UNIVERSITI PUTRA MALAYSIA

FACTORS AFFECTING THE EXCHANGE RATE VOLATILITY IN ASEAN FOUR

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

APRIL 2008

DEDICATION

This work is dedicated,

to my beloved wife and loving daughter and sons. **“My heartfelt thanks for your loving care and endless encouragement”**

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

FACTORS AFFECTING THE EXCHANGE RATE VOLATILITY IN ASEAN FOUR

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APRIL 2008

Chairman: **Associate Professor Zulkornain Yusop, PhD**

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Regional integration has become important subject among economists and is viewed capable of boosting monetary cooperation and foreign exchange arrangements among ASEAN members thus promotes greater macro coordination, with the ultimate goal of reducing the extent of macroeconomics volatility such as exchange rate volatility. The purpose of the formation is to reduce exchange rate uncertainty and to avoid exchange rate misalignment among the ASEAN member countries namely; Indonesia, Malaysia, Thailand, and The Philippines. This thesis intends to investigate the extent of optimum currency area (OCA) criteria and financial factors (FF) works within the context of ASEAN region with US Dollar and Japanese Yen used as anchor currencies, given their importance being the major trading partners with the ASEAN countries and being the global demand currencies. This study employed the Autoregressive Distributed Lag (ARDL) procedure to examine several objectives. In general, this study found that OCA

criteria have played an important role in explaining the bilateral exchange rate volatility. In addition, several financial factors were found to have significant contribution in determining exchange rate variation. Furthermore, the inclusion of Currency Control (CC) was found to have the expected negative impact on exchange rate volatility (ERV) in both types of anchor currencies namely; US Dollar and Japanese Yen.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

FAKTOR-FAKTOR YANG MEMPENGARUHI KEMERUAPAN KADAR TUKARAN DALAM EMPAT NEGARA ASEAN

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Integrasi serantau telah menjadi subjek penting di kalangan ahli-ahli ekonomi dan dilihat mampu merangsang kerjasama kewangan serta aturan tukaran asing pada anggota negara ASEAN seterusnya memperluaskan promosi koordinasi makro dengan sasaran utama untuk mengurangkan tahap kemeruapan makro ekonomi seperti kemeruapan kadar tukaran. Tujuan pembentukkan adalah untuk mengurangkan ketidaktentuan kadar tukaran dan mengelak ketidakselarasan kadar tukaran di kalangan anggota negara ASEAN iaitu Indonesia, Malaysia, Thailand dan Filipina. Tesis ini berhasrat untuk menyiasat tahap kriteria Kawasan Matawang Optima (OCA) dan faktor kewangan (FF) dalam konteks rantau ASEAN, dengan US Dollar dan Yen Jepun digunakan sebagai matawang utama, juga kepentingannya sebagai rakan dagangan utama dengan negara ASEAN serta menjadi matawang permintaan global. Kajian ini menggunakan kaedah kointegrasi ‘Autoregressive Distributed Lag (ARDL)’ untuk menguji beberapa objektif

tesis ini. Secara amnya, kajian ini mendapati kriteria OCA memainkan peranan penting dalam menjelaskan kemeruapan kadar tukaran dagangan dua hala. Tambahan lagi, beberapa faktor kewangan di dapati memberi sumbangan penting dalam menentukan perubahan kadar tukaran. Seterusnya, kemasukkan Kawalan Matawang (CC) didapati telah memberi kesan negatif seperti dijangka kepada kemeruapan kadar tukaran (ERV) dalam kedua-dua matawang utama iaitu US Dollar dan Yen Jepun.

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I certify that an Examination Committee has met on 25 April 2008 to conduct the final examination of Samsudin Ishak on his Doctor of Philosophy thesis entitled "Factors Affecting the Exchange Rate Volatility in ASEAN Four" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the student be awarded the degree of Doctor of Philosophy.

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DECLARATION

I declare that this thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at UPM or at any other institution.

SAMSUDIN ISHAK

Date : 21 July 2008

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LIST OF ABBREVIATIONS

ABM	The Asian Bond Market
ADF	Asian Development Fund
AFTA	The Association of Southeast Asian Nations Free Trade Area
ASEAN	The Association of Southeast Asian Nations
CDRC	Corporate Debt Restructuring Committee
CMI	The Chiang Mai Initiative
EA	East Asian
EFPI	Equity Foreign Portfolio Investment
EMS	The European Monetary System
ERM2	The Exchange Rate Mechanism
ERV	Exchange Rate Volatility
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
KLSE	Kuala Lumpur Stock Exchange
LDCs	Less Developed Countries
MNEs	Multi National Enterprises
OCA	Optimum Currency Areas
PI	Portfolio Investment
REER	The Real Effective Exchange Rate
SEA	South-East Asia
SRERs	Sustainable real exchange rates
USD	United States Dollar

CHAPTER 1

1.0 INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967 in Bangkok by the five original member countries, namely, Indonesia, Malaysia, Philippines, Singapore, and Thailand. Brunei Darussalam joined on 8 January 1984, Vietnam on 28 July 1995, Laos and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. The ASEAN region has a population of about 542 million, a total area of 4.5 million square kilometers, a combined gross domestic product (GDP) of USD 686 billion, and a total trade of around USD 790 billion.

Prior to the currency and economic crises in 1997, ASEAN countries had recorded a historically strong and impressive real economic growth for the past ten years since the late 1980s. On average, the real GDP growth rates for the ASEAN countries, excluding Brunei, in 1994 and 1995 were 7.6 percent and 7.9 percent respectively. Among the ASEAN member countries, the highest economic growth rate (in 1995) was recorded in Malaysia (9.5 percent), followed by Thailand and Singapore (8.7 percent), Indonesia (8.2 percent) and the Philippines (4.8 percent). Strong domestic consumption and investment, plus large exports, due to widespread economic expansion in the industrial countries, had been the major impetus for the ASEAN region's strong growth.

Table 1.1: Growth of GDP in ASEAN (%)

Country	1996	1997	1998	1999	2000	2001	2002	2003
Indonesia	7.8	4.7	-13.1	0.8	4.1	3.5	3.7	4.1
Malaysia	10.0	7.3	-7.4	6.1	8.9	0.3	4.1	5.3
Philippines	5.8	5.2	-0.6	3.4	4.4	4.5	3.1	4.7
Thailand	5.9	-1.4	-10.5	4.4	4.8	2.1	5.4	6.8
ASEAN - 5	7.3	4.1	-7.1	3.6	5.9	3.3	4.3	5.0

Note: ASEAN - 5 refers to Indonesia, Malaysia, Philippines, Singapore and Thailand.
Source: ASEAN Statistical Yearbook 2004, ASEAN Secretariat.

One of the important factors being cited in the literature as being a big contributor to this achievement is the role of openness. In other words, greater reliance on external sectors (i.e. imports and exports) has provided an impetus to the development process via industrialization.

Prior to July 1997, the exchange rates for most of the ASEAN currencies were loosely tied to the US dollar. The Thai baht, although tied to a basket of currencies, was effectively pegged to the US dollar at an exchange rate ranging around 25 baht. Like the baht, the Philippine peso was allowed to move in a fairly narrow range around the US dollar at a rate between 25 and 27 pesos to the US dollar. The Indonesian rupiah was subjected to a managed gradual devaluation against the US dollar, in effect a moving peg, which drifted towards the 2,500 mark through the first part of 1997. The Malaysian ringgit was allowed to fluctuate more than the other three currencies, but still maintained a rough band of around 2.5 ringgit to the dollar. The currencies of the newer ASEAN members (with the exception of Myanmar) remain non-convertible.

Exchange rate stability is very important in order to achieve macroeconomic stabilization goals. Economic theory suggests that real exchange rate misalignment, or departure from its long run equilibrium rate, will negatively affect economic growth. It creates relative price uncertainty, adjustment costs and decreases the efficiency of resource allocation in domestic markets (Kemme and Tend, 2000). Hence, effort in stabilizing exchange rate will provide a favorable environment for businesses, by which the economic growth can be boost further. In contrast, exchange rate volatility is a cause for concern due to its ability to disrupt economic activities. In the international system, the price of a country's currency plays a major role in determining the cost of its import and export. Since, some ASEAN countries rely heavily on external sector, i.e. export and import, currency fluctuations may have a significant impact on commercial trade flows.

1.0.1 ASEAN EXCHANGE RATES AND COMMON CURRENCY

Volatility is substantially higher in developing countries with thin foreign exchange markets that are usually dominated by a relatively small number of market participants, and may be compounded by lack of political stability and disciplined macroeconomic environment. In a world with high capital mobility, even small adjustments in international portfolio allocations to developing economies can result in large swings in capital flows creating large volatility in exchange rates. Because their financial markets are poorly developed, hedging possibilities are limited in developing countries.

High exchange rate volatility creates uncertainty, increases transaction costs and interest rates, discourages international trade and investment, and fuels inflation. The medium-term swings are identified with substantial misalignment. This is a particularly serious concern for developing countries because persistent real exchange rate volatility and misalignment have been associated with unsustainable trade deficits and lower economic growth over the medium and long run (Ghura and Grennes, 1993; Razin and Collins, 1997; Elbadawi, 1998; World Bank, 2000). Persistent overvaluation is identified as a strong early warning for currency crisis (Kaminsky *et al.*, 1998). It is also recognized that, with high volatility in exchange rate, it is very hard to develop long-term domestic financial markets.

High volatility of the exchange rate in the floating regimes gives rise to a phenomenon called "fear of floating". According to recent studies, few developing countries that claim to be implementing a floating exchange rate policy, do in fact allow their exchange rates to float (Calvo and Reinhart, 2000a and 200b). Compared to the United States and Japan, international reserves, reserve money, and interest rates in these countries have been more volatile, and their exchange rates more stable (see also Mussa *et al.*, 2000) which indicate that they effectively maintain some kind of managed or pegged regime. "Fear of floating" is explained largely by the fact that exchange rate volatility is more damaging to trade, and the pass-through from exchange rate swings to inflation is far higher in developing countries (Calvo and Reinhart, 2000b). Fear of appreciating because of short-term capital inflows and losing competitiveness are also factors for not letting the exchange rate float freely. A key problem of fearful floating is its lack of transparency and verifiability which would heighten uncertainty.

Meanwhile, applying the guidelines of the OCA (Optimum Currency Area) literature shows that there are several characteristics of ASEAN that suggest the benefits of a common currency may be significant relative to the costs. The costs of surrendering monetary autonomy, given the somewhat mixed track record of many of these countries in conducting their monetary policies, are unlikely to be large. At least some of them may perhaps be giving up something that they do not have. In fact, as a result of forming a currency union, there is a possibility that some of the countries that now have a patchy track record of inflation control and exchange rate management could benefit substantially from a monetary policy conducted by a more credible regional central bank.

Such a convergence to best (or better) practices in monetary policy in the region will be a benefit, not a cost. In terms of the mobility of factors, ASEAN compares favorably with the European Union (EU) at the time of the Maastricht Treaty. ASEAN has relatively high labor mobility as well as capital mobility (Goto and Hamada, 1994; Eichengreen and Bayoumi, 1999; Moon, Rhee, and Yoon, 2000). For example, workers from Indonesia, Malaysia, Philippines, and Thailand account for 10 percent of the employment in Singapore. Emigration has been as much as 2 percent of the labor force of the sending countries.

Compared to the EU, ASEAN also ranks quite high in terms of wage and price flexibility. In fact, traditionally they are known for their flexibility and speed of adjustment to shocks. According to Bayoumi and Eichengreen (1994), almost all of the change in output and prices in response to a shock in East Asia takes place in about two years. By comparison, in Europe, only about half the adjustment occurs in the first two years after a shock. These results are consistent with the general impression that labor markets are more flexible in ASEAN than in Western Europe.

Many ASEAN countries have trade-to-GDP ratios as well as trade-intensity ratios (which normalize bilateral trade by the relative share of the countries in total world trade to eliminate size effects) that are higher than in Western Europe (Goto and Hamada, 1994, Kawai and Takagi, 2000). At close to 25 percent, the share of intraregional trade in ASEAN total trade, although lower than in the EU (40 percent), is significant and rising (Bayoumi and Mauro, 1999). It is much higher than in some of the other currency unions such as the Eastern Caribbean Currency Union (about 10 percent), the Western Africa Economic and Monetary Union (about 10 percent), and the Central African Economic and Monetary Community (about 3 percent).

Although there are inter-country differences, the symmetry in shocks among the countries in the region is comparable to the EU (Eichengreen and Bayoumi, 1999). The region wide economic slowdown in 2001 in response to the global economic downturn is another evidence of the high degree of shock symmetry among these countries. The high degree of shock symmetry reflects both the high degree of openness (export orientation, capital flows and so forth) and the similarities in the production structures among these economies.

Overall, the composite OCA indices for the region, which take into account intra-regional trade, wage-price flexibility, labor mobility, and shock symmetry, are similar to those for the EU (Eichengreen and Bayoumi, 1999). Using a variety of indicators drawn from the OCA literature, Eichengreen and Bayoumi conclude that from a purely economic perspective, East Asia/ASEAN is as suitable for an OCA as Europe was prior to the Maastricht Treaty.

On the other hand, the global slowdown in 2001 and 2002, together with the yen weaknesses, generated precisely such problems. Matters were made worse by the asymmetric needs of specific countries. The poorer countries in ASEAN such as Indonesia and the Philippines are more concerned about relative currency fluctuations among themselves. The immediate response to the Asian crisis was that if it were not possible to juggle all three economic policy objectives in the air at one shot, then a 'corner' solution might be better. The remaining option now is either to keep convertibility and a stable currency but abandon monetary independence and fix the currency, or alternatively to keep monetary policy and convertibility but abandon currency management and adopt a free float. But a hard peg is perceived to be too rigid for most countries in ASEAN. Even Malaysia, which adopted a formal peg to the dollar in September 1998, has restricted convertibility in order to maintain some control over monetary policy. On the other hand, the potential costs of a clean float are seen to be too great for emerging economies with weak financial infrastructures. There would be a risk of serious currency misalignment with real consequences for exports and inflation targets; and continued volatility in capital flows and foreign exchange markets characterized by manipulation and herd behavior, runs the risk of destabilizing speculation.

1.2 THE ISSUES

ASEAN economies generally prefer to follow a more flexible exchange rate regime after the collapsed of Bretton Wood system. However, in spite of the adoption of a crawling peg exchange rate regime[1] in the period after the breakdown of the Bretton Woods system, the ASEAN-4[2] nations still experienced substantial exchange rate volatility as evidenced in the following Figure 1.1 – 1.4. Between 1974 and 1999, the Indonesian rupiah was the most volatile followed by the Philippine peso, while the Singapore dollar was the least volatile (Hurley and Santos, 2001; Jason and McPhee, 2001). This phenomenon can be seen from the plots of the change of foreign exchange rates for Indonesia, Malaysia, the Philippines, Singapore and Thailand, which are given in Figure 1.1 – Figure 1.4.

The Indonesia Rupiah seems to be the most volatile currency in ASEAN-5[3], especially after the Asian crisis, which reflects the economic and political upheavals plaguing the country. From the figure, the largest devaluation of the Indonesia rupiah was by 27 percent at observation 1049, which corresponds to the share market crash of 18.5 percent in mid-afternoon trading. After the Asian crisis, the Malaysia ringgit was pegged to the US dollar. Outliers observed after the crisis indicate pegging adjustments made by Bank Negara, Malaysia's central bank. The largest adjustment to the US Dollar peg is at

[1] Crawling peg regime is the regime in which currency is pegged, but can be changed.
[2] ASEAN-4 comprises countries of Indonesia, Thailand, Malaysia and The Philippines.
[3] ASEAN-4 comprises countries of Indonesia, Thailand, Malaysia, The Philippines and Singapore.