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THE IMPACT OF GLOBALIZATION ON TRADE: THE CASE OF MALAYSIA-CHINA ECONOMIES

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ABSTRACT

This paper analyzes the impact of globalization on trade for the case of Malaysia-China economies. Specifically, the cointegration analysis was used to determine factors that influence the level of trade between Malaysia and China. Findings indicate the existence of at least one cointegrating vector, which means that the long run relationship among variables exists. Meanwhile, the ECT has correct magnitude and sign. The ECT is strongly significantly different from zero at the five per cent level, thus provide support for the hypothesis of cointegration. The significance of ECT_{t-1} is sufficient to infer cointegration among the variables in question. This result also indicates that there is a long run binding between the NX and its determinant, namely WTO, GDP, ERCM. As for the WTO effect, it takes around two year of lag to see the effect to the NX. This is parallel to the previous studies such as Schwalbach and Su (2001), Zhai and Li (2000)

Keywords: *Trade, Unit Root, Cointegration.*

Field: *Economics*

1. INTRODUCTION

Globalization has provided several positive and negative effects to the ASEAN countries economies, particularly in terms of income distribution, employment, and the need for skilled and educated workforce. Obviously, globalization has had positive results on the countries' economic growth through trade expansion and foreign direct investment (FDI) that opened new channels for economic expansion.

Over four decades, ASEAN countries have been relying on the United States and the European Union for export markets and inward foreign direct investments. However, the current spate of international affairs has put the world economy in shaky condition and rather undetermined. The United States has lost its grip and newly emerging markets like China pave the way to loosen up the escalating downward pressure on the world economy.

The current trend in the ASEAN region proposes a well-defined economic relation among its members. The establishment of AFTA and ASEAN+3 initiatives highlighted the budding role of China, stand-in as a catalyst to jumpstart the inventiveness of an open-integrated market characterized by active involvement of the countries. To date, promising results are observed

on behalf of all ASEAN members to partake in an effort to liberalize the region, evident from the surge in intra-regional trade among its members.

Giving the above scenario, the purpose of this paper is to analyze the impact of globalization on trade for the case of Malaysia-China economies, using the cointegration analysis. The rest of the paper is organized as follows. Section 2 analyzes Malaysia's trade policies. Section 3 reviews the existing literature on globalization and trade. Section 4 describes the data used and the methodology of determining factors that influence the level of trade between Malaysia and China using the econometrics approach. The empirical results of the study and discussion are reported in Section 5. Section 6 concludes.

2. MALAYSIA'S TRADE POLICIES

Malaysia's economy has remained relatively open to trade and foreign investment; especially for the goods sector compares to services sector. Imports and exports of goods and services were equivalent to 106 per cent and 117 per cent of GDP on average during the period 1997-2000, respectively.

In the second half of 1997, Malaysia was struck by the Asian financial crisis, which contributed to a severe deterioration in its economic performance in 1998. There have been a few noteworthy changes in Malaysia's trade-related institutional framework since its previous Trade Policy Review. In January 1998, the National Economic Actions Council (NEAC) was established as a consultative body to the Cabinet with a view to dealing with economic problems arising from the Asian Financial Crisis, and in July 1998 the NEAC announced the National Economic Recovery Plan (NERP).

WTO Agreements continue to play a crucial role in the formulation of Malaysia's trade and trade-related policies. Regional arrangements are also important, i.e. ASEAN, APEC and various bilateral agreements, including areas not covered by WTO Agreements.

2.1. Trade Restrictions

Malaysia's policy of liberalizing trade is not only incorporated with the WTO and AFTA objectives but also micro-economic objectives. Reducing tariff levels will not only decrease inflationary pressures in the expanding economy but also increase the competitiveness of Malaysian industry though out strategic exposure. Liberalization can also enhance export incentives from FDI's as seen in the nine FTZs. In line with microeconomic change, trade restrictions have been aligned with development strategies, which are often based upon the notation of comparative advantage. Selective protection promotes the development of industrial sub sectors that have the potential to produce high value added products (see Brown, 1993).

2.2. Exchange Regulations

The exchange rate policy is also an important component in the Malaysian FDI promoting framework and in general economic policy. In recent years, Malaysia has substantially opened-up its foreign exchange regime and can now be considered fairly liberal. On 21st July 2005 Bank Negara has announced that Malaysia adopts manage floating exchange rate regime after

imposing the Ringgit Malaysia peg to US dollar since September 1998. Export oriented FDI provides the foreign exchange required to develop a nation without incurring huge debts. Malaysian economic policy has promoted a favorable climate for FDI, resulting in rapid industrial development and influx in foreign exchange that can promote new development projects.

3. REVIEW OF LITERATURE

A number of studies have investigated China's growing competitiveness with the competitiveness of the economies in the ASEAN. Siew-Yan (2001) investigated the issue of competitiveness in the manufacturing sectors of Malaysia and China during China's pre-WTO accession period. He utilized three measures of revealed comparative advantage[1]. He found that Malaysia still has relatively high comparative advantage for high-technology sectors and resource-based products such as woods and woods products may be able to increase their market share in China due to the relatively high comparative advantage that Malaysia has for this product group.

Tyers *et al.* (1987) examined the impact of China's increasing exports of labor-intensive manufactures (LIM) on ASEAN exporters of the same products. Their results revealed that in 1981, despite some differences in emphasis in the export of LIM between China and ASEAN as a bloc, they do compete in the exports of clothing, textiles, footwear, furniture, textile yarn, and thread and toys, especially in the United States and Japanese markets. A subsequent study by Herschede (1991) on export rivalry between ASEAN, China, and the Newly Industrialized Economies (NIEs) in the Japanese import market between 1982-1987, concluded that ASEAN exports suffered the most from the entrance of China to the Japanese import market. In the case of manufactured goods, ASEAN was found to have experienced competitive disadvantage in the export of machinery and transport equipment and miscellaneous manufactures (SITC 7 and 8) and competitive advantage in the export of chemicals and manufactures (SITC 5 and 6). China, in contrast, experienced competitive disadvantage in the export of manufactures and miscellaneous manufactures (SITC 6 and 8) and competitive advantage in the export of chemicals and machinery and transport equipment (SITC 5 and 7).

Voon (1998), in turn, analyzed the export competitiveness of China and ASEAN in the market of the United States of America. The results obtained indicate ASEAN-4's exports of manufactured goods in the United States have grown absolutely between 1980-1994, despite the entry of China since 1979. However, China's share of more labor-intensive goods (MLIM, SITC 6 and 8) increased very rapidly over this period *vis-à-vis* the ASEAN-4 due to the lower cost of labor in the former country as opposed to the latter group of economies. But in the case of less labor-intensive goods (LLIM, SITC 5, 7, and 9), China's share in the United States market has been increasing steadily from 1980-1994 while Malaysia's share declined from 1980-1990 and increased from 1991-1994.

More importantly, the study showed that the ASEAN-4 as a region experienced a competitive advantage in the United States market as opposed to Herschede (1991)'s results that showed a competitive disadvantage for ASEAN in the Japanese market. This result was attributed to the appropriate emphasis in the MILM in China's industrial structure while ASEAN economies especially Singapore and Malaysia focused, again appropriately, in the LLIM. Moreover the

larger annual capital outflow of the United States in terms of direct manufacturing investment to the ASEAN-4 than to China, particularly between 1992-1994, was also perceived to have contributed to the competitive edge of the ASEAN-4 *vis-à-vis* China.

So far, it can be concluded that China has a growing advantage in labor-intensive goods while Malaysia has a declining advantage in these goods at the SITC single digit. However, in the case of technology-intensive products, the contrasting trend between China and Malaysia was not obtained. Instead, Das (1998)'s study disclosed the *RCA* for technology-intensive goods from China increased from 0.39 to 0.45 between 1980-1993 while Malaysia's comparative advantage for the same product group also increased from 0.15 to 0.75 during the same period. Subsequent study by Sunil (2000) gave additional supporting evidence for the increasing importance of high technology exports from China and Malaysia as well as a few other developing countries. Sunil's *RCA* indices of high technology exports show an improvement in the competitiveness of China and Malaysia in these exports from 1992-1998[2]. However, while Malaysia's *RCA* index ranked third among the developing countries in 1997, China's *RCA* index ranked last in the same year. Wilson and Wong (1999)'s study on the export competitiveness of ASEAN economies between 1986-1995, found Malaysia to be the main rival for Singapore in key manufacturing categories of electrical machinery, telecommunications/ sound equipment and organic chemicals in the Japanese market.

4. METHODOLOGY

4.1. Data

Secondary data is used through out the study. Secondary data are gathered and verified from various sources i.e. International Financial Statistics by IMF, World debt tables and Central Bank of Malaysia.

4.2. Method of Estimation

Equation (4.1) is used to estimate the trade model of Malaysia.

$$NX_t = a_0 + a_1 (GDP_c)_t + a_2 (POPCHIN_c)_t + a_3 (ERCM)_t + a_4 (WTO)_t \qquad (4.1)$$

Where;

NX	=	Net Export of goods and services
GDPc	=	Income (China)
POPCHINc	=	Total population (China)
ERCM	=	Exchange rate of China relative to Malaysia
WTO	=	membership (dummy variable 1 if yes 0 if no)

4.2.1. Unit Root Test

Before estimating equation (4.1), the order of integration of all variables are determined. An integrated series needs to be differenced in order to achieve stationarity. A time series Y_t, that requires no such differencing to obtain stationarity is denoted as $Y_t \sim I(0)$. This is because

only variables that are of the same order of integration may constitute a potential cointegrating relationship. Thus, it is important to determine that the time series of interest have the same order of integration before we proceed into further estimation.

According to Nelson and Plosser (1982), most economic time series appear to be difference-stationary processes. Thus, in numerous studies, the augmented Dickey and Fuller (1981) unit root tests and Philips-Perron Unit Root Test were employed to determine the order of integration of the individual series.

The test is the *t*-statistic on the parameter α from the following equation

$$\Delta Y_t = \delta_0 + \alpha Y_{t-1} + \sum_{i=1}^{L} \delta_i \Delta_{t-i} + \nu_t \tag{4.2}$$

where ν_t is the disturbance term. The role of the lagged dependent variable in the ADF regression equation (2) is to ensure that ν_t is white noise. The null hypothesis, H_0: Y_t is $I(1)$, is rejected (in favour of I(0)) if α is found to be negative and statistically significantly different from zero. The computed *t*-statistic on parameter α, is compared to the critical value tabulated in MacKinnon (1991). The unit root tests were also carried out for first-difference of the variables, that is, the following regression equation is estimated

$$\Delta^2 Y_t = \delta_0 + \alpha Y_{t-1} + \sum_{i=1}^{L} \delta_i \Delta^2 Y_{t-i} + \omega_t \tag{4.3}$$

where the null hypothesis is H_0: Y_t is I(2), which is rejected (in favour of I(1)) if α is found to be negative and statistically significantly different from zero. The optimal lag length in the above equation is identified by ensuring the error term is white noise.

4.2.2. The Cointegration Test

After establishing the stationarity of the data, we have used Johansen (1988) and Johansen and Juselius (1990) approaches to examine the test for a long equilibrium relationship among variables. This involves the test of cointegrating vectors. Considers a *p* dimensional vector autoregression,

$$X_t = \sum_{i=1}^{k} \prod_t X_{t-i} + c + \varepsilon_t \tag{4.4}$$

which can be written as:

$$\Delta Y_t = \mu_t + \Pi\, Y_{t-k} + \sum_{i=1}^{k-1} \Gamma_i\, \Delta Y_{t-i} + \varepsilon_t \tag{4.5}$$

Where

$$\Gamma_i = -I + \Pi_1 + \Pi_2 + \ldots + \Pi_t$$

$$i = 1, 2, \ldots\ldots, k-1$$

$$\Pi = I - \Pi_1 - \Pi_2 - \ldots\ldots - \Pi_k$$

where *p* is equal to the number of variables under consideration. The matrix Π capture the long run relationship between *p* variables, and this can be decomposed in two matrices, A and B,

such that $\Pi = AB'$. A is interpreted as the vector error correction parameter and B as cointegrating vectors. This procedure is used to test the existence of a long run relationship between NX, WTO, ERCM, POPCHIN and GDP in equation (1).

Besides, we have also extended this cointegration analyses by utilizing Johansen procedure, which are two likelihood ratio (LR) test statistics, trace statistic (λ_{trace}) and maximal eigenvalues statistic (λ_{max}) to determine the number of cointegrating vector. The trace value is used to test for the null hypotheses that at most B-cointegrating vectors exist against the alternative of B or more cointegration vectors. Meanwhile, the maximal eigenvalues is used to test for the null hypothesis that at most B cointegrating vectors exist against the alternative of B + 1 cointegration vectors. All cointegration tests have also been compared with Dickey-Fuller's critical values (τ)

4.2.3. The Error-Correction Model

Generally, when two variables are cointegrated, thus there is a long-term equilibrium relationship between them. However, in the short run, there must be disequilibrium. The error correction model (ECM) regressed changes in the variables on lagged deviations from the equation condition. Disequilibrium reflected by the error term should bring about equilibrium changes in the cointegrated variables. In other words, ECM means of reconciling the short-run behavior of an economic variable with its long-run behavior. This error correction procedure is confirmed through a concerning of the t-statistic of the parameters on the one-period lagged value of the residual term in the priori OLS estimate of the levels.

For this purpose, following Engle and Granger (1987), an ECM is employed. The ECM involves estimating the model in the first difference form and adding an error correction term (ECT) as other explanatory variables. In this case, the ECM to be estimated is as follows:

$$\Delta NX_t = \alpha_0 + \alpha_1 \Delta WTO_t + \alpha_2 \Delta GDP + \alpha 3 \Delta ERCM_t + \alpha_4 \Delta POPCHIN_t + \beta ECT_{t-1} + \mu_t \quad (4.6)$$

where the coefficients ás were derived from running the cointegrating regression of consisting NX and its determinants. ECT_{t-1} is the lagged one-period residual from regressing NX with all the determinants selected in this study. Meanwhile, coefficient β represents the speed of adjustment towards the long run equilibrium. The μ_t is an error term.

The ECM involves estimating the model in the differences form and adding an ECT as another explanatory variable. Since changes in WTO, ERCM, POPCHIN and GDP can have a lagged effect on NX, we have also included the lagged values of these variables in the estimation. Appropriate lags are identified using Akaike's (1970) final prediction error criterion.

5. RESULT

5.1. The Test of Stationarity

The unit root property of the series is crucial for cointegration and causality analysis. It was examined by the standard Augmented Dickey-Fuller (ADF). All series have been log-transformed before the analysis.

Table 1 presents the results of the unit root tests for the variables in the trade model both in levels and first-difference. The results indicate that non-stationarity cannot be rejected for the

levels at the five per cent significance level base on the ADF test. When the series are differenced, non-stationarity can be rejected for all series.

Table 1
Integration Test

Variables	*Level*		*First Difference*	
	Lag	*ADF Statistics*	*Lag*	*ADF Statistics*
NX	0	-0.293	1	-4.613*
WTO	4	-0.677	0	-3.629*
GDP	0	-1.137	0	-3.637*
ERCM	0	-1.206	2	-7.279*
POPCHIN	3	-0.666	3	-5.935*

Notes: Asterisk (*) denotes statistically significant at level five per cent level. The calculated statistics are those computed in Mackinnon (1991). The critical values at five per cent for N=50 is -3.49 and -2.91 for -3.49 and -2.91 respectively.

The ADF statistics suggest that all five series are integrated of order one I(1), whereas the first-differenced are integrated of order zero, I(0). Therefore, all series best characterized as difference-stationarity process instead of trend-stationary process.

5.2. The Cointegration Test

Table 2 shows the result of the cointegration test. The results indicate the existence of at least one cointegrating vector, which means that the long run relationship among the variables exists.

Table 2
Johansen Cointegration Test

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic*		*Max-Eigen Statistic*	
		λ_{trace}	*0.05Critical Value*	λ_{max}	*0.05Critical Value*
None *	0.957	126.744	69.819	71.564	33.876
At most 1*	0.795	55.179	47.856	28.149	27.584
At most 2	0.514	27.030	29.797	21.131	23.522
At most 3	0.136	3.508	15.495	3.323	14.264
At most 4	0.001	0.184	3.841	0.184	3.841

Note: Trace test indicates 2 cointegrating equation (s) at the five per cent level
* denotes rejection of the hypothesis at the five per cent level
**MacKinnon-Haug-Michelis (1999) p-values

Table 3 reports the estimates of the long run relationship for the trade model. We found that all independent variables are statistically significant with the correct signs at the five per cent level. These results are consistent with the previous studies. Specifically, the net exports of Malaysia increased by RM4230.37 million due to WTO agreement.

Table 3
Estimates of the Long Run Relationship

Variables	*Coefficient*	*Standard Error*	*t-statistic*
Dependent: NX			
Independent and Constant:			
C	50634.280	20025.550	2.528
WTO	4230.372	768.035	5.521*
GDP	2262.784	577.223	3.920*
ERCM	-1506.807	522.032	-2.886*
POPCHIN	9942.458	20025.550	2.528*
Log likelihood = -330.3428			

Note: * denote significance at 5% level of significance

5.3. The Error-Correction Model

After establishing the long run relationship between NX and the explanatory variables, the short run dynamics of the relationship was examined. For this purpose, an ECM model was estimated. The estimated results are reported in Table 4.

The ECT has correct magnitude and sign. The ECT is strongly significantly different from zero at the five per cent level, thus provide support for the hypothesis of cointegration. The significance of ECT_{t-1} is sufficient to infer cointegration among the variables in question. This result also indicates that there is a long run binding between the NX and its determinant, namely WTO, GDP, ERCM. A negative sign carried by ECT and is significant at the conventional

Table 4
Results of Error-Correction Model

Variables	*Coefficient*	*Std. Error*	*t-statistics*
C	307.738	210.808	1.459
ΔNX_{t-1}	0.782	0.088	8.929*
ΔNX_{t-2}	-0.184	0.157	-1.168
$\Delta ERCM_{t-1}$	407.491	220.562	1.848
$\Delta ERCM_{t-2}$	188.234	197.113	0.955
$\Delta LGDP_{t-1}$	-1602.9	755.961	-2.120*
$\Delta LGDP_{t-2}$	252.949	769.403	0.329
$\Delta LPOPCHIN_{t-1}$	-58198	58910.5	-0.988
$\Delta LPOPCHIN_{t-2}$	48702.4	59104.5	0.824
ΔWTO_{t-1}	-496.21	730.504	-0.679
ΔWTO_{t-2}	1178.53	455.115	2.589*
ECT_{t-1}	-0.524	0.169	-3.112*
R-squared	0.939		
Adjusted R-squared	0.913		
F-statistic	35.484		
Log likelihood	-244.72		
Akaike info criterion	13.877		
Schwarz criterion	14.399		

Note: * denote significant at 5% level of significance and ** denote significane at 10% level of significance level.

level indicates that any deviation from equilibrium in the current period is corrected in the next period.

As for the WTO effect, it takes around two year of lag to see the effect to the NX. This is parallel to the study conducted by Schwalbach and Su (2001) which stated that economic performance could be improved due to obtaining higher survival probability of economic growth rate, higher efficiency in international trade and improved protection of consumer welfare after China join WTO. It is also in line with Zhai and Li (2000) concluding that until 2005, the country's GDP and social welfare increased by 195.5 billion RMB Yuan and 159.5 billion RMB Yuan (1995 price level), respectively, only if China joins the WTO.

After two years of agreement, Malaysia's NX increased by RM1178.53 million, which shows that increased productivity and trade liberalization in China both increase the country's demand for imports and raise investment and welfare in China's trading partners. However, other variables such as NX_{t-1} and $LGDP_{t-1}$ have the statistically significant immediate effect on NX.

6. CONCLUSION

The main focus of this study is to analyze the impact of globalization on trade for the case of Malaysia and China economies. Specifically, the cointegration analysis was used to determine factors that influence the level of trade between Malaysia and China. Both cointegration and ECM test results indicate that WTO has a statistically significant positive effect on NX. Specifically, it takes around two years of lag to see the positive effect to net export. Therefore, this study proves that the trade globalization plays an important role in improving trade performance of Malaysia.

Notes

1. Siew-Yan adopted three methods namely the net export to total trade ratio given by $NX_{ij} = (X_{ij} - M_{ij}) /(X_{ij} + M_{ij})$; and World Export Ratio given by $WES_{ij} = (X_{ij} / X_i)/(X_{wj} / X_w)$ and HTS: Share of Export of High Technology Products as the Percentage of Manufacturing Goods, $HTS_{ij} = (X_{ij} / X_{im})$.
2. Siew-Yean, T. (2001), Can Malaysian Manufacturing Compete With China in the WTO? *Asia Pacific Development Journal*, Vol. 8, No. 2.

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