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THE IMPACT OF THE TERMS OF TRADE SHOCKS ON MALAYSIAN ECONOMY: A GENERAL EQUILIBRIUM ANALYSIS

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ABSTRACT

The importance of the external sector to Malaysian economy means that changes in the terms of trade is one of the main sources of macroeconomic instability to the country. Utilizing the 1-2-3 Computable General Equilibrium (CGE) model, this study examines the impact of terms of trade shocks on Malaysian economy. This study shows that even though Malaysia is industrializing, its terms of trade is deteriorating. Simulations for the model shows that terms of trade deterioration affects key macroeconomic variables negatively, reducing welfare. To lessen the negative impact of terms of trade shocks in the short run, the study proposes a reduction in indirect tax instead of subsidy. In the long run, Malaysia needs to diversify its exports and shifts into technological intensive product. In addition, there should be strong linkage between domestic-oriented sector and export-oriented industries to improve the value added of the exports.

ملخص البحث

إن أهمية القطاع الخارجي بالنسبة للاقتصادِ الماليزي يَعْني أنّ التغيّرات في شروط التبادل التجاري هي إحدى العوامل الرئيسيةِ في عدمِ استقرار الاقتصاد الكلي (macroeconomic) في البلد. وباستخدام نموذج الموازنة العامة الحاسوبية ((Computable General Equilibrium (CGE)) 1-2-3، تختبر الدراسة تأثيرَ صدماتِ شروط التبادل التجاري على الاقتصادِ الماليزي. وقد أفادت أنَّ شروط التبادل التجاري في ماليزيا -على الرغم من كونها بلداً صناعياً- تكون في تدهور. إن تطبيق هذا النموذج على واقع الاقتصاد الماليزي يكشف عن التأثير السلبي لتلك الشروط على متغيرات الاقتصاد الكلي الرئيسي، وبالتالي يؤدي إلى انخفاض الرفاهية. لذلك، لتَقليل التأثيرِ السلبي لصدمةِ تلك الشروط في المدى القريبِ، تقترح الدراسة تخفيض الضريبة غير المباشرةِ بدلاً مِنْ منح الإعانة الماليةِ. أما في المدى البعيد، فتَحتاجُ ماليزيا إلى تَنويع صادراتِها وتَنتقلُ إلى المُنتَجِ المركّزِ التقني. إضافة على ذلك، يَجِبُ أنْ يَكُونَ هناك ترابطاً قوياً بين توجه القطاع المحلي وتوجه صناعاتِ التصديرَ من أجل تَحسين ضريبة شراء السلع الصادرة.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Economics.

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DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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To my beloved wife and beautiful daughter

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

Terms of trade volatility is one of the sources of macroeconomic instability that impedes growth (Easterly, Kremer, Pritchett and Summers, 1993; Barro and Sala-i-Matin, 1995; Bleaney and Greenway, 2001; Hadass and Williamson, 2003). It prevails especially in a small open economy, which depends heavily on external sector such as Malaysia. This study examines the impact of changes in the terms of trade on Malaysian economy, utilizing 1-2-3 Computable General Equilibrium (CGE) model.

The model was firstly developed by Devarajan, Lewis and Robinson (1990), to look at the relationship between the changes in the external environment and the economic condition of developing countries. This model can capture the essential mechanism by which external shocks and economic policies ripple through the economy presented in a certain number of macroeconomic components such as investment, savings, government budget and others. Therefore, it is well suit to analyze the impact of the terms of trade changes on the economy and to find the best policy response to mitigate the impact.

The main analysis of this research is to analyze how key macroeconomic variables, namely (i) Gross Domestic Product (GDP), (ii) consumption, (iii) savings, (iv) investments, (v) government budget, (vi) exports and (vii) imports, are affected by the changes of the terms of trade. As this shock is a price shock transmitted through the real exchange rate adjustment, we also look its impact on domestic prices, which are (vii) output price/GDP deflator, (viii) consumer price/Consumer Price Index (CPI) and (ix) sales price. Based on the main findings, we will find the welfare condition of the country and attempt to propose some policy prescriptions to mitigate the negative impacts.

This study also examines the current condition of Malaysian terms of trade in order to find the magnitude of the shocks, which will be implemented in the model simulation. In addition, by observing the current condition of Malaysian terms of trade, we can identify whether terms of trade problem in Malaysia has been solved. The sensitivity analyses will complement the study by looking at different structures of the economy reflected by the changes on the production and consumption structure in the model.

This chapter is divided into six sections. The next section discusses the role of external sector in the process of economic development in Malaysia. The third section elaborates the relationship between the terms of trade and macroeconomic performances in Malaysia. The fourth section specifies the main objective of the study while limitation of the study is stated in the fifth section. The last section concludes the overall discussion of this chapter.

1.2 THE EXTERNAL SECTOR AND MALAYSIAN ECONOMY

The development of the external sector in Malaysia was strongly related to the process of industrialization in the country (Ariff, 1972 and 1991). Following the World Bank recommendation, Malaysia like other developing countries, started their process of development by depending on the Import Substitution Industrialization (ISI) strategy. Malaysia took the advice and performed a major economic reform plan shortly after gaining independence. The industrialization strategy was devoted to encourage local industrial entrepreneurship and infrastructural development (Alavi, 1996).

Even though the ISI strategy contributed to the development process of the country, it soon came up with the problems on limited domestic market. The local producers failed to achieve international competitiveness, which made exports insignificant. In addition, there was also minimal contribution to job creation (Jomo 1987). Looking at the success of an export-led growth strategy in the Newly Industrialized Countries (NICs), such as Taiwan and Hong-Kong, Malaysian government realized that it is necessary to pursue this economic strategy, which would encourage the growth of export-oriented activities (Toh and Lim, 1990).

In the First Five Year of Malaysia Plan 1966–1970 (Economic Planning Unit [EPU], 1965), the Export-Oriented Industrialization (EOI) was reflected as the formal planning effort by the government. The main objective of the plan was to attract Foreign Direct Investment (FDI) from large multinational corporations and regionally focused investors with a smaller market share. Among other investment incentives given by the government, the main important tool of this strategy in Malaysia was the establishment of Export Processing Zones (EPZ), which showed significant role in the manufacturing activities (Warr, 1987).

Table 1.1.
Foreign ownership of fixed assets in some Malaysian manufacturing industries (%)

Manufacturing Industries	1980	1985
Food	32	25
Beverage and Tobaco	76	67
Textile	54	48
Chemicals	53	16
Leather	48	54
Machinery	42	35
Electrics/electronics	80	73
Transport equipment	32	15
Other Manufacturing	57	53
Manufacturing	39	33

Source: Rasiah (1995)

Nevertheless, the EPZ in Malaysia is still far from being the "engines of development", which is shown by little integration between the domestic and export sector. Recognizing this condition, the government encouraged the return of the ISI strategy by promoting heavy industries program by the end of the 1970s (Rasiah, 1995). Consequently, this policy reduced the support for export-oriented industries in favor of nationally owned import-substitution industries, which then lead to a decline in FDI in almost all manufacturing industries as shown in table 1.1. It was also shown that the export sector decreased while imports rose significantly in line with the import of heavy industry and infrastructural item from 1980 to 1982 (Table 1.2).

Table 1.2
The Growth of Malaysia's Export, Imports and Heavy Industries imports

Year	Total Imports Growth (Percent)	Heavy Industries Imports Growth (Percent)	Total Exports Growth (Percent)
1980	+ 34.1	+ 42.9	+18
1981	+14.9	+ 8.6	-1.7
1982	+ 9.3	+ 16.9	+5.4

Source: Ministry of Finance [MOF], 1984

Looking at this failure and a worsening recession in the mid 1980s, the government returned to support the export orientation strategy to expand investment and employment. The establishment of The First Industrial Master Plan (1986-1995) by promoting the manufacturing sector through foreign investment and export promotion reflected the outward-looking strategy opted by the government. Through this policy, industries that are oriented towards external markets were promoted aggressively and various investment incentives were granted. As a result, the FDI level increased significantly from 325 million Ringgit in 1986 to 6.2 billion Ringgit in 1990, which was also supported by favorable world market condition (Jomo, Liew and Kaehler, 2001). In fact, by 1993, Malaysia was listed among the top ten largest host economies for both FDI flows and stock (United Nations Conference on Trade And Development [UNCTAD], 1995). In the next period, the Second Industrial Master Plan (1996 – 2005) continued the success of this outward looking strategy. In this second phase, the government laid great emphasis on deepening industrial linkages, increasing productivity and improving competitiveness. The whole focus of this strategy was to move up the value added chain to rectify some of the flaws in the first industrial plan (Johan, 2006).

Table 1.3
Industrialization Process and the Development of External Sector in Malaysia

	ISI 1 (1958-1970)		EOI 1 (1970-1980)		ISI 2 (1980-1985)		EOI 2 (1985-Current)	
	1960	1970	1971	1980	1981	1985	1986	2006
Total Export Value to GDP (percent)	47.5	47.4	41.1	58.7	52.9	54.9	56.3	123.7
Total Import Value to GDP (percent)	44.1	36.5	34	54.9	59.1	50.2	49.7	100.6
Proportion of Primary Commodities on Export (percent)	88.6	89.3	88.7	79.9	80.1	44.9	41.9	23.8
Proportion of Manufactures on Export (percent)	11.4	10.7	11.3	20.1	19.9	55.1	58.1	76.2
Proportion of Manufactures on GDP	8.7	12.3	14	18.5	18.2	19.7	21	32

Source: Figures for the 2006 are from Economic Report, 2006/2007
Figures for the 1980 to 86 are from Economic Report, 1985/1986
Figures for the 1970 to 1980 are from Economic Report 1982/1983
Figures for the 1960 are from First Malaysian Plan, 1965-1970

Overall, table 1.3 shows clearly that the industrialization process in Malaysia has influenced strongly the external sector of the country. It is shown by proportion of trade to GDP, which has been progressively increasing along with the process of industrialization. We observe that EOI strategy has given much influence on the establishment of manufacturing industries through export promotion by depending on FDI. This process has transformed the Malaysian economy from primary production to the production of manufactured goods, which is mainly supported by the export-oriented industries.

The rising share of exports in GDP has led to high GDP growth rates. This condition was mostly influenced by the manufacturing sector as its share on total exports increased progressively from 11.4 per cent in 1960 to 76 per cent in 2006. In addition, the proportion of manufacturing output on total GDP also increase from 8.7 per cent to 32 per cent in the respective year. Empirical study showed that greater than 50 percent of GDP growth from 1987 to 1997 came directly from manufacturing, with foreign firms accounting for over 75 percent of manufactured exports (Athukorala, 2001). As a result, trade has had a strong effect on economic growth in Malaysia, where the high proportion of manufactures on total trade situates the industries to be the engine of growth in the process of country's development.

However, high exports of manufactures still depend heavily on high imports content. In 2006, the proportion of intermediate inputs and capital goods on total imports has reached approximately 83 % (Ministry of Finance [MOF],2006/2007). It reflects that Malaysia's dependency on export is still followed by the dependency on imported inputs. Rasiah (1992) observed that import dependency of the manufacturing sector as a whole has remained high, where industries enjoying high export production ratios are still dominated largely by foreign firms. Keong, Choo and Yusop (2004) also proved that there exists a long-run relationship between Malaysian exports and imports.

Finally, the proportion of trade to GDP has reached approximately 224 per cent in 2006. It reflects that international trade has strongly integrated the economy to the world market, which makes the domestic economy to be more sensitive to the external disturbances. Concisely, the terms of trade[1], which is the main transmission channel of external prices to the domestic economy, holds a strategic role in influencing the economic stability, where the impacts may impede growth and economic development of the country.

1.3 THE TERMS OF TRADE AND MACROECONOMIC PERFORMANCE

Malaysia may still bear the terms of trade deterioration even though manufacturing products are the main sources of export earnings. Studies on terms of trade in manufactures found that, over the period of 1970 – 1987, the price of manufactures exports from developing countries had fallen by an average of 1 per cent per annum (Singer and Sarkar, 1991). UNCTAD (2006) relates the relationship of the terms of trade and income growth, stated in Trade Development Report that between 2003 and 2005, the deterioration in the terms of trade of developing countries, which concentrated on manufacturing exports, meant a relative loss of income of close to 1 per cent of GDP per annum.

The relationship of terms of trade to macroeconomic variables in a small open economy have been extensively studied since the early 1950s when Harberger (1950) and Laursen and Metzler (1950) predicted that a deterioration in the terms of trade would reduce real income, thereby lowering savings and investment. Recent study

[1] The terms of trade used in this study is net barter terms of trade, which is ratio of export price to import price.

also suggests that the private savings is affected positively by the terms of trade improvement in high and medium income countries in Asia. As in Malaysia, rapid income growth and terms of trade improvement have been proved to boost private savings (Hariggan, 1998).

Malaysia is categorized as a country where the terms of trade changes record the greatest impact on the real exchange rate. It was proved that Malaysia's real exchange rate volatility would have 18 per cent of total volatility attributed to terms of trade changes (Dungey, 2004). Furthermore, Malaysia had been experienced the largest negative shifts in the terms of trade for the period of 1980 to 2001. Consequently, this negative shift had reduced the purchasing power parity of individual person for approximately US $1,900 for the period (Newman, 2006)

The terms of trade also affect the domestic price level through the import price. The falling terms of trade means that the imported inflation from the trading counter partner can also be the main channel of domestic price changes. Higher import prices on consumption goods will then affect the consumption level of the country. In 2006, Malaysia imported approximately RM 28 billion of consumption goods, which accounted for approximately 11% of total consumption expenditure (MOF, 2006/2007). High import prices may affect the consumption level of the households, as they have to pay higher price for the imported goods. Broda and Tille (2003) show that the terms-of-trade shock may affect consumer prices where under a flexible exchange rate regime, a domestic currency depreciation (7 per cent) feeds into higher prices for imported goods and leads to an increase in consumer prices of 1.7 percent.

As the terms of trade has significant impact on Malaysian macroeconomic variables, it is necessary to look into these variables. Utilizing the 1-2-3 CGE model, this study will identify the impact of the terms of trade shocks on key macroeconomic variables. This study will also come up with policy proposals in mitigating the negative impact of the terms of trade shock while maintaining welfare condition of the country.

1.4 RESEARCH OBJECTIVES

The importance of international trade to Malaysian economy means that the terms of trade is an essential factor in determining the performance of the economy. This study examines the current condition of Malaysian terms of trade and evaluates the effects of the changes to the economy. It also endeavors to propose some policy prescription to mitigate the negative impact found.

The transmissions of external shocks due to movements in the terms of trade will be analyzed using a general equilibrium framework. The framework detailed the linkages among different economic sectors and agents indicated by the changes on macroeconomic variables. As there is no any study applied this framework in analyzing the issue of the terms of trade in Malaysia, it is essential to conduct this study.

We follow the 1-2-3 general equilibrium model (Devarajan, Lewis and Robinson, 1990; Devarajan, Go, Lewis, Robinson and Sinko, 1997), which focuses on the international trade issue to analyze the impact of terms of trade movement. The model is made up of a small open economy with two production sectors and three goods. The major advantage of the model is its simplicity, which makes transparent the mechanisms by which an external shock or policy change affects the economy. Even though minimalist, this two-sector model still behaves in a similar fashion to the more complex multi-sector model.

Overall, the objectives of this study are:

1. To examine the current condition of Malaysian terms of trade
2. To simulate and to analyze the impact of the terms of trade shocks on Malaysian economy.
3. To simulate and to analyze the responses of Malaysian economy to external price shock based on different production and consumption structure through model simulations.
4. To simulate and to analyze the policy shock responses, which mitigate the impact of the terms of trade changes.

1.5 LIMITATION OF THE STUDY

This study utilizes a small model covering only the aggregated sector of the economy. Therefore, it cannot estimate the impact of price changes based on specific sector. The model also assumed perfect competition market, which ignores market imbalances as shown in imperfect market model. Another limitation is that we cannot asses the distribution of income in the economy because the factor markets are assumed constant. It also leaves the time factor that put this model as static model, which is suit only for a short-run analysis.

1.6 CONCLUSION

The external sector of Malaysian economy has been the main contributor to the economic growth of the country along with the process of industrialization. Consequently, the terms of trade become one of the essential factors in determining the performance of Malaysian economy as it reflects the price ratio of exports to imports. The main analysis of this study is to assess the impact of the terms of trade