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# Trade Openness in Malaysia: Evidence from Trade with ASEAN and Australasian Countries

**Dr. Rafiq Idris**
Senior Lecturer at Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah

*Corresponding Author
Dr. Rafiq Idris
Email: rafiq.idris@ums.edu.my

**Abstract:** There is a large literature that relates trade openness and economic growth. My literature survey suggests that Malaysia's WTO accession, active participation in regional trading agreements, trade policy reform in agricultural and manufacturing sectors, government reforms encouraging economic competitiveness and lower trade cost are among the main reasons for explaining Malaysia trade performance and openness. Apart from the role that trade openness has played in Malaysia's economy, this paper's gravity model empirical regression results suggest that other factors such as distance, per capita income in Malaysia and its trading partner and exchange rate also explain significantly Malaysian trade performance with its regional counterparts, namely the major ASEAN and Australasian countries.
**Keywords:** Malaysia, trade performance, ASEAN, economy

## INTRODUCTION

Since gaining independence in 1957, Malaysia has recorded an impressive economic growth with average Gross Domestic Product (GDP) amounting to 6.6% in the 1960s, 7.8% in the 1970s, and 7.3% in the 1990s [1]. This expansion was marked by a rapid structural transformation from an agriculture based economy to a manufacturing dominant economy. This high sustained growth was anchored by an export oriented industrialization strategy introduced during the 1980s which led to rapid industrialization and an export led high growth. Malaysia's poverty rate fell from 49% in the 1960s to below 10 per cent by the end of the century, and in 2007 to less than 5 per cent [2].

Malaysia's exports and imports represent as much as twice the country's GDP. Some economists attributed the magnificent trade performance to trade openness [3-8]. Malaysia's openness is perceived by the leap in ranking in world trade from being the 43rd largest exporting nation in 1980 to 25th in 1990 and 20th in 2007. Furthermore, with a population of 27 million, Malaysia was ranked among the world top 25 leading importers in 2007 with regard to the merchandise trade [9]. In general, ASEAN, the United States, Japan, European Union, China, South Korea, Hong Kong, Taiwan and Australia are the most important trading markets for Malaysia by which total trade amounted to almost 90 percent of Malaysian trade in 2008.

This paper aims to explain the national trade policies reforms and other factors that led to trade openness and increasing trade flows by undertaking a literature review and estimating a regional trade gravity model. The paper's findings suggest that Malaysia's trade openness and performance can be explained by: *i) its WTO accession, ii) active participation in regional trading agreements, iii) trade policy reform in agricultural and manufacturing sectors, iv) government reforms encouraging economic competitiveness* and, *iv) lower trade cost.* Section two offers a literature review on factors explaining Malaysia's trade openness. Section three presents an empirical trade formulation using the gravity model. The final section gives concluding remarks.

## LITERATURE REVIEW: TRADE OPENNESS

Malaysia is often described in the literature as a small, open economy. The word 'small' not only implies its economic size, but also identifies the country as a price-taker with respect to import. An economy is said to be open if the economy permits transactions with the outside world with less barriers. Trade openness is the degree to which a country exhibits a liberal and accommodating trade policy with the rest of the world by having low trade barriers.

Evaluating openness of a country to trade in goods and services is a debatable issue. This argument is illustrated, for example, by the studies that have attempted to measure the openness of Australia. Australia was claimed as has been a long-time advocate of an open, transparent and rules-based global trading system [10], others like Gutmann and Richards [11] find Australia as having low degree of trade openness in 2002 (openness ratio was the third-lowest among the 30 OECD countries), explaining Australia's low openness ratio are due to its distance to the rest of the world, and to a lesser extent its large geographic size.

One measure of openness could be computed by estimating the ratio of trade value flows to the level of the economy's GDP, which are:

$$\text{Openness} = \frac{\text{(Total Export + Total Import)}}{\text{Gross Domestic Product}}$$

There is no consensus among economists as to whether the degree of trade openness influences the growth of output and about the causality between openness and growth [12, 13]. In a similar fashion, Panagariya [14] emphasizes that trade openness is vital, but may not be a sufficient condition for sustained economic growth. In Malaysia, trade is considered to be an integral part of the economy and it is widely perceived that the country is a very open economy [3, 5]. Malaysian trade as a proportion of GDP is relatively large compared to other major ASEAN and Australasian countries, except Singapore (Figure 1), and this trend has been increasing since independence (Figure 2 and Table 1).

**Table 1: Malaysia's Openness since independence**

| Year | Openness at Current Prices (2005) |
|---|---|
| 1957 | 77.77 |
| 1960 | 82.59 |
| 1970 | 73.57 |
| 1980 | 107.63 |
| 1985 | 100.05 |
| 1990 | 140.29 |
| 1995 | 183.6 |
| 2000 | 220.41 |
| 2001 | 203.36 |
| 2002 | 199.36 |
| 2003 | 194.2 |
| 2004 | 210.37 |
| 2005 | 212.1 |
| 2006 | 211.23 |
| 2007 | 200.08 |

Source: Heston, Summers and Aten [15], Penn World Table Version 6.3

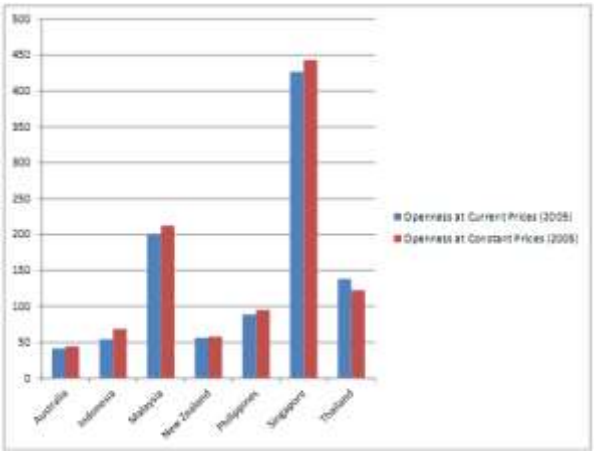


**Fig-1: Comparative Openness between Malaysia and major ASEAN and Australasian economies (Total Trade to GDP ratio (openness))**

Source: Heston, Summers and Aten [15], Penn World Table Version 6.3

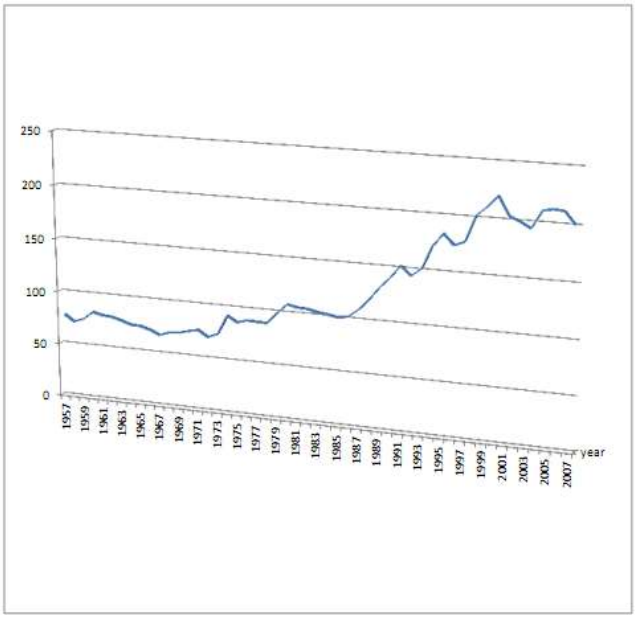


**Fig-2: Openness at Current Prices (2005)**
Source: Heston, Summers and Aten [15], Penn World Table Version 6.3

**Table 2: Openness (current prices) in countries with population of less than 10 million in 2007**

| Country | Population ('000) | Openness (current prices) | | Country | Population ('000) | Openness (current prices) |
|---|---|---|---|---|---|---|
| Palau | 20.59 | 156.97 | | Ireland | 4109.09 | 149.88 |
| St. Kitts & Nevis | 39.55 | 108.86 | | New Zealand | 4132.34 | 56.2 |
| Antigua and Barbuda | 83.42 | 126.67 | | Central African Rep. | 4377.39 | 35.33 |
| Tonga | 116.94 | 75.99 | | United Arab Emirates | 4444.01 | 148.46 |
| St. Lucia | 158.88 | 114.21 | | Croatia | 4493.31 | 103.97 |
| Samoa | 214.26 | 84.21 | | Singapore | 4553.01 | 426.68 |
| Belize | 294.61 | 124.1 | | Norway | 4627.93 | 75.02 |
| Bahamas | 305.65 | 88.61 | | Georgia | 4646 | 93.59 |
| Maldives | 364.97 | 168.31 | | Eritrea | 5357.68 | 43.85 |
| Brunei | 374.58 | 102.06 | | Denmark | 5468.12 | 103.5 |
| Luxembourg | 480.22 | 312.54 | | Papua New Guinea | 5806.04 | 161.98 |
| Solomon Islands | 566.95 | 119.02 | | Libya | 6036.91 | 104.1 |
| Bhutan | 673.35 | 91.77 | | Sierra Leone | 6152.36 | 41.2 |
| Qatar | 814.9 | 117.26 | | Paraguay | 6669.09 | 135.58 |
| Fiji | 918.88 | 126.17 | | El Salvador | 6948.07 | 75.44 |
| Timor-Leste | 1086.17 | 104.6 | | Hong Kong | 6980.41 | 404.11 |
| Guinea-Bissau | 1472.78 | 87.35 | | Israel | 6990.06 | 88.97 |
| Gambia, The | 1688.36 | 87.79 | | Benin | 8278.16 | 47.86 |
| Botswana | 1913.42 | 85.78 | | Burundi | 8390.5 | 62.88 |
| Slovenia | 2009.24 | 144.61 | | Haiti | 8710.83 | 51.21 |
| Kuwait | 2505.56 | 99.43 | | Sweden | 9031.09 | 97.03 |
| Jamaica | 2782.22 | 105.9 | | Somalia | 9291.61 | 2.01 |
| Mongolia | 2951.79 | 121.22 | | Bolivia | 9425.94 | 76.06 |
| Armenia | 2971.65 | 57.97 | | Rwanda | 9907.51 | 36.31 |
| Uruguay | 3460.61 | 59.09 | | Hungary | 9956.11 | 157.65 |

Source: Alan Heston, Robert Summers and Bettina Aten [15], Penn World Table Version 6.3, retrieved from: http://pwt.econ.upenn.edu/php_site/pwt63/pwt63_retrieve.php on 24/9/2009

Some studies discuss the characteristics of an open economy, looking into determinants of openness, or at least at the effect of being open to trade. Edward [16] in his study of open economy characteristics states

that total factor productivity growth is faster in more open economies. His empirical results are robust in the use of openness indicators, and he suggests that more open countries experienced faster growth in productivity.

With regard to studies exploring the determinants of openness, a study by Gutmann and Richards [11] on Australia found that the most important determinants of openness are population and distance to potential trade partners. Countries with larger populations trade less, as do countries that are relatively more remote. Similarly, Alesina and Wacziarg [17] concluded that smaller countries have a larger share of public consumption in GDP, and are also more open to trade. They argue that large countries can afford to have smaller governments and they already benefit from a sizable market which reduces their need to be open to trade. However, this may not be accurate for all cases. For instance, Australia's openness indicator is indeed smaller than Malaysia, Indonesia, the Philippines and Thailand, despite having a smaller population than those countries (Table 2 and 3, for comparison). In addition, Malaysia is having more trade and exhibits a higher degree of openness compared to smaller populated countries like Brunei, New Zealand, Norway, Uruguay, Bolivia and the Netherlands. Thus, population is not the only determinant of openness and does not necessarily have a negative relationship with openness.

**Table 3: Openness (current prices) in countries with population more than 10 million in 2007**

| Country | Population ('000) | Openness (current prices) | Country | Population ('000) | Openness (current prices) |
|---|---|---|---|---|---|
| Czech Republic | 10228.74 | 156.91 | Uganda | 30262.61 | 46.09 |
| Tunisia | 10281.21 | 114.82 | Afghanistan | 31889.92 | 101.35 |
| Belgium | 10392.23 | 174.09 | Canada | 32935.96 | 67.77 |
| Cuba | 11394.04 | 33.46 | Kenya | 36913.72 | 56.05 |
| Angola | 12263.6 | 109.11 | Argentina | 40048.82 | 45.25 |
| Guatemala | 12728.11 | 68.49 | Spain | 40448.19 | 58.93 |
| Cambodia | 13995.9 | 142.48 | Korea, Republic of | 48250.15 | 91.73 |
| Ecuador | 14134.96 | 65.84 | South Africa | 48367.13 | 66.45 |
| Niger | 14214.71 | 56.34 | Italy | 58147.73 | 58.7 |
| Burkina Faso | 14797.17 | 36.15 | United Kingdom | 60776.24 | 55.23 |
| Kazakhstan | 15284.93 | 93.29 | France | 63681.74 | 55.41 |
| Netherlands | 16570.61 | 142.57 | Thailand | 65068.15 | 138 |
| Cameroon | 18060.38 | 54.62 | Iran | 65397.52 | 58.84 |
| Syria | 19314.75 | 79.76 | Turkey | 74767.84 | 66.7 |
| Australia | 20749.63 | 41.23 | Germany | 82401 | 86.44 |
| Sri Lanka | 20926.31 | 68.75 | Philippines | 94157.46 | 88.83 |
| Yemen | 22230.53 | 72.18 | Mexico | 108700.89 | 66.89 |
| Romania | 22276.06 | 77.26 | Japan | 127433.49 | 33.5 |
| Taiwan | 22828.56 | 139.46 | Russia | 141377.75 | 52.84 |
| Ghana | 22931.3 | 95.89 | Nigeria | 143312.1 | 65.44 |
| Malaysia | 24835.24 | 200.08 | Bangladesh | 152033.86 | 52.42 |
| Venezuela | 26023.53 | 51.82 | Pakistan | 169340.54 | 39.39 |
| Uzbekistan | 27079.27 | 72.55 | Brazil | 193918.58 | 25.74 |
| Iraq | 27499.64 | 103.35 | Indonesia | 234694 | 54.32 |
| Saudi Arabia | 27586.53 | 97.16 | United States | 301279.59 | 29.07 |
| Nepal | 27827.89 | 43.44 | India | 1129866.15 | 48.27 |
| Peru | 28809.3 | 50.03 | China | 1321851.89 | 70.98 |

Source: Alan Heston, Robert Summers and Bettina Aten [15], Penn World Table Version 6.3, retrieved from: http://pwt.econ.upenn.edu/php_site/pwt63/pwt63_retrieve.php on 24/9/2009

On the effect of trade liberalization, Sachs [18], has questioned whether trade liberalization is a necessary component of successful outward oriented strategies. Sachs argued that the success of the East Asian countries was to a large extent due to an active government role in promoting exports in an environment where imports had not been fully liberalized. This indeed is relevant to the Malaysian case, in which the government plays a pivotal role in boosting the competitiveness of manufacturing sector while increasingly opening up the economy [4]. On this regard, however, Rodriguez and Rodrick [19], have warned that trade liberalization alone is unlikely to

improve growth without complementary measures like good economic policies and institutional reforms.

Moreover, on the effect of being open, Romalis' [20] study on market access, openness and growth suggest that eliminating existing developed world tariffs would increase developing country trade to GDP ratios by one third. In addition, Anderson [21] states that phasing out distortionary government subsidies and barriers to international trade will yield extraordinarily huge benefits relative to any adjustment costs. As for Malaysia's case, it is evident that openness to trade and capital flow have played an important role in increasing the country's trade overtime.

Furthermore, a study by Cortes [22] on trade between Australia and Latin American countries using the gravity model, suggests that Australia's openness variable is significant for its major trading partners which are Brazil, Chile, Colombia, Mexico, and Peru. Australian openness has high elasticity, especially in the total Australian exports to Brazil and Colombia also in the total Australian imports from Colombia and Chile. This indicates that trade openness have a strong influence in explaining Australian trade with some Latin American countries. In the Malaysia context, there were few studies which have explained Malaysia's trade openness. Studies by Menon [5], have shown that Malaysia is more open to trade since an export oriented industrialization strategy adopted in the 1970s. Chandran and Munusamy [5] emphasize that openness is a vital factor that explain Malaysia's increasing manufacturing products trade. It is indeed consistent with that of Dollar [23], who ranks Malaysia as the eighth most open of a sample of 95 developing countries.

In relation to trade openness, Malaysia's experience can be explained by the following:

**a) World Trade Organization (WTO) accession**

Malaysia has been a WTO member since January 1995 [24]. According to the most recent Trade Policy Review [25], Malaysia has implemented its Uruguay Round commitments, and it has consistently and unilaterally lowered tariffs while participating actively in the Doha Round. The cited benefits of WTO membership: are Most Favored Nation tariff access to WTO member markets, access to the WTO trade disputes settlement process, reduction in trade discrimination, governments shielded from lobbying and the system encourages good government.

Rose [26] when commenting on the significance of trade liberalization and the role of WTO, stated that since the General Agreement on Tariffs and Trade (GATT) began operating in 1948, global merchandise trade has increased 16 times; world trade has grown approximately three times faster than merchandise output. However, Rose doubts that the GATT/WTO has systematically played a strong role in encouraging trade. His empirical results suggest that there is little evidence that countries joining the GATT/WTO have different trade patterns from those who are none member. Contrasting this, Subramaniam and Wei [27], suggest that there is robust evidence that the WTO has had a strong positive impact on trade, amounting to about 120 percent of additional world trade. The effect has, nevertheless, been uneven. He emphasizes that industrial country which participated more actively than developing countries in reciprocal trade negotiations witnessed a huge increase in trade. Bilateral trade was greater when both partners undertook liberalization than when only one partner did and sectors that did not witness liberalization did not see an increase in trade.

Malaysia's active and consistent participation in the WTO may therefore be an important factor in explaining the country's trade openness and performance.

**b) Active participation in regional trading agreements**

Malaysia has also pursued regional and bilateral free trade agreements (FTAs) to complement the multilateral approach to trade liberalisation. Malaysia's involvement in FTAs began with the establishment of the ASEAN Free Trade Area (AFTA) in 1993. To date, Malaysia has concluded bilateral FTAs with Japan and Pakistan, while actively negotiating with the United States of America (USA), Chile, India, Australia and New Zealand. Together with other ASEAN members, Malaysia has concluded regional FTAs with China, South Korea, Japan, India, Australia and New Zealand and is currently negotiating with the European Union. Malaysia has also concluded preferential trading arrangements with members of the Organisation of Islamic Conference (OIC) and the Developing Eight (D8-PTA) (Table 4).

**Table 4: Trade Agreements involving Malaysia**

| No | Country | Date of Signing |
|---|---|---|
| 1 | Malaysia-Japan Economic Agreement Partnership (MJEPA) | 13.12.2005 |
| 2 | Malaysia-Pakistan Free Trade Agreement (MPFTA) | 18.02.2005 |
| | • Early Harvest Programme (EHP) | 01.10.2005 |
| | • Malaysia-Pakistan Closer Economic Partnership Agreement (MPCEPA) | 08.11.2007 |
| 3 | The Framework Agreement on Comprehensive Economic Cooperation | 04.11.2002 |
| | between ASEAN and China | |
| | • Early Harvest Programme (EHP) | 01.01.2004 |
| | • Trade in Goods (TIG) Agreement | 01.07.2005 |
| | • Trade in Services | 14.01.2007 |
| 4 | The Framework Agreement on Comprehensive Economic Cooperation | 13.12.2005 |
| | between ASEAN and Republic of Korea | |
| | • Trade in Goods (TIG) Agreement | 13.12.2005 |
| | • Trade in Services | 12.11.2007 |
| 5 | The Framework Agreement on Trade Preferential System among the | 30.06.2004 |
| | Member States of the Organisation of Islamic Conference (TPSOIC) | |
| | • Protocol on the Preferential Tariff Scheme for TPSOIC | 27.03.2006 |
| 6 | D-8 Preferential Tariff Agreement (PTA) | 13.05.2006 |

Source: MITI 2008 Annual Report (MITI, 2009)

FTAs indeed provide involved countries with the advantages of being able to export in a member's markets at preferential tariff rates, facilitate trade through harmonisation of customs procedures, mutual recognition arrangements and providing an avenue to solve issues concerning standards, technical regulations and health and sanitary measures. ASEAN, for example, has eliminated import duties on 64 per cent of products, with most of the remaining duty affected ranging from 1 to 5 per cent and on average import duty in ASEAN was 1.9 per cent in 2008 [28]. Besides, ASEAN-6[1] has eliminated import duties on 85 per cent of products and an average tariff for intra-ASEAN-6 trade fell to 0.8 per cent in 2008 from 12.8 per cent in 1993 [28]. To a large extent, import duties are no longer seen as a barrier in intra-ASEAN trade as import duty for a substantial portion is less than 5 percent.

**c) Trade policy reform in agricultural and manufacturing sectors**

Malaysia's government has heavily intervened in the manufacturing and agricultural markets by imposing various trade policy regimes. Malaysia's trade policy reform can be divided into four periods:

**Period I** (1957–70)**:** Import substitution industrialization (ISI) strategy introduced to encourage the growth of industries that produced simple consumer goods. Tariffs intended for protecting infant industries producing consumer durables. Moderate tariff rate was the instrument used to encourage new investment in the manufacturing sector. Average tariff in 1965 was estimated at only 13 percent and very few quantitative restrictions used [29].

**Period II (**1970 to 1980)**:** Export-oriented industrialization was introduced and tariffs were gradually reduced [30]. Mild protection measures practised during the ISI phase made the transformation to export-orientated industrialization relatively smooth. Incentives were granted to encourage manufactured exports. Protection of rice products rose in the agricultural sector during this period. Export of manufacturing goods start to increase dramatically.

**Period III (**1980 to 1985)**:** Malaysia introduced a second round of ISI measures for heavy industries, such as automobile, petrochemical, iron and steel, and cement industries. High protection was given for these chosen industries in the form of high import duties, or import restrictions for competing products as part of the move towards heavy industrialization. The average effective rate of protection increased from approximately 25 percent in the early 1960s to 70 percent in the early 1980s [2]. Protection on rice further increased tremendously in the early 1980s [31].

**Period IV (**1985 to present)**:** The economic crisis of mid 1980s led to the introduction of a structural adjustment reform package, including removal of quantitative restrictions and significant tariff reductions. Consequently, the average effective rate of manufacturing protection declined to below 30 percent by the late 1980s [2]. By end of 1980s, further tariff reductions were introduced as part of the common effective preferential tariff (CEPT) of the ASEAN Free Trade Agreement (AFTA) and a second round of

[1] ASEAN-6 refers to Malaysia, Indonesia, Singapore, Thailand, Philippines and Brunei

export-orientation was initiated [2]. More recently, Malaysia's initiative to sign bilateral FTAs with major trading partners is bringing about further liberalization of its trade regime. All in all, by 2005, limited restrictions imposed in Malaysia's trade policy existed only for selected products, such as rice and the automotive industry. Phase IV in particular has seen a substantial liberalization in Malaysia's international trade, which indicates why trade volume is double the value of GDP in 1998.

**d) Government's reforms encouraging economic competitiveness**

The Malaysian government's commitment to boosting the competitiveness of all sectors in the economy can be seen in national policies introduced since the 1960s. Policies prior to 1970s were introduced with the objective to efficiently use natural resources, reducing dependence on raw material exports and expanding domestic production to increase exports of manufactured products [32]. Among the initiatives launched are promotions of traditional and new export products, tax incentives for the private sector to lead industrial development, protection tariffs for selected infant industries. Furthermore, foreign private capital was encouraged and industrial estates, power and communication facilities were provided.

The New Economic Policy (NEP) was implemented during 1971-1990 and it aimed to eradicate poverty, increase exports, and greater cooperation between the private and public sectors. Among the programs undertaken were improvements in export incentives such as the establishment of free trade and export processing zones, by government promoting foreign investment capital and expertise, privatization, reduction of protection for industries to a reasonable level, providing finance for exports and encouraging joint ventures with international corporations using foreign technology and local resources.

The National Development Plan (1991-2000) was announced with the aim of creating a balanced broad-based and international competitive economy and moving towards capital intensive and technologically sophisticated industries. The initiatives which have been undertaken are pioneer status tax holidays, expanded investment tax allowances for expansion projects, tax deduction for export promotions, tax incentives for accelerating productivity and encouraging large scale production for economies of scale through private sector initiatives, liberalization and deregulation of industries and development of a modern, competitive, and technologically innovative small and medium industry sector.

The New Vision Plan (2001-2010) targeted on increasing responsiveness to challenges and opportunities from global competition, enhancing the country's position as a strategic and cost effective location for foreign investment and changing mindsets. Efforts include more efficient use of labor and capital as well as improvement in skills, technology and managerial capability, greater application of information and communications technology and increased intra-regional trade using AFTA and developing new sources of growth, particularly in services. These mentioned national development policies explain Malaysia's commitment towards openness and indeed have increased trade overtime by successfully making the country's product more competitive internationally.

**e) Lower trade cost**

Trade costs are defined as including all costs involved in getting a product to end user other than the marginal cost of producing the good itself. It includes transportation costs (time and freight costs), policy barriers (tariffs and nontariff barriers), information costs, contract enforcement costs, costs associated with using different currencies, legal and regulatory costs, and local distribution costs (wholesale and retail) [33].

Anderson and Wincoop [33] state that trade costs are large in value (approximately 170 percent of total trade barriers) with huge welfare implications (about 10 percent of national income). However, in the Malaysian trade context, since most policy barriers are already low, trade costs involve transportation and distribution costs. Anderson and Wincoop [33] provide some estimates of around 170 percent. A casual observation of automobile markets indicates a price difference of about 40 percent between Malaysia and Thailand. This suggests that trade cost between Malaysia and most of its trading partners have fallen overtime due to collective active participation in regional or bilateral trading arrangements. Lower trade costs may explain why Malaysian trade has increased over the past twenty years.

## EMPIRICAL ANALYSIS USING A GRAVITY MODEL SPECIFICATION OF MALAYSIA'S TRADE WITH SELECTED ASEAN AND AUSTRALASIAN COUNTRIES

An empirical analysis is undertaken using a gravity model specification to understand the degree of elasticity of distance, exchange rate and income in Malaysian trade with selected ASEAN and Australasian countries. Specifically these countries are Indonesia, Philippines, Singapore, Thailand, Australia and New Zealand.

Modeling of bilateral trade flows was pioneered by Tinbergen [34] based on the theory that trade between any two countries is determined by their national incomes and their geographical distance. Later, the initial gravity equation changed and become widely used with other variables [7, 8, 22]. Cortes [22] in his study on trade between Latin America and Australia used the following gravity equation:

$$Ln\ (M_{ij}) = \beta_0 + \beta_1\ .Ln(Y_i) + \beta_2\ .Ln(Y_j) + \beta_3\ .Ln(L_i) + \beta_4\ .Ln(L_j) + \beta_5\ .Ln(Op_i) + \beta_6.Ln(Op_j) + \beta_7\ .Ln(Exr_{ij}) + \beta_8\ Ln.(Ma_{ij}) + \beta_9\ .Ln(D_{ij}) + \varepsilon ij. \quad \ldots\ldots (1)$$

Where i and j are sub indexes referring to country i and its trading partner j. $\beta_0$ is a constant, Y is the value of per capita income, L is the population, Op is the openness, Exr is the bilateral exchange rate, Ma is the Economic Mass, D is the geographical distance and $M_{ij}$ is the dependent variable which refers to the value of export and import.

From the above equation (1), I propose a simplified empirical formulation as follows:

$$Ln\ (M_{ij}) = \beta_0 + \beta_1\ .Ln(D_{ij}) + \beta_2\ .Ln(Y_i) + \beta_3\ .Ln(Y_j) + \beta_4.Ln(Exr_{ij}) + \varepsilon ij. \quad \ldots\ldots (2)$$

Where i and j are sub indexes referring to country which is Malaysia denote by i and its trading[2] partner denote by j. $\beta_0$ is a constant, $D_{ij}$ is the geographical distance between Malaysia and its trading partner, $Y_{i\ is}$ per capita income in Malaysia while $Y_j$ is the per capita income in its trading partner, $Exr_{ij}$ is the bilateral exchange rate, and $M_{ij}$ is the dependent variable which refers to the value of exports and imports between Malaysia and its selected trading partners.

The most commonly used absolute geographical distance variable is the distance between capitals, as a proxy for a country's economic center. This variable is expected to have negative relationship with trade [35]. An increase in distance between countries is expected to increase costs (transportation), and hence reduce trade.

Regarding per capita income variable, this is expected to be positively related to trade [36]. The larger the income of a population, the more it will exports due to its productive capacity, as well as import more due to its absorptive capacity.

The bilateral exchange rate variable is defined in this paper as the number of Malaysia's trading partners' units of currency that can be purchased by one unit of Malaysian Ringgit (RM), thus, foreign currency/RM. The coefficient of the bilateral exchange rate is expected to be negative for Malaysian exports to its trading partners and positive for Malaysian imports. A rise in the exchange rate (appreciation) means that the price of Malaysian currency and products become more expensive while a drop in the exchange rate indicates lower price and cheaper Malaysia's products.

The panel data set are on annual basis, which covers seven countries for the years 1990 to 2007. There are four explanatory variables (income in exporting and importing country, exchange rate and distance) and two dependent variables (total Malaysian export to and import from trading partners).

Ordinary least squares (OLS) pooled regressions were performed on all the six countries 18 years observations, with a total number of observations equal to 108. Bilateral data between Malaysia and each of the six countries under study is combined and analyzed using the following two dependent variables:
1) Total Malaysian exports to selected trading partners
2) Total Malaysian imports from selected trading partners

**RESULTS**

The results in Table 5 suggest that, besides the relative importance role played by trade openness, distance and GDP per capita income are statistically significant in explaining Malaysia's exports and imports with its trading partners in the ASEAN-Australasian region. Moreover, the exchange rate has a significant negative effect on explaining the nation's export with its trading partners.

Distance as predicted has a negative sign which indicates an inverse relationship with trade. The coefficient of distance is statistically significant at 1 percent significance level for both Malaysia's exports and imports. The elasticity value is -0.997489 for Malaysia's exports while the coefficient of distance for Malaysia's import from its ASEAN-Australasian trading partner is -0.832178. This indicates that for an estimated average of 1 percent increase in distance, it will cause a 0.997489 percent decrease in export, holding everything else constant. On the other hand, an estimated average 1 percent increase in distance will cause a 0.832178 percent decrease in imports, holding other things as constant.

This result is indeed similar to the study by Mangunsong and Hapsari [37], who found that distance have statistically significant negative effects on the bilateral exports of ASEAN members. The distance coefficient is -1.31, with statistical significance at 1

[2] From now on trading partner refers to selected major trading partner in ASEAN-Australasian region which are Indonesia, Philippines, Singapore, Thailand, Australia and New Zealand.

percent level. The variable distance represents a barrier in trade with the implicit assumption that transport costs increase with distance. A 1 percent increase in the distance between two countries will lessen their bilateral exports by 1.31 percent, holding other things constant. Similarly, a study by Battersby and Ewing [38] on Australian trade indicates that distance has a negative and significant effect on trade, with slightly lower coefficient which is at -0.53. An estimated average of 1 percent increase in distance will cause a 0.53 percentage fall in Australian trade. Hence, consistent with other studies, distance is negative and statistically significant in explaining Malaysia's trade with its ASEAN-Australasian trading partners.

**Table 5: Results of Gravity Model Regression**

| Independent Variables | Dependent variables | |
|---|---|---|
| | Export (RM) | Import (RM) |
| Income in Malaysia (thousands RM) | 1.943095*** | 1.666847*** |
| | (0.153407) | (0.1732585) |
| Income in trading partner countries (thousands RM) | 0.1357949* | 0.2155363*** |
| | (0.0689878) | (0.0779152) |
| Exchange rate (RM1= units of foreign currency) | -0.0855198** | 0.0102968 |
| | (0.034325) | (0.0387668) |
| Distance (KM) | -0.9974892*** | -.832178*** |
| | (0.044502) | (0.0502607) |
| Constant | 10.38331*** | 10.75778*** |
| | (1.352275) | (1.527265) |
| R-squared | 0.8789 | 0.809 |
| Adjusted R-squared | 0.8742 | 0.8016 |
| Number of observations | 108 | 108 |

*** indicates significance at the 1 per cent level, ** indicates significance at the 5 per cent level and * indicates significance at the 10 per cent level.

For per capita GDP, a proxy for income variable, as predicted will have a positive effect on trade. The variable per capita income reflects the absorptive capacity and purchasing power of a population to buy foreign goods. In addition, it implies productive capacity of a population to export. For income in Malaysia, the coefficient is statistically significant at 1 percent significance level for both Malaysia's exports and imports. The elasticity value is 1.943095 for Malaysia's exports while the coefficient of income in Malaysia for Malaysia's imports from its ASEAN-Australasian trading partner is 1.666847. This indicates that for an estimated average of 1 percent increase in Malaysia's per capita income, it will cause 1.943095 percent increase in export, holding other things constant. On the other hand, an estimated average 1 percent increase in Malaysia's per capita income will cause 1.666847 percent increase in imports, holding everything else constant.

Similarly, for per capita income in trading partner's variable, the coefficient is statistically significant at 10 percent significance level for Malaysia's exports and at 1 percent significance level for Malaysia's imports. The elasticity value is 0.135795 for Malaysia's exports while the coefficient of income in trading partner countries for Malaysia's imports is 0.215536. This implies that for an estimated average of 1 percent increase in Malaysia's trading partner's per capita income, it will cause 0.135795 percent increase in export, holding other things constant. Besides, an estimated average 1 percent increase in Malaysia's trading partner's per capita income will cause 0.215536 percent increase in imports, holding other things constant.

These results are in fact consistent with previous studies, such as of Mangunsong and Hapsari [37], who found that, income in an exporting country has statistically significant positive effects on the bilateral exports of ASEAN members. The GDP per capita income in both reporting and partner country coefficient is 0.46 and 0.35 respectively, with statistical significance at 1 percent level. It means that for an estimated 1 percent increase in the per capita income in both exporting and importing countries, it will increase their bilateral export by 0.46 and 0.35 percent respectively, holding other things constant. Similarly, Cortes [22] in his study on Australia's trade with Latin American countries found that income in Australia has positive and statistically significant effect on Australia's imports from Argentina. The coefficient is 4.09 at significance level of 1 percent. Hence, in line with other studies, income has a positive significant effect in explaining Malaysia's bilateral trade.

For the exchange rate variable, this paper's regression results suggest that exchange rate has a statistically significant negative effect on Malaysia's exports. The coefficient of exchange rate is statistically

significant at 5 percent significance level for Malaysia's exports. The elasticity is, however, low and valued at -0.0855198 for exports. This indicates that for an estimated average of 1 percent increase in exchange rate, it will cause a 0.0855198 percent decrease in exports, holding everything else constant. Thus, any appreciations in Malaysia's currency (Malaysian Ringgit) will cause exports to fall as Malaysian goods become more expensive internationally. This outcome is consistent with Baak's [39] conclusion, in a study on exchange rate volatility of Asian Pacific countries. He concludes that depreciation in an exporting country's currency will lead to an increase in its exports. The coefficient is -0.168 for the observation during 1989-1996 and -0.368 for 1997-2002.

When discussing the influence of exchange rates on imports, this paper's regression results suggest that exchange rate has a positive statistically not significant effect on imports. The coefficient is low with the value of 0.0102968. Consistent with other studies such as that of Cortes [22], exchange rates have insignificant positive effects on Australia's imports from Latin America countries such as Argentina, Chile, Colombia, Mexico and Uruguay.

Regarding the reliability of the model and estimates, this paper's results are consistent with those of other previous studies. There is no difference in the relationship between explanatory and dependent variables. In fact, the elasticity value is close to the coefficients of other previous studies undertaken in terms of magnitude. Moreover, the reported R-squared and adjusted R-squared for present regression indicates a convincing outcome. It implies that more than 80 percent of dependent variables are explained by its independent variables.

To sum up, while trade openness played an extremely important role in Malaysia's improved trade performance, distance, per capita income and exchange rate also played significant role in explaining Malaysian trade in the period 1990 to 2007.

## CONCLUSIONS

Malaysia's trade openness has progressed steadily. This is reflected in its ranking in world trade from being the 43$^{rd}$ largest export nation in 1980 to 20$^{th}$ in 2007. The export-oriented industrialization strategy that began in the 1970s combined with active government initiatives for having free trade arrangements and active participation in WTO, have increased Malaysia's trade overtime. The literature survey suggests that *i) Malaysia's WTO accession, ii) active participation in regional trading agreements, iii) trade policy reform in agricultural and manufacturing sectors, iv) government reforms encouraging economic competitiveness* and, *iv) lower trade cost* are among the main reasons for explaining Malaysia trade performance and openness.

Apart from the role that trade openness has played in Malaysia's economy, this paper's gravity model empirical regression results suggest that other factors such as distance, per capita income in Malaysia and its trading partner and exchange rate also explain significantly Malaysian trade performance with its regional counterparts, namely the major ASEAN and Australasian countries. Consistent with other studies, my literature survey and empirical regression results were not unexpected especially in regard to the relationship between distance, exchange rate, income and the dependent variable. Indeed, exchange rate, per capita income and distance are statistically significant in explaining Malaysia's exports while only per capita income and distance are statistically significant in explaining Malaysia's import.

It can be summarized that Malaysian government's role in formulating national trade and development policies since independence is the key factor in explaining the country's trade performance and openness. It is hoped that current national trade and development policies will continue so that the goal of becoming a top ten highest exporters and developed nation by 2020 is achieved.

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