## THE RELATIONSHIP BETWEEN CAPITAL FLOW AND EXCHANGE RATE IN MALAYSIA

LEE LIM SHI

FELFUSTAKAIN

# THE DISSERTATION IS SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF BACHELOR OF SCIENCE WITH HONOURS

# MATHEMATICS WITH ECONOMICS PROGRAMME SCHOOL OF SCIENCE AND TECHNOLOGY UNIVERSITI MALAYSIA SABAH



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#### DECLARATION

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J.

LEE LIM SHI (BS09110302)

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## **CERTIFIED BY**

1. SUPERVISOR (MR. YONG ENN LUN) Signature

2. CO-SUPERVISOR 1 (PROF. DR. AMRAN AHMED)

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3. CO-SUPERVISOR 2 (DR. CAROLINE GEETHA)



#### ACKNOWLEDGEMENT

I would like to firstly express my heartfelt gratitude towards my lovely supervisor, Mr. Yong Enn Lun for providing me with his profound knowledge and direction. His thoughts were always valued and this study would not have been possible without his significant input. I really appreciate for his invaluable supervision, guidance and advices throughout my final year project.

Secondly, I would like to sincerely thank my co-supervisor, Prof. Dr. Amran Ahmed for allowing me to work under his supervision. Prof. is willing to sacrifice his precious time and always stayed back after office hour just to help me by sharing his knowledge and correct my mistake in my dissertation. I am truly appreciative.

Thirdly, I would like to acknowledge and thank another co-supervisor, Dr. Caroline Geetha who is a wonderful supervisor and always guides me during this dissertation. Dr. have providing me proper knowledge in economic field as in preparing this study. Her guidance is highly appreciated.

Last but not least, I would like to express my gratitude towards my lovely parent and all my sincere friends for their support, love, caring, guidance and encouragement. Whenever I am facing difficulties and challenges, they are willing to be my listeners and give me a hand all the time when I need it. I am glad to join this dissertation as it really helps me to grow up and learn the new knowledge. Thank you.



# HUBUNGAN ANTARA ALIRAN MODAL DAN KADAR PERTUKARAN DI MALAYSIA

#### ABSTRAK

Kajian ini bertujuan untuk menentukan hubungan antara aliran modal dan kadar pertukaran di Malaysia. Kajian ini menganalisis data siri masa yang terdiri daripada data tahunan dari tahun 1970 sehingga 2010. Dalam kajian ini, terdapat tiga langkahlangkah yang akan dijalankan untuk menganalisis iaitu ujian unit akar, ujian kointegrasi Johansen dan ujian kesan Granger. Keputusan empirikal menunjukkan bahawa wujud hubungan jangka panjang di kalangan pembolehubah yang diuji termasuk kadar pertukaran sebenar, hutang luar negari jangka pendek, aliran masuk bersih modal dan perbelanjaan kerajaan dengan menggunakan ujian kointegrasi Johansen. Vektor kointegrasi mencadangkan bahawa hutang luar negari jangka pendek mempunyai kesan negatif terhadap kadar pertukaran sebenar manakala aliran masuk modal bersih dan perbelanjaan kerajaan mempunyai kesan positif terhadap kadar pertukaran sebenar. Selain itu, keputusan model vektor pembetulan ralat (VECM) memberikan maklumat mengenai kesan-kesan hutang luar negeri jangka pendek, aliran masuk model bersih dan perbelanjaan kerajaan ke atas kadar pertukaran sebenar di Malaysia. Hutang luar negeri jangka pendek dan perbelanjaan kerajaan menerangkan variasi kadar pertukaran sebenar dalam jangka panjang manakala aliran masuk modal bersih hanya penting dalam jangka pendek. Di samping itu, keputusan empirikal juga menunjukkan bahawa terdapat kesan Granger satu arah dari hutang luar negeri jangka pendek kepada kadar perkadaran sebenar dan ada juga wujud kesan Granger satu arah dari aliran masuk modal bersih kepada kadar pertukaran sebenar. Nilai sezaman kadar pertukaran sebenar boleh meningkat dengan memasukkan nilai lepas hutang luar negeri jangka pendek dan aliran masuk modal bersih. Aliran modal telah memainkan peranan yang penting dalam menerangkan perubahan dinamik dalam kadar pertukaran sebenar.



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#### ABSTRACT

This study aims is to determine the relationship between capital flow and exchange rate in Malaysia. This study analyzes time series data which comprised of annually data from 1970 until 2010. In this study, there are three steps that have to be carried out to analyze the data which are unit root test, cointegration test and Granger causality test. The empirical result shows that there exists a long-run relationship among the variables that are tested which included real exchange rate, short-term external, net capital inflows and government spending by using Johansen's cointegration test. The cointegrating vector suggests that real exchange rate is negatively related to short-term external debt, it is positively related to net capital inflows and government spending. Besides that, the results from the vector error correction model (VECM) give information regard on the effect of short-term external debt, net capital inflows and government expenditure on real exchange rate in Malaysia. Short-term external debt and government spending explains the most variations of real exchange rate in long-run while net capital inflows is significant only in short-run. The empirical result further shows that there are unidirectional causality from short-term external debt to real exchange rate and there is also exists a unidirectional causality from net capital inflows to real exchange rate. The contemporaneous value of real exchange rate can be significantly improved by incorporating past value of short-term external debt and capital inflows. Capital flows have played an important role in explaining the dynamic changes in real exchange rate.



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#### LIST OF SYMBOLS

- + addition
- subtraction
- × multiplication
- + division
- = equal to
- ≠ not equal to
- < less than
- > greater than
- $\geq$  greater than or equal to
- smaller than or equal to
- Δ difference / changes
- Σ summation
- √ square root
- α alpha
- $\beta$  beta
- $\sigma$  sigma
- ε epsilon
- δ delta
- $\theta$  theta
- χ Chi
- λ lambda
- | | Modulus
- % Percent



#### **CHAPTER 1**

#### INTRODUCTION

#### 1.1 Overview

Malaysia is a South-East Asian country separated into two regions by the South China Sea. The two parts are West Malaysia and East Malaysia. Malaysia is a country on the move. From a country dependent on agriculture and primary commodities in the sixties, Malaysia has today become an export driven economy spurred on by high technology, knowledge based and capital intensive industries.

According to The World Bank (2011), Malaysia's economy staged a strong recovery in 2010 and is expected to resume growth at pre-crisis rates. Near-term growth is expected to develop favorably at 5.3 percent for 2011 and 5.5 percent in 2012. Malaysia's positive growth performance was accompanied by a build-up in inflationary pressure and a surge in foreign capital flows. Inflation rose on higher food and fuel prices amidst sharp increases in global commodity prices. The continued inflow of foreign capital saw the recovery of foreign direct investment (FDI) inflows from their steep decline in 2009, yet estimates suggest FDI continues to underperform relative to potential if Malaysia were to strengthen to investment climate.



According to Malaysia Institute of Economic Research (2011), recent foreign exchange liberalization measure will be neutral on the performance of ringgit since higher direct investment abroad will be offset by inflows from more trade finance and easier borrowing rules from nonresident related companies. Thus, RM/USD is projected to average around 3.00 in 2011. Improving macroeconomic fundamentals will see an average RM/USD of 2.95 in 2012.

#### **1.2 Malaysia Exchange Rate**

According to Multidevises database (2004), at the beginning of 1998, a control of the exchanges and capitals was instituted in order to limit the flow of capitals in the short term. On 2 September 1998, Central Bank of Malaysia announced that for an unspecified period, the Ringgit would be pegged to RM/USD 3.80 in order to curb the devaluation. (http://currencies.multidevises.com/d-Malaysian\_Ringgit\_MYR.html)

On 21 July 2005, Central Bank of Malaysia announced that the exchange rate of the Ringgit with immediate effect will be allowed to operate in a managed float, with its value being determined by economic fundamentals. Central Bank of Malaysia will monitor remains exchange rate against a currency basket to ensure that the exchange rate remains close to its fair value. Changes in the international and regional financial and economic environment have made it important for Malaysia to have a stable exchange rate against its major trading partners, in particular, the regional countries. Such stability can best be achieved by maintaining the value of the ringgit against a trade-weighted index of Malaysia's major trading partners.

According to Trading Economics Analytics (2011), historically from 1972 until 2011, RM/USD averaged 2.81, reaching an historical high of 4.71 in January of 1998 and a record low of 2.10 in October of 1978.



#### 1.3 The Importance of Capital Flow

According to Dass (2011), several Asian economies have embarked on selective capital controls that comprise the major portion of international finance to regulate speculative capital flows. Malaysia has been a recipient of a slice of the global portfolio capital. Malaysia was one of the countries affected by portfolio investment outflows. Portfolio investment swelled up to RM44.2 billion (2010), while liquidity remained still strong. The mainstream theory suggests that capital control created distortion and is ineffective; such controls have been extensively used by both the developed and developing countries.

According to Organisation for Economic Co-operation and Development, OECD (2011), macroeconomic policies are important part of the response to capital inflows. In addition, macroeconomic policies such as exchange rate and fiscal policies also have a significant role to play in reducing vulnerabilities associated with capital inflow. Capital control on inflows gives a greater independence to monetary policy, alters the composition of capital flows and reduces real exchange rate pressures. One of the fundamental propositions in recent debates on exchange rate regimes is that under free capital mobility, the exchange rate regime determines the ability to undertake independent monetary policy. As for capital outflows, it is clear that such provision was successful in Malaysia, it remains unclear with respect to other economies.

#### **1.4** Problem Statement

Malaysia has an extremely high ratio of external debt. According to the Auditor-General's Report 2010 which is reported at The Star newspaper on 25 October 2011, Malaysia's debt rises 12.3 percent to RM407 billion (2010) from RM362.39 billion (2009). National debt grew 12 percent to RM390.36 billion (2010) from RM348.60 billion (2009) while foreign debt grew 21.5 percent to RM16.75 billion from RM13.79 billion in the previous corresponding period. In 2010, unresolved public debt both at



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the national and foreign level grew by RM41.76 billion. The national debt level totaling RM390.39 billion accounts for 95.9 percent of the Federal Government's total debt. The ratio of the Federal Government's debt to gross domestic product at the end of 2010 was 53.1 percent which was over 50 percent for the second year in a row. This combined loans raised domestically almost exceed a ceiling of 55 percent of the nation's GDP. The ratio of the Federal Government's debt to gross domestic product should not exceed a ceiling of 55% of nation's GDP which stated by various laws that imposed a debt ceiling for the Government Under Act 637 of the Loan (Local) Act 1959, and Act 275 of the Government Investment Act 1983. Meanwhile, Act 403 of the External Loans Act 1963 limits external loan exposure to RM35 billion.

Malaysia is vulnerable to currency speculative attack due to high debt. This would result in banking and financial crisis. The financial crisis is considered as the interaction between the currency crisis and the banking crisis. In recent years, financial crisis have spread across nations. According to Caprio and Klingebiel (1996), the banking crises in developing countries are far more serious compared to developed countries. Moreover recapitalization of insolvent banks also handicaps the government budget creating a large deficit which is finance by public debt. Serious banking problems also create difficulties for monetary policy which distorts the intermediate and final targets of the policy. The foreign investors will lost confidence due to the uneffective monetary policy with an already strained banking sector. An outflow of capital will magnify the decline in international reserve allowing the currency crises to be turned into debt crises. According to Honohan (1996), banking crises dampens economic growth and foreign trade, strains the ability to service and to repay private capital inflows in short. High-resolution cost to save the financial sector will increased the government expenditure in a country. Moreover high resolution cost also creates a deficit in the government budget. The public debt will increased when the government sourced funds are used to cover the deficit from foreign countries. High public debt will cause economic recession that encouraged the government to practice tight monetary policy. This may cause the inflow of capital and the confidence of investors to decrease and therefore leads to a deficit in the balance of payment.



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When the Asian financial crisis broke out in Thailand in the mid-1997, it spreads quickly to the neighboring countries such as Malaysia, Korea, Indonesia and Brunei. Most of the Asian currencies depreciate significantly, causing a shift of bank deposits from the domestic banks to the foreign banks. In 1998, Malaysia suffered a contraction in gross domestic product (GDP) due to the Asian financial crisis. According to Goh and Michael (2010), the impact of the Asian financial crisis on Malaysia was huge. The stock market and the currency market nearly collapsed during the crisis. The real gross domestic product (GDP) growth rate declined from 7.3 percent in 1997 to -7.4 percent in 1998. This is the worst downturn since independence. With the onset of Asian financial crisis, the government budget reversed back to a fiscal deficit to stimulate the economy. Although the economy recovered, the government has been running on a persistent fiscal deficit.

According to Goh and Michael (2010), the global financial crisis was due to the weaknesses in the United States of America (USA) financial industry which escalated into a severse international financial crisis and deep slump in global trade and global recession by late 2008. The financial and economic environment worsened in the second half of 2008 and first quarter of 2009 in Malaysia. The global financial crisis is transmitted to Malaysia mainly through the financial and trade channel. The impacts of the global crisis on finance in Malaysia are Malaysia suffered capital flight due to the banks and financial institutions in the USA and the West reduced their international businesses and focused on their home markets. This cause a big drop in funds flowing into Malaysia. The big reversal of the portfolio capital flows due to divestment by foreign participants affected the stock market significantly. Foreign direct investments into Malaysia fell 17 percent in 2008. The The net outflow is lower due to lower net external debt repayment by both the official and private sectors. Malaysia's high level of reserves has acted as a buffer during periods of large reversals in short-term flows.



which were found by other researchers. Thus, the study aims to answer the following question, "Does capital flows influence the exchange rate of Malaysia?"

## 1.5 Research Questions

The study aims to measure the relationship between exchange rate and capital flow in Malaysia. The following research question need to be addressed:

- (a) Is there a short-run relationship between exchange rate and capital flows in Malaysia?
- (b) Is there a long-run relationship between exchange rate and capital flows in Malaysia?

## **1.6** Objective of the Study

The research questions mentioned in section 1.5 can be answered based on the following objectives of the study:-

- (a) To determine the relationship between exchange rate and capital flows.
- (b) To identify whether capital flow influence exchange rate in short-term and long-term.
- (c) To determine whether there are Granger cause between exchange rate and capital flows.



## 1.7 Scope of the Study

This study is only carried out in Malaysia. Data used were annually data from 1970 until 2010 which was collected from The World Bank. There is 41 observations involved in the analysis of the study. The dependent variable of this study is real exchange rate (RER) while the independent variables are short-term external debt (DEBT), net capital inflows (FINVQ) and government spending (GSPEND).



#### **CHAPTER 2**

#### LITERATURE REVIEW

# 2.1 Reviews on the Relationship between Capital Flow and Exchange Rate

Hsiao and Hsiao (2001) conducted a study on the relationship between capital flow and exchange rate in Korea and Taiwan from the time period 1979 to 1998. The researchers claimed that between Korea and Taiwan, the macroeconomic fundamentals are the same but only their international financial sector differs. This is due to the high debt ratio. A comparison was made between the ratio of short-term external debt to international reserve with inward portfolio investment to international reserve. The comparison showed that countries with high debt are vulnerable to currency speculative attack. This will result in banking and financial crisis. Using both the ratios, it was proven that Korea has a more sensitive exchange rate compared to Taiwan which is stable in its current account surplus, international reserve and external debt.

Hsiao and Hsiao (2001) used the Augmented Dickey-Fuller (ADF) test to examine the stationary of the residual series. This was followed by the cointegration test to identify the long-run relationship between exchange rate and debt. Finally the error-correction model (EME) was not only used for short-term run but also to determine causality between exchange rate and debt. The result revealed that the variables were stationary at level one.



The cointegration test for Taiwan showed no cointegration mean while in Korea the two series were cointegrated. This is because Taiwan has a large trade surplus and reserve unlike Korea that has high debt. Moreover in Korea, not only debt influences exchange rate but exchange rate can influence debt in the short-run.

Dua and Sen (2004) also conducted a study on the relationship between real exchange rate, level of capital flows, volatility of the flows, fiscal and monetary policy indicators and the current account surplus in India economy from the time period 1993:Q2 to 2004:Q1 by using robust econometric techniques. This study was based on theoretical model that focus on the issue of capital flows which abstract from the role of capital markets and investment,  $W \equiv \frac{M+B+(\frac{F}{E})}{P}$  where W is real wealth, M the nominal money supply, B the supply of (all short) government bonds, F is the net foreign assets of the private, E is the nominal exchange rate and P is the price level (Branson *et al.*, 1977). The researchers claimed that level of capital flows, volatility of the flows, money supply, current account surplus and government expenditure were cointegrated and each of above independent variable granger causes the real exchange rate which was the dependent variable.

Dua and Sen (2004) used the Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test with the null hypothesis of difference stationary. This was the three tests for non-stationary and the presence of a unit test. This was followed by the description of cointegration and ganger causality to identify the cointegrating relationship between the variables and captures both the short-run and long-run dynamics by construct a vector errorcorrection. The researchers generalized impulse response and variance decomposition analysis to examine dynamic relationships among variable in VAR models.

The result revealed that the relationship between the variables was statistically significant. The generalized variance decompositions showed that the determinants of the real exchange rate, in descending order of importance included net capital inflows



and their volatility, government expenditure, current account surplus and the money supply. The direction of the generalized impulse responses confirm to the signs in the cointegrating vector. The shocks to each of the determinants have long run impact on the real effective exchange rate that is correspond with economic theory. The researchers study the relationships between real foreign exchange acquisitions, trade based real effective exchange rate on 36 countries, net capital flows, fiscal policy indicator, monetary policy indicator and real current account surplus by turn the results to capture the intervention by the Reserve Bank of India. They find that all the variables have the expected signs and the cointegrating vectors suggests that while real foreign exchange acquisitions is positively related to real effective exchange rate, real net capital inflows, real government expenditure and real current account surplus, but it is negatively related to money supply.

Ibarra (2011) conducted a study on capital flows and real exchange rate appreciation in Mexico. The researcher analyzes the long-run determinants of the Mexican peso's exchange rate from 1988:Q1 to 2008:Q2 using bounds testing approach. The researcher claimed that all types of capital inflows tended to appreciate the peso. The dependent variable was bilateral real exchange rate between the US and Mexico meanwhile the independent variable were industrial production, government consumption, international price of oil, foreign direct investment, foreign portfolio investment, foreign bank loans deposits, domestic capital inflows and accumulation of international reserves.

Ibarra (2011) used the recently-developed bounds testing approach of Pesaran *et al.* (2001) to analyzes the determination of the Mexican peso's real exchange rate. The real exchange rate equation may be estimated to examine the main question posed in the paper. Following the bounds testing approach, the equation can be estimated by means of an Autoregressive Distributed Lag (ARDL) model in error-correction form. The estimation proceeds in two steps. Firstly, test the statistical adequacy of the model. This requires determining the optimal number of lags for the first difference of the variables, for example, to Akaike Information Criterion (AIC) and confirming that the model passes the standard diagnostics tests.



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