AN EMPIRICAL INVESTIGATION OF RINGGIT MALAYSIA

By

LOW SHU FANG

Thesis Submitted to

School of Economics, Finance and Banking (SEFB)

Universiti Utara Malaysia,

In Partial Fulfillment of the Requirement for the Master of Science (Finance)

Pusat Pengajian Ekonomi, Kewangan dan Perbankan
SCHOOL OF ECONOMICS, FINANCE, AND BANKING
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PENYELIDIKAN
(Certification of Research Paper)

Saya, mengaku bertandatangan, memperakukan bahawa
(I, the undersigned, certified that)
LOW SHU FANG (818166)

Calon untuk Ijazah Sarjana
(Candidate for the degree of)
MASTER OF SCIENCE (FINANCE)

telah mengemukakan kertas penyelidikan yang bertajuk
(has presented his/her research paper of the following title)

AN EMPIRICAL INVESTIGATION OF RINGGIT MALAYSIA

Seperti yang tercatat di muka surat tajuk dan kulit kertas penyelidikan
(as it appears on the title page and front cover of the research paper)

Bahawa kertas penyelidikan tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that the research paper acceptable in the form and content and that a satisfactory knowledge of the field is covered by the dissertation).

Nama Penyelia (Name of Supervisor) : **DR. SABARIAH NORDIN**

Tandatangan (Signature) :

Tarikh (Date) : **16 DECEMBER 2015**

PERMISSION TO USE

In presenting this dissertation/project paper in partial fulfillment of the requirements for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this dissertation/project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of School of Economics, Finance and Banking (SEFB) where I did my dissertation/project paper. It is understood that any copying or publication or use of this dissertation/project paper parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my dissertation/project paper.

Request for permission to copy or to make other use of materials in this dissertation/project paper in whole or in part should be addressed to:

Dean of School of Economics, Finance and Banking (SEFB)
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRACT

This study investigates factors that influence the Malaysian exchange rate using quarterly data from 1996Q1 to 2015Q2. The Johansen-Juselius cointegration test is used to assess the long run equilibrium relationship between the Malaysian exchange rate, government consumption, trade openness and net foreign assets. The long run VECM results indicate that the government consumption, the trade openness and the net foreign assets are the factors that significantly influence the Malaysian exchange rate. The government consumption and the trade openness have negative relationships with the Malaysian exchange rate, while the net foreign assets is found to have a positive influence on the Malaysian exchange rate. This study provides insights for the policy maker to justify the factors that influence the exchange rate and use the factors as a channel to influence the Malaysian exchange rate. Results of this study enhance existing limited knowledge of the exchange rate study using the BEER model in determining factors that influence the Malaysian exchange rate, and the period of study covers a number of situation where the Malaysian exchange rate had a significant drop in value.

Keywords: Exchange rate, BEER model, cointegration, variance decomposition

ABSTRAK

Kajian ini mengkaji faktor-faktor yang mempengaruhi kadar tukaran Malaysia dengan menggunakan data suku tahunan dari 1996Q1 hingga 2015Q2. Ujian kointegrasi Johansen-Juselius digunakan untuk mengkaji hubungan ekuilibria jangka panjang antara kadar tukaran Malaysia, perbelanjaan kerajaan, keterbukaan dagangan dan aset asing bersih. Dapatan jangka panjang VECM menunjukkan bahawa perbelanjaan kerajaan, keterbukaan dagangan dan aset asing bersih merupakan faktor yang signifikan dalam mempengaruhi kadar tukaran Malaysia. Perbelanjaan kerajaan dan keterbukaan dagangan mempunyai hubungan negatif dengan kadar tukaran Malaysia, manakala aset asing bersih mempunyai hubungan yang positif dengan kadar tukaran Malaysia. Kajian ini membantu pembuat polisi dalam mengenal pasti faktor-faktor yang mempengaruhi kadar tukaran dan menggunakan faktor-faktor tersebut sebagai salah satu kaedah untuk mempengaruhi kadar tukaran Malaysia. Dapatan kajian ini meningkatkan lagi pengetahuan sedia ada berkaitan dengan penggunaan model BEER dalam menentukan faktor-faktor yang mempengaruhi kadar tukaran Malaysia di samping tempoh kajian meliputi keadaan di mana kadar tukaran Malaysia mengalami kejatuhan nilai yang signifikan.

Kata kunci: kadar tukaran, model BEER, kointegrasi, penguraian varians

ACKNOWLEDGEMENT

Firstly, I would like to express my deepest gratitude to my supervisor, Dr. Sabariah bt Nordin for her time, patience, motivation and immense knowledge. Her guidance and motivation helped me in all the time of the research and writing of this dissertation. I could not imagine to have a better advisor and mentor for my Master study, without her encouragement, I could not complete this dissertation.

Besides my supervisor, I would like to extend my appreciation to all the writers of books, journals and articles that provide sources of theories and ideas for this dissertation. Furthermore, I would like to thank my course mates and friends that have helped me a lot along the journey of research.

Last but not least, I would like to thank my parents and siblings that morally and financially support me throughout the research process. Without all these people, it is impossible to complete this dissertation. Hence, the deepest and sincere thanks and gratitude to all of them who had made this dissertation a success.

TABLE OF CONTENT

CHAPTER 3: METHODOLOGY

CHAPTER 4: RESULT AND DISCUSSION

CHAPTER 5: CONCLUSION AND RECOMMENDATION

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviation	Explanation
BEER	behavioural equilibrium exchange rate
BNM	Bank Negara Malaysia
B-S effect	Balassa-Samuelson effect
CCR	Canonical Cointegrating Regressions test
CNER	rate of change in nominal exchange rate
DEER	desired equilibrium exchange rate
DR	real interest rate differential
ECM	error correction mechanism approach
ERER	equilibrium real exchange rate
FEER	fundamental equilibrium exchange rate
GDP	Gross Domestic Product
GOV	government consumption
INVGDP	ratio of investment to GDP
LOOP	law of one price
NATREX	natural rate of exchange
NEER	nominal effective exchange rate
NFA	net foreign assets
NFI	net income from foreign countries
NKI	net foreign capital inflow
O	real oil price
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
OPEN	trade openness
PD	productivity differential
PEER	permanent equilibrium exchange rate
PPP	purchasing power parity

PROD	productivity differential
R	real interest rate differential
RCG	ratio of government consumption to GDP deflator
REER	real effective exchange rate
RER	real exchange rate
RES	difference between the changes in reserve
RESBAL	resources balance
RIRD	real interest rate differential between domestic and world real interest rate
RM/MYR	Ringgit Malaysia
SGD	Singapore dollar
TB	trade balance
TOT	terms of trade
UECM	unrestricted error correction model
UIP	uncovered interest rate parity
USD	U.S dollar
VECM	Vector Error Correction Model
RD	reserve differential
DOLS	Dynamic Ordinary Least Square

CHAPTER 1

INTRODUCTION

1.0 Background of the Study

Exchange rates play a significant role in international trade transactions and investment (Doidge, Griffin and Williamson, 2006). An exchange rate is the price of a currency against another currency. Foreign exchange rate can be expressed in direct and indirect quotations. Direct quote is defined as domestic currency per unit of foreign currency while indirect quote is defined as foreign currency per unit of domestic currency. Likewise, an exchange rate can further be divided into nominal effective exchange rate (NEER) and real effective exchange rate (REER). NEER is the exchange rate value against a weighted average of the country's trading partners' currencies while REER is the inflation adjusted NEER by country's trading partners' currency index in international market (Kakkar and Yan, 2014). REER that made up of average real exchange rate (RER) between trading partner's countries according to trade shares can be used to measure the exchange rate misalignment (Cat ão, 2007).

Foreign exchange market is a form of global decentralized made up of supply and demand of currencies (Ickes, 2006; Sharma and Rai, 2014). Foreign exchange market that work twenty-four hours in seven days is the largest financial market in the world (Eun and Resnick, 2014). It facilitates the transfer of purchasing power, finances international trade and minimizes foreign exchange risk. The foreign exchange market is made up of two tiers: the wholesale market and the retail market which can be segregated into international banks,

The contents of the thesis is for internal user only

REFERENCE

AbuDalu, A., & Ahmed, E. M. (2014). The determinants of ASEAN-5 real effective exchange rate *vis-á-vis* the UK pound. *World Journal of Entrepreneurship, Management and Sustainable Development*, *10*(2), 98–118. doi:10.1108/WJEMSD-07-2013-0038

Aguirre, A., & Calderon, C. (2008). Real exchange rate misalignments and economic performance, (June).

Ahmad, M.N.N., Yusop, Z. & Masron, T.A. (2010). How Did the Malaysian Real Exchange Rate Misalign During the 1997 Asian Crisis ? *2*(2), 161–195.

Balvers, R. J., & Bergstrand, J. H. (2002). Government expenditures and equilibrium real exchange rates. *Working Paper of the Helen Kellogg Institute for International Studies*, (295). Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-34548024400&partnerID=40&md5=2af0f155a9050a015d6fd67d34bf5a39

Bank Negara Malaysia Press Statement. (2005, July 22). Malaysia Adopts a Managed Float for the Ringgit Exchange Rate. Retrieved September 18, 2015, from http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=482&lang=en

Bank Negara Malaysia Press Statements. (1998, September 1). Measures to Regain Monetary Independence. Retrieved September 18, 2015, from http://www.bnm.gov.my/index.php?ch=en_press&pg=en_press_all&ac=1054&lang=en

Boughton, J. M. (1988). *The Monetary Approach to Exchange Rates: What Now Remains? Princeton Essays in International Finance* (Vol. 171).

Broda, C. (2002). *Terms of Trade and Exchange Rate Regimes in Developing Countries*.

Cahyono, D. (2008). *Determinants of Equilibrium Real Exchange Rate and Its Misalignment in Indonesia (Post Crisis Era)*.

Calderon, C. a, & Kubota, M. (2009). Does Higher Openness Cause More Real Exchange Rate Volatility? *SSRN eLibrary*, (April).

Calvo, G.A. & Reinhart, C. M. (2009). Fear of Floating. *Quarterly Journal of Economics*, *CXXIV* (November), 379–408.

Cao, Y. & Ong. W. L. (1981). PPP and the Monetary Model of Exchange-Rate Determination : The Case of Singapore.

Cassel, G. (1916). The Present Situation of the Foreign Exchanges. *The Economic Journal*, *26*, 62–65. doi:10.2307/2231709

Cat ão, L. A. V. (2007). Why real Exchange Rates. *Finance & Development*, 46–47.

Choudhri, E. U., & Khan, M. S. (2004). Real Exchange Rates In Developing Countries : Are Balassa-Samuelson Effects Present ? Determinants of Capital Flows", in ed. J. Williamson, Estimating Equilibrium Exchange Rates, Institute for International Economics, Washington, D.C.

Clark, P. B., & MacDonald, R. (1998). Exchange Rates and Economic Fundamentals: A Methodological Comparison of BEERs and FEERS. *October*. Retrieved from http://www.countryanalyticwork.net/Caw/CawDocLib.nsf/5c5c47bfc0561e8c85256c5e000f5efd/98605C19C847FC4585256D7400707470/$file/wp01160.pdf

Clark, P.B. & MacDonald, R. (1999). Exchange Rates and Economic Fundamentals: A Methodological Comparison of BEERs and FEERs in R. MacDonald and J Stein (eds) *Equilibrium Exchange Rates*, Kluwer: Amsterdam. And IMF Working Paper 98/67 (Washington: International Monetary Fund, March 1998).

Costa, S. (2005). A survey of literature on the equilibrium real exchange rate. An application to the euro exchange rate, 49–64.

Coudert, V., Couharde, C., & Mignon, V. (2008). Do Terms of Trade Drive Real Exchange Rates? Comparing Oil and Commodity Currencies. *CEPII Working Paper*.

Cui, Y. (2014). Revisiting China's exchange rate regime and RMB basket: a recent empirical study. *International Journal of Economics and Finance*, *6*(2), p150. doi:10.5539/ijef.v6n2p150

Doidge, C., Griffin, J., & Williamson, R. (2006). Measuring the economic importance of exchange rate exposure. *Journal of Empirical Finance*, *13*(4-5), 550–576. doi:10.1016/j.jempfin.2005.12.003

Dornbusch, R. (1976). Expectations and Exchange Rate Dynamics. *Journal of Political Economy*, *84*(6), 1161–1176. doi:10.1086/260506

Dornbusch, R., & Krugman, P. (1976). Flexible Rates in Exchange the Short Run. *Brookings Papers on Economic Activity*, *109*(2), 191–213.

Driver, R. L., & Westaway, P. F. (2004). *Concepts of equilibrium exchange rates*. Equilibrium Exchange Rates, Institute for International Economics, Washington, D.C.

Edison, H. J., & Melick, W. R. (n.d.). Purchasing Power Parity and Uncovered Interest Rate Parity: The United States 1974-1990.

Edward, S. (1989). *Real Exchange Rates in the Developing Countries: Concepts and Measurement.* NBER Working Paper Series No. W2950.

Eichengreen, B. & Hausmann, R. (1999). Exchange Rates and Financial Fragility. *NBER*

Eita, J. H., & Sichei, M. M. (2014). Estimating Namibia's Equilibrium Real Exchange Rate, *13*(3), 561–573.

Erdemlioglu, D., Laurent, S., & Neely, C. (2012). Econometric modeling of exchange rate volatility and jumps. *... of St. Louis Working Paper No*. doi:10.4337/9780857936097.00026

Eun, C. S. & Resnick. B. G. (2014). *International Finance* (Seventh Gl.). New York: McGraw-Hill Education (UK) Limited.

Fida, B. A., Khan, M. M., & Sohail, M. K. (2012). Analysis of exchange rate fluctuations and external debt: Empirical evidence from Pakistan. *African Journal of Business Management*, *6*(4), 1760–1768. doi:10.5897/AJBM11.1283

Galstyan, V., & Lane, P. R. (2009). The composition of government spending and the real exchange rate. *Journal of Money, Credit and Banking*, *41*(6), 1233–1249. doi:10.1111/j.1538-4616.2009.00254.x

Garces-diaz, D. (2004). How Does the Monetary Model of Exchange Rate Determination Look When It Really Works ? *Econometric Society 2004 North American Winter Meetings*.

Gharleghi, B., & Abu Hassan Shaari Md Nor (2012). Is Monetary variable a determinant in the ringgit-dollar exchange rates model?: A cointegration approach. *Sains Malaysiana*, *41*(9), 1163–1169. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0 84865623376&partnerID=tZOtx3y1

Ghosh, A.R. & Ostry, J. D. (2009). Choosing an Exchange Rate Regime. *Finance and Development*, (December), 38–40.

Goldstein, M., & Lardy, N. (2006). China's Exchange Rate Policy Dilemma. *American Economic Review*, *96*(2), 422–426. doi:10.1257/000282806777212512

Gruen, D. W. R., & Wilkinson, J. (1994). Australia's Real Exchange Rate–Is it Explained by the Terms of Trade or by Real Interest Differentials?*. *Economic Record*, *70*(209), 204–219.

Gujarati, D.N & Porter, D. C. (2009). *Basic Econometrics* (Fifth.). Singapore.

Hau, H. (1999). Real Exchange Rate Volatility and Economic Openness : Theory and Evidence.

Ickes, B. W. (2006). The Foreign Exchange Market, 1–51.

IMF (2004, June 30). Classification of Exchange Rate Arrangements and Monetary Policy Frameworks -- as of June 30, 2004. (n.d.). Retrieved September 20, 2015, from https://www.imf.org/external/np/mfd/er/2004/eng/0604.htm

Investopedia. (n.d.). Natural Unemployment Definition. Retrieved December 2, 2015, from http://www.investopedia.com/terms/n/naturalunemployment.asp

Isard, P. (2007). Equilibrium Exchange Rates: Assessment Methodologies. *IMF Working Papers*, *07*, 1. doi:10.5089/9781451868593.001

Isard, P. and H. Faruqee (1998), "Exchange Rate Assessment: Extensions of Macroeconomic Balance Approach, *IMF Occasional Paper* No. 167.

Jeong, S., & Mazier, J. (2000). Equilibrium Exchange Rates of Eight East Asian Currencies : A Fundamental Equilibrium Exchange Rate (FEER) Approach, 1–36.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*. doi:10.1111/j.1468-0084.1990.mp52002003.x

Jongwanich, J. (2009). Equilibrium real exchange rate, misalignment, and export performance in developing asia. *ADB Economics Working Paper Series*, *151*, 1–40. doi:10.2139/ssrn.1604839

Kakkar, V., & Yan, I. (2014). Determinants of real exchange rates : An empirical investigation Institute for Economies in Transition. *BOFIT Discussion Papers*, (1).

Khouja, I. (2015). Financial Development and Optimal Exchange Rate Regime Choice in Developing Countries, (2002), 527–550.

Lean, H. (2008). The impact of foreign direct investment on the growth of the manufacturing sector in Malaysia. *International Applied Economics and Management Letters*, *1*(1), 41–45. Retrieved from http://econ.upm.edu.my/iaeml/vol1no1/bab08.pdf

Lee, J., Faruqee, H., & Bayoumi, T. (2005). A Fair Exchange? Theory and Practice of Calculating Equilibrium Exchange Rates. *IMF Working Papers*, *05*(229), 1. doi:10.5089/9781451862485.001

Lutkepohl, H., & Saikkonen, P. (2000). Testing for the cointegrating rank of a VAR process with a time trend. *Journal of Econometrics*, *95*(1), 177–198.

Macdonald, R., & Dias, P. (2007). Behavioural equilibrium exchange rate estimates and implied exchange rate adjustments for ten countries. *Peterson Institute of International Economics*,(February 2007), 1–33. Retrieved from http://ynvw.iie.com/publications/pb/pb07-4/macdonald.pdf methodological comparison of BEERs and FEERs', paper presented at Conference on Exchange Rates, Strathclyde University.

Macdonald, R., & Ricci, L. (1998). The real exchange rate and the Balassa Samuelson Effect : The Role of the Distribution Sector.

Macdonald, R., & Ricci, L. (2003). *Estimation of the equilibrium real exchange rate for South Africa*. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=879180

Maysami, R. C., & Koh, T. S. (2000). A vector error correction model of the Singapore stock market. *International Review of Economics and Finance*, *9*(October 1980), 79–96. doi:10.1016/S1059-0560(99)00042-8

Maysami, R. C., Hamzah, M. A., & Lee, C. H. (2004). Relationship between Macroeconomic Variables and Stock Market Indices : Cointegration Evidence from Stock Exchange of Singapore ' s All-S Sector Indices. *Jurnal Pengurusan*, *24*, 47 – 77.

Mohamad, S. (2004). Real Exchange Rate (RER) Performance in Southeast Asian Economies: Were Competitive Undervalued Currencies Used to Boost Exports? *Economic Bullentin*, *6*(January).

Mohamad, S. Jusoff, K., Nair, M., & Zaghlol, A. K. (2007). The Effect of Balassa-Samuelson in South-East Asia. *Asian Social Science*, *4*(8), 112–116.

Monetary and Financial Conditions 2013. (2013). Retrieved October 6, 2015, from http://www.bnm.gov.my/index.php?cx=006442245152660814738%3Aohlmytqlkxy&cof=FORID%3A9&ie=UTF-8&tpl_id=470&q=domestic+monetary+and+financial+condition&sa.x=0&sa.y=0&sa=Search

Monetary and Financial Conditions 2014. (2014). Retrieved October 6, 2015, from http://www.bnm.gov.my/index.php?cx=006442245152660814738%3Aohlmytqlkxy&cof=FORID%3A9&ie=UTF-8&tpl_id=470&q=domestic+monetary+and+financial+condition&sa.x=0&sa.y=0&sa=Search

Naseem, N.A.M., Tan, H.B. & Hamizah, M.S. (2010). Exchange Rate Misalignment, Volatility and Malaysian Export Flows. *International Journal of Business and Society*, *11*(2), 51–70.
Retrieved from http://search.proquest.com/docview/863651465?accountid=10297\nhttp://sfx.cranfield.ac.uk/cranfield?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3Aabiglobal&atitle=EXCHANGE+RATE+MISALIGNMENT%2C+VOLATILITY+AND+MALA

Nurkse, R. (1945). Conditions of International Monetary Equilibrium, Essays in International Finance 4 (spring). Princeton, New Jersey: Princeton University Press, International Finance Section

Oriavwote, V. E., & Oyovwi, D. O. (2012). The Determinants of Real Exchange Rate in Nigeria. *International Journal of Economics and Finance*, *4*(8). doi:10.5539/ijef.v4n8p150

Ozturk, I. (2006). Exchange Rate Volatility and Trade: a Literature Survey. *Internatinal Journal of Applied Economtrics and Quantitative Studies*, *3*(1), 85–102.

Phua, L.N. (2014). *The Relationship of Government Expenditure,Polpulation, Exchange Rate,Trade Openness and Economic Growth in Malaysia*. *Igarss 2014*.

Ravn, M. O., Schmitt-Grohé, S., & Uribe, M. (2012). Explaining the Effects of Government Spending Shocks. *Journal of Monetary Economics*, *59*(3), 215–234. doi:10.1016/j.jmoneco.2012.02.001

Razin, O., & Collins, S. M. (1997). *Real Exchange Rate Misalignments and Growth*. (No. 6174). *International Finance and Macroeconomics*.

Reinsdorf, M. B. (2009). Terms of Trade Effects: Theory and Measurement, (October), 0–41. doi:10.1111/j.1475-4991.2010.00384.x

Sercu, P. (2009). *International Finance - Theory into Practice*. New Jersey: Princeton University Press.

Sharma, P, & Rai, S. (2014). The Determinants of Foreign Exchange Rate (FER) Volatility in the Indian Economy. *Indian Journal of Commerce & Management Studies*, *V*(3), 34–44.

Sidek, M.Z.M. (2011). Malaysia : how much exchange rate misalignment is detrimental to exports ? *Development*, *7*, 5–9.

Sidek, N.Z.M. & Yusoff, M.B. (2009). An Empirical Analysis of Malaysian Ringgit Equilibrium Exchange Rate and Misaligmnet. *Global Economy & Finance Journal*, *2*, 104–126.

Sidek, N.Z.M., Yusoff, M.B., Duasa, J. & Ghani, G.M. (2010). Does Exchange Rate Risk Matter for Exports? A Case of Malaysia. *Kedah.Uitm.Edu.My*, *5*(1), 27–42. Retrieved from http://www.kedah.uitm.edu.my/v1/images/stories/industrial_linkages/uitm_press/voa_5_1_2010/5_1_2010_4.pdf

Siregar, R. Y. (2011). The Concepts of Equilibrium Exchange Rate : A Survey of Literature The Concepts of Equilibrium Exchange Rate : A Survey of Literature. *The South East Asian Central Banks (SEACEN) Research and Training Centre*, *Staff Pape*(81).

Stavarek, D. (2013). Cyclical Relationship between Exchange Rates and Macro-Fundamentals in Central and Eastern Europe. *Ekonomska Istazivanja-Economic Research*, *26*(3), 83–98.

Stein, J.L. (1994). The Natural Real Exchange Rate of the US Dollar and Determinants of Capital Flows. John Williamson, Ed., Estimating Equilibrium Exchange Rates. Washington, DC: Institute for International Economics, 1994.

Taylor, A. M., & Taylor, M. P. (2004). The purchasing power parity debate. *Journal of Economic Persperctives*, *18*, 135–158.

The World Bank (n.d.). Net foreign assets (current LCU). Retrieved November 28, 2015, from http://data.worldbank.org/indicator/FM.AST.NFRG.CN

Tu, W & Feng, J. W. (2009). An Overview Study on Dornbusch Overshooting Hypothesis. *International Journal of Economics and Finance*, *1*(1), 110–116.

Williamson, J (1983, *revised* 1985), 'The Exchange Rate System', Institute for International Economics, Washington DC: Policy Analyses in International Economics, No. 5.

Wong, H. T. (2013). Real exchange rate misalignment and economic growth in Malaysia. *Journal of Economic Studies*, *40*, 298–313. doi:10.1108/01443581311283934

Wren-Lewis, S (1992), 'On the analytical foundations of the fundamental equilibrium exchange rate', in Hargreaves, C P (ed), *Macroeconomic modelling of the long run*, Edward Elgar.