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Causality and correlation of currency exchange rates in the region East and Southeast Asia

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Abstract

This research was conducted to see how the relationship of causality and correlation between the exchange rate of the currency there East and southeast asia the low liest. Among countries that made the research of its currency is Indonesia, Brunei darusalam, Philiphina, Malaysia, Singapor, Thailand, Korea, Japan, Hongkong, China. Research methodology used in this study is a stasioneritas test, test of causality and correlation. From the research that has been done by the author it can be concluded that the currency exchange rate data for 10 countries that exist come within East asia and South-East have relations just one direction and loads of which are correlated with negative as well as positive correlated bit. From the research that has been done this can eventually contribute to the existing literature by investigating different aspects of causality and correlation in terms of currency exchange rates come within East asia and South-East.

Key words : Causality, correlation, Stasioneritas, currency exchange rates, and macroeconomics.

Jel Classification : C39, C01, B49

1 Introduction

In research and empirical model on exchange rate performed by the Boller-slev (1986), by using the conditional autoregressive model of public heteroskedastisitas or commonly called (GARCH) model. GARCH Model is a model that is based on the properties of autoregressive volatility and formed from the model left behind in terms of the quadratic error. When analyzing an existing information, whether the model used is contained in the macroeconomic variables could help to improve estimates of the volatility and correlation of the rate that is always repeated, repeated the model above can also be used and an extension of the standard model and GARCH model DCC, the way is by adding for example a set of relevant economic variables in one ofan economic factor analysis that will be performed in both the mean and conditional variance equation. In a study conducted by Sollis (2005) and Van Landschoot (2003) gives the conclusion that the

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increase in the estimated volatility variable to doresearch on the S P & Composite stock (by adding a few variables on macroeconomic factors) as well as provide more pre Tax refund with correlation estimates shares of some banks (including the impact of the spread of the credit).

Related analysis of an economic performance that will be performed, the technique of correlation between different currency pairs if done in a study, it is necessary in thepublic market volatility take note that increases in the days when the macroeconomic variables such as unemployment or inflation rate which is scheduled or be released; In addition to an increase in volatility that will be observed, the spike in volatility can occur with view or show that the markets reaction to the new information for example. In a study conducted by Christiansen & Ranaldo (2007) concerning correlation shares bonds, Thomakos et al., (2008), researching on short - term correlations against long-term interest rates, Chulia et al., (2010), who did research on the correlation of stocks in the S P & 100. All the research done to explain how a phenomenon has been documented for several of the principle of equity, bonds, interest rates, and also for foreign currency or commodity. However, most of the attention has been focused on the reaction that occurs from the level of prices and price volatility, as well as only little has been done in regard to the reaction of the kovarian or the correlation between the variables examined. But literally the characteristics of research conducted the current author only began to take on the topic and with the analysis of the exchange rate alone, without the use of other variables.

In the model the behaviors such as return on assets, we can develop a new extension model initiated by Engle (2002). Model initiated by the Angel known as DCC model, a model that allows for the dynamic correlation depending on when a country as participants conditional correlation depends against other countries. The transition between the two countries occurs gradually and dependant on a deterministic exogenous variables, class models, smooth transition autoregressive or commonly called model or often called as the STAR model, the model initiated by Chan & Tong (1986) and Teräsvirta (1994). While in this study did not use these models and also not using a Markov-switching model DCC from Billio and Caporin (2005), with the exception that regime change based on the deterministic variables than on stochastic processes. Some other deterministic model is considered to be better used, due to the nature of the conditional correlation as depending from the shape of a country' spolicies while keeping constant dynamics in Van Dijk et al., (2011), by using the threshold function by Kwan et al., (2010), or other models such as the constant correlation assumption in a country by Sil-vennoinen and Teräsvirta 2005, 2009). In this study using a model approach to correlation and causality, which does not incorporate time-varying (dynamic), as there is the nature of the model DCC standards with a smooth transition of building structures of a class of STAR models.

2 Literatur Review

Usually in terms of the economic theory of exchange rates has always been associated with a number of other macroeconomic factors, such as inflation, interest rates and others. If

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the used variables are connected is the interest rate, it will unfold apurchasing power parity theory which will made grand theory. If we talk about the theory of exchange rate, then the theory of UIP expected could explain how a nominal interest rate differential between the two countries, although empirical evidence speaks against most of the theory of UIP there is such uncertainty. If we see it in a larger framework, monetary model with flexible prices can be used as a means ofliaison between the level of the exchange rate of two currencies in the long term to see the interest rate differential, but can also be used to see the difference in themoney and stock income examples.

In 1973 the decade many countries especially in the Western European model started to leave the exchange rates were fixed and floating; many studies conducted with focuses on testing the relationship between Exchange rates and macroeconomic factors are postulated by the monetary model and by other models. However, after some research the experience of development of that promise, then the Meese and Rogoff (1983a, b) questioned the validity of the empirical truth or the form of the relationship between macroeconomic factors are variables that are used and the exchange rate. Model of the short and medium term that is widely used in research to estimate within 1-12 months. In MacDonald and Taylor (1994) in the research conducted were able to find some resources prediction in the monetary model. The research done to extend the list of input over the model's dynamic error correction model in explaining the dynamics of a short term is quite complex because of the exchange rate. Monetary model to estimate the horizon 1-12 months, although the rate of improvement over the rising horizon estimates in the long term. In addition to interest rates, money supply and real income is defined in the monetary model, a number of fundamental economic or other factors began many proposed. Research conducted by the Throop (1993) for example, a substantial increase from the out-of-sample foretold the casts of the model error correction when using the account, productivity growth Government budget deficit and the declining real price of oil in addition to the standard interest rate is real. According to the study, these factors together can account for up to 80% of long-term variations in the exchange rate.

Other research on exchange rate performed by Brooks et al. (2004). In its research itusing a variable rate of movement in exchange rates associated with capital flows ornet equity value in the sense of financial which flows by using currency exchange rates euro / U.s. dollar as well as the value of bonds financial flows denominated in the U.s. dollar / yen, in the long term by using the interest rate differential. This research conducted in criticism by Meese and Rogoff (1983a,b), because they contend thatother puzzles have appeared related to the volatility of exchange rates. In other research that concerns the issue of exchange rates by Marston (1989) gives the conclusion that the currency volatility has increased in the era of the ' 70s, after the end of the fixed exchange rate system known as the Bretton Woods system. And they also argued that the fundamental case for something making changes to economic factors still largely unchanged. In Rose et al (1993) concluded that macroeconomic factors can provide a bentuan just a little in explaining or predicting the changes in exchange rates. It is also asserted by Schwert (1989) the existence of several sub-series provide weak finances and renders evidence

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that equity return volatility helps explain future macroeconomic volatility, not vice versa.

Engel (1982) in his research using model volatility mainly based on information contained in the form of such volatility, model heterokedastisitas, developed by Engle (1982) is the conditional autoregressive models (ARCH) models, and model the engel modified again into the common model ARCH (GARCH) Model by Bollerslev (1986). Of the two studies it appears various models with different specifications-specification can be constructed to take account of features that will be presented in the form of research data on the financial markets. Then the research model formed by Bollerslev et al. (1992) and Palm (1996) provides a broad picture of the top of the order of the GARCH model, however, Bauwens et al. (2006) saw the need for a model of multivariate GARCH form from ekssitensi. With the new calculations to take into account the form of time series data in multivari, then Bollerslev (1990) expanding forms of GARCH model by doing a conditional constant model inclusion using correlation factor, so it will be a full covariance matrix is obtained, not only one variance as contained in standard GARCH structure. Then other studies performed using covariance matrix of the entire modeling, in the way that leb more dynamic known as BEKK Model. But the level of accuracy and the weakness of this model is a large number of parameters that make it impractical for larger data sets; therefore modeling with simonious and scalar diagonal BEKK model version which in gagas by Engle and Kroner (1995) the more favored.

Some advanced research conducted by Engle (2002) extending the model Bollerslev, Engle and Sheppard (2001) discusses the dynamic model of conditional relations (DCC). TSE and Tsui (2002) developed a model that is similar to the model in the form of DCC. It should be noted there are 4 main advantages of model research conducted by Engle (2002) and Tse and Tsui (2002), since the top model correlation formed is the simplest form. Then in the Cappiello et al. (2006) allows the dynamics of asymmetric correlation model, because the model has often been observed in financial markets that are mutually connected correlation, either between different asset classes and financial assets in certain classes, which are experiencing an increase in negative market environment, which is in a sense a diversified model will be very important for investors. Pesaran and Pesaran in research (2007) using Model DCC Engle, the study assumes that the distribution of t is distributed normally. However, another problem is the lack of arrangement forms of bivariat deemed necessary for a research data. So the model of Rombouts and Verbeek (2009) can provide a more detailed comparative analysis of the model that you want.

In the findings of research conducted by Rose et al (1993) and Meese & Rogoff(1983a, b), describes that macroeconomic factors have not been much used explicitly to model or in the volatility of the estimates as well as in the correlation of exchange rates. Approaches to other Exchange rates, but in the wider context of the model of financial markets is done by Davis and Kutan (2003) who found empirical evidence internationally that the stock return Predictor and volatility using GARCH models with monthly data, EGARCH

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model plus 13 for the industry and the stock market hasevolved significantly in influence on the volatility of the stock in four and six countries, respectively, of the 13 in considerationn. With the same hanpir model Sollis (2005) uses a set of data that is a little larger than the macroeconomic variables to predict the return and volatility of stocks listed in the S P &.
To do with the Fundamental Macroeconomic forecasting financial markets, for a number of major currencies is analyzed against the dollar Australia, Engel and Gizycki(1999) found that the correlation is large enough and in time and can reject the assumption of a correlation matrix with the unconditional constant. In the matrix the Variance-Covariance forecasting, in can be some of the advantages of the approach ismore complex compared to GARCH model based on exponential weighted. In Van Dijk et al. (2011) found some form of structural relationship between the level ofunconditional u.s. dollar exchange rate against the euro, the Pound United Kingdom, and franc Switzerland in particular.

With research conducted by van Dijk et al. (2011), they questioned whether DCC standard sufficient for modeling volatility and correlation vary in time or whether the term structural gap need to be included in the model to make it more explicit. Structural changes in disclosed and documented by Pérez-Rodríguez (2006) that the U.s. dollar and the pound/euro/U.s. dollar exchange rates, notably between the second half of 2001 and 2004 has a relatively high correlation levels, although with high variability over the time period considered (1999-2004). Next, we found the volatility spillovers between the pound and the euro exchange rate, and at the lower levels of the exchange rate between the pound and the yen.
Another case with Campa and Chang (1998) benchmarking forecasting correlation implies choice currency for GARCH- based estimates of the correlation. They found that the correlation arising / GARCH model exceeds the implied as well as in historical simple with RiskMetrics model. On the other hand, Walter and Lopez (2000) found mixed results on the usefulness of the implied correlation; While the information is implied apparently useful for estimates on the level of the exchange rate of the yen, and this does not apply to the estimated correlation franc mark / Switzerland. Castren and Mazzotta (2005) reached a similar conclusion that the strength prediction of the implied correlation is not always better than a traditional strength of there appearance of a correlation is based on the measures in question. However, they note that the implicit correlation measures tend to be the result of pro-vide and most consistent across all Exchange rates. In contrast to Walter and Lopez (2000) and Castren and Mazzotta (2005), the results of Moldenhauer (2011) shows on the other side of the level of implied correlation that has high predictions of a power inforecasting between four major currencies (euro, yen, pounds franc, all quoted franc against the u.s. dollar); estimates based on high-frequency correlation and this finding applies to data presented on a weekly basis and up to yearly.

3 Methodology Research

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3.1 Data Description and Time Research

The data used in this research is the time series data from the exchange rate of the currency of State come within East asia and southeast asia including Indonesia, Bruneidarusalam, Philiphina, Malaysia, Singapor, Thailand, Korea, Japan, Hong Kong, China's exchange rate against the currency of U $ D dollars. The data in this study data for the daily currency exchange rate starting from 1 January 2004 until 31 December 2014.The data in this study in may by the author how to download it from the internet,especially from Indonesia Bank web site, the Central Bureau of statistics, and other web site. This research was conducted by the author in Jakarta starting from April-June 2015.

3.2 Analysis Data Research

3.2.1 Stationarity Test

Suppose a data time series Y_t (t = 1, 2 ...) is said to be stationary or have a weak in the sense that if the nature of the statistics that do not vary with time as in expectation, variance, autocorrelation. Is a white noise is an example of a stationary time series, examples of cases in which a distributed data Y_t normal N where sigma ^ 2 is independent of t.

In order to identify the data series are not stationary allows us then to find out where non-derived stasioneritas. A series of non-stationary can be said to be stationary in adifference, also called integrated of order 1 : stationary, but not Y_t Y_t-Y _ {t-1} is adifference stationary.

The Hypothesis to unit root is :

$$H_o: \delta = 0 \text{ (Unit Root)}$$
$$H_1: \delta \neq 0$$

Decision rule:

If t* > ADF crtitical value, ==> not reject null hypothesis, i.e., unit root exists.

If t* < ADF critical value, ==> reject null hypothesis, i.e., unit root does not exist.

3.2.2 Correlation Test

Make a correlation between the word variable with another variable. The intent of this correlation is used to understand and to know:
1. If there is a positive or negative between multiple variables
2. Explain how big power relations in question.

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Statistical correlation is measured by what is called the correlation coefficient (r). Numeric values ranging from 1.0 to -1.0. This gives us an indication of the strength of the relationship. In General, r > 0 indicates a positive relationship, r 0 show negative Relationship < while r = 0 indicating no relationship (or enriched, and the independent variables are not related to you). Here r = 1.0 Positive explains the correlation is perfect and r =-1.0 to explain the negative correlation was perfect. The correlation coefficient when closer to + 1.0 and-1.0, the Greater is the power relationship between the variables.

Value of r	Strength of relationship
-1.0 to -0.5 or 1.0 to 0.5	Strong
-0.5 to -0.3 or 0.3 to 0.5	Moderate
-0.3 to -0.1 or 0.1 to 0.3	Weak
-0.1 to 0.1	None or very weak

3.2.3 Causality Test

Granger causality is statistical hypothesis tests in order to determine how much of thebase of the Y data can now be explained by the Y value of the past and Then to see if there are failed the value of X by doing a explanation in the increase. A series of data within Y when analyzed with model Granger-caused by the variable X because the coefficient on the lagged XS statistically significant [Granger, 1969]. Analysis of two way often become the cause of the occurrence of such relationships, where X Granger-causes - Y and Y Granger Cause X. In order to see and to identify whether the causal relationship exists and there is among a series of Time period now to do an investigation, bivariat regression a granger will form a simple equation as follows:

$$Y_t = a_0 + \sum_{i=1}^{p} a_i Y_{t-i} + \sum_{i=1}^{p} \beta_i X_{t-i} + e_t$$

$$X_t = a_0 + \sum_{i=1}^{p} a_i X_{t-i} + \sum_{i=1}^{p} \beta_i Y_{t-i} + u_t$$

For the pair (X, Y) data series within the group over a failed is the number of assumed to enrich the value of the failed to present value of variable Y is a function of ITS lagging values and the value of the variable X in the second equation, assumed to be the value added of a variable X that we have at the beginning which is a function of the value of ITS

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property and the value of the variable Y is left behind. In statistical reports Wald to the hypothesis for the above equation will be :

$$\beta_1 = \beta_2 = \beta_3 = \cdots = \beta_p = 0$$

Thus, the hypothesis that the zero-X does not Granger Cause is Y in the first regression and it does not cause - Y Granger Cause X in the regression.

4 Empirical Results

4.1 Testing for Unit Roots

In statistics and Econometrics, the unit root test is used to test for the existence of apresumption that a time series data is not stationary. A commonly used test is the test of augmented Dickey – Fuller. Other similar tests i.e. Test Phillips – Perron. Both indicated the presence of a null hypothesis of the unit root as.
Please note that the data is said to be stationary is the data spatially flat, do not contain components of the trend, with a diversity that is constant, and there is noperiodic fluctuations.

Table 1 : Result test of unit root

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

**Sources proceed by author*

Hypothesis used in testing augmented dickey fuller are:
H0: $\rho = 0$ (there is unit roots, the variable Y is not stationary)
H1: $\rho \neq 0$ (there is no unit roots, the Y variable 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.
We can see that the value of the statistic t in output is seen significantly, is still smaller than the value of criticism on statistics on the level of trust McKinon 1%, 5%, or 10%.The results of the output data showed that currency exchange rates come within East asia and southeast asia are stationary at level lags the used.

4.2 Causality Tests

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Test causality was first propounded by Engel and Granger. The purpose of causality Granger is researching whether A precedes B, or B precedes A, or the relationship between A and B reciprocity. The relationship of causality can occur between two variables, if a variable y, i.e. inflation is affected by the variable x, namely the price ofrice. Granger causality test aims to look at the past influence of a variable against other variable conditions at the present. In other words, the causality tests Granger can be used to see if the y can more accurately forecasting with enter lag variable x.

Table 2 : Result Causality test

Pairwise Granger Causality Tests
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
HONGKONG_$ does not Granger Cause CHINA_YUAN	2686	5.44328	0.0044
CHINA_YUAN does not Granger Cause HONGKONG_$		20.4116	2.0009
INDONESIA_RUPIAH does not Granger Cause CHINA_YUAN	2686	3.97187	0.0189
CHINA_YUAN does not Granger Cause INDONESIA_RUPIAH		0.72941	0.4823
JAPAN_YEN does not Granger Cause CHINA_YUAN	2686	1.01642	0.3620
CHINA_YUAN does not Granger Cause JAPAN_YEN		3.27021	0.0381
KOREAN_WON does not Granger Cause CHINA_YUAN	2686	10.0170	5.0005
CHINA_YUAN does not Granger Cause KOREAN_WON		2.20172	0.1108
MALAYSIA_RINGGIT does not Granger Cause CHINA_YUAN	2686	10.9748	2.0005
CHINA_YUAN does not Granger Cause MALAYSIA_RINGGIT		11.4043	1.E-05
PHILIPPINE_PESO does not Granger Cause CHINA_YUAN	2686	23.0550	1.0010
CHINA_YUAN does not Granger Cause PHILIPPINE_PESO		11.0288	2.0005
SINGAPORE_$ does not Granger Cause CHINA_YUAN	2686	6.90400	0.0010
CHINA_YUAN does not Granger Cause SINGAPORE_$		9.73089	6.0005
THAI_BAHT does not Granger Cause CHINA_YUAN	2686	10.2828	4.0005
CHINA_YUAN does not Granger Cause THAI_BAHT		10.3902	3.0005
BRUNEI_$ does not Granger Cause CHINA_YUAN	2686	6.75780	0.0012
CHINA_YUAN does not Granger Cause BRUNEI_$		11.9535	7.0006
INDONESIA_RUPIAH does not Granger Cause HONGKONG_$	2686	29.8611	1.0013
HONGKONG_$ does not Granger Cause INDONESIA_RUPIAH		3.01654	0.0491
JAPAN_YEN does not Granger Cause HONGKONG_$	2686	11.8034	8.0006
HONGKONG_$ does not Granger Cause JAPAN_YEN		1.32072	0.2671
KOREAN_WON does not Granger Cause HONGKONG_$	2686	11.3130	1.0005
HONGKONG_$ does not Granger Cause KOREAN_WON		2.87936	0.0563
MALAYSIA_RINGGIT does not Granger Cause HONGKONG_$	2686	2.77698	0.0624

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HONGKONG_$ does not Granger Cause MALAYSIA_RINGGIT		0.38760	0.6787
PHILIPPINE_PESO does not Granger Cause HONGKONG_$	2686	3.81091	0.0222
HONGKONG_$ does not Granger Cause PHILIPPINE_PESO		0.24261	0.7846
SINGAPORE_$ does not Granger Cause HONGKONG_$	2686	11.4877	1.0005
HONGKONG_$ does not Granger Cause SINGAPORE_$		1.82771	0.1610
THAI_BAHT does not Granger Cause HONGKONG_$	2686	3.98873	0.0186
HONGKONG_$ does not Granger Cause THAI_BAHT		0.64065	0.5270
BRUNEI_$ does not Granger Cause HONGKONG_$	2686	11.1875	1.0005
HONGKONG_$ does not Granger Cause BRUNEI_$		1.34920	0.2596
JAPAN_YEN does not Granger Cause INDONESIA_RUPIAH	2686	2.80566	0.0606
INDONESIA_RUPIAH does not Granger Cause JAPAN_YEN		3.22761	0.0398
KOREAN_WON does not Granger Cause INDONESIA_RUPIAH	2686	0.59007	0.5544
INDONESIA_RUPIAH does not Granger Cause KOREAN_WON		19.3678	4.0009
MALAYSIA_RINGGIT does not Granger Cause INDONESIA_RUPIAH	2686	0.00788	0.9922
INDONESIA_RUPIAH does not Granger Cause MALAYSIA_RINGGIT		11.5402	1.0005
PHILIPPINE_PESO does not Granger Cause INDONESIA_RUPIAH	2686	0.46974	0.6252
INDONESIA_RUPIAH does not Granger Cause PHILIPPINE_PESO		1.26545	0.2823
SINGAPORE_$ does not Granger Cause INDONESIA_RUPIAH	2686	0.41439	0.6608
INDONESIA_RUPIAH does not Granger Cause SINGAPORE_$		2.27422	0.1031
THAI_BAHT does not Granger Cause INDONESIA_RUPIAH	2686	0.28739	0.7502
INDONESIA_RUPIAH does not Granger Cause THAI_BAHT		6.75333	0.0012
BRUNEI_$ does not Granger Cause INDONESIA_RUPIAH	2686	0.11402	0.8922
INDONESIA_RUPIAH does not Granger Cause BRUNEI_$		5.92840	0.0027
KOREAN_WON does not Granger Cause JAPAN_YEN	2686	0.97769	0.3763
JAPAN_YEN does not Granger Cause KOREAN_WON		6.44892	0.0016
MALAYSIA_RINGGIT does not Granger Cause JAPAN_YEN	2686	2.67444	0.0691
JAPAN_YEN does not Granger Cause MALAYSIA_RINGGIT		0.10386	0.9014
PHILIPPINE_PESO does not Granger Cause JAPAN_YEN	2686	2.03682	0.1306
JAPAN_YEN does not Granger Cause PHILIPPINE_PESO		0.95792	0.3838
SINGAPORE_$ does not Granger Cause JAPAN_YEN	2686	8.60645	0.0002
JAPAN_YEN does not Granger Cause SINGAPORE_$		0.15214	0.8589
THAI_BAHT does not Granger Cause JAPAN_YEN	2686	5.50743	0.0041
JAPAN_YEN does not Granger Cause THAI_BAHT		0.66935	0.5121
BRUNEI_$ does not Granger Cause JAPAN_YEN	2686	5.76075	0.0032
JAPAN_YEN does not Granger Cause BRUNEI_$		1.01200	0.3636

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MALAYSIA_RINGGIT does not Granger Cause KOREAN_WON	2686	1.31769	0.2679
KOREAN_WON does not Granger Cause MALAYSIA_RINGGIT		8.66834	0.0002
PHILIPPINE_PESO does not Granger Cause KOREAN_WON	2686	0.45785	0.6327
KOREAN_WON does not Granger Cause PHILIPPINE_PESO		1.44784	0.2353
SINGAPORE_$ does not Granger Cause KOREAN_WON	2686	0.10013	0.9047
KOREAN_WON does not Granger Cause SINGAPORE_$		2.38285	0.0925
THAI_BAHT does not Granger Cause KOREAN_WON	2686	0.17894	0.8362
KOREAN_WON does not Granger Cause THAI_BAHT		2.09745	0.1230
BRUNEI_$ does not Granger Cause KOREAN_WON	2686	0.04495	0.9560
KOREAN_WON does not Granger Cause BRUNEI_$		4.89968	0.0075
PHILIPPINE_PESO does not Granger Cause MALAYSIA_RINGGIT	2686	6.41329	0.0017
MALAYSIA_RINGGIT does not Granger Cause PHILIPPINE_PESO		11.6084	1.0005
SINGAPORE_$ does not Granger Cause MALAYSIA_RINGGIT	2686	33.4008	5.0015
MALAYSIA_RINGGIT does not Granger Cause SINGAPORE_$		6.99887	0.0009
THAI_BAHT does not Granger Cause MALAYSIA_RINGGIT	2686	9.00135	0.0001
MALAYSIA_RINGGIT does not Granger Cause THAI_BAHT		14.0641	8.0007
BRUNEI_$ does not Granger Cause MALAYSIA_RINGGIT	2686	22.3444	2.0010
MALAYSIA_RINGGIT does not Granger Cause BRUNEI_$		18.2953	1.0008
SINGAPORE_$ does not Granger Cause PHILIPPINE_PESO	2686	11.4112	1.0005
PHILIPPINE_PESO does not Granger Cause SINGAPORE_$		2.61564	0.0733
THAI_BAHT does not Granger Cause PHILIPPINE_PESO	2686	19.5480	4.0009
PHILIPPINE_PESO does not Granger Cause THAI_BAHT		21.4332	6.0010
BRUNEI_$ does not Granger Cause PHILIPPINE_PESO	2686	10.7677	2.0005
PHILIPPINE_PESO does not Granger Cause BRUNEI_$		6.40638	0.0017
THAI_BAHT does not Granger Cause SINGAPORE_$	2686	0.12263	0.8846
SINGAPORE_$ does not Granger Cause THAI_BAHT		23.6560	7.0011
BRUNEI_$ does not Granger Cause SINGAPORE_$	2686	2.44160	0.0872
SINGAPORE_$ does not Granger Cause BRUNEI_$		254.656	6.0102
BRUNEI_$ does not Granger Cause THAI_BAHT	2686	20.2739	2.0009
THAI_BAHT does not Granger Cause BRUNEI_$		0.86016	0.4232

**Sources proceed by author*

On the Granger causality test there are four possible results obtained are:
1. If $\Sigma aj \neq 0$ and $\Sigma bj = 0$, then there is a causality one way. from x to y.
2 If $\Sigma aj = 0$ and $\Sigma bj \neq 0$, then there is a causality one way from y to x.
3. If $\Sigma aj = 0$ and $\Sigma bj = 0$, then there is no relationship of causality between x and y.

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4. If Σaj ≠ 0 and Σbj ≠ 0, then there are two way causality between x and y.

Then from the results table above shows that received 3 possible results obtained withthe parable of the No. 1, 2 and 3 which says that there is a one-way causality from x to y and from y to x, and there is not a relationship of causality between x and y.

4.3 Correlation Tests

One of the likely condition of the exchange rate movements are as follows: the exchange rate EUR/USD moves up, the exchange rate USD/JPY moving up, and the exchange rate of EUR/JPY also moved up. In short a third exchange rate moves up.The possibility of the condition of the movement of exchange rates is: exchange rate EUR/USD and USD/JPY exchange rate moves up, while the EUR/JPY exchange rate moves instead, moving down. With the assumption that the exchange rate is always changing, not fixed or stationary, then the rate of these three will happen eight likely conditions the movement of the exchange rate. However, in this paper will be discussed only one Exchange rate movement conditions i.e. a condition where a third rate similarly moving up. Seven other possibilities not discussed here.
Important things you need to know is how likely the rate moves up simultaneously. It means whether or not third rate the same moves up. If it's possible, how much percentage chances when compared to the likely condition of the movement of the exchange rate.

Table 3 : Result Causality test

CRNCY	C_YUAN	HK_$	IND_RP	JPN_YEN	KRN_WON	MLY_RGT	PHP_PSO	SGD_$	THA_BAHT	BRNEI_$
C_YUAN	1	0.34241	-0.42693	0.64785	-0.31525	0.86947	0.87403	0.96048	0.90331	0.96033
HK_$	0.34241	1	-0.40272	0.23861	-0.27129	0.13035	0.14687	0.25609	0.15740	0.25609
IND_RP	-0.42693	-0.40272	1	0.11594	0.23842	-0.01328	-0.14306	-0.24452	-0.09778	-0.24420
JPN_YEN	0.64785	0.23861	0.11594	1	-0.54010	0.68178	0.54127	0.67331	0.66235	0.67342
KRN_WON	-0.31525	-0.27129	0.23842	-0.54010	1	-0.05517	-0.03217	-0.13476	-0.14858	-0.13512
MLY_RGT	0.86947	0.13035	-0.01328	0.68178	-0.05517	1	0.93004	0.95289	0.95586	0.95276
PHP_PSO	0.87403	0.14687	-0.14306	0.54127	-0.03217	0.93004	1	0.91851	0.94964	0.91820
SGD_$	0.96048	0.25609	-0.24452	0.67331	-0.13476	0.95289	0.91851	1	0.95266	0.99982
THA_BAHT	0.90331	0.15740	-0.09778	0.66235	-0.14858	0.95586	0.94964	0.95262	1	0.95257
BRNEI_$	0.96033	0.25609	-0.24420	0.67342	-0.13512	0.95276	0.91820	0.99982	0.95257	1

**Sources proceed by author*

The main results of this correlation is called the correlation coefficient (or "r"). This ranges from-1.0 to + 1.0. The closer r is + 1 or-1, closer to the two variables arerelated. If r is close to 0, it means there is no relationship between the variables. If r is positive, it means that as one variable gets bigger more will be greater. If r is negativethat means that as one gets larger, the other is getting smaller (often called "inverted" correlation). While correlation coefficients are usually reported as r = (a value between-1 and + 1), squaring them makes then easier to understand.

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This type of table is called a correlation matrix. This is a list of variable names (C1-C10) down the first column and in the first line. The diagonal of the matrix of correlation(i.e., numbers that came out from the top left corner to the lower right) always consists of people. That's because this is the correlation between each variable and him self (and always perfectly correlated with the variable it self). This statistical program shows only the lower triangular correlation matrix. In each of the correlation matrix there are two triangles that are the values below and to the left of the diagonal (the triangle below) and above and to the right of the diagonal (upper triangle). There is no reason to print the second triangle for two triangles from the correlation matrix is always mirror each other (of correlation variables x with y variable is always equal to the y variable correlation with the variable x). When the matrix has a mirror - image quality is above and below the diagonal symmetric matrix as we call it. A correlation matrix is always symmetric matrix.

From the table it can be noted that the movement of the exchange rate of the currency exchange rates come within East asia and southeast asia has a positive and negative correlation. This means that in the whole year of data carried out research exchange rate there are moving in the same direction and things are not the same. If currency exchange rates increase, then the exchange rate tends to rise. When a currency's exchange rate against U.s. Dollar appresiation (depreciation) main, then the exchange rates of the currencies of countries in the Asian region will also terapresiasi against the dollar.

From the second table may be aware that currency rates come within asia tend to correlate negatively with the exchange rate of major currencies. When the exchange rate of major currencies rises, then the lowliest Asian currency rates that are used tend to move down. In other words, if the U.s. Dollar depreciating Asian currencies by the lowliest, then at the same time the Dollar also tends to depreciate by currencies in the Asian region.

5. Conclusion

From the research that has been done can be concluded that currency exchange ratescome within East asia and southeast asia, where data are stationary by using 27 lags. Results for causality data concluded that currency exchange rates come within East asia and southeast asia have a relationship in one direction from x to y, from y to x, and has no relationship between the exchange rates. As for the later test results it can be concluded that currency exchange rates in asia-many of which correlatednegative and there is little that correlate positively.

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