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The Determinants of Money Demand Function in ASEAN-5 Countries

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Abstract- This paper aims to investigate the determinant of money demand function for ASEAN-5 countries over the period from 1987-2014. Macroeconomic data of these countries from World Bank Data Stream were obtained for the period between 1987 until 2014 was collected and analyzed using panel data regression analysis. Money demand function model is designed and tested using Stata 13. The results obtained showed that all the independent variables except stock price are determinants of money demand function in ASEAN-5 excluding time-invariant variables. This current study provides empirical results regarding the relationships between money demand function and its determinants in ASEAN 5 countries from 1987-2014. The finding of this study provides useful insights for policymakers; it could be used by the central bank of ASEAN 5 Countries as a guide for effective monetary policy. Even though the findings are fairly significant with a stable money demand in the five ASEAN 5 countries, they have some limitations. Other scholars should look at the other methods of analysis in determining the money demand functions in the region.

Keywords: *money demand, GDP per capita, exchange rate, interest rate, inflation.*

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The Determinants of Money Demand Function in ASEAN-5 Countries

Hussaini Umaru [α] & Muhammad-Bashir Owolabi Yusuf [σ]

Abstract- This paper aims to investigate the determinant of money demand function for ASEAN-5 countries over the period from 1987-2014. Macroeconomic data of these countries from World Bank Data Stream were obtained for the period between 1987 until 2014 was collected and analyzed using panel data regression analysis. Money demand function model is designed and tested using Stata 13. The results obtained showed that all the independent variables except stock price are determinants of money demand function in ASEAN-5 excluding time-invariant variables. This current study provides empirical results regarding the relationships between money demand function and its determinants in ASEAN 5 countries from 1987-2014. The finding of this study provides useful insights for policymakers; it could be used by the central bank of ASEAN 5 Countries as a guide for effective monetary policy. Even though the findings are fairly significant with a stable money demand in the five ASEAN 5 countries, they have some limitations. Other scholars should look at the other methods of analysis in determining the money demand functions in the region.

Keywords: money demand, GDP per capita, exchange rate, interest rate, inflation.

I. Introduction

After the 2009 Global Financial Crisis, the five ASEAN countries, including Malaysia, Indonesia, the Philippines, Thailand, and Singapore experienced unstable economic growth, which includes reducing in export demand, where the export is a major growth of the countries (Musibah, 2014). These bring about unemployment crisis and economic recession in the countries. These tight economic situations directly affect the quantity of Money holding in the economic system, which brings unstable money demand in the countries. The policy makers are faced with a challenge from global financial turmoil, which brings about the need to understand the role of macroeconomic policy response and behavior of money demand to conduct effective monetary policy (Musibah, 2014).

The essential component in formulating monetary policy is demand for money. It makes possible for monetary authorities to influence the expected changes in macroeconomic variables such as income and interest rate by correct changes in monetary policies (Iftekhar, Mamoon, & Hassan, 2016). According to Jhingan (2004), demand for money arises from two functions of money. That is it is a store of value and the second is that money act as a medium of exchange. Thus businesses and individuals wish to hold money partly both in cash and in the form of assets.

There are so many literatures on money demand, for instance, Abdullah, Ali, & Matahir, (2010) Re-examining the demand for money in ASEAN-5 countries; Arize and Nam (2012) The Demand for Money in Asia: Some Further Evidence; Asif and Rashid (2014) Estimation of money demand function through partial adjustment model; Azim, Ahmed, Ullah, and Zakaria (2010) Demand for money in Pakistan: an Ardle approach; Dogru and Recepoglu (2013); Gu (2007) Empirical analysis of money demand in China: A cointegration approach; Hussain and Wijeweera (2013) Estimation of the money demand function in a heterogeneous panel for selected Asian countries; Jiranyakul and Opiela, (2014a) Instability of money demand: recent evidence for Thailand, 2014b An empirical test of money demand in Thailand from 1993-2012; Sarwar, Sarwar, and Waqas (2013) Stability of money demand function in Pakistan; Sarwar, Hussain, and Sarwar (2010) Money Demand Function for Pakistan (Divisia Approach); Tang (2002) "Demand for money under low interest rates in Japan"; and Valadkhani (2008) "Long-and short-run determinants of the money demand in the Asian-pacific countries: An empirical panel investigation".

The above literature, show there are quite a few empirical studies on money demand function in ASEAN countries. Most papers seem to ignore the factors of money demand function, especially the money demand behavior in the ASEAN countries. Therefore, this paper aims to provide information on the relationship between money demand and its determinant in major five developing countries in ASEAN (ASEAN-5). This paper is one of the few empirical studies that concerned both long-run and the short-run equilibrium of demand for money in developing countries. The ASEAN 5 is chosen as the area of study due to its relatively similar economic, cultural, and geographical background. The region has experienced rapid growth of the economy last decade. The region has been the attractive center of investors with its abundant resources and large market. These will lead to cross-border transactions which will give an indirect effect towards the money demand of ASEAN 5 countries. Hence, there is a need for stable money demand function in the region. The findings of this study could be used by the monetary authorities of

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the central bank of ASEAN 5 Countries as a guide for effective monetary policy.

II. Literature Review

According to Hassan, Ali, and Dawood (2016), Money demand function is being affected by various macroeconomic factors. These factors are inflation, fiscal deficit, interest rate, exchange rate, real income, energy crises, external and internal debt, oil shocks, tax revenue, etc. The relationship between variables mentioned above and money demand has ever been of vital importance to the researchers. The stability of money demand is what will make the monetary authorities to adequately estimate the effect of monetary policy on economic activities, to enable them to carry out policy actions with greater confidence and efficiency.

It is essential to track the interest rates and the money stock to assess exactly how monetary policy influences the economy (Valadkhani & Alauddin, 2003). Tang (2007) reveal that real M2 aggregate, exchange rate, real expenditure components, and inflation rate are cointegrated for Singapore, Malaysia, and the Philippines. The statistical significance of real income mechanisms suggests the biases of using an (M2 aggregate) single real income variable in money demand specification of both long and short-run.

A stable money demand allows for better expectations of the effect of monetary policy on inflation, output, and interest rates and therefore reduces the possibility of an inflation bias (Cziráky & Gillman, 2006). Also, the determinant of money demand function has significant implications for the selection of appropriate monetary policy instruments (Musibah, 2014). The money demand function is an essential way of meeting the liquidity needs of economic agent. Therefore, understanding the determinants of money demand function is a key for successful conducting monetary policy in any nation (Rutayisire, 2010). Because of the significance of money demand, it has attracted attention from researchers.

The issue of money demand function, particularly the relationship between money demand function and its determinants, has drawn concerns in monetary economics research. Over the past decade, many researchers attempt to examine the relationship between the money demand function and its determinants in developing, emerging, and developed Countries. Inan Asean country, most papers focus on the effect of financial liberation on the stability of money demand function. For example, James (2005) in Abdullah et al. (2012) attempt to offer the new approach to analyze the effect of financial liberalization on the money demand in Indonesian. His findings revealed that there is the existence of along-run relationship between broad money and its determinant when the proxy of liberalization is included.

In developing and emerging economies the function of money demand function in four countries of Africa was investigated, including Cameroon, Kenya, Ivory Coast and Nigeria. The findings supported the co-integrational relationship existed in the case of Nigeria (Fielding, 1994). The results further reported the evidence of the existence of long-term relation among M2, real income, and inflation (Abdullah et al., 2012). Jiranyakul and Opiela (2014) their study examines the short and long-run stability of demand for money in Thailand using monetary aggregates M1, M2, and M3, using Johansen cointegration test and revealed that only a change in real GDP affects money holdings (M1) in the short run. The short-run uncertainty of M1 money demand makes it hard for the monetary authorities to use M1 as an intermediate target to control short-run and long-run inflation. A relationship exists between M1 money demand and real GDP (a proxy for real income) and interest rate in the long-run. Also, it was revealed in the long-run both real GDP, and an interest rate determines money demand.

There are mixed results on the relationship between the determinants and money demand. These are due to the difference in estimation techniques; researchers could not come to the same conclusion. The other reason for different results is different data time spans. Therefore, this research aims to find the determinants of money demand function in ASEAN-5. These research applied the econometric model in investigating the determinate of money demand function in the ASEAN-5 including Indonesia, Malaysia, Philippine, Thailand, and Singapore, by using broad money (M2) as a proxy for money aggregate between 1987-2014.

Theoretically, there are three motives for holding money or money demand. Firstly, transaction demand for money, which had a positive relationship with income and inverse relationship to interest rates. Secondly, precautionary demand for money, which is also positively related to income. Lastly, speculation demand for money, which had a negative relationship with interest rates. However, many previous studies and real-world experience usually include the cost of credit in money demand estimation.

The conventional theories of demand for money assume that the determinant of money demand on the closed economy is by opportunity cost, income and country's overall interest rate (M. Abdullah et al., 2012).Currently, the efforts have been carried out by the researchers to find other determinants of money demand (Foresti & Napolitano, 2013). Wealth may have a different impact on money demand. According to Foresti and Napolitano (2013),a positive wealth effect can occur in three situations. Firstly, a rise in the assets prices could imply an increase in the volume of their transactions, which will lead to a rise in money demand to facilitate the transactions. Secondly, an increase in

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asset prices leads to rising or additional wealth, which may be stored in money. And thirdly, the rise in assets prices reflects an increase in the anticipated return from risky assets on risk-free ones.

Several studies indicated the positive impact of income on money, for instance: Arize and Nam (2012); Bhatta (2012); Sarwar, Sarwar, and Waqas (2013). Some other studies like Arize and Nam (2012); Tang (2007) reported a negative relationship between interest rate and money demand function whereas; interest rate has a positive relationship on money demand as suggested by Abdulkheir (2013); Abdullah, Ali, and Matahir (2010). Also, Azim, Ahmed, Ullah, and Zakaria, (2010) Reported that there is a unique cointegrated long-run relationship among exchange rate, inflation, income, and M2 monetary. The inflation coefficients and income elasticity are positive while it is negative in exchange rate elasticity.

Furthermore, Azim et al. (2010) reported inflation and income are positively related to money demand while exchange rate affects money demand negatively. The negative relationship of money demand ad exchange rate supports the theoretical expectation that depreciating of domestic currency will lead to a decline in demand for domestic currency. Kumar, Chowdhury, and Rao (2013) reported that the decrease in income elasticity of demand for money, increase interest rate changes.

Subsequently, exchange rate is also considered to be among the important factors of money demand function and according to Arize and Nam (2012) exchange rate has a positive relationship with money demand function while Dharmadasa and Nakanishi (2013); and Okonkwo, Ajudua, and Alozie, (2014) recorded negative effect on money demand function. Moreover, there is a positive relationship between fiscal deficit and money demand. Khrawish, Khasawneh, and Khrisat (2012); and Vamvoukas, (1998) reported a negative effect of fiscal deficit on money demand function. Similary, Samimi, Kenari, Ghajari, and Rate (2013) reported the exchange rate elasticity and money demand coefficient are negatively related. These indicate that depreciation of local currency reduces the demand for money.

Furthermore, Bathalomew and Kargbo (2009) reported the existence of a cointegrating relationship between real M2 and its determinants. In the long run, there is a negative and statistically significant effect on the demand for real M2 on the coefficient of the exchange rate, providing evidence of the currency substitution phenomenon. While in the short run dynamics also reported the presence of substitution of currency but there is no significant on the coefficient of the exchange rate, which is attributed to the mix of both wealth effects and currency substitution. The results also find the statistically significant negative coefficient of the foreign interest rate, which support the argument of the capital mobility effect. The Valadkhani and Alauddin (2003) explored some determining factors of money demand for eight developing countries like Malaysia, Thailand, Papua New Guinea, Bangladesh, Chile, Sri Lanka, Sierra Leone, and the Philippines. The annual time series data were employed for the period ranges from 1979- to 1999. The findings showed the positive link between income and money demand, while a negative relationship was observed between inflation, interest rate, US long-term interest rate and money demand

III. Methodology

Data are taken from World Bank Data Stream for five ASEAN countries for Indonesia, Malaysia, Philippines, Singapore, and Thailand. The data collected; GDP per capita, interest rate, exchange rate, inflation rate and stock price index as independent variables. While money demand stands as the dependent variable, the time frame of the data starts from 2000 to 2015. This study is interested in finding the relationship that exists between money demand and its determinant.

This study applied a different type of panel data models such as Pooled OLS model, Fixed Effect Model (FEM), and Random Effect Model (REM are used to analyze the data. All intercept and coefficient are assumed to be fixed in the constant coefficient model, so time element and space are overlooked.

a) Pooled Ordinary Least Square

The basic model to be used in this research is as follow:

$$M = \beta_0 + \beta_1 GDP + \beta_2 IR + \beta_3 ER + \beta_4 INF + \beta_5 SPI \ldots + u_t$$

Where,

M2	=	Money Demand (Million),
GDP	=	GDP per Capita,
IR	=	Interest Rate,
ER	=	Exchange Rate
INF	=	Inflation Rate,
SPI	=	Stock Price, and
U	=	Error Term

Pooled OLS model does not consider the panel structure of the data and estimate the model. It is used to test whether panel data or Pooled OLS can estimate the data set. (Larisa, 2012).

$$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + \varepsilon_{it}$$

While

$$\varepsilon_{it} = \lambda_i + u_{it}$$

$$u_{it} \sim N(0, \sigma_u^2)$$

The u_{it} is called the time-varying error or idiosyncratic error. Its use is to explain changes over time and among the units in panel data. On the other hand, is unobserved heterogeneity.

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b) Random Effects Model

In the random-effects analysis, the assumption is that the true effect size is different from one study to the others and that the studies in our analysis represent a random sample of effect sizes that could have been observed. The summary effect will be our estimate of the mean of these effects. Random effect assumes λ_i drawn from some probability distribution. The random effect has the following form:

$$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + \lambda_i + u_{it}$$

In random effect model, λ will be treated as a part of the error term. Error term would not be well-behaved error term. Hence, this study will overcome this problem with General Least Square (GLS):

$$\widehat{\beta_{re}} = (X'\widehat{\Omega}^{-1}X)^{-1}X'\widehat{\Omega}^{-1}y$$

GLS is a weighted average of between and within effect.

c) Fixed Effects Model

The fixed effect also is known as the unobserved effect. In the fixed-effect analysis, all studies are assumed to have the same true size effect. The summary effect will be our estimate of this common effect size. As it relies on the variation that occurs within individuals rather than between individuals, it is called the "within" estimator. The assumption in fixed effect model assumes λ_i constant. Hence the equation as follow:

$$Y = (\beta_0 + \lambda_i) + \beta_1 X_{1it} + \beta_2 X_{2it} + \cdots + u_{it}$$

d) Hausman Test

Hausman test has been used in these projects. To decide between the fixed effect or random effect model, this study ran the Hausman test. It is a general test that assesses the uniformity of an estimator when compared to an alternative. It helps one identify if a statistical model correlates to the data. The Hausman specification test model would be as follow:

$$H = (\hat{\beta}_{re} - \hat{\beta}_{fe})'(Var(\hat{\beta}_{fe}) - Var(\hat{\beta}_{re}))^{-1}(\hat{\beta}_{re} - \hat{\beta}_{fe})$$

If the null hypothesis shows that $\hat{\beta}_{re}$ is inconsistent and we should apply FEM in the study.

IV. Analysis Data

This part will include results and explanation of fixed effect and random effect. Some specification test conducted by using some test like Hausman test, Breusch and Pagan Lagrangian multiplier test and F-test. The test aims to find the best model for this study.

Table 1: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
M2	140	11.2091	1.1722	7.8098	13.0439
Gdppc	140	8.1201	1.2546	6.0916	10.9382
Sp	140	7.0180	0.8073	4.4031	8.8763
Inf	140	4.9966	5.7753	-0.8457	58.3871
Ir	140	9.9577	6.5728	0.0380	32.1542
Er	140	1327.4020	3106.4120	1.2497	11865.2100

Note: M2=money demand for country, Gdppc= GDP per capita, SP= Stock Price, Inf= Inflation, IR= Interest rate, and Er= Exchange rate.

Table 1 above presents a summary of the descriptive statistics which shows the total observation (Obs), mean, standard deviation, minimum, and maximum values for each variable used in this study. The results show that Money demand (M2) has an average of 11.21 with a standard deviation of 11.72%. The mean value for Gross domestic product per capita (Gdppc) is 8.1201, which means Gdppc is highly related to money demand, with a standard deviation of 12.55%, with minimum and the maximum value of 6.0916 and 10.9382 respectively. And the mean value indicates that on average,

Table 2: Correlation

Variables	M2	Gdppc	Sp	Inf	Ir	Er
M2	1.0000					
Gdppc	0.6387*	1.0000				
Sp	0.4653*	0.4521*	1.0000			
Inf	-0.3405*	-0.4750*	-0.1762*	1.0000		
Ir	-0.6664*	-0.8607*	-0.4504*	0.6887*	1.0000	
Er	0.0332	-0.2846*	0.0396	0.4354*	0.4537*	1.0000

** Significant at 0.01 level, ** Significant at 0.05 level*

Note: M2=money demand for country, Gdppc= GDP per capita, SP= stock price, Inf= Inflation, IR= Interest rate, and Er= Exchange rate.

From the table above it shows all the variables are correlated with money demand at 1% levels except exchange rate that does not provide any correlation with the money demand.

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Table 3: OLS, FE, RE, and VIF

Variables	Pooled OLS		FE		RE		VIF
M2	Coef.	P>|t|	Coef.	P>|t|	Coef.	P>|t|	
Cons	11.51031	0.0000	1.743426	0.0340	11.51031	0.0000	
Gdppc	0.026069	0.7740	1.416636	0.0000*	0.026069	0.8840	7.47
Sp	0.101362	0.2430	-0.23238	0.1060	0.101362	0.6020	4.45
Inf	0.022836	0.0800***	0.025315	0.0220**	0.022836	0.1810	2.20
Ir	-0.153507	0.0000*	-0.07744	0.0520***	-0.15351	0.0000*	1.46
Er	0.000143	0.0000*	0.000179	0.0030*	0.000143	0.0000*	1.42
R-sqr	0.5982		0.8941		0.7366		
White test		Chi^2=38.77		P= 0.0071			
Hausman	Chi^2= 142.22			P= 0.0000			

**Significant at 0.01 level **Significant at 0.05 level ***Significant at 0.10 level*

Note: M2=money demand for country, Gdppc= GDP per capita, SP= stock price, Inf= Inflation, IR= Interest rate, and Er= Exchange rate. All models are based on robust standard.

The normality test shows VIF of less than 10 proving that multicollinearity is not an issue for the study. Also, the white test has shown that Heteroskedasticity exists for the study. However, all the result is based on a robust standard to eliminate Heteroskedasticity. Although, the result supported the fixed effect (FE) by having a p-value of less than 0.05 on Hausman test. The study also reports both Pooled OLS and RE to look at the relationship in the model.

a) Regression Results

Table 3 above shows the OLS result coefficient for Gdpppc is 0.026069 with an insignificant relationship with the M2. The coefficient of FE effect for Gdppc is -0.23238 with a significant negative relationship at 1% level with M2. The RE model for the Gdppc provides 0.026069 but do not provide any significant relationship with M2. Among the models, only FE presented a significant relationship between Gdppc with the M2.

The variable SP presents a coefficient of 0.101362 that has an insignificant relationship with M2 under OLS. However, the FE model provides a negative coefficient of -0.2561159 at a significant level 10% relationship with M2. The RE model presents a coefficient of 0.101362 that has an insignificant relationship with M2. Among the models, only FE has provided a significant relationship between SP and M2.

OLS coefficient figure for Inflation is 0.022836 with a significant relationship with the M2. The coefficient of FE effect for Inflation is 0.025315 with a significant positive relationship at 5% level with M2. The RE model for the Inflation provides 0.022836 with insignificant relationship to M2. Among the three models, only FE presented a significant relationship between Inflation with the M2.

The Interest rate variable presents all the models reported significant negative relationship, a coefficient of -0.153507 at a significant level of 1% with M2 under OLS. The FE model provides coefficient -0.07744 at a significant relationship at 10% level with M2. The RE model presents a negative coefficient of -0.15351at a significant level of 5% relationship with M2.

The variable Exchange rate presents a minimal significant relationship in all the models with a coefficient of 0.000143 that has a positive relationship with M2 under OLS. Also, the FE model provides a coefficient 0.000179 showing a minor relationship with M2. The RE model presents a coefficient of 0.000143 that has a minimal significant relationship with M2.

According to Hausman test fixed effect model is the most suitable model for this study. The Fixed Effect (FE) R2 within is 0.8941. These show that the model explains 89.41% of changes in money demand. The model has all the variables significant, except stock price (SP). GDP per capita is statistically significant at 1% level and positive relationship with money demand. The Inflation has a positive relationship and statistically significant at 5% level with money demand. While interest rate results show significant at 10% level and negative correlation with money demand, and exchange rate revealed significant results with the minor positive relationship at 1% level with money demand.

V. Conclusion

This study has three alternative models (i.e., OLS, FE, and RE) to estimate money demand, M2 in 5 ASEAN countries. The Hausman test results support FE against Pooled OLS and RE. And therefore report FE to be more suitable for this study. See table 3 for details.

a) The implication of the study to ASEA 5

The findings show all the variables are significant, GDP per capita is statistically significant and has a positive relationship with money demand, this relationship indicates that the demand for money rise as a result of perceived increase in GDP per capita which is consistent with (Azim et al., 2010; Samimi et al., 2013).The stock price is reported to have a negative relationship and statistically significant at 10% level with M2, indicating a decrease in stock price will lead to increase in demand for money. Inflation is statistically significant and has a positive relationship with money demand is also supported the findings of (Azim et al., 2010), the implication of this findings is demand for

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money positively response to inflation that increases in prices of good will bring about the increase in money demand of ASEAN 5 countries.

Also, the interest rate is statistically significant and has a negative relationship with money demand, showing an increase in interest rate will reduce money demand in ASEAN 5 countries this supports the finding of Kumar et al. (2013). Lastly, exchange rate is also statistically significant but with a very small effect on money demand, this because In a flexible exchange rate regime, the demand for money would not depend on the exchange rate otherwise the monetary policy effects on employment and income may be compromised, this also supports the findings of Tang (2007).

The above finding shows that that real M2 is a predictable monetary aggregate. The results of the findings also indicate that a relationship exists for all the ASEAN 5 countries between the dependent variable independents variables at 1%, 5%, and 10%

Table 4: Regression analysis for cross-sectional data

	Cons	Gdppc	Sp	Inf	Ir	Er	R2	Country
Coef.	1.2952	-0.0890	-0.0030	0.0369	0.0003	-0.2910		
t	4.7200	-0.5500	-0.3000	1.3200	10.5400	-0.1900	0.9709	Indonesia
P>|t|	0.0000	0.5850	0.7670	0.2020	0.0000*	0.8550		
Coef.	-3.4623	1.5709	-0.0281	-0.0668	0.0403	0.5385		
t	-3.1500	10.4300	-0.2100	-2.4300	1.3800	8.2900	0.9765	Malaysia
P>|t|	0.0050	0.0000*	0.8330	0.0240**	0.1810	0.0000*		
Coef.	-3.6429	1.4859	0.2046	-0.0271	0.0339	0.0474		
t	-4.3100	9.4700	2.2400	-2.2900	2.4200	14.1400	0.9883	Philippine
P>|t|	0.0000	0.0000*	0.0350**	0.0320**	0.0240**	0.0000*		
Coef.	-11.6189	2.0583	-0.0689	0.0080	-0.0269	1.8720		
t	-7.1400	11.6800	-0.4700	0.4600	-1.2500	7.0200	0.9798	Singapore
P>|t|	0.0000	0.0000*	0.6400	0.6510	0.2260	0.0000*		
Coef.	-1.0910	1.4265	-0.0209	-0.0215	0.0171	0.0540		
t	-3.3600	41.1000	-0.6400	-2.8700	2.4000	19.9400	0.9966	Thailand
P>|t|	0.0030	0.0000*	0.5280	0.0090**	0.0250**	0.0000*		

**Significant at 0.01 level **Significant at 0.05 level ***Significant at 0.10 level*

Note: M2=money demand for country, Gdppc= GDP per capita, SP= stock price, Inf= Inflation, IR= Interest rate, and Er= Exchange rate. All models are based on the robust standard.

b) Country Cross-Sectional Data

Table 4 above shows a regression analysis of cross-sectional data for Asean 5 countries.

The regression results for the country Indonesia, the variables Ir presents a positive coefficient of 0.0003 at a significant level of 1% relationship with money demand. The explanatory power between Ir and M2 provides 97.09%. In the regression, all other variables provide an in significant relationship with the m2.

In Malaysia, the variables Pgdpc, Inf, and Er provide coefficients (Pgdpc= 1.5709, at a significant level of 1%, Inf=-0.0668, at a significant level of 5%, and Er=0.5385, at a significant level of 1%) relationship with money demand. While Sp and Er provide an insignificant relationship with M2, with the explanatory power of 97.65%.

In Philippine variables Pgdpc, Sp, Inf, Ir and Er provide positive coefficients (Pgdpc=1.4859, at a significant level of 1%, Sp=0.2046, at a significant level of 5%, Ir=0.0339, at a significant level of 5%, and Er= 0.0474, at a significant level of 1%) relationships with M2. While a negative coefficient for Inf= -0.0271 at a significant level of 5% relationship with M2. Explanatory power for the variables under Philippine reported 98.83%.

The regression results for the country Singapore, the variables Gdppc and Er presents a positive coefficient of 2.0583 and 1.8720 respectively at a significant level of 1%) relationship with money demand. The explanatory power between Gdppc, Er, and M2 provides 97.98%. While variables Sp, Inf, and Ir provide insignificant relationships with the m2.

In Thailand variables, Gdppc, Inf, Ir, and Er provide a positive coefficients (Gdppc=1.4265 at a significant level of 1%, Ir=0.0171 at a significant level of 5%, and Er=0.0540, at a significant level of 1%) relationship with M2. A negative coefficient for Inf=-0.0215 at a significant level of 5%, relationship with M2, and Sp provide an insignificant relationship with M2. The explanatory power of 99.66%

c) The implication for individual countries

Table 4 above shows a regression analysis of cross-sectional data for Asean 5 countries.

Gdp per capita reported a positive statistical significant relation at 1% level from Malaysia, Philippines, Singapore, and Thailand, and insignificant relationship at Indonesia with money demand. These shows that Gdp per capita is an important determinant of money demand for all the countries except Indonesia. All the Asean 5 countries reported an insignificant

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relationship except Philippine which has a positive and statistically significant at 5% between stock price and money demand, explaining stock market is not a good determinant of money demand among the Asean 5 countries. A negative and significant relationship is found in Malaysia, Philippine, and Thailand between inflation and money demand while Indonesia and Singapore present insignificant results. Indonesia, Philippine, and Thailand present positive and statistically significant results at 10% level between interest rate and money demand, while Malaysia and Singapore have an insignificant relationship between interest rate and money demand. Lastly, the exchange rate is positively, and significant relationship was observed between exchange rate and money demand while Indonesian has a negative and insignificant relationship.

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