, the effect of this policy is largely consistent with conventional theories. For example, in the United States (US), an increase in domestic interest rates, may tighten monetary policy, is if it is linked to the appreciation of the currency in host Kim and Roubini (2000). On the other hand Cushman & Zha (1997) says that in the setting of a small open economy, the impact of monetary shocks do not seem consistent with existing economic theory. Another example as found by Sims (1992), the monetary contraction failed to reduce the level of house prices (a problem known as puzzle price). In addition, rising interest rates is often associated with the depreciation of the home currency (which is defined as a problem puzzle exchange rate).

This research will look at the impact of domestic monetary policy on key macroeconomic variables due to the influence of foreign variables Indonesia using SVAR approach. In addition, this study also will examine whether the response of short-term and long-term key macroeconomic variables Indonesian domestic monetary shocks are consistent with existing theory. In particular theory of monetary policy will reduce the absorption of the monetary aggregates of domestic variables Indonesia?

In building a model SVAR to model the Indonesian economy, there are two important things that need to be seen. First, Indonesia should be considered in the form of a small open economy, very sensitive to foreign shocks were exogenous. Therefore, to analyze the monetary policy in a small open economy setting, Cushman & Zha (1997), Zha (1999), as well as Dungey & Pagan (2000) suggest foreign exogeneity assumptions used blocks. In the context of the Indonesian economy models, this assumption see that there is an influence either directly or indirectly, the effect of dropping the Indonesian economy to foreign economies. Impose this restriction is not only interesting from an economic standpoint but also econometrically as to prevent any decisive as it existed on the model Zha, (1999).

2. Previous Research

Previous research identified the effects of a standard approach to monetary policy has been used Autoregressions vector (VAR). This approach does not have a strong theory in identifying monetary shocks initiated by recursive models of Kim and Roubini, (2000). Because of this, the results of studies using standard VAR may be biased as well as being contrary to the theory that there is monetary. Suppose the simultaneous reaction between monetary policy and exchange rate. In the standard VAR model, the exchange rate will mean react to all the other variables. Meanwhile, other variables (eg policy level) is placed before the exchange. This means that the interest rate used for that policy will only respond with a lag of the exchange rate. As a result, the relationship between interest rates and exchange rates, or interdependence simultaneously ruled out. But it does not apply, because the central bank may respond very rapidly exchange rate, this indicates that monetary policy has been identified as mentioned in Zaidi, (2011).

SVAR expansion model made by Sims & Zha (1995a), Cushman & Zha (1997), Kim & Roubini (2000), which identifies the demand for money and the money supply in the context of a small open economy. Researchers impose the equation of money supply as the central bank reaction function. The difference between the two models of existing research Cushman & Zha (1997) are more stringent in applying restrictions on foreign exogeneity block model of Kim & Roubini (2000). The policy conducted by the Fed directly in research at Cushman & Cushman and Zha justify it, while Kim & Roubini (2000) did not. The existence of other differences in the study conducted by Cushman and Zha (1997) and Kim and Roubini assumed that domestic output and domestic price levels do not respond to extraneous variables, while Kim & Roubini (2000) noted the importance of the impact of world price used variables.

The latter is a study conducted by Pirovano (2012), as amended by the model SVAR Neri (2004) and Li et al. (2010). In a study conducted by Pirovano (2012), he developed four models svar using seven variables to identify the impact of monetary policy on stock prices for the Czech Republic, Hungary, Poland and Slovenia. He found that the response of stock prices in countries that are more sensitive to changes in interest rates (Euro Area) foreigners than to shocks in one household. Moreover, changes in stock prices in these countries are also due to shocks in the exchange rate and monetary policy Eurozone. This implies that the domestic stock market is more sensitive to external shocks than domestic ones.

From the study of related theories and empirical research on the above, it can be concluded that a change in interest rates is a better indicator of innovation in monetary aggregates in identifying monetary policy shocks in Sims, (1992). It can also be concluded and it is expected that there will be appreciation of the exchange rate, the increase in imports in response to the tightening of monetary (interest rate increase). On the other hand, there will be a drop in stock price, the stock of money, export, the output and the price level in response to the policy of Facilities.

3. Research Method

3.1 Time Research

This research was conducted at the time of the month November 2014-March 2015.

3.2 Model Approach In Research

The approach in this research model based on the specifications of the structural model approach vector Autoregressions (SVAR) initiated by Bernanke & Mihov (1998) to model the short term, as well as Blancard & Quah (1989) for the long-term model, the authors did not use and discuss in detail SVAR models Zha (1997), Kim Cushman & Roubini (2000), which many researchers make reference to the model SVAR.

3.3 Research Data

This study uses monthly data from December 1984 to December 2012. Data derived international financial statistics (IFS) and the website of Bank Indonesia (BI), but the data is processed in advance by the author. This study divides the variables in the two blocks. The first block consists of domestic variables : a. Interest Rate of Bank Indonesia (SBI / BI_RATE), b. Indonesian Consumer Price Index (CPI), Then the second block consisting of non domestic variables: c. The interest rates on the American central bank (FFF), d. Inflation in the United States (INF_USA).

4. Research Result

The first part of this research begins with a discussion of the various diagnostic tests SVAR models short term and long term. Then, the second part is about the benchmark model. The focus of this second part is to discuss the impact of the domestic monetary policy on key macroeconomic variables inndonesia, to check whether the results of the research conducted is consistent with economic theory that is used, then the method of impulse response function (IRF) and variance decomposition error Fector (FEVD) in use. Furthermore, the last part is about the use of the model of Bernanke and Mihov and Blancard & Quah which can be used as a handle for SVAR models in use.

4.1 Diagnostic tests Model SVAR Short Run With 4 variables

Short-term models in the idea Bernanke & Mihov (1998). They examined the controversy about the effects of liquidity (LE) and LR neutrality M (LRN), simultaneously using SVAR. Here we see the results display SVAR models with models of short-term restrictions B & M.

Table 1 : SVAR model short run restriction with four variables

Structural VAR Estimates

Log likelihood	-290.5183

Estimated A matrix:

1.000000	0.000000	0.000000	0.000000
1.766064	1.000000	0.000000	0.000000
0.005930	-0.008594	1.000000	0.000000
0.005736	0.000885	0.075392	1.000000

Estimated B matrix:

3.093596	0.000000	0.000000	0.000000
0.000000	55.04453	0.000000	0.000000
0.000000	0.000000	1.293683	0.000000
0.000000	0.000000	0.000000	0.732869

Sources : Process by author

In general literature to assume that structural innovation has a diagonal covariance matrix that is by comparing the results of the literature, dividing each column B with the elements on the diagonal. Matrix B is a diagonal matrix, which results in the estimation matrix A matrix multiplication as table

1: where in the model overidentified but passed the restrictions identified. Look at the results of model estimation matrix A, the result of multiplying domestic and non domestic variables, showed significant levels greater, so that we can be sure the models used svar short-term domestic and non domestic variables Indonesia in the economy there is interplay and there were affected.

4.2 Diagnostic tests Model SVAR Long Run With 4 variables

Long-term model identification results by: Blanchard & Quah (1989) decomposition. B & Q shows how macroeconomic variables and the recovery of pure shock (identify VARs) by assuming that long-term demand shocks could have an impact on the output of zero. As mentioned in section 3 (methodology), this study did not use diagnostic the information

criterion FPE, AIC, SIC and HQIC to determine the optimal length, as a result, if there is value remaining two (m = 2) for all models. Restriction tests needed to confirm the identity over the validity of the identification in the model. Here the authors show for the results of the model svar Blancard & Quah who took 4 of 8 models matrix.

Table 2 : SVAR model long run restriction with four variables

Structural VAR Estimates

Log likelihood	-543.4630

Estimated A matrix:

1.000000	0.000000	0.000000	0.000000
0.000000	1.000000	0.000000	0.000000
0.000000	0.000000	1.000000	0.000000
0.000000	0.000000	0.000000	1.000000

Estimated B matrix:

1.879493	-2.143618	0.617889	-1.860501
-26.37196	28.79649	24.40726	-25.90662
5162.112	4173.264	2860.738	2899.652
-0.196626	-0.542116	1.002078	0.820893

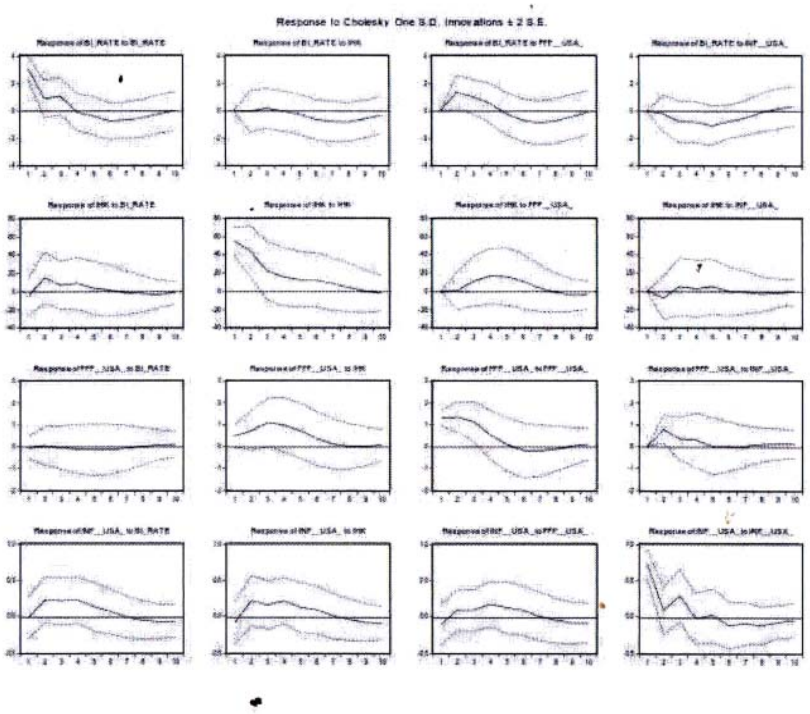
Sources : Process by author

Similarly, the short-term models SVAR literature, in the long-term model assumes that structural innovation has covar diagonal matrix by comparing the results of the literature, as well as dividing each column B with the elements on the diagonal. If the short-term model is used as the handle is the result of multiplying that of the matrix A, but in the long run is the matrix B. We can see the result of the multiplication of domestic and non domestic variables Indonesia looks balanced, in the sense that there are domestic and non domestic variables in the long term affected and there were influences, but it is very obvious dependence in the long term, as a result of the estimation matrix B.

4.3 Impulse Response Function (IRF)

Model impulse response function is a practical way in analyzing visual data that represent the behavior of inflation and the unemployment rate in response to various shocks in an economy. Impulse response function is as a nuisance coefficients of the structural model. All functions of the impulse response in this study was calculated from the percent increase in disturbance and increased distractions can be understood to have a good effect for the economy. Here we see the impulse response of the data processing in this study.

Figure 1 : IRF SVAR four variables



The IRF procedure is based the assumption that occurs contemporaneously independent between domestic variables with non domestic variables when shocks. To analyze at the beginning of shocks, with one variable and other variables, are also experiencing the same changes. If we see the impulse response graph shows the movement is getting closer to the point of balance or return to the previous equilibrium point. This indicates that the response of the variables due to the shocks the longer will disappear, so that the shocks did not leave a permanent effect on these variables.

From the image visible and shows the impact of the response received by CPI due to shocks and INF_USA FFF for 10 months is convergent, which is shown by the graph towards zero. A similar trend is also visible from shocks BI_Rate, FFF and INF_USA on the CPI.

4.4 Fector Error Variance Decomposition (FEVD)

Impulse response function analysis previously used to look at the impact of shocks from one variable to another variable, while the FEVD analysis is used to illustrate the relative importance of each variable in the system modeling using VAR base.

Table 3 : Result FEVD with four variable in SVAR

Variance Decomposition of BI_RATE:

Period	S.E.	BI_RATE	IHK	FFF__USA_	INF__USA_
1	3.093596	100.0000	0.000000	0.000000	0.000000
2	3.490092	84.83671	0.013601	14.79213	0.357558
3	3.871544	76.38536	0.204796	18.93715	4.472697
4	3.999464	71.67379	0.199584	19.67919	8.447429
5	4.173896	66.65257	0.560979	18.29892	14.48753
6	4.420330	62.46706	2.613934	18.89764	16.02137
7	4.666153	58.23817	5.379173	20.60323	15.77944
8	4.831229	55.57396	7.938992	21.71115	14.77589
9	4.897488	54.34628	9.248796	21.94390	14.46103
10	4.919644	53.85914	9.553667	21.78944	14.79775

Variance Decomposition of IHK:

Period	S.E.	BI_RATE	IHK	FFF__USA_	INF__USA_
1	55.31501	0.975559	99.02444	0.000000	0.000000
2	72.46886	4.795948	94.22565	0.007936	0.970471
3	77.05315	4.953422	91.72473	2.000372	1.321472
4	80.91879	5.636762	86.98521	6.051749	1.326279
5	83.67239	5.422699	83.60798	9.311597	1.657724
6	85.19793	5.253258	82.58635	10.56144	1.598951
7	85.68385	5.247503	82.54082	10.61776	1.593917
8	85.89978	5.343163	82.34713	10.60043	1.709279
9	86.08458	5.465498	81.99394	10.79811	1.742454
10	86.23186	5.515027	81.76452	10.97821	1.742247

Variance Decomposition of FFF__USA_:

Period	S.E.	BI_RATE	IHK	FFF__USA_	INF__USA_
1	1.378999	0.224213	11.76663	88.00916	0.000000
2	2.208201	0.109959	15.15041	71.64254	13.09709
3	2.735061	0.133274	25.54976	63.94964	10.36732
4	2.972294	0.252253	32.56328	57.34253	9.841942
5	3.065845	0.496306	36.25161	53.99848	9.253602
6	3.095232	0.671653	36.94769	53.29575	9.084904
7	3.104925	0.725001	36.87124	53.37226	9.031501
8	3.108518	0.723436	36.78614	53.37732	9.113100
9	3.111608	0.767471	36.71396	53.27538	9.243183
10	3.117920	0.864380	36.60016	53.18035	9.355101

ance Decomposition of INF
USA_:

Period	S.E.	BI_RATE	IHK	FFF__USA_	INF__USA_
1	0.744171	0.011521	1.285279	1.717772	96.98543
2	0.820181	7.884609	8.270594	2.764545	81.08025
3	0.917884	11.72505	9.762102	3.302302	75.21054
4	0.985646	15.37166	13.34189	6.036142	65.25031
5	1.012561	16.44932	14.32898	7.326340	61.89537
6	1.029536	16.37897	14.70375	7.867463	61.04982
7	1.033397	16.26039	14.60714	7.815375	61.31710
8	1.042367	16.19976	14.47614	7.853986	61.47012
9	1.052975	16.30599	14.75426	8.277790	60.66196
10	1.062317	16.36628	15.17037	8.693533	59.76982

Cholesky Ordering:
BI_RATE IHK FFF__USA_
INF__USA_

S.E : Standar error

Based on the table above shows that the source of the importance of variation I_Rate is BI_Rate it self, while for the next period variation predicted value for BI_Rate variation predictive value of 84.36% was contributed by the CPI by 0.01%, amounting to 14.79% of the FFF and by INF_USA by 0.35%. So forth at month 10 shocks to the variable in question. Seen that shocks and influence of non domestic factors (FFF and INF_USA) is immense (Against BI_Rate) when compared with the domestic factor itself (CPI).

5. Conclusion

Research is conducted to look at the impact of macroeconomic variables from abroad Indonesia in analyzing monetary policy approach, which uses short term and long term structural vector Autoregressions at (SVAR). Diagnostic tests for identity-based restrictions, model BM and BQ can be used as a tool of analysis in the SVAR models other than the model developed by the Sim known as Zha & KRBM and KRMM. From the research that has been done by the author can be inferred that the model used in this study supports the results of previous studies. Because of the limited number of observations to test this model is too complicated. But in this study provide an explanation of the restrictions that also serves as a policy analysis tool and the economic conditions in Indonesia.

However, the identification of schemes in all the models seem to be successful to identify the impact of monetary shocks on key macroeconomic variables for empirical puzzle solving the Indonesian economy. By looking at the impulse response function (IRF), the error variance decomposition fector (FEVD), Indonesian monetary policy seen contracting followed by appreciation of the variable factors of the domestic economy. So, when we see the results of the model SVAR short term and long term, it can be concluded that the domestic variables in Indonesia for monetary analysis influenced by larger factors from overseas. While domestic monetary variables that affect the Indonesia factor variable domestic monetary Indonesia itself was not great, as the output produced by the FEVD.

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8.Unit Root and VAR Modelling Application

By
Wuri Septi Handayani

1. Introduction

In some literature the following research like Chen et al, (1986); Mukherjee and Naka, (1995); Mayasmi and Koh, (2000); Kown, and Shin (1999); Cheung and Ng, (1998); Gjerde and Saettem, (1999) discusses how the existence of a relationship between macroeconomic variable and stock price, where the two components of this variable are related and still consider to be of interest to research in review, both by academics and by practitioners in the fields of Economics, finance and accounting and capital markets. But in the current research that is done by the author, by adding one more variable i.e. dividends, because dividends many make the reason why such a study needs to be done, and no other company because most of the owners want to share and get dividends on the current year. For example see the theory that in the proposal by Fama (1966) that support that dividend could be in use as a benchmark the success of a company, by seeing how macroeconomic influence in it. Several other variables in make gauges over the relationship between macroeconomic and shares as well as dividends this IE: GDP, CPI and the level of long-term interest rates. The authors conducted research at the State's data on US because, the US can be considered a central place on the world's stock exchanges. And in other respects the authors assume that the occurrence of a stock return process can be influence by a number of macroeconomic variables that are present in the country as it has been mentioned before. From some of the previous existence of a research response and the argument that the existence of an effect of macroeconomic variables against the return on stocks or stock prices and dividends which in publish at every different countries. Lots of theories exist, which provide input and analysis of different models, so many are making economists, analysts, brokers and user interests with sports data that make the framework to do research between stock return and macroeconomic variables in the models on offer.

dividends , by using the test unit root and VAR. This research consists of 5 sections, where

section 1 Introduction, part 2, part 3 Literature research methodology, the results of the econometric analysis 4, and part 5 conclusion.

2. Literature Review

In a theory of finance are known by the name of arbitration price theory (APT), lots of researchers who used this theory as a basis to see how to see a relationship between macroeconomic variables with other variables in a variety of countries such as variable dividend, stock and return. In Chen et al. (1986), Hamoa (1988), Poon and Taylor (1991) describe how variable variables such as shares as well as the risks, can be explained by the influence of economic variables in the research they do on a stock market or equity. From some research they do give the conclusion that economic variables in use as research had a very complex relationship on the stock market, it can be seen from how a risk of investing in the stock market that has a rate of return that is difficult in the prediction, so that in say a systematic consequences. The existence of events at discount prices here makes a company's ability to generate net cash flow, as well as expect dividends on investment funded, making macroeconomic variables used in the study can influence indirectly over the possibility of risk will occur on investing in the stock market. By doing a combination of analytical research such as the application of econometric techniques and theory of APT, the researchers also was accidentally seeing the results that the varibel macro economy has a very good relationship with the level of investment in stocks perform, the existence of one of the variables in the research such as interest rates and the value of unexpected inflation as well as growth of the industry in a country, which can also affect the rate of return on investment and risk investment in the research of a market share in Japan. In the study gave the opinion that, the appearance of which is not significant from a process variable industrial production among other variables variable.

Econometric analysis which became a mainstay in the tool in solving the theory of the relationship between macroeconomic theory and APT, suitable to the use of the model box jenkin in achieving maximum results. ARIMA indeed remains the choice of researchers in addition to the still much other analysis models in assessing the relationship between theory and the macro economic situation. The research they do limited over events that occurred in the

country in which the researchers settled, such as Japan and the United Kingdom. It makes APT use many theories, as a tool of analysis of investments in various nationalities in use by researchers without exception in English. But in the writings of the author at this time, do not link the use of theory in the meaning with the analysis tools are in use. The author's research is currently only using the analysis tools of econometrics in the application of macro-economic relations and dividends and share prices.

Still with almost the same theme in French et al., (1987), Bulmash and Trivoli (1991), Allen and Jagtianti Gjerde (1997), and Saettem (1999), Achsani and Strohe (2002), Kandir (2008), the average research they do still use the stock variables and see the impact of the interest rate pegged to the rate of return that may occur. Some of the analysis in the research of emiris, gives the conclusion how the influence of interest rate on very significant value in the rate of return on investment in shares, whereas in some of the study argues on the contrary, if the production process is an industry has no effect directly against stock exchanges in doing research. This happened in the country of Turkey, at the time a period of research in the wake of the 1998 Asian crisis, between 1997-2005. But in such research gives the conclusion that there is a small market in the country of turkey makes the return on stock prices that have already invested in or impacting negatively to interest rate changes, and gives the conclusion that the macro economic variables used in the study that provides significant damak in influencing the share price on the stock of the country turkey. In theory in some other research says that, interest rates in a country largely determine all over the return on stocks, because they assume that the occurrence of the increase or decrease in the interest rate would rise and could lead to a decline in the stock price, and will be able to raise the charges over cash at the holding. In the short term and the long term existence of the increase and decrease in cost over pemegangan cash would cause the occurrence of negative response over a rise in interest rates, and can lower the stock price theoretically.

Other research by Nelson and Kim, (1993); Stambaugh, (1999); Heaton and Lucas (1999); Lettau and Ludvigson (2001a) Shiller, (2001), the Cochrane, (2001); Ang and Bekaert, (2001); Fama and French (2002); Valkanov, (2003); Goyal and Welch, (2003), Campbell (2003); Campbell, (2003) examine when stock prices during the late 1990s with outstanding behaviour, which do not decompose in the form of academic transformation. In research they ride down stock prices in the aggregate will always play a more central role when compared with the ratio

of dividends to restore proper price. Not closed the possibility of gaps in the tread, with the emergence of the paradigm in academic field, about predictability over standard ratio between the dividend at a price that has been set. In such research also provides some findings that the world recognised academics as one of the conclusions that can bring about a change in the direction of the rate of refund of excess, with the onset of a rise in the value of the stock at the market price in the aggregate ratio. In the arguments and opinions on the show in the research, the basis for decision making and evidence empirically based on the aggregate value of consumption to consumption and dividends that have been paid to the company, in which a growth that ultimately can show the change and can make the contribution of the price increase. Predictability of forecasting that in the short term in deem appropriate but in the long run will happen a fluctuation that can make the price be uncontrolled. In research they are empirically found a proof positive that can transform a State over estimated, so the occurrence of excess stock returns may occur.

3. Research Methods

3.1 Data and time research

The authors conducted research at the time of the April-May 2016, the data used in this research is the country's economic variables maro USA interest rates, CPI, GDP, stock prices and dividends on the S & P during the period between January 1960 to December 2014.

3.2 Analisys data research

In this study the author uses data analysis Unit root and VAR models. By using the ADF model test data will be analyzed at the level of the non-stationary. The author does not transform the data into a model logaritmatic or other. After the analsa data in the stationary do the authors continue by using VAR test which consists of testing residual test and lag.

4. Econometric Results

In this study the authors use data to predict and analyze the timeseries dividend, shares with macroeconomic variables. The table below explains how the results of the tests that have been done using the ADF test, to see the stationary and stationary over the lack of data that have.

Table 1. ADF Unit root Test Results for level forms of time series data

Variables	Individual Trend	Indiv. And Trend	None
Levin, Lin & Chu t*	4.88970	1.69568	4.44250
Im, Pesaran and Shin W-stat	5.74521	0.70631	Prob.Not significant
ADF - Fisher Chi-square	0.75866	7.99531	1.68505
PP - Fisher Chi-square	0.81346	11.0956	1.89313

From the ADF test results in [Table 1], it is seen that individually individual trend trend, as well as with none, none of the models only are significant, whereas with individual models and the trend is not significant, the same together. This test is the first test of the ADF that is done by using the method level, the following is presented in table 2 for the ADF test results by using the method of 1st diff. Still to model time series data.

Table 2. ADF Unit root Test Results for 1st diff. forms of time series data

Variables	Individual Trend	Indiv. And Trend	None
Levin, Lin & Chu t*	1.73085	2.13118	-4.68382
Im, Pesaran and Shin W-stat	-7.79782	-7.98095	Prob.Significant
ADF - Fisher Chi-square	93.2335	89.6698	88.8160
PP - Fisher Chi-square	654.305	863.934	644.881

[Table 2] also shows the test results for the individual model with the ADF, trend and none with the 1st diff method. Results for the second test method also gives significant results for model none, same with the use of methods of level on the test unit root. But for the values test pesaran and shin low w-stat of his compare with the first model, whereas for AD Fisher and PP fishernya higher for models that are both value. Here we can see for the third model using method 2nd diff. Hannan-method And Quin for the first differensi method.

Table 3. ADF Unit root test results for 2 nd diff. time series data

Variables	Individual Trend	Indiv. And Trend	None
Levin, Lin & Chu t*	57.3613	81.0966	-22.2855
Im, Pesaran and Shin W-stat	-31.4390	-33.0026	Prob. Significant
ADF - Fisher Chi-square	395.234	541.039	434.132
PP - Fisher Chi-square	241.488	337.074	247.907

Table 4. Hannan – Quin unit root test results for first differencing time series

Variables	Individual Trend	Indiv. And Trend	None
Levin, Lin & Chu t*	-2.33812	-14.0369	-7.03023
Im, Pesaran and Shin W-stat	-12.5166	-19.5916	Significant
ADF - Fisher Chi-square	203.237	377.879	195.960
PP - Fisher Chi-square	654.305	863.934	644.881

The results of the Augmented Dickey-Fuller and Phillips-Perron test for unit roots of the first order differentiation time series shows that at 1% and 5% level of significance of critical values for all variables the macro economy in the form of a first differencing is smaller than their respective statistical test which means that the null hypothesis cannot be accepted at this particular level of meaning. So, it can be inferred that the macroeconomic variables in the form of a stationary first-differencing in nature. And we can use it for further analysis specific to conclude in the future about the behavior of our stock back with interest rate changes the Treasury bill and the industrial production.

After obtaining the first distinction from a stationary time series, the effect of the treasury bill rate and industrial production have been examined by applying test results are provided in the VAR by [Table 5].

Table 5. Results of Vector Autoregression (VAR)

Vector Autoregression Estimates

	COMP__S_P	DIVIDEND	GDP_CAPIAT	INDEX_CPI	LONG_INTEREST
COMP__S_P(-1)	0.993548	0.000185	0.181223	0.000182	3.01E-05
	(0.00659)	(2.7E-05)	(0.05845)	(0.00012)	(7.0E-05)
	[150.770]	[6.86813]	[3.10024]	[1.53377]	[0.42757]
DIVIDEND(-1)	1.228751	1.020027	7.881268	-0.031243	0.002687
	(0.57592)	(0.00235)	(5.10865)	(0.01035)	(0.00615)
	[2.13354]	[434.392]	[1.54273]	[-3.01811]	[0.43700]
GDP_CAPIAT(-1)	-0.002432	-3.19E-05	0.964063	4.45E-05	-9.35E-06
	(0.00105)	(4.3E-06)	(0.00929)	(1.9E-05)	(1.1E-05)
	[-2.32121]	[-7.46872]	[103.728]	[2.36382]	[-0.83582]
INDEX_CPI(-1)	0.484739	0.004379	6.637931	0.993901	0.001262
	(0.20261)	(0.00083)	(1.79719)	(0.00364)	(0.00216)
	[2.39253]	[5.30118]	[3.69351]	[272.926]	[0.58352]
LONG_INTEREST(-1)	-1.566795	-0.003635	-2.088494	0.060419	0.990419
	(0.64715)	(0.00264)	(5.74052)	(0.01163)	(0.00691)
	[-2.42105]	[-1.37779]	[-0.36382]	[5.19422]	[143.362]
C	0.843384	-0.036003	-57.18343	-0.110654	0.075160
	(3.95864)	(0.01614)	(35.1146)	(0.07115)	(0.04226)
	[0.21305]	[-2.23060]	[-1.62848]	[-1.55516]	[1.77855]
R-squared	0.997545	0.999855	0.999788	0.999951	0.989401
Adj. R-squared	0.997527	0.999854	0.999787	0.999950	0.989320

Sum sq. resids	464882.1	7.728158	36578703	150.1886	52.97815
S.E. equation	26.68178	0.108788	236.6778	0.479581	0.284834
F-statistic	53076.95	903336.1	617247.5	2639225.	12191.81
Log likelihood	-3096.210	529.8281	-4534.622	-447.8056	-104.4624
Akaike AIC	9.414902	-1.589767	13.78034	1.377255	0.335242
Schwarz SC	9.455789	-1.548880	13.82123	1.418142	0.376129
Mean dependent	537.3716	11.51139	22830.29	117.7338	6.395023
S.D. dependent	536.5047	9.013833	16210.83	67.91770	2.756206

Determinant resid covariance (dof adj.)	8207.571
Determinant resid covariance	7840.676
Log likelihood	-7630.055
Akaike information criterion	23.24751
Schwarz criterion	23.45195

Of results [Table: 2] for the VAR model in the above form, visible value adj. R very high i.e. squarednya of 0.997527, and also based on the output of the above look how variable pricing a stock S & P contributes significantly by variabl S & P t-1 GDP t-1 and t-1 long interest, if we see and describe overall, almost every variable has a significant influence, using the lag 1. Here we see the results of the VAR model in the proposal for the VAR criterion lag selection as attached [Table: 6] :

Table 6. Results of VAR lag order selection

VAR Lag Order Selection Criteria

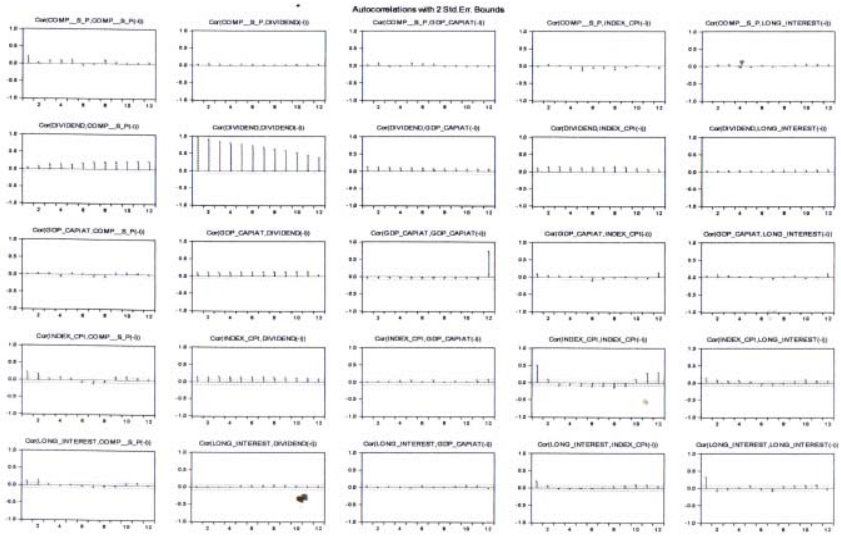
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-16313.75	NA	4.41e+15	50.21154	50.24598	50.22490
1	-7545.298	17375.03	9129.147	23.30861	23.51524	23.38876
2	-6669.508	1721.938	666.0906	20.69079	21.06962*	20.83773
3	-6614.490	107.3279	607.3440	20.59843	21.14944	20.81215*
4	-6593.151	41.30018	614.2618	20.60969	21.33290	20.89021
5	-6570.729	43.04895	619.2175	20.61763	21.51302	20.96493
6	-6539.278	59.90321	607.1368	20.59778	21.66536	21.01187
7	-6507.186	60.62868	594.1541	20.57596	21.81573	21.05684
8	-6471.637	66.61388	575.3339	20.54350	21.95547	21.09116
9	-6431.252	75.05268	548.9244	20.49616	22.08032	21.11062
10	-6399.535	58.45793*	537.9267*	20.47549*	22.23184	21.15674

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

[Table: 6] above the visible results to test VAR lag selection of models in the proposal. Can we be sure to number the value of AIC and SIC of the lag in the show looks at the table. Then we

can conclude that the model that in the proposal by using the lag starting from 0 up to 10 lags, the value of AIC and SIC in the lag 1 of the most high, thus the model that is best for our proposal is modeled using the lags of 1, as a result of the VAR model in the form of in the beginning. Here we can see the equation from the model VAR test the residual in the proposal below:

Figure 1. Residual Test



5. Conclusion

In a study done by Mukherjee and Naka Gjerde (1995), and Saettem (1999), Ibrahim and Aziz (2003) gives the conclusion that is the result of influential industry production significantly to the price of the shares on the market, and found that the value of interest rates has reversed the relationship against the share price index on the market. This makes things inconsistent with previous research. But in research this time gives a conclusion the price of the stock price in the S P & contributes significantly by macro economics variable components in research S P & t-1, t-1 GDP and the level of long-term interest rates t-1, and if the overall outlines, almost every variable has a significant influence, with the use of lag 1. Thus the author's research currently supports previous research research.

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9.Non-Stationerity Modelling

By
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1.Introduction

Several empirical studies in the field of economics, which uses data based on time series has been much developed and published. When viewed from some of these studies, showing how the standards for a data that is time series, which in replication as a process of realization of a stochastic process. To build a model in times of data eries could use some tools or statistical inference as a tool to build and test the equations that will be able to characterize the relationship between economic variables are in use. According to the opinion (Wei, 2006) there are two special categories of many major characteristics in an economic data series that are either stationary or non-stationary nature series or also about volatility over time. Two special categories of time series data can or can lead to many applications in both areas, especially relating to statistics and economics.

A data in said nonstationarity if there are analytical tools that are general to be widely applied to the time series data. With a sense that the use of multiple variables sure will not have a clear trend, for these variables back to the value that is constant or linear trend. The argument is generally considered a justification and see that an economic process will be produced by the nonstationary process from the time series data, and the data in the sense that it must follow a stochastic trend. In a study done by (Pfaff, 2006) one of the main objectives of the empirical studies in economics to test hypotheses and estimate relationships derived from economic theory, among other variables such as aggregate.

In the mechanism of statistical methods newest and earlier many of which use data analysis tool used to build and test a model of simultaneous equations small scale and large scale, such as the example structural VAR, VAR, Ordinary Least Squares (OLS) and others, where some of the methods that many based on the assumption that economic variables are used in the equation must be stationary model. Currently the core of a problem is how a process of statistical inference

related to the analysis of time series data to a stationary process and is no longer valid if the time series data that are formed because of the lack of stationary. If a time series is nonstationary, it is unlikely that the analysis of these data certainly use OLS models to estimate that there is a linear relationship in the long term in the data or variables used in the study. Or in other words, in the language of statistics if the data remains on proceed to the OLS equation form, it can cause spurious regression. Spurious regression is a state in which the data will be analyzed before is not stationary, but apparently there are a significant relationship between the data in the statistical equations, or in other words between the variables in the study did not have a relationship with each other. In the previous period a lot of the meet the difficulties of data that is nonstationarity problem is, in because of the absence of a good understanding in the model built into the OLS regression equation earlier. With the emergence of cointegration method, makes the stationary test methods to be forgotten, but not so for some particular cases should remain stationary method and should remain on the run in an analysis of data that are time series. So that will be built and developed several models containing stochastic variables that are stationary, which can be built such that the result if we interpret the results are statistically and economically can be accounted.

As with the study done by (Wei, 2006) discuss the cointegration models. As was said at the beginning of this modeling is one of econometric concepts that can be used to see how an economic or a few variables in the case of a state of long-term equilibrium between economic time series data that is in use. We must pay attention to the analysis of data in the time series, because any analysis of the data will have functions and usefulness, because if the data are nonstationary time series, then the equation OLS estimate assumption is certainly violated. Before the analysis procedure carried on regular, preferably for testing the hypothesis should see how the relationship between variables is not stationary. See the distinction data is stationary and not stationary then several methods, one of which called the method of truth in large samples, can lead to mistakes that can be misleading, so it will be able to give a false conclusion or regression in a small sample. A study done by (Banerejee et al., 1993) regarding the estimation framework of a single equation with variable integrated or nonstationary tend to be able to create a problem like the following: will the emergence of data distribution is non-standard of the estimated coefficients gender erated by a process that does not become stationary, in the sense that further explanatory variables generated by the process that created the equation will show autocorrelation. With the presence of more than one cointegrated vector and the tendency for a slightly weak exogeneity.

In this study will be undertaken is to estimate a model of the process data is stationary and not stationary and explain the application that will be used for a different data sets using three main methods of testing analysis of existing data model in the unit root test (ADF test) to see the stationary over the data. Results from this study will be able to answer phenomena in stationary and nonstationary, data analysis by using a variable rate of economic growth in Indonesia as time series data analysis. In this study, the above techniques for testing stationery to be explored by using statistical software assisted, where this software can be tested by using the three forms of the model data sets.

2. Theoretical overview

Stationarity and nonstationarity

A time series of data which will be observed, can be regarded as the embodiment of a random variable that can be explained by some stochastic process. The concept of "stationary" relates to the properties of stochastic data. In this study, the concept of "stationary and nonstationary" adopted by the author; which means that the data is assumed to be stationary if the means, variances and covariances of the series independent of time, rather than all the data has been distributed. A process stationarity and nonstationarity within a period of time can occur, when there is no means constant μ, there is no constant variance t, or both of these properties are met. It can come from various sources but the most important is a unit root.

Unit root

Of the many simplest model, is a model that may contain a unit root AR (1).

Standard equations of the first order autoregressive process, AR (1), as below:

$$Y_t = \varphi Y_{t-1} + t \qquad (1)$$

where the letter t show serial error term white noise corrected with average zero and constant variance constant.

In the study (Yule, 1989) If $\varphi = 1$, equation 1 will be random, it will form a nonstationary process. When this happens, we face the problem of what is known as a root unit. This means that we are faced with a situation of nonstationarity in the series. However, if $\varphi < 1$, then the series Yt is stationary. Stationarity of these series is important because it can survive in the correlation nonstationary time series even if the sample is very large and can cause what is called spurious regression. The presence of unit root problem can be solved when stationary on the data can be

achieved by conducting the process of differencing on a collection of data that we have (see Wei, 2006).

The augmented Dickey-Fuller (ADF) test

In this section, it is stated that, if $\varphi = 1$, contained in equation 1 become a model random walk without irregularities, known as nonstationary process. The basic idea behind the ADF unit root test for nonstationarity is the regression only on the Yt (one period) left value Yt-1 and find out if φ is estimated statistically equal to 1 or not. Equation 1 can be manipulated by subtracting Yt-1 from both sides to get the following equation:

$$Y_t - Y_{t-1} = (\varphi - 1)Y_{t-1} + t \qquad (2)$$

Where can we write the equation :

$$\Delta Y_t = \delta Y_{t-1} + t \qquad (3)$$

is $\delta = (\varphi - 1)$, and Δ is the first difference operator.

In practice, instead of estimating equation 1, we will estimate equation 3 and the test for the null hypothesis of $\delta = 0$ against the alternative $\delta = 0$. If $\delta = 0$, then $\varphi = 1$, which means that we have a unit root problem and the series under consideration is nonstationary. It should be noted that under the null hypothesis $\delta = 0$, the value t of the estimated coefficients Yt-1 does not follow t-distribution even in a large sample (Erdogdu, 2007). This means that the value of t does not have a normal distribution asymptotically. The decision to reject or not reject the null hypothesis of $\delta = 0$ based on the Dickey-Fuller (DF) important values of τ (tau) statistics. DF test is based on the assumption that the fault of the term t are not correlated.

However, in practice, the error term in the test series DF usually show evidence of correlation. To resolve this problem, Dickey Fuller and has developed a test known as Augmented Dickey-Fuller (ADF) test. In the ADF test, which lags behind the first differences that are included in the regression equation to make the t error term white noise and, therefore, the regression equation is presented in the following form:

$$\Delta Y_t = \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + t. \qquad (4)$$

To be more specific, the intercept may be included, as well as a time trend t, after which the model becomes

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1} \Delta Y_{t-i} + \varepsilon_t. \quad (5)$$

The testing procedure for the ADF unit root test is applied to the following model

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \sum_{j=1}^{\rho} \delta_j \Delta y_{t-j} + i_t \quad (6)$$

where α is a constant, β the coefficient on a time trend series, γ the coefficient of y_{t-1}, ρ is the lag order of the autoregressive process, $\Delta y_t = y_t - y_{t-1}$ are first differences of y_t, y_{t-1} are lagged values of order one of y_t, Δy_{t-j} are changes in lagged values, and i_t is the white noise.

So ADF test can be tested on at least three possible models:

(i) This is defined by using the constraint $\alpha = 0$, $\beta = 0$ and $\gamma = 0$ in equation 6. This leads to the equation

$$\Delta y_t = \Delta y_{t-1} + \varepsilon_t. \quad (7)$$

Study (see in Pfaff, 2006) with equation 5 if not stationary series because its variance grows with time.

(ii) In is obtained by imposing the constraint $\beta = 0$ and $\gamma = 0$ in equation 6, which yields to the equation

$$\Delta y_t = \alpha + \Delta y_{t-1} + \varepsilon_t. \quad (8)$$

(iii) In equation if trend with a drift. For $\beta = 0$, equation 6 becomes the following deter- ministic trend with a drift model

$$\Delta y_t = \alpha + \beta t + \Delta y_{t-1} + \varepsilon_t. \quad (9)$$

In (Pfaff, 2006) Value sign of the drift parameter (α) causes the series to wander upward if positive and downward if negative, whereas the size of the absolute value affects the steepness of the series.

With in the ADF model is γ. For $\gamma = 0$, the y_t sequence contains the unit root and hence is integrated of order $d = 1$.

The test procedure for unit roots is similar to statistical tests for hypothesis, that is: (i) Set the null and alternative hypothesis as

$H_0 : \gamma = 0$ (10)

$H_1 : \gamma < 0$ (11)

Determine the test statistic using

$$F_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})} \quad (12)$$

Is $SE(\hat{\gamma})$ is the standard error of γ.

(iii) Compare the calculated test statistic in 12 with the critical value from Dickey-Fuller table to reject or not to reject the null hypothesis.

(iv) The ADF test is a lower-tailed test, so if F_τ is less than the critical value, then the null hypothesis of unit root is rejected and the conclusion is that the variable of the series does not contain a unit root and is nonstationary.

Testing DF and ADF are similar since they have the same asymptotic distribution. Although there are numerous unit root tests, such as the Phillips-Perron test and the Schmidt-Phillips test, the most notable and commonly used is the ADF test, which will be used in this study.

Why Testing for Nonstationarity and Stationarity is Important

In testing a form of time series data, the data is not stationary and stationary is very important to know in a study. Why is that, because of where the underlying variables of the study are based on time series. It is supposed to be for the time analysis of the data series has many applications, especially in various fields eg economy, where data time series including one type of data that many learned, because it is closely connected with the study of a relationship between the economic variables with economic variables other mutually or very affect. If the financial industry study time series data, such as learning about how to link a variable in which financial profit with

other financial variables that affect said such dividend will be paid, or as a variable in household consumption and GDP of a country. An econometric analysis is very important, because the econometric analysis can create a form that is most appropriate equation, using variables that will be analyzed in the economy. A determination of the trends in the data and determining the level of significance that is in use. Many studies concerning the financial and economic as well as the study of the behavior of the time series data, or papers relating to the non-stationary in a data reference can be made in a time series data analysis.

As done by the authors is currently analyzing time series data for the variable rate of economic growth in Indonesia, began the decade 1968-2014, focusing on a non-stationary process. Some researchers such as Granger and Newbold (1974) is one of many researchers who provide opinions in the field of research, especially those dealing with time series data. They give the idea that the data contained or that will be used to macroeconomic regarded as a rule that there must be a process of stochastic trend. A data marked with a process unit root for example, they suggested that the use of variables in the equation econometric models can lead to a spurious regression. With in doing a test for data non-stationarity is very important, because the author considers that the results of a regression that maximum will be made if through the process. Or with a simple sentence can be said that the data in the form of time series will tend to continue to so-called non-stationary when the unit root test is not done and will tend to be stationary when marked with in doing it the unit root test.

In this study the authors only using Dickey-fuller in stationary and whether a notice of data, although many other models to see stationery a process of economic and financial data. In an article initiated by Dickey and Fuller (1979, 1981), there is the existence of a formal test assay development to achieve a stationary nature of the data will have. Significance level of testing carried out to see whether the test for the existence of a unit root presence, the Dickey-fuller look at the value of which is derived to make the right decision in making a regression equation later. This can be considered as a test in accordance with all the tests to be run later in using the unit root analysis tool stationary.

In this study the authors used a variable rate of growth in Indonesia as variables to be tested for stationary data. Especially by applying only one method used to test the data for stationary, but using lags the model and the level of test models in Dickey-fuller different.

3. Data and Research Method

3.1 Time Research and Data Collection

This study was conducted by the authors in December 2015 to January 2016. The data used in this research is of variable value of the growth rate of the national economy of the Indonesia nation during the time period from last year ended 1968 to 2014. The data in the can by the author's web site statistics central body as well as the web sites of other government institutions. Data once in the can by the first author in the last though analyzed by means of statistical aided latest version.

3.2 Research Method

3.2.1 Unit Root

Further in Granger and Newbold (1974) says that the data will be analyzed when stationary test has not been implemented there can be a spurious regression. Spurious regression is one of the crucial problems that usually caused many standard errors of non-stationary variables, that could cause the data that we produce biased results. There are several ways that can be used to ensure that no spurious regression correlation. In this study, the unit root test of Augmented Dickey-Fuller (ADF), Phillip-Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS). But here the author only apply augmented Dickey fuller test (ADF). The equation is simple a stationary the data as follows:

$$Y_t = \rho\, Y_{t-1} + U_t$$

If the coefficient of Yt-1 (ρ) is a = 1 in the sense that the hypothesis is accepted, then the variable contains a unit root and non-stationary. To change the trend of non-stationary becomes stationary test first order (first difference)

$$\Delta Y_t = (\rho\text{-}1)\,(Y_t - Y_{t-1}$$

P coefficient would be 0, and the hypothesis will be rejected so the model becomes stationary. The hypothesis used in the test is augmented Dickey fuller:

H0 : q = 0 *(There are roots unit, the variable Y is not stationary)*

H1 : q ≠ 0 *(No there are roots unit, the variable Y is stationary)*

Test root test is obtained by comparing the t-test with a t-table in the table Dickey-Fuller.

4. Result and Discussion

By using statistical and econometric methods, we will be able to check later whether the data rate of economic growth in Indonesia is stationary or not stationary. However, in this study the author uses augmented Dickey fuller test or complete a short test of the ADF. The test is widely used in time series data is stationary or not stationary. Indeed there are other stationary data test such as the Phillips-Perron test. In this study the authors divide into three parts in the form of unit root test results using the model lagged 1, are 10 and 20, and divide again into the respective model in the form of intercept, trend and intercept also None. In each model to another in the form of levels, 1 st and 2 nd difference. From these results we can see the model behind the implementation and use of different models earlier.

Lags 1 with interceipt, trend and interceipt and none

Table 1 : Result test ADF with lags 1 with interceipt model

Null Hypothesis: GROWTH has a unit root		With interceipt level		With interceipt 1 st diff		With interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=1)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.792038	0.0003	-7.411968	0.0000	-9.757662	0.0000
Test critical values:	1% level	-3.581152		-3.588509		-3.592462	
	5% level	-2.926622		-2.929734		-2.931404	
	10% level	-2.601424		-2.603064		-2.603944	

Source : Proceed by author

Table 2 : Result test ADF with lags 1 with trend and interceipt model

Null Hypothesis: GROWTH has a unit root		Trend & interceipt level		Trend & interceipt 1 st diff		Trend & interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=1)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.031872	0.0009	-7.328882	0.0000	-9.641248	0.0000
Test critical values:	1% level	-4.170583		-4.180911		-4.186481	
	5% level	-3.510740		-3.515523		-3.518090	
	10% level	-3.185512		-3.188259		-3.189732	

Source : Proceed by author

Table 3 : Result test ADF with lags 1 with none model

Null Hypothesis: GROWTH has a unit root	None level		None 1 st diff		None 2 nd diff	
Lag Length: 0 (Automatic - based on	t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*

AIC, maxlag=1)							
Augmented Dickey-Fuller test statistic		-1.639087	0.0949	-7.492795	0.0000	-9.878398	0.0000
Test critical values:	1% level	-2.617364		-2.618579		-2.619851	
	5% level	-1.948313		-1.948495		-1.948686	
	10% level	-1.612229		-1.612135		-1.612036	

Source : Proceed by author

Of output produced above shows how the variable rate of economic growth in Indonesia in [Table 1, Table 2, and Table 3], her t statistical value respectively -4.79, -7.41 -9.75, -5.03, -7.32, -9.64, -1.63, -7.49 and -9.87 some already greater than the value of t on the table McKinon confidence level of 1%, 5%, or 10%, except for non-models on the level probabilistic value level is not significant. The average value of the probability of 0.0000 has been smaller than the value of criticism 0.05 (0.0001 <0.05). Thus, the data has been stationary at the level of level, differentiation of the first stage (1st difference), differentiation of the second phase (2nd differensi) and the null hypothesis can be rejected, except for non-level models in [Table 3].

Lags 10 with interceipt, trend and interceipt and none

Table 4 : Result test ADF with lags 1 with interceipt model

Null Hypothesis: GROWTH has a unit root		With interceipt level		With interceipt 1 st diff		With interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=10)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.792038	0.0003	-7.411968	0.0000	-6.041251	0.0000
Test critical values:	1% level	-3.581152		-3.588509		-3.605593	
	5% level	-2.926622		-2.929734		-2.936942	
	10% level	-2.601424		-2.603064		-2.606857	

Source : Proceed by author

Table 5 : Result test ADF with lags 1 with trend and interceipt model

Null Hypothesis: GROWTH has a unit root		Trend & interceipt level		Trend & interceipt 1 st diff		Trend & interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=10)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.031872	0.0009	-7.328882	0.0000	-5.951847	0.0001
Test critical values:	1% level	-4.170583		-4.180911		-4.205004	
	5% level	-3.510740		-3.515523		-3.526609	
	10% level	-3.185512		-3.188259		-3.194611	

Source : Proceed by author

Table 6 : Result test ADF with lags 1 with none model

Null Hypothesis: GROWTH has a unit root	None level		None 1 st diff		None 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=10)	t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.287829	0.1795	-7.492795	0.0000	-6.129982	0.0000

Test critical values:	1% level	-2.618579		-2.618579		-2.624057	
	5% level	-1.948495		-1.948495		-1.949319	
	10% level	-1.612135		-1.612135		-1.611711	

Source : Proceed by author

If we see similar results for the variable data value economic growth in Indonesia in [Table 4, Table 5 and Table 6] on the use lags 10 above, the value of t-statistic of -4.79, -7.41 -6.04, -5.03, -7.32, - 5.95, -1.28, -7.49 and -6.12 some already greater than the value of t on the table McKinnon confidence level of 1%, 5%, or 10%, except for non-models on the level probabilistic value level is not significant. The average value of the probability of 0.0000 has been smaller than the value of criticism 0.05 (0.0001 <0.05). Thus, the data has been stationary at the level of level, differentiation of the first stage (1st difference), differentiation of the second phase (2nd differensi) and the null hypothesis can be rejected, except for non-level models in [Table 3] is almost the same as the model use lags 1.

Lags 20 with interceipt, trend and interceipt and none

Table 7 : Result test ADF with lags 1 with interceipt model

Null Hypothesis: GROWTH has a unit root		With interceipt level		With interceipt 1 st diff		With interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=20)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.314570	0.6072	-2.411138	0.1485	-0.042456	0.9453
Test critical values:	1% level	-3.711457		-3.711457		-3.737853	
	5% level	-2.981038		-2.981038		-2.991878	
	10% level	-2.629906		-2.629906		-2.635542	

Source : Proceed by author

Table 8 : Result test ADF with lags 1 with trend and interceipt model

Null Hypothesis: GROWTH has a unit root		Trend & interceipt level		Trend & interceipt 1 st diff		Trend & interceipt 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=20)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.643886	0.7468	-0.479245	0.9777	2.213731	1.0000
Test critical values:	1% level	-4.356068		-4.374307		-4.394309	
	5% level	-3.595026		-3.603202		-3.612199	
	10% level	-3.233456		-3.238054		-3.243079	

Source : Proceed by author

Table 9 : Result test ADF with lags 1 with none model

Null Hypothesis: GROWTH has a unit root		None level		None 1 st diff		None 2 nd diff	
Lag Length: 0 (Automatic - based on AIC, maxlag=20)		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.064274	0.0395	-0.829269	0.3466	-0.160087	0.6179
Test critical	1% level	-2.656915		-2.660720		-2.664853	
	5% level	-1.954414		-1.955020		-1.955681	

values:	10% level	-1.609329		-1.609070		-1.608793	

Source : Proceed by author

For the last table of this output results in [Table 7, Table 8 and Table 9] use lags 20 above shows that the statistical value of t for economic data Indonesian state growth rate t statistics for each -1.31, -2.41 -0.04, -1.64, -0.47 , 2:21, 0:03, 0:34 and -6.17 some have less than the value of t on the table McKinon confidence level of 1%, 5%, or 10%, except for non-models at a rate level probabilistic significant value. The average value of the probability of 0.0000 has been greater than the value of criticism 0.05 (0.0001 <0.05). Thus, the data is not stationary at the level of level, differentiation of the first stage (1st difference), differentiation of the second phase (2nd differensi) and the null hypothesis is rejected, except for non-level models in [Table 3] received.

5. Conclusions

From the research that has been done, the subject of non-stationary stationary data using a variable that is the rate of economic growth in Indonesia. It can be concluded that, in theory statineritas with a data rate of growth in Indonesia is stationary, with the use of lag 1, lag 10, but on the level of variable data usage dropping 20 Indonesian state growth rate becomes stationary. So it can be concluded from the study that in doing this, that the data rate of growth in Indonesia in the use level of inaction is greater, then the test data in less stationary.

Note that if the test results show the data that is in use is stationary, the econometric model test that will be applied is the VAR model. However, if the test results indicate that the data is not stationary, then in the form of lag that used to be required to change in order to make these data become stationary. If the data is already in the transformation of the stationary, the next test steps that can be implemented is cointegration. If the test results show that the data contained cointegration, the VAR model is a model which is in the form of Vector Error Correction Model (VECM). Data cointegration indicates the long-term variable is used interconnected or have a relationship.

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10.Planning and Prediction

By
Iin Rosini and Irwan Setiawan

1.Introduction

In the science of economic and financial forecasting, in need, the situation and condition of the economy or company less stable. If in these conditions the company parties a policy, which has decided will earn investment, a new power generation plant in the short-term and long-term, top estimates the future. Process resceduling staff as well as whether the State will be receiving new employees, require an estimate of the volume in the time and cost. The process of prediction and forecasting extremely in need for the next few the existence of the problem of capital investment, or in the short-term routing of telecommunications. All of dimension horizons of time and circumstances involved in the numbers of that you want to serve. Prediction and forecasting according to the author is one of the important tools, as a means to achieve business decisions and budget allocations for a country to match that expected. Indeed sometimes the results of a prediction and forecasting there is less precise it all depends on the model of analysis that we use.

Numbers projection and redictability of an event that is the quantity usually influence by several factors: first how well we understand the factors that contribute to the results of the forecasting and prediction ; the latter how much data is available to be seen where the data or variables that influence to be foretold and in prediction; the third are estimated from the process of forecasting and prediction of yesteryear can affect to predict. As an example do forecasting and prediction a sale, it will be able to estimate the projected figures in forecasting sales very accurate because all three conditions are usually satisfied. Usually there are several factors or variables that can affect the number or numbers predictions forecasting, such as the economic circumstances of a country that can affect business condition indirectly, or the company's own internal variables that could cause number prediction or forecasting be influential.

And forecasting are that can describe the conditions at the right time, in available data could also be used by an understanding person who also is very limited from the factors that influence the results of prediction and forecasting. But the estimate forecasting can impact directly or indirectly on the level of a much smaller scale. While there is a published over estimates that the value of a company's sales will increase, then the party will quickly adjust the measures and policies that are likely to be taken in connection with the results of the prediction and forecasting of yesteryear. Another example is the existence of the "efficient market hypothesis. The existence of such a hypothesis, the process of prediction and forecasting in an enterprise. will go up or down at a later date in numbers predictions forecasting. In the second situation we will likely have a degree of truth about 50% of the time, that would make us have to. To understand the situation as the forecasters, need to realize the limitations of which are owned by themselves, and do not claim that the results of prediction and forecasting of over might.

But sometimes prediction and forecasting, the main measures necessary, such as when can be accurately foretold would happen, and when it is estimated there will be better than it has been in the prediction or in foretold. The existence of a process, a good estimate can be made of existing relationships in the historical data in a prediction or forecast, but the author's assumption we should not emulate past events which in the form of failure will occur again. In this study the author will seek how to distinguish between random fluctuations in the past data, may not necessarily be able to us for granted, and original patterns that must be modeled and extrapolation from a prediction model or eramalan. Many of the researchers that the estimate is not possible in an environment of change. Any changes in the environment, and a good forecasting model will be able to capture the way in which are changed. The presence process forecasts that the environment does not change can be made as the basis of a prediction and forecasting. Usually assumed environment changes will continue into the future, that is to say a very volatile environment will continue to be highly volatile business with sales fluctuati will continue to have a fluctuating sales as well as the level of economic activity that have been through the rise and the decline through the boom. A forecasting model is intended to capture how can affect forecasting and prediction: Abraham Lincoln said, "when we started and to know where we can know our existence so where do our tendency will be to run or vote, we will feel better judge what to do and how to do it"

Prediction and forecasting situation varies in accordance with the time horizon that is in use, the deciding factor of the success of a prediction, the actual results, the type of pattern data, and

many other aspects as well as the data analysis techniques are crucial. Indeed to do the prediction and forecasting methods can be very simple as using the latest observation as an estimate of the so-called "naive " method, or even using the method and analysis of a very complex neural nets as well as techniques such as Econometrics simultaneous equations. But there will be no success in an analysis of the data if the option method in use, all the success of prediction and forecasting depending on what data is available and predictability of the quantity.

2.Literature Review

In a study done by Hameed and Bashir (2012), Farkas (2012) developing countries, the researchers used FDI and GDP. Almost in its entirety such research Econometrics model and methods, particularly with regard to the multiple regression. research done by them provides a conclusion that FDI and GDP related variables are positive, and they have an opinion that the use of this FDI variable can affect economic growth in a country, that in doing research by the author, the need for a domestic investment as well as the presence of an openness towards international trade.

Another case with research done by Thu anh and et al. (2010), Zeeshan and antique (2012), and Onakoya (2012) still use FDI and GDP to see how macro-economic development is in countries such as Nigeria and Pakistan. Such research using model 3SLQ techniques and econometric model of simultaneous equations and plugging Macros model Cobb Douglas on the equations of the model in the making. Results from researc that the FDI and GDP significantly throwing impact on output of that economy. That of, the Cobb Douglas is used to research data 1971-2001. Conclusion the impact of an economic effect of substitution of imports and exports has a different purpose. The results support the hypothesis that conclude the spillover effects of the existence of Bhagwati where FDI in the economy of the year last year. The last research towards Vietnam spillover effects, FDI in the economy with endogenous growth model of Cobb Douglas can be used little evidence of spillover effects of FDI on the economy of the country in research.

Other research that still uses the variable FDI and GDP in the municipality by Turk et al. (2008), Noormamode (2008), Karimi & et al. (2009), Makki and Somwaru (2009). All the research done by some developing countries a cross sectional data by using test VAR, the ARDL. Most of the research still hold the same as the above research, where it provides a conclusion that FDI interact positively with the trade and FDI promote domestic investment, besides FDI may also lead to an increase in the GDP figures in a country. Indeed all the analysis mode in use using

techniques of Econometrics. By using the latest analysis of test model panel VAR model found that there is a clear cut evidence about the effects of the growth of the GDP ratio of FDI on endogenous relationship between FDI and GDP through data panel of 23 OECD countries in time series from '1975 to 2004. With the results they use 2 simultaneous equations model coupled with a common method when to draw conclusions of the research performed. The results of such research reflects if both factors are in use in the study variables that affect the economy, and one of the variables considered as major contributor to speed up the rate of GDP. GDP the level of FDI in some research that has been done.

Athukorala (2003), Akinlo (2003) Adelegan (2000), De Mello (1999), and Johnson (2005), the existence of the research done to see and study the effects of two interrelated economic variables i.e. FDI and human capital, in 90 countries covering the time period 1980-2002. Regression methods in the data in the form of the model panel. The researchers are of the opinion on the results of this research and found that FDI could lead to an increase in GDP in developing countries in general. By studying the positive influence of the variable FDI and GDP ratio in the context of the country Sri Lanka research results give the conclusion that the contribution of FDI to accelerate the rate of the GDP but not the sole factor that affect GDP. To strengthen the research researchers at the top, they were filmed using the econometrics model in the framework of the model considered a good analysis to explain all circumstances and influence. The researchers also supports previous research results that that FDI statistically significant to improve the level and the pace of economic growth in some developing countries such as Sri Lanka, Malaysia, Nigeria, and particularly in developing countries. As well, the opinion that FDI is associated with negative domestic investment. These results were taken from a study done by using data and panel data time series from developed and developing countries 32 of 1970-1990 to investigate the impact of FDI against GDP. In order to attract test results are used, however, in study done, the argument that there is a weak relationship between GDP on FDI, is inversely proportional results previous research.

3.Research Methods and Hypothesis

Data and Time Research

This study uses data from 204 countries by 2014 for variable FDI. The author considers using one single variable could in the long term and short term predictions for the State economy a small scale. The research was done by the author at the time of the March 2016. The following data attachment of FDI

globally against 204 countries is, but the author rise to several countries as the representation of the data in the study.

Table 1. *Data FDI in million 2014*

No.	COUNTRY	FDI $ millions 2014
1	Afghanistan	49
2	Albania	1,149
3	Algeria	1,505
4	Andorra	0
202	Yemen, Rep.	-738
203	Zambia	1,508
204	Zimbabwe	545

USD, at the level of 1 $ = 14.000 IDR.
Source: www.worldbank.com.

Analysis of Data Technique

Box-Jenkins Forecasting Method (Planning) :

The author uses the analysis Box Jenkin in the planning over the variables of FDI 204 countries in research. Univariate analysis models considered the author can project the time a series of methods of forecasting. As for the fundamental in the model with this formula, is a formula for finding more precise later so that it can a residual number as small as possible and shows no pattern. In building a model of this analysis, the author uses a few steps in a sense quite can the pattern and model estimates are accurate. The ARMA model (2.1) describes a condition the residual coefficient approaching one, model identification procedure improvements now result the residual patterns autoregressive order 1 and 2 applied together with the term moving average in the order of 1.

Predictions by Regression (Short Term)

Prediction model for authors using regression analysis with one diff (1st) model in order to predict a single variable and applying Econometrics modelling in the use of a single variable. The following model equation for a multiple regression in the form and format of Mathematics:

Formulas and Notations:

- $\bar{x} = Sx / n$

  This is just the mean of the x values.

- $\bar{y} = Sy / n$

This is just the mean of the y values.

- $S_{xx} = SS_{xx} = S(x(i) - \bar{x})^2 = Sx^2 - (Sx)^2 / n$
- $S_{yy} = SS_{yy} = S(y(i) - \bar{y})^2 = Sy^2 - (Sy)^2 / n$
- $S_{xy} = SS_{xy} = S(x(i) - \bar{x})(y(i) - \bar{y}) = Sx \times y$ Â– $(Sx) \times (Sy) / n$
- Slope $m = SS_{xy} / SS_{xx}$
- Intercept, $b = \bar{y} - m . \bar{x}$
- y-predicted = yhat(i) = m×x(i) + b.
- Residual(i) = Error(i) = y Â– yhat(i).
- $SSE = S_{res} = SS_{res} = SS_{errors} = S[y(i)$ Â– $yhat(i)]^2$.
- Standard deviation of residuals = $s = S_{res} = S_{errors} = [SS_{res} / (n-2)]^{1/2}$.
- Standard error of the slope (m) = $S_{res} / SS_{xx}^{1/2}$.
- Standard error of the intercept (b) = $S_{res}[(SS_{xx} + n. \bar{x}^2) /(n \times SS_{xx}]^{1/2}$.

Hypothesis

H1: There is positive relation between Global FDI in The world with Planning (Long term) .

H2: There is positive relation between Global FDI in The world with Prediction (Short term) .

4.Result and Discussion

In the prediction and forecasting financial and economic concerns the existence of accuracy in the time of as well as the implementation of a proper estimation methodologies, planning and control has always been a very important issue for most researchers in particular. Indeed in fact many decision makers on the accuracy of forecasts because such information is likely to be used to make a decision over the hasi prediction and forecasting especially relating to the subject of the budget as well as related operations activities in the fields of finance, economics and more. When the results of a prediction and forecasting in use then it will show up on any relating to the accuracy or inaccuracies of forecasting results. In this study the authors used two approaches in prediction and forecasting, prediction in the short term while forecasting in the long term. Good future value estimation based on analysis of the factors that are believed to affect the values of the future, the clarity of a prediction method, based on the study of public data deduced from the behaviour of the latter from time to time. In terms of forecasting variables analysis of FDI follows, authors the model analysis of the ARMA (2.1). That this can create a numeric accuracy in forecasting. Here you can see the results for forecasting variable for FDI at 204 countries the world, which served as the [table: 2]

Planning With Box Jenkin (ARMA 2,1)

Table 2. *Result FDI 2014 with ARMA (2.1)*
Dependent Variable: FDI
MA Backcast: 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	144.2037	16.21393	8.893815	0.0000
AR(2)	-0.157392	0.070420	-2.235053	0.0265
MA(1)	-0.025592	0.071069	-0.360100	0.7192

R-squared	0.024842	Mean dependent var	144.5478
Adjusted R-squared	0.015041	S.D. dependent var	275.7530
S.E. of regression	273.6714	Akaike info criterion	14.07647
Sum squared resid	14904310	Schwarz criterion	14.12561
Log likelihood	-1418.724	Hannan-Quinn criter.	14.09635
F-statistic	2.534705	Durbin-Watson stat	1.993728
Prob(F-statistic)	0.081843		

Inverted MA Roots	.03

[Table: 2]. significant probability coefficient figures for model AR (2) and not significant for the model MA (1), for constant C looks significant. We see of for model C, model 0.157392-AR (2) and-0.025592 for model MA (1). As for the numbers of model predictions on the ARMA (2.1) we can see on the results of the Command buttons on the estimation of software in the outlines into shape below:

Estimation Command:
==========
LS(DERIV=AA) FDI C AR(2) MA(1)

Estimation Equation:
==========
FDI = C(1) + [AR(2)=C(2),MA(1)=C(3)]

Substituted Coefficients:
==========
FDI = 144.203657883 + [AR(2)=-0.157391958346,MA(1)=-0.0255919053622]

As already explained in the above command the estimation can be is in the form:

FDI = 144.203657883 + [AR(2)=-0.157391958346,MA(1)=-0.0255919053622]

Prediction With Regression

From [table: 2] below it can be seen that FDI, expected variables correlated positively with FDI (-1) and D (FDI) at a equal, an increase in this variable will result in increased FDI into the country. It is important to declare a single relationship, yet this relationship is in varying

degrees. [Table 3] shows the regression results for the individual variables on FDI. It is able to assess the impact of this relationship of quantitative regression in a single variable.

Table 3. *Result FDI 2014 with Regression*
Dependent Variable: FDI
Included observations: 202 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	168.9399	23.92305	7.061802	0.0000
FDI(-1)	-0.171690	0.099956	-1.717661	0.0874
D(FDI(-1))	0.156511	0.070371	2.224076	0.0273

R-squared	0.024437	Mean dependent var	144.5478
Adjusted R-squared	0.014632	S.D. dependent var	275.7530
S.E. of regression	273.7282	Akaike info criterion	14.07689
Sum squared resid	14910498	Schwarz criterion	14.12602
Log likelihood	-1418.766	Hannan-Quinn criter.	14.09677
F-statistic	2.492356	Durbin-Watson stat	2.014379
Prob(F-statistic)	0.085294		

a single regression model, the results one variable FDI on [table 3] above suggest that the relationship between FDI are not the same in the two sub periods. Marginal propensity to invest (MPI), changes (meaning) of FDI as a result of the increase in unit time is as follows: for a period of 2014. The value of the coefficient of FDI on C of 168.9399, while for FDI (-1)-0.171690, D (FDI (-1)) amounted to 0.156511. This indicates the of positive impact of FDI results using single regression equations. Significant levels well below the level of an alpha of 5%. Estimation model command :

Estimation Command:
==========
LS FDI C FDI(-1) D(FDI(-1))

Estimation Equation:
==========
FDI = C(1) + C(2)*FDI(-1) + C(3)*D(FDI(-1))

Substituted Coefficients:
==========
FDI = 168.939858401 - 0.171690414713*FDI(-1) + 0.156510840574*D(FDI(-1))

The number of coefficients of the FDI in the produce being in the form of :

FDI = 168.939858401 - 0.171690414713*FDI(-1) + 0.156510840574*D(FDI(-1))

5.Conclusions

Empirical analysis of conditions in the world economy by using foreign capital (especially FDI) better. Foreign capital has a significant effect on the world economy by using a single regression equations. In a sense, this proves that the variable FDI has positive effects on economic growth in almost every country. When we discuss the effects of foreign capital on the global economy, we must know that foreign capital had foreign investors activities, which will definitely be restricted by foreign investors planning market and global business strategy. So it can be conclude prediction and forecasting of short-term and long-term analysis method with ARMA (2.1) and linear regression. In the short term and the long term variables are positif by FDI, and FDI globally.

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