



**UNIVERSITI PUTRA MALAYSIA**

**INTERNATIONAL RESERVES, CURRENT ACCOUNT IMBALANCE  
AND EXTERNAL DEBT IN EAST ASIAN ECONOMIES**

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AND EXTERNAL DEBT IN EAST ASIAN ECONOMIES**

**By**

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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**

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This study investigates the impact of current account imbalance and external debt on international reserve holdings in nine East Asian economies, namely China, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand (henceforth East Asia). These countries are further divided into four groups: East Asia, ASEAN5, ASEAN4, and the non-ASEAN countries. After the 1997-98 East Asian financial crisis, these countries had increased their reserve holdings and the current accounts in majority of these countries had experienced consistent surpluses at least until 2005. Besides, most of these countries had also increased their external debt holdings in recent years. The autoregressive distributed lag (ARDL) approach, panel cointegration, and panel fully modified ordinary least squares (FMOLS) were utilized to examine the relationship between international reserve holdings and its determinants. The study covers the period from 1970 to 2005. There are three



important conclusions can be derived from the empirical findings. First, current account balance has a positive and significant relationship with international reserve holdings in Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan, East Asia, ASEAN5, ASEAN4, and non-ASEAN countries. The positive relationship indicates that the rise in the current account surplus leads to the rise in international reserve holdings in these countries. Second, total external debt is a substitute for international reserves in China, Japan, Korea, the Philippines, East Asia, ASEAN5, and ASEAN4. Third, short term external debt acts as a substitute for international reserves in Korea, the Philippines, Thailand, ASEAN5, and ASEAN4. The role of external debt as substitute for international reserves implies that external debt is used to finance international transactions. However, in China, Singapore, and the non-ASEAN countries, short term external debt acts as a complement for international reserves. In other words, these countries increased reserves as their precautionary measure against short term capital flow reversals during the crisis. High international reserve holdings and current account surplus are associated with the savings-investment imbalance in East Asia. The imbalance is due to the limited ability of the private sector to transform its savings into investment. The development in the regional capital markets may assist the private sector to circulate its savings within the region and minimize its dependence on external financing.



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

**REZAB ANTARABANGSA, KETIDAKSEIMBANGAN AKAUN SEMASA  
DAN PINJAMAN LUAR NEGARA DI NEGARA-NEGARA ASIA TIMUR**

Oleh

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Kajian ini menguji kesan ketidakseimbangan akaun semasa dan pinjaman luar negara ke atas pegangan rezab antarabangsa di sembilan negara Asia Timur iaitu China, Indonesia, Jepun, Korea, Malaysia, Filipina, Singapura, Taiwan, dan Thailand (kemudiannya disebut Asia Timur). Negara-negara ini seterusnya dibahagikan kepada empat kumpulan berikut: Asia Timur, ASEAN5, ASEAN4 dan negara-negara bukan ASEAN. Selepas krisis kewangan Asia Timur pada tahun 1997-98, kebanyakan negara-negara ini telah meningkatkan pegangan rezab antarabangsa dan akaun semasa di kebanyakan negara-negara ini mengalami lebihan yang berterusan sekurang-kurangnya sehingga tahun 2005. Kebanyakan negara-negara ini juga telah meningkatkan pinjaman luar negara pada tahun-tahun kebelakangan ini. Autoregressive distributed lag (ARDL), panel cointegration, dan panel fully modified ordinary least squares (FMOLS) digunakan untuk mengkaji hubungan di

antara pegangan rezab antarabangsa dan penentunya. Kajian ini merangkumi tahun 1970 hingga 2005. Tiga kesimpulan penting dapat dibuat daripada keputusan empirikal kajian ini. Pertama, baki akaun semasa mempunyai hubungan positif dan signifikan dengan pegangan rezab antarabangsa di Indonesia, Jepun, Korea, Malaysia, Singapura, Taiwan, Asia Timur, ASEAN5, ASEAN4 dan negara-negara bukan ASEAN. Hubungan positif ini menunjukkan bahawa peningkatan lebihan akaun semasa menyebabkan peningkatan pegangan rezab antarabangsa di negara-negara ini. Kedua, jumlah pinjaman luar negara adalah pengganti kepada rezab antarabangsa di China, Jepun, Korea, Filipina, Asia Timur, ASEAN5 dan ASEAN4. Ketiga, pinjaman jangka pendek luar negara adalah pengganti kepada rezab antarabangsa di Korea, Filipina, Thailand, ASEAN5 dan ASEAN4. Fungsi pinjaman luar negara sebagai pengganti kepada rezab antarabangsa menunjukkan bahawa pinjaman luar negara digunakan untuk membiayai transaksi antarabangsa. Walaubagaimanapun, pinjaman jangka pendek luar negara adalah penggenap kepada rezab antarabangsa di China, Singapura dan negara-negara bukan ASEAN. Dengan perkataan lain, negara-negara ini meningkatkan rezab sebagai langkah berjaga-jaga terhadap kemungkinan aliran keluar dana jangka pendek ketika krisis. Peningkatan pegangan rezab antarabangsa dan lebihan akaun semasa dikaitkan dengan ketidakseimbangan di antara simpanan dan pelaburan di Asia Timur. Ketidakseimbangan ini adalah disebabkan oleh kebolehan yang terhad sektor swasta untuk mengubah simpanan mereka kepada pelaburan. Pembangunan pasaran kewangan di rantau ini dapat membantu sektor swasta untuk mengedarkan simpanan

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## **LIST OF ABBREVIATIONS/GLOSSARY OF TERMS**

ADB	Asian Development Bank
ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag
ASEAN	Association of South East Asian Nations
BOP	Balance of Payments
CA	Current Account Balance
DC	Developed Countries
DF	Dickey Fuller
DOLS	Dynamic Ordinary Least Squares
DV	Dependent Variable
ECB	European Central Bank
ECM	Error Correction Model
EXTD	Total External Debt
FDI	Foreign Direct Investment
FMOLS	Fully Modified Ordinary Least Squares
GARCH	Generalized Autoregressive Conditional Heterokesdasticity
GDP	Gross Domestic Product
GMM	Generalized Method of Moment
IFS	International Financial Statistics
IMF	International Monetary Fund
IPS	Im, Pesaran, and Shin



IR	International Reserves
KPSS	Kwiatkowski, Phillips, Schmidt, and Shin
LDC	Less Developed Countries
LLC	Levin, Lin, and Chu
LSDV	Least Squares Dummy Variable
MAS	Monetary Authority of Singapore
MPI	Marginal Propensity to Import
M2	Broad Money
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PIM	Propensity to Import
STD	Short Term External Debt
TOT	Terms of Trade
UECM	Unrestricted Error Correction Model
UK	United Kingdom
US	United States
VECM	Vector Error Correction Model
WDI	World Development Indicators
XPV	Export Volatility
YC	GDP per capita
2SLS	Two Stage Least Squares



# CHAPTER 1

## INTRODUCTION

### 1.1 Preface

Emerging market economies have been holding high level of international reserves since the 1997 East Asian financial crisis. Among the Asian countries, China, Japan, Hong Kong, Korea, Taiwan, and Singapore are ranked among the top reserve holders. Even though reserves can provide liquidity and returns, there are several implications associated with high reserve holding. High reserves in emerging markets in recent years reflect the prudence in their economic policies, high growth prospect, and surplus in their trade accounts. At the same time, high reserves are associated with the global external payments imbalances (World Bank, 2005).

Countries can increase their reserve holdings through the surpluses in their current and capital accounts; and from external borrowings. Since reserves are denominated in foreign currencies, holding reserves means that the domestic country is financing the economic development of other countries. Holding reserves is like holding foreign government securities. Countries that hold excessive amount of reserves have to take the risk of the depreciation of the currency in which the reserves are denominated. The higher the amount of reserves held in a certain currency, the higher the risk of capital losses if the currency depreciates (Williams, 2006).



### **1.1.1 Background and Importance of International Reserve Holdings**

The basic concept on the theory of international reserve holdings is based on the precautionary motive of holding reserves. A country tries to balance the cost of adjustment due to reserve depletion and the opportunity cost of holding the reserves (Edison, 2003). Traditionally, there are two motives for holding reserves: transactions and precautionary. Transaction motives include: (1) to provide liquidity to the country; (2) to provide returns on investment; and (3) to pursue export-led growth strategy. Precautionary motives are as follows: (1) to finance balance of payments deficits; (2) to lower the impact of external shocks due to abrupt capital flow reversals; (3) to intervene in the foreign exchange market (to manage exchange rate); and (4) to overcome speculative attacks on currency (Roger, 1993; IMF, 2003; Nugee, 2000; Scobie & Cagliesi, 2000; Higgins & Klitgaard, 2004; World Bank, 2005; International Relations Committee Task Force, 2006).

Besides the two motives listed above, Wang (2006) added another motive for reserve holding-the development oriented motive. This motive include (1) to increase public confidence; (2) to improve international credibility; (3) to improve credit ratings so that countries can reduce the costs of external borrowing; and (4) to reduce the risk of change.