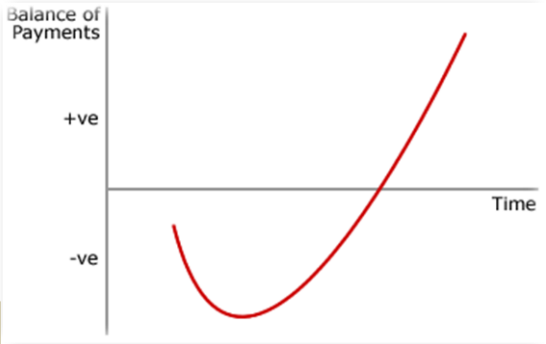
Topic of the session

Is There A J-curve Between Malaysia and her Trading Partners? Evidence from ARDL Test and Industry Level Data

Associate Professor Dr Azhar Mohamad
Dept of Finance, KENMS, IIUM

INTRODUCTION

Both ML condition and J-curve effect attempt to explain relationship between currency devaluation and trade balance.



$Exports_{ped} + Imports_{ped} > 1$

Indirect approach that is considered as a long-run condition and earliest researches have followed this methodology

Marshall-Lerner (ML) condition

Explains that due to the currency depreciation, trade balance worsens at first and improves later

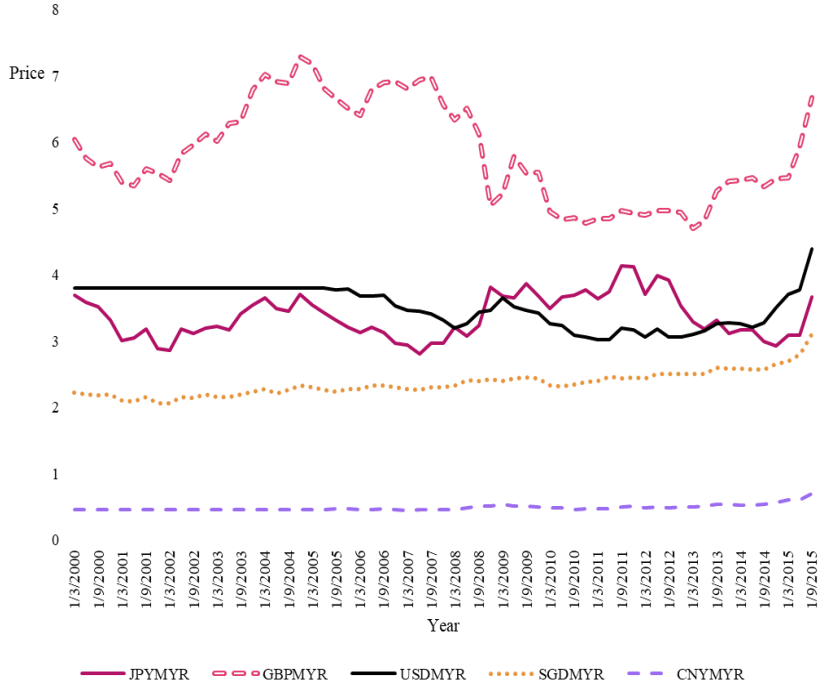
J-curve effect

Ringgit per 1 USD from 1972 - present

Problem Statement

- Real value of the ringgit (real exchange rate) actually fluctuates against the currency of her trading partners.
- Ringgit weakened so much in 1997/98 South East Asian Financial crisis.
- However, the real value of the ringgit has been rising against the Indonesian rupiah and has been relatively stable against the Filipino peso since the 1970s (Bahmani-Oskooee and Harvey, 2006).
- The percentage shares of the total trade among the top five trading partners are China 14.5%, Singapore 12.6%, Japan 10.4%, the EU 10.4% and the USA 8.4% (Source: DOS, Malaysia).

Value of One Jpy, Gbp, Usd, Sgd, Cny in terms of MYR from 2000 - 2015



- A number of studies written on the impacts of exchange rate volatility on balance of trade (J-curve effect) between Malaysia and her major trading partners
- Not many studies have examined J-curve effect using industry level data

Research Objectives & Research Questions

Objectives:

1) To examine the effects of the real exchange rate changes on the Malaysian trade balance against five major trading partners at industry level.
2) To examine the existence of J-curve effects in trade balance between Malaysia and her five major trading partners at industry level.
3) To examine long-run relationship between Malaysia's real exchange rate and her trade balance at industry level.

Questions:

1) How does the trade balance of Malaysia with her trading partners at the industry level respond to the real exchange rate changes?
2) Are there J-curve effects in trade balance at industry level between Malaysia and her five major trading partners?
3) Is there a long-run relationship between the two main variables, namely Malaysia's real exchange rate and the trade balance at the industry level?

Significance of the Study

- ✓ To serve as a road map for policy makers and related agencies.
- ✓ Malaysian government agencies can assess the effect of ringgit changes on industry level trade balance.
- ✓ We believe our study is the most comprehensive study so far; Malaysia against her five major trading partners.

LR 1: Studies that Employ Aggregate Trade Data

No	Title	Author/s (Year)	Objective/s	Data/Methodology	Findings
1	Is there a J-curve? A new estimation for Japan	Anju, G. K., & Uma, R.(1999). International Economic Journal	Determine whether Japanese exports and imports exhibit a J-curve during the flexible exchange rate regime	-Error correction model (ECM) -Use impulse response function to examine the J-curve phenomenon – -Quarterly data from 1975:I to 1996:IV	-There is J-curve effect
2	The exchange value of the Renminbi and China's balance of trade: An empirical study	Zhang, Z. (1996). National Bureau of Economic Research	Assess the relationship between the exchange value of the Chinese Renminbi (RMB) and China's trade balance.	-Time series, Cointegration analysis, Granger causality -Monthly Data 1991-1996	-No J-curve effect -TB Granger cause the exchange rate but exchange rate does not Granger cause the TB
3	Determinants of Malaysian trade balance: An ARDL bound testing approach	Duasa, J. (2007). Global Economic Review	-Examines the relationship between TB and ER, under the elasticity approach in SR and LR with regard to Malaysian data -Test the empirical relevance of the absorption and monetarist approaches by incorporating variables of income and money supply in the models.	-Method: Bound testing approach to cointegration and ECM, developed within ARDL model -Annual data 1974 to 2003.	-Evidence of a long-run relationship between trade balance and income and money supply variables but not between trade balance and real exchange rate. -Marshall-Lerner condition does not hold in the long-run for Malaysia and for policy wise the Malaysian trade balance/ balance of payments should be viewed from absorption and monetary approaches.

LR 2: Studies that Employ Disaggregate Trade Data

No	Title	Author/s (Year)	Objective/s	Data/Methodology	Findings
1	Is there a J-curve?	Rose, A. K., & Yellen, J. L. (1989). Journal of Monetary Economics	-Investigates whether a J-curve can be detected in the last 25 years of American data.	-Data: USA with her six G-7 trading partners: Canada,France,Germany, Italy,Japan and UK -Quarterly (1960-1985) -Method: Time series IV and OLS	-No statistically reliable evidence of a stable J-curve is detected.
2	Bilateral J-curve between US and her trading partners	Bahmani-Oskooee, M., & Brooks, T. J. (1999). Review of World Economics	-Study the response of the US trade and six trading partners to a currency depreciation in short-run and long-run	-ARDL: cointegration and ECM -Quarterly data (1973:1-1996:2)	-No specific short-run pattern supporting the J-curve phenomenon -The effects are favourable in long-run
3	The J-curve: Malaysia versus her major trading partners.	Bahmani-Oskooee, M., & Harvey, H. (2010). The J-curve: Malaysia versus her major trading partners. Applied Economic	-Investigate the short-run and long-run effects of real depreciation of ringgit to trade balance	-Method: bound testing approach and ECM -Data: Quarterly (1973:1-2001:3)	-Some support for the J-curve hypothesis -However, the long-run results revealed improvement in Malaysia's bilateral trade balance at least in 4 cases.

LR 3: Studies that Employ industry Level Trade Data

No	Title	Author/s (Year)	Objective/s	Data/Methodology	Findings
1	The J-curve: Evidence from commodity trade between Canada and the US.	Bahmani-Oskooee, M., & Bolhasani, M. (2008). Journal of Economics and Finance	-Find the short run and long- run relationship between real depreciation of Canadian dollar and trade balance by commodity	-Method: bound testing to cointegration and ECM -Data: 152 industries	-Real depreciation of the Canadian dollar has short-run effects on the trade balance of two thirds of the industries. However, only in 50% of the industries, the short-run effects translate into the long-run favorable effects. -Furthermore, both durables and non-durable commodities responded favorably to real depreciation
2	How responsive are trade flows between Malaysia and China to the exchange rate? Evidence from industry data	Soleymani, A., & Chua, S. Y. (2014). International Review of Applied Economics	-Investigates the impact of currency depreciation on bilateral trade between Malaysia and China, especially how a real depreciation of ringgit against the yuan on each industry's inpayments and outpayments affect the trade balance	-Method: Cointegration and ECM -Data: Quarterly (1993:1-2012:4) -52 industries -Annual data (1962-2004)	-Real bilateral exchange rate has significant role in impayments and out payments for the majority of industries in short-run but is limited to a smaller number of industries in the long-run effects.
3	The J-curve: Evidence from commodity trade between Malaysia and Japan	Soleymani, A., & Saboori, B. (2012). The International Journal of Applied Economics and Finance	-Investigate the short-run (J-curve) and long-run effects of the real depreciation ringgit/yen on the trade balance of each industry	-Method: Bound testing approach to cointegration and ECM -Data: Annual (1974-2009) -67 industries	- -Whilst depreciation of ringgit has short-run significant effects on the trade balance in majority of the industries, the short-run effects translate into long-run effects only in 24 of the 67 industries -In only 22 industries empirical support for the J-curve is established.

Data & Methodology

Model specification: $$LnTB_{i,t} = a + bLnY_{M,t} + cLnY_{P,t} + dLnREX_t + \varepsilon_t \qquad (1)$$

No	Variable	Definition/ Measurement	Data/ Source	Estimated coefficient
1	$TB_{i,t}$	*The trade balance for industry i *Measured by XM/MM of commodity i to each of her major trading partners	*Department of Statistics, Malaysia	
2	Y_M	*Real income of Malaysia *Measured by real GDP of Malaysia (expenditure approach)	*Department of Statistics, Malaysia	*Negative>> increase in Malaysian economy will lead to an increase in Malaysia's imports of commodity i * Positive>> the increase in real income is due to an increase in the production of imports substitute goods.
3	Y_P	*Real income of each trading partner *Measured by real GDP of trading partner (expenditure approach)	*Bloomberg Database *Official OECD Website. *National Bureau of Statistics, China	*Positive>> increase in the real income of each trading partner, encourages an increase in Malaysia's exports of commodity i to that trading partner *Negative>> increase in the trading partner's income is due to the increase in the production of substitute goods
4	REX	*Real bilateral exchange rate $REX=(P_P * NEXi) / P_M$; Where the definition of NEX is the nominal bilateral exchange rate as the number of Malaysian ringgit per partner's currency. P_P is the measurement of the partner's price level by CPI and P_M is the measurement of Malaysia's price level, also by CPI.	*Bloomberg Database	* Positive>> an increase reflects a real depreciation of the ringgit or an appreciation of the trading partner's currency. If the real depreciation of the ringgit causes the Malaysian exports of commodity i to increase, hence improve the trade balance of industry i

Model specification

- This work uses well-established Equation (1) to estimate the long-run relationship among the variables.
- To derive the J-curve effect we should include the short-run dynamics into Equation (1), and the specification should be in an error-correction format. According to Pesaran, Shin and Smith (2001), we replace Equation (1) with Equation (2) and the error-correction modelling format as follows:

$$\Delta LnTB_{i.t} = \alpha + \sum_{k=1}^{n1} \eta_k \Delta LnTB_{i,t-k} + \sum_{k=0}^{n2} b_k \Delta LnY_{M,t-k} + \sum_{k=0}^{n3} c_k \Delta LnY_{P,t-k} + \sum_{k=0}^{n4} d_k \Delta LnREX_{t-k}$$
$$+ \beta_1 LnTB_{i,t-1} + \beta_2 LnY_{M,t-1} + \beta_3 LnY_{P,t-1} + \beta_4 LnREX_{t-1} + \omega_t \qquad (2)$$

- Short-run effect (J-curve effect) is inferred by the sign and significance of d_k.
- Long-run effect is inferred by β_4.
- We employ an ARDL bound testing approach to cointegration and error-correction modelling on the quarterly data for the period of Quarter1 2001 to Quarter3 2015.

Summary of Findings

	Results/ Country (Short-run)				
Criteria	Malaysia-Japan	Malaysia-UK	Malaysia-US	Malaysia-Singapore	Malaysia-China
1. Industries have at least one significant coefficients of RER effects	89 industries (83 at 5% and 6 at 10% level of significance)	39 industries (36 at 5% and 3 at 10% level of significance)	5 industries (4 at 5% and 1 at 10% level of significance)	11 industries (8 at 5% and 3 at 10% level of significance)	9 industries at 5% level of significance
2. Industies that have traditional J-curve effects (initially negative sign and positive sign later)	10 industries	7 industries	1 industries	2 industries	3 industries
	Results/ Country (Long-run)				
Criteria	Malaysia-Japan	Malaysia-UK	Malaysia-US	Malaysia-Singapore	Malaysia-China
1. Industries that have significant coefficients in RER	72 industries (63 at 5% and 9 at 10% level of significance)	17 industries (13 at 5% and 4 at 10% level of significance)	3 industries (3 at 5% level of significance)	6 industries (4 at 5% and 2 at 10% level of significance)	10 industries (7 at 5% and 3 at 10% level of significance)
2. Industries that have positive and significant coefficient of RER	46 industries (40 at 5% and 6 at 10% level of significance)	9 industries (8 at 5% and 1 at 10% of level of significance)	1 industries at 5% level of significance)	5 industries (4 at 5% and 1 at 10% level of significance)	3 industries (1 at 5% and 2 at 10% level of significance)
3. Industries that have new definition of J-curve (combination of negative short-run effects and positive significant long-run effects)	40 industries	6 industries	0 industries	3 industries	1 industries
4. Industries that have new definition of J-curve (combination of negative short-run effects and positive coefficient long-run effects)	60 industries	15 industries	3 industries	4 industries	1 industries

Conclusion

- Majority of J-curve effects are found in durable goods industries.
- Durable goods are more sensitive exchange rate changes than non-durable goods.
- Generally results are in line with the Soleymani et al. (2011) findings.
- Results indicate that there are J-curve effects for the Malaysia-Japan and Malaysia-UK cases, but the effects are more pronounced in the long-run.

Thank You

Nor Afifah Khalilah Mohd Jaafar
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Kulliyyah of Economics and Management Sciences
International Islamic University Malaysia

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