UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL AND HUMAN SCIENCES

School of Social Sciences

Essays on Applied Exchange Rate Issues:

Some New Evidence on the Export Led Growth Hypothesis, Exchange Rate Exposure and the Exchange Rate Volatility-Export Nexus

by

Norimah Ramli

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

Thesis for the degree of Doctor of Philosophy

July, 2012

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF SOCIAL AND HUMAN SCIENCES

Social Sciences

Doctor of Philosophy

ESSAYS ON APPLIED EXCHANGE RATE ISSUES:
SOME NEW EVIDENCE ON THE EXPORT LED-GROWTH HYPOTHESIS, EXCHANGE RATE EXPOSURE AND
THE EXCHANGE RATE VOLATILITY-EXPORTS NEXUS

By Norimah Ramli

The thesis comprises three essays, all of which are empirical studies of different issues on exchange rates. Implementing advanced econometrics methodologies with monthly time series data, these studies focus on macroeconomic determinants to measure the relationships within the variables. The first essay (Chapter Two) re-examines the robustness of the export-led growth hypothesis across the exchange rate regimes in Malaysia. According to the exchange rate regime history, Malaysia experienced three different exchange rate mechanisms from 1990 to 2010. Generally, the results vary across the time and regimes. Specifically, the study suggests bi-directional and/or unidirectional causality between exports and economic growth across the regimes, both in the short-run and long-run. The second essay (Chapter Three) tries to bridge the gap between the exchange rate issues by investigating the impact exchange rate exposure on sector level in Malaysia from October, 1992 to December, 2010. The purpose of this study is to examine the impact of the exchange rate exposure in Malaysia sectorial returns by using an augmented model. Overall, in all instances, the results suggest that the exchange rate exposures in Malaysia can be categorized as the long memory in the volatility process. After investigating currency exposure in two types of models, the results further suggest that the sectors are largely affected by the currency fluctuations. The third essay (Chapter Four) explores the channels and magnitude of exchange rate volatility-export nexus empirically on the export flow of five ASEAN countries namely, Singapore, Malaysia, Thailand, Philippines and Indonesia to the United States from January, 1990 to December, 2010. The major results show that increases in the volatility of the real bilateral exchange rate, exert significant effects upon export demand in the short run in each of the ASEAN countries. This study further suggests significant negative effects from the bilateral exchange rate volatility of exports flow in Singapore, Malaysia and Philippines. However, these findings do not apply to Indonesia and Thailand.

List of Contents

05-4506832 pustaka.upsi.edu.my Perpustakaan Tuanku Bainun Kampus Sultan Abdul Jalil Shah PustakaTBainun ptbupsi

List of Figures

List of Tables

Declaration of Authorship

I, Norimah Ramli

Declare that the thesis entitled,

Essays on Applied Exchange Rate Issues:
Some New Evidence on the Export Led Growth Hypothesis, Exchange Rate Exposure and the Exchange Rate Volatility-Export Nexus

and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- parts of this work have been published as:

    - Ramli, Norimah (January) 2011. *The Export Led Growth Hypothesis under Different Exchange Rate Regime. Multidisciplinary PG Research Showcase.* Poster Presentation. 31th January, 2011. University of Southampton, United Kingdom.
    - Ramli, Norimah (February) 2011. *The Robustness Analytical Analysis of Export Led Growth Hypothesis across Exchange Rate Regime Environment.* Faculty of Social & Human Sciences Research Showcase. Poster Presentation. 21st February, 2011. University of Southampton, United Kingdom.
    - Ramli, Norimah (April) 2011. *Analytical Sophistication of First and Second Moment Exchange Rate Exposure in Malaysia. The Third International Conference on Prediction and Information Markets, International Conference on Gambling Studies, and Sixth International Conference on Money Investment and Risk.* Conference Paper. 3th - 5th April 2011. Nottingham Trent University, United Kingdom.
    - Ramli, Norimah and Podivinsky, Jan M. (November) 2011.*The Effects of Exchange Rate Volatility on Exports: Some New Evidence for Regional ASEAN Countries.* Conference Paper and Poster Presentation. 7th ESDS Annual Conference. 28th, November, 2011. Institute of Materials, London.

Signed: ....

Date:..

Acknowledgements

I believe and according on my own experiences, PhD is a very long journey and definitely, it is not easy. Therefore, along this voyage, I have been accompanied, supported and assisted by many people to whom I am thankful.

First and foremost, I would like to thank my main supervisor, Dr. Jan M. Podivinsky for his support, enthusiasm, encouragement, and also for his great comments and suggestions that help me to improve this thesis immensely.

Secondly, my most sincere gratitude goes to MOHE for finding my study here in University of Southampton, United Kingdom. Also, I would like to thank University of Education Sultan Idris (UPSI) in Perak, Malaysia for granting me the study leave and also for all their support along the way.

Thirdly, special thanks go to my special friend: Dayang, Lyn, Asmah, and Durra for always being a loyal friend to me. Thanks also to Qi, Nicholas, Ria, Zulkefly, Derya, Juan, Omar, Yahia, Hilda, Margarida, Reza, Kandala, Lana, Sarah, Marcos, and Ronaldo for being great motivator to keep me going and always be strong in my journey. Thanks also to *"Keluarga Soton"*, among other, Farhana (Abg Faizal), Ani Liza (Wan Rizan), Nana (Faizul), Ifa (Fuad), Kak Lin (Abg Idham), Kak Pah (Abg Rizal), Faridah (Muhajir), Faridah (Arif). Thanks for the friendship; it was them who have made Southampton felt like home. I am sure when I look back years from now; they will be always stays in my heart.

Fourthly, a penultimate thanks goes to my wonderful caring family; may parent (in Meru and Kedah), En. Ramli, En. Ahmad, Puan Azizah, Puan Norini, Kak Long (Noreha) and Abang Bullah (Hasbullah), Abang Ngah (Safuan) and Kak Rose, No-g and Rahimi, Sabri and Fina, Suhairi, Syikin and Haris Eija, Yap, Firdaus, Teah, Aisyah. Also to all my beloved nephew namely, Iman, Aleeya, Malik, Farouq, Ameera, Ashraf, Amna, Zarif and Dhia.

My final, and most heartfelt acknowledgement, must go to my beloved hubby, Ahmad Farabi Bin Ahmad and to my wonderful son, Ahmad Adib Bin Ahmad Farabi for their support, sacrifice in time and everything just to be here in the United Kingdom with me. It is nothing can describe my feeling of how I really appreciate everything that you both have done for me. Thank you and I love you all. ***To them dedicated this thesis...***

List of Abbreviations

GDP	Gross Domestic Product
NBM	National Bank of Malaysia
VECM	Vector Error Correction Modelling
GARCH	Generalized Autoregression Conditional Heteroscedasticity
VAR	Vector Autoregression
ASEAN	Association of South East Asian Nations
GNP	Gross National Product
GDI	Gross Domestic Income
ADF	Augmented Dickey Fuller
DF	Dickey Fuller
REER	Real Effective Exchange Rate
CPI	Consumer Price Index
IMF	International Monetary Fund
ESDS	Economic and Social Data Service
BOP	Balance of Payment
ARMA	Autoregression Moving Average
AR	Autoregressive
CAPM	Capital Asset Pricing Model
US	United States
LBP	Large Bank Portfolio
APT	Arbitrage Pricing Theory
KLS	Kuala Lumpur Stock
ARCH	Autoregressive Conditional Heteroscedasticity
PRF	Population Regression Function
SRF	Simple Regression Function
CLRM	Classical Linear Regression Model
EEC	European Economic Conference
EU	European Union
OECD	Organization for Economic Co-operation and Development
MLE	Maximum Likelihood Estimator

Chapter 1

1.1 Introduction

The quickening pace of globalisation over the last quarter of a century has transformed the scenery of economic relations in terms of the importance of trade and financial flows. National economies are now increasingly inter-dependent and an understanding of international economic and financial issues is ever more relevant to everyday life in both the economic system and the wider environment. Nouriel Roubini[1] listed the exchange rate[2] as one of eight current major global concerns in the world today. These issues have attracted a great deal of interest from both economists and policy makers. Moreover, throughout the developing world, the effects of the exchange rate on other macroeconomic determinants, stands out as perhaps the most contentious aspect of macroeconomic policy and of course its effects on economic growth are vital.

The impact of exports on economic growth, for instance, is a common issue discussed theoretically and empirically. But, there is little agreement amongst researchers concerning the impact of exports on economic growth under different exchange rate regimes. There are however substantial empirical studies of the impact of exchange rate exposure in stock returns. Most of the studies suggest a significant impact of exchange rate exposure on sector returns. There is also broad empirical evidence for the negative impact of exchange rate volatility in promoting exports. However, there is lack of contributions for ASEAN nations. The implication of the Asian Financial Crisis (hereafter: AFC) in 1997 to 1998 has however generated a momentous structure break in the economic system worldwide and therefore gives a significant impact on macroeconomic variables. It is important to consider this impact in all instances.

[1] Dr. Nouriel Roubini is ranked 12 in the 2011 Foreign Policy's list of Top Global Thinkers. He was named to Fortune Magazine's list of "10 new economics gurus you should know". He was also in the 2010 Time magazine list of 100 Most Influential People in the World.

[2] The exchange rate is the rate at which one currency trades against another on the foreign exchange market. In other words, if the present exchange rate is 1USD = RM3.33 this means that to go to Malaysia from America you would get RM333 for 100USD. Similarly, if a Malaysian comes to America she would have to pay RM333 to get 100USD. Although in the real life, the dealer would make a profit during the transaction, and this really depend upon to the market price. Thus, this is a very basic explanation for the notion of the exchange rate.

Therefore this thesis contributes to the empirical evidence by deepening our understanding on the three issues of exchange rates mentioned in the previous paragraph. In Chapter Two, the exchange rate regime is shown to condition the impact of exports on economic growth. Chapter Three investigates the impact of exchange rate exposure on sector returns. Finally, Chapter Four examines the sensitivity of the exchange rate volatility on export demand.

Chapter Two, is inspired by recent empirical studies pointing towards the effect of exports on growth in Malaysia. In other words, this chapter tests the Export Led Growth Hypothesis (hereafter: ELGH). Although this sounds ordinary tests due to exports have traditionally been understood in terms of contributions to Malaysia's economic growth, but economists always fail to account for different exchange rate regimes as part of their analysis. It is well known that the AFC which started in 1997 has pushed Malaysia's economic systems to peg their exchange rate in 1998. In 2005, due to economic stability, Malaysia has been floating back its exchange rate. Following this scenario, it is shown that from 1990 to 2010, Malaysia's economy faced three different exchange rate regimes. Adopting the ELGH the objective of this research is to re-examine the relationship between exports and economic growth in Malaysia in different exchange rate environments. Essentially, previous studies suggest the relation between exports and growth maybe bidirectional, or unidirectional. It predicts a positive relationship between exports and growth during the floating exchange rate regime. The main insight is that the liberalization of the floating exchange rate regime is assumed to provide support for the ELGH, where economic freedom allows the economic agent to make decisions in the market. Several studies also predict a positive relationship between exports and growth during pegged exchange rate regimes. Some of the previous studies also suggest that the diffusion of knowledge depends on other intervening factors. Thus, several factors have been put forward as important determinants to economic growth: import, price competitiveness and crisis dummy. To provide empirical support for this hypothesis, the study adopts an advanced econometrics approach based on multivariate modelling.

Fundamentally, the main research questions for this study are as follows;

i. Is the ELGH valid across different regimes in Malaysia?
ii. If the ELGH is valid in Malaysia, is there any short- and long-run relationship between the variables across regimes?
iii. Following Darrat's (2000) exogeneity tests procedure, is there strong evidence of ELGH in Malaysia across the regimes?

iv. Across the regimes in Malaysia, are imports and the exchange rates important in explaining growth?

The contribution of Chapter Two is twofold. The first contribution is that it provides the first empirical evidence on the ELGH in different exchange rate regimes, for the case of Malaysia. We expand the regime further by including the dummy variable in regime one and two, which is based on the economic history; these two regimes are vastly affected by the AFC in 1997 and 1998. Also, we take two actions to check for the robustness of the main modelling. Firstly, we merge the entire regime, in the condition with and without imposing the crisis dummy in the models. Secondly, we also observe the impact of export on growth in Malaysia in the condition pre-AFC and post-AFC. These two models are purely based on the situation before and after the AFC occurred, without taking in to account the situation during pegged exchange rate regime.

The second contribution of this research is to depart from the existing literature from a methodological standpoint by explicitly allowing for the long-run and short-run relationship by using the Granger Causality within vector error correction modelling. Also, we expand the empirical framework further by including the exogenous tests in the vector error correction framework proposed by Darrat *et al.* (2000), in order to detect the strong case of ELGH across the regimes.

Chapter Three investigates empirically the impact of exchange rate exposure on sector returns in Malaysia. Theory suggests that the impact of exchange rate exposure to sector returns is through cash flow channels. Several recent models suggest that the diffusion of exchange rate exposure to sector returns could be ambiguous, while, some other findings document the positive or negative effect from exchange rate exposure to sector returns. However, a large number of empirical studies focused on developed countries as their case study, with lack of study focusing on developing countries like Malaysia. Therefore, this research tries to fill the gap by exploring the sensitivity of the exchange rate exposure, namely, first moment exchange rate exposure, second moment exchange rate exposure, and asymmetric exchange rate exposure in effecting sector returns in Malaysia. In the view of the investor, the knowledge of which sectors are sensitive to the ups and downs of the exchange rate and the volatility of the exchange rate, are important in making decisions when investing. As the economic agent is predicted to behave risk aversely, the decision making always considers the sector of less risk. Also, the inclusion of two dummy variables in some of the estimation models, namely peg exchange rate dummy and Asian crisis dummy, are to observe for any sensitivity between sector returns and the dummies.

Specifically, this chapter answers the following questions:

i. Are the sector returns in Malaysia sensitive to the market returns?
ii. Does the level of exchange rate fluctuation (first-, second-, and asymmetric exchange rate exposure) affect sector returns in Malaysia?
iii. If the sectors in Malaysia sensitive to the exchange rate fluctuation, what is the directions of the relationship (negative, positive or ambiguity)?
iv. In Malaysia, are the sector returns sensitive to the dummy variables (the peg exchange rate dummy and the Asian Crisis dummy)?

This research contributes to the existing literature addressing the impacts of exchange rate exposure to sector price indexes in Malaysia. In particular, it is in the spirit of Ibrahim (2008) extending the literature along the following dimensions. Firstly, it provides time series evidence on the exchange rate issue in Malaysia. Where, the current study employs the time series data techniques by applying the maximum likelihood estimator (MLE). In addition to CAPM theory and top-down approach proposed by Adler and Dumas (1984), the study includes some other macroeconomic variables namely, exchange rate volatility generated by GARCH(1,1), exchange rate asymmetric effects variables, and two types of dummy variables namely: Asian crisis and peg exchange rate dummies. These two dummies are assumed to give a significant impact on sector returns. Thirdly, this study analyses the exchange rate exposure issue in Malaysia by comparing the results between contemporaneous and one day lagged exchange rate estimations modelling.

Chapter Four investigates the exchange rate issues in term of sensitivity of the export demand to exchange rate volatility in selected ASEAN countries. The study hypothesizes that, if the exchange rate movement are not fully anticipated, an increase in the exchange rate volatility may lead risk-averse agents to reduce their international trading activity. Therefore, the agents will prefer to focus on domestic investment, thus a negative relationship between exchange rate volatility and exports are hypothesized.

The main questions of this chapter are as follows:

i. Across countries, does a short and long run relationship between the variables in the multivariate systems exist?
ii. Do the effects of exchange rate volatility-exports vary across the ASEAN countries?
iii. Is importing country growth significant with positive impacts in promoting export in ASEAN countries?

This study makes important contribution to the literature in several aspects. First, the novelty of this study stems from the in-depth research of developing countries in ASEAN5: Singapore, Malaysia, Philippines, Thailand and Indonesia. It attempts to answer the question of whether there is exists a statistically significant relationship between exports and the exchange rate volatility in ASEAN5 countries. Secondly, in order to analyse to short run relationship between the variable in the system, the error correction modelling is applied. Finally, the Granger causality in a vector error correction framework is utilised to distinguish between the short and long run relationships among the variables in the system.