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Halal Development and Malaysian Exports to Western Asian Countries

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Abstract: Malaysia's economic growth in the past three decades is mostly attributed to its success in the export sector. A major challenge facing Malaysia is its high dependency on a selected few export destinations such as the USA and Japan. In order to further improve or stabilise its economy, Malaysia needs to diversify its export locations. In line with its extensive development in halal-related areas, Malaysia can further promote its halal products to Islamic countries such as Western Asian Countries (WACs). This study attempts to investigate the relevant factors that determine Malaysian exports to WACs, with special attention given to the role of halal development in Malaysia. Employing panel data analysis, this study observes that *halal* development generally plays a significant role in improving Malaysian exports to WACs. As a result, the efforts to promote halal products should be intensified, covering every aspects of the halal processes.

Keywords: Exports, *halal* development, Western Asian countries
JEL classification: F10, F43

1. Introduction

Malaysia has been an exporting country for some 2000 years. Its border with the Straits of Malacca, which is an important international shipping crossroads, promotes the country's international trade. Since the beginning of history, Malacca has served as a regional trading centre for Chinese, Indian, Arab and Malay merchants. The terrain, which consists of extensive coastal plains backed by a mountainous interior, has helped Malaysia emerged as a strategic place to trade.

Since the 1970s, Malaysia has transformed itself from a producer of raw materials into an multi-sector economy. It has been a major supplier of primary products such as tin, rubber, palm oil, timber, oil, liquefied natural gas etc. to the industrialised countries. However, in 1970, exports began to expand to include textiles, electrical and electronic

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goods, rubber products and other goods, helping Malaysia to achieve a multi-sector economy. As a result, Malaysia grew rapidly in the 1980s and 1990s. This remarkable pace of growth is, to a certain degree, argued by many to be attributable to its open policies and emphasis on the role of exports. The relationship between exports and GDP improvement can be seen in Figure 1.

Figure 1 shows the strong relationship between exports and GDP. They have both shown upward trends since 1970. It is interesting to note that before 1997, the Malaysian GDP tended to be higher than exports. However, after 1997, or to be more precise after the financial crisis that struck East Asia in 1997, including Malaysia, exports have had a tendency to be above GDP. This might be explained by the series of economic crises that struck the West from early 2000. For instance, in 2001, the USA, which is the largest Malaysian trading partner, experienced an economic slowdown that forced a lower demand for Malaysian imports. The reduction in demand for Malaysian exports consequently caused Malaysian GDP to be lower than expected. As mentioned by MITI (2011), Malaysia's ongoing recovery from the global economic recession has had a positive impact on its trade performance in 2010. Malaysia has to hope for economic stability in countries such as the USA, Japan and Singapore as they are the top few export destinations. Hence, in order to stabilise its economy, it is important for Malaysia to diversify its export destinations, rather than be too dependent on only a few.

Where and why? This could be our next question. Before we offer potential avenues for Malaysia to explore, let us first discuss the structure of Malaysian exports. Figure 2 depicts two main components of Malaysian exports, namely manufacturing and food. The manufacturing sector is now the primary contributor to Malaysian economic growth (Chandran and Munusamy 2009). As shown in Figure 2, the amount of manufacturing goods exported has been growing over time, albeit falling slightly in the most recent year. A similar pattern can be observed for food exports. What is important for both products, from an Islamic perspective, is the permissibility under Islamic law for these products to be consumed. The simple Arabic word for this is *halal*. While the emphasis for food is

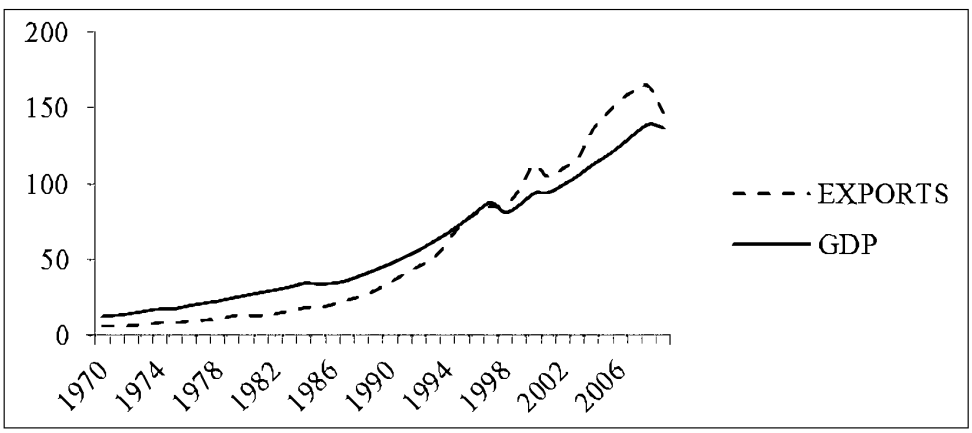

Figure 1. Malaysian exports and GDP (in billion USD)
Source: World Development Indicators (World Bank, 2011 a).

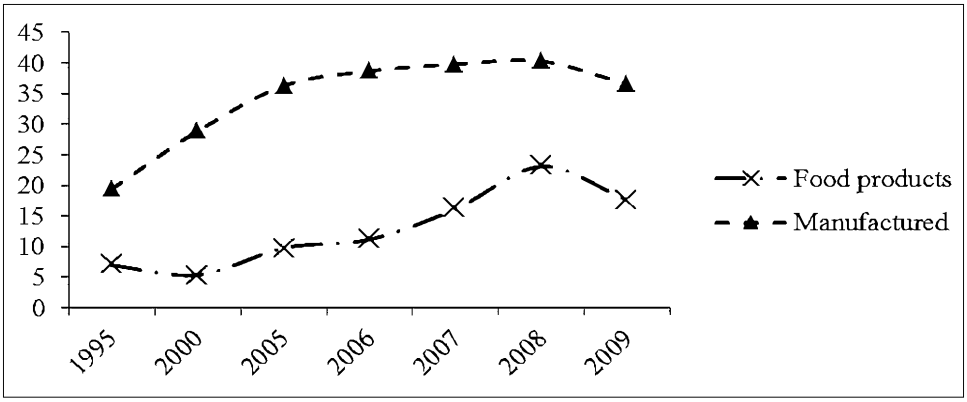

Figure 2. Manufactured and foods exports of Malaysia (in billion USD)
Source: World Bank (2011 a or b????).

mainly on the content itself, the focal point for manufactured products is on the inputs used as well as the manufacturing procedures.

The following section provides details about some areas of development that are taking place to support the *halal* sector. The selling point for Malaysian exports could be the *halal* issue. With this in mind, we can expect to see more active trading between Malaysia and Islamic countries, such as Western Asian countries (WACs), Northern African countries (NACs) and also non-Islamic countries with huge Muslim populations, such as China and India. Although China and India are two growing destinations for Malaysian exports, with China currently ranked as the third largest trading partner and India among the top ten export destinations, the role of *halal* could be secondary.[1] The extent and aggressiveness of the Malaysian authorities in promoting Malaysia as a *halal* hub suggests that the populous and rich Islamic countries should be high priorities as Malaysia's next top export destinations.

Figure 3 depicts the quantities of exports into NACs and WACs as a percentage of Malaysia's total exports. Two things can be observed. Firstly, the demand from WACs is much larger than the demand from NACs. Secondly, although the percentage of exports to WACs is larger than to NACs, the percentage for the whole region is quite low, considering the wealth of some WACs. Hence, this study attempts to examine the factor(s) that might be useful as policy tools in promoting Malaysian halal exports to WACs, a region that offers huge demand for *halal* products.

This study is organised as follows. Section 2 offers a brief background, followed by a discussion on the methodology in Section 3. Section 4 presents results and the corresponding explanations. Section 5 concludes the study and makes some policy suggestions.

[1] However, this could be an interesting issue to investigate, as none of the studies have so far dealt with the implications of *halal* development and export performance. It might not be surprising to identify a significant role for *halal* in promoting exports into these two emerging economic powers.

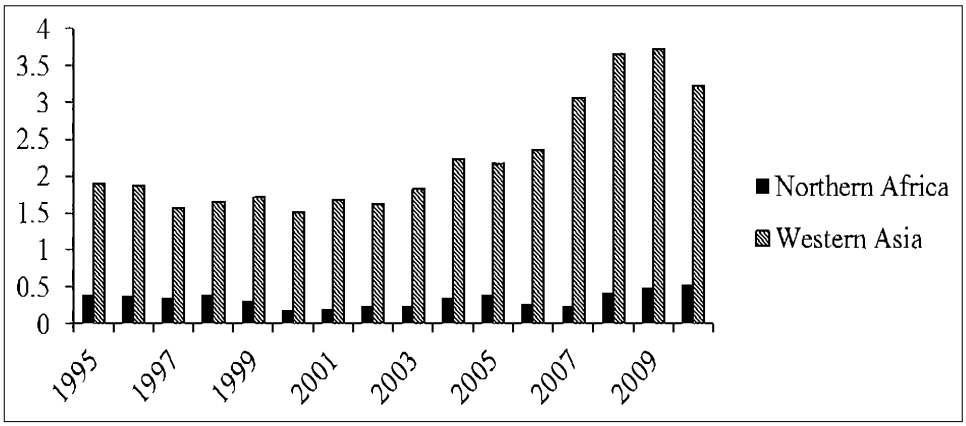

Figure 3. Malaysian exports to WACs and NACs (as % of total exports)

Source: UNCTAD Statistics (UNCTAD, 2011). Northern Africa comprises of Algeria, Egypt, Libya, Sudan, Morocco, Tunisia, and Western Sahara. Western Asia consists of Bahrain, Iraq, Jordan, Kuwait, Lebanon, Palestine, Oman, Qatar, Saudi Arabia, Syria, Turkey, UAE and Yemen. Iran has been omitted due to unavailability of data for several variables.

2. Background

2.1 Prospects for Halal Products

The *halal* industry has been well accepted across the globe. The industry is growing and gaining approval in many parts of the world, including countries such as Singapore, Australia and New Zealand. Australia and New Zealand, which are major producers of cattle-related products, in the form of milk or meat, have embarked on *halal* certification of their products to penetrate markets in Islamic countries such as Malaysia. With small Muslim populations, these two economies have contributed to the increase in world *halal* products. Table 1 provides guidance on gauging the size of the market for *halal* products. Although Indonesia is the most populous Muslim country, India has the largest Muslim population in terms of numbers. The only advantage to dealing more with Indonesia rather than India is because Indonesian people have higher average incomes, implying more demand for products from Malaysia. China is also ranked within the top six in terms of the number of Muslims, although this figure represents only 7 per cent of China's total population. As far as WACs are concerned, we find that all of the countries we selected are almost 100 per cent Muslim. Not only do they offer a huge demand from a Muslim perspective, but some countries like Turkey and Syria also have high average incomes. Hence, they should be the target of Malaysia's exports in the long term.

Which countries have penetrated the WAC markets so far? To show the potential market for Malaysia's halal products, we present the main food exporters to WACs in Table 2. The USA, Brazil and Argentina seem to be the primary trading partners exporting food to WACs. Out of eleven WACs highlighted in Table 2, Jordan, Lebanon, Turkey and Kuwait are the countries to which the USA is the top exporter of foods. Saudi Arabia, Syria and Yemen have Latin American countries (either Brazil or Argentina) as their major source of food imports. Some EU countries such as France, the Netherlands and Germany also have significant volumes of food exports to WACs. For Malaysia, the highest contributions are

Table 1. Top 20 countries with high Muslim populations

	Population (in millions)	GDP per capita (USD)	Muslims (%)	Number of Muslims (in millions)
India	1170.94	829.70	25	295.45
Indonesia	232.52	1180.00	87	203.30
Pakistan	173.38	671.00	98	169.06
Bangladesh	164.43	503.50	90	148.43
Nigeria	158.24	540.90	60	94.92
China	1338.30	2423.27	7	88.89
Egypt	84.47	1942.51	92	77.63
Algeria	35.42	2221.97	99	35.10
Sudan	43.55	523.95	75	32.73
Morocco	32.38	1816.93	98	31.78
Afghanistan	30.61	n.a.	99	30.35
Uzbekistan	28.16	955.12	89	25.14
Malaysia	27.91	5264.13	61	17.06
Mali	15.37	269.90	93	14.27
Cote d'Ivoire	21.57	540.85	70	15.01
Selected WACs				
Turkey	75.71	5137.1	99	75.05
Iran	73.85	n.a.	99	73.19
Iraq	32.30	730.20	98	31.60
Yemen	24.26	n.a.	100	24.24
Syria	21.62	1421.81	92	19.95

Source: International Monetary Fund (2011).

Table 2. Major food exporting countries into WACs (% of total imports) in 2005

WAC	Partner	%	WAC	Partner	%	WAC	Partner	%	WAC	Partner	%
Iraq	Turkey	19.83	Lebanon	USA	8.92	Syria	Argentina	9.89	UAE	India	8.75
	USA	10.91		France	7.57		USA	7.61		Brazil	8.59
	Thailand	5.07		Brazil	7.46		Brazil	6.73		USA	8.59
	Vietnam	3.94	Oman	India	6.43		France	6.47		Netherlands	4.35
	France	3.34		Malaysia	3.63		Egypt	5.44		France	3.60
	Malaysia	0.39	Qatar	Saudi	16.50		Malaysia	2.70		Malaysia	2.99
Jordan	USA	8.31		Malaysia	0.78	Turkey	USA	15.50	Kuwait	USA	13.96
	Argentina	5.93	Saudi	Brazil	9.70		Brazil	5.70		Syria	7.97
	Malaysia	2.09		India	7.45		Argentina	5.64		India	7.19
Yemen	Brazil	12.99		USA	7.09		Germany	4.77		Saudi	5.56
	USA	7.54		Australia	5.89		Netherlands	4.14		Brazil	5.28
	Malaysia	5.74		Malaysia	1.58		Malaysia	5.62		Malaysia	0.39

Note: The chosen countries, except for Malaysia, have at least USD80 million worth of exports to each of their trading partners. The inclusion of Malaysia is simply to compare its export performance to WACs relative to the other major exporters.
Source: UNCTAD Statistics (UNCTAD 2011).

found in Yemen (5.74 per cent of Yemen's total imports) and Turkey (5.62 per cent), but these are far smaller than Brazil (12.99 per cent of imports) and the USA (15.50 per cent) in Turkey. In summary, we observe a very minimal role played by Malaysia in food exports to WACs. As to whether *halal* initiatives can induce WACs to demand more Malaysian products is yet to be tested.

Figure 4 shows the performance of Malaysian *halal* exports to the Organisation of Islamic Countries (OIC). The total Malaysian *halal* exports improved from USD20 billion in 2009 to USD22 billion in 2010 and USD25 billion in 2011, a jump in growth rates of *halal* exports from Malaysia to OIC from 10 per cent to 13.6 per cent. Unfortunately, only approximately 6 per cent of total *halal* exports in 2010 and 9 per cent in 2011 went to OIC. This shows that Malaysia is yet to tap the OIC market, including WACs which offer a huge market for Malaysian *halal* products.

Where is the primary location of Malaysian *halal* exports? To gauge the answer, albeit a bit outdated, Table 3 demonstrates the exports of processed foods to the top 10

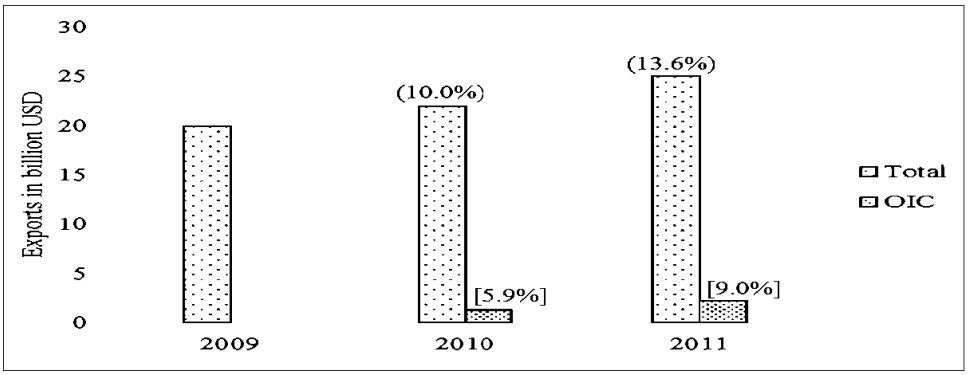

Figure 4. Malaysian total exports and exports to OIC
Source: HDC (2012)

Table 3. Malaysian Processed Food Exports – Top 10 countries

	1996	2000 (in million ringgit)	2005	Average annual growth 1996 – 2005 (in %)
Singapore	564.1	791.2	1,064.9	7.1
Indonesia	72.8	320.3	613.4	22.5
USA	167.4	231.8	580.4	13.4
Japan	152.9	85.3	314.1	6.4
Thailand	43.5	141.7	309.8	26.6
Australia	113.3	149.7	296.1	9.3
Hong Kong	286.5	230.1	249.7	-1.4
Philippines	74.7	111.5	236.0	15.5
Netherlands	113.1	113.4	223.8	7.8
Taiwan	88.7	109.8	166.2	6.2
Total	2,333.4	3,408.4	6,529.9	10.8

Source:http://www.halalrc.org/images/Research%20Material/Literature/Development%20of%20Halal%20Food.pdf

countries. Singapore is the largest export destination for Malaysian processed food exports during the period from 1996 till 2005, followed by fellow ASEAN country, Indonesia and the USA. Another striking point to note is the highest growth of *halal* processed food exports from Malaysia during the period is for the exports to fellow ASEAN countries such as Indonesia, Thailand and the Philippines. This shows that huge opportunities to export *halal* processed foods to WACs are not being exploited fully.

2.2 Halal Development in Malaysia[2]

In Malaysia, several institutions have been established to support the development of the *halal* sector. Among the important *halal*-related institutions are the Department of Islamic Development Malaysia (JAKIM)[3] and the Halal Industry Development Corporation (HDC)[4]. JAKIM is particularly vital as it holds the sole responsibility for issuing *halal* certification. Apart from standard activities, HDC is actively collaborating with many other agencies, locally and internationally, to hold various *halal*-promoting events such as World Halal Forum, world *halal* conferences, world *halal* research summits, World Halal Week, Malaysia International Halal Showcase (MIHAS) and so on. For instance, MIHAS 2014 is the 11th MIHAS, signifying Malaysian efforts to promote *halal* products of Malaysia throughout the world.

HDC provides the necessary infrastructure to facilitate investments in the Malaysian *halal* industry. The establishment of *halal* parks by HDC is among the measures introduced to facilitate the growth of the industry. A *halal* park comprises a community of manufacturing and service businesses located on a company's property. It is considered to be one of the building blocks of the *halal* industry. Table 4 presents the list of *halal* parks either already established, under development or in the planning stage. At present, there are 28 companies operating in these *halal* parks and this number is expected to increase in the future. In addition, there are various supporting services established by the government to ensure the smooth running of the *halal* industry, ranging from the processing procedures to promotions and transportation. Table 5 provides a summary.

3. Methodology

3.1 Brief Review of Theories and Empirical Studies

The importance of trade to economic development is confirmed by several studies, such as those of Dollar (1992), Edwards (1992), Ben-David (1996), Sachs and Warner (1995), Harrison (1996), Edwards (1998), Frankel and Romer (1999), Irwin and Terviö (2002), Dollar and Kray (2003), Alcala and Ciccone (2004) and Noguer and Siscart (2005). Although these studies used different sets of indicators such as trade, openness, tariffs and so on, they all reached a similar conclusion that generally trade (especially exports) is growth-enhancing.[5]

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[2] Other information can be found from Masron, Fujikawa and Nik Azman (2015) and Masron, Nik Azman and Hassan (2014).

[3] In the Malay translation, JAKIM stands for Jabatan Kemajuan Islam Malaysia. Details about JAKIM can be found at *http://www.islam.gov.my.*

[4] Details about HDC can be retrieved from *http://www.hdcglobal.com.*

[5] Pacheco-Lopez (2005), however, argued that a recently discovered fact is that exporters are generally more productive before they enter export markets. Thus, exporting may not directly improve growth or productivity as only the most productive firms can explore markets abroad. In short, we can expect causality to run from productivity to exports, rather than vice versa.

Table 4. *Halal* parks in Malaysia – established, under development and planned

Established	Under development	Planned
Selangor Halal Hub	Prima Halal Food Park	Johor Halal Park
Port Klang Free Zone	Sungai Kapar Halal Park	Sabah Halal Park
Melaka Halal Hub	Perak Halal Park	
Techpark@Enstek	Pahang Halal Park	
Tanjung Manis Halal Hub	Terengganu Halal Park	
Palm Oil Industrial Cluster	Kelantan Halal Hub	
Pedas Halal Park	Perlis Halal Park	
Penang Halal Park	Kedah Halal Park	
Kelantan Halal Park	Labuan Halal Distribution Hub	

Source: HDC (2011).

Several trade theories are available to explain the behaviour of trade across the globe, starting from the classic, yet powerful explanation by Adam Smith, who introduced absolute advantage theory, followed by David Ricardo, who pioneered the concept of comparative advantage. The recent emphasis is more on the capability to create economies of scale as a basis for trade success, such as intra-industry theory and product life cycle theory. Nevertheless, as far as bilateral trade is concerned, the gravity model is the most appropriate.[6] Masron *et al.* (2015) summarised several benefits of applying the gravity model, particularly its power as a tool to examine event studies or qualitative measurements, such as trade agreements and similarity in language and political ideology. The basic idea behind the gravity model successfully captures the reality of trading patterns across the globe. According to Bussière and Schnatz (2009), the rationale of the gravity model, which assumes that bilateral trade correlates positively with economic size and negatively with distance, can be easily proven either graphically or statistically via regression analysis. Graphically, Bussière and Schnatz (2009) showed that countries such as the USA and Japan, which have huge GDPs, tend to have the largest share of export markets. On the other hand, countries with small GDPs, such as the Philippines, Thailand and Malaysia, tend to experience low world market share. Bussière and Schnatz (2009) also proved that China mostly trades with countries that are relatively close, such as Hong Kong, Japan, South Korea and the Philippines. In contrast, countries that are relatively remote from China, such as Mexico and France, have the least amount of trade with China.[7]

How is *halal* development in Malaysia to be positioned in terms of its impact on bilateral trade between Malaysia and each WAC? The power of gravity model, as mentioned above, is due to its ability to handle a dummy representing two trading partners' special characteristics. These characteristics include similarity or commonality issues (e.g. language, border, landlocked, island or culture (see Anderson and van Wincoop 2003; Okubo 2004; Papazoglou *et al.* 2006; Melitz 2007; among others)), events (e.g. economic crises, natural disasters, political change and so on (see Papazoglou *et*

[6] Even bilateral investment, such as foreign direct investment, can also be considered.

[7] Instead of trade volume, Bussière and Schnatz (2009) applied trade concentration, which is measured as the share of country *i* in China's trade to the share of country *i* in world trade.

Table 5. Government supporting agencies for the *halal* food industry

Institution	General function	Detailed functions
DVS, MARDI, SIRIM, UKM, UPM, UUM, USM, Ports, public and private abattoirs	Infrastructure and support services	i. Human resource development, training and educating ii. Slaughtering services iii. Ports and transportation facilities iv. Storage facilities
DVS, MARDI, SIRIM, UPM	R&D and food processing technology	i. Fresh, chilled and frozen meat technology ii. *Halal* food ingredient technology iii. Product development from bio-technology
MDTCC, DVS, Malaysia Royal 1975 Custom	Laws and regulations	i. Laws and regulations: a. Trade description 1972 (Use of Expression "*Halal*") Order, b. Trade Description 1972 (Marking of Food) Order, 1975 c. The Animal Rule 1962-Section 8 ii. Local by-laws: a. Educate consumer b. Handle consumer complaints
MIDA, Public and Private, Financial Institutions	Financial and capital	i. Financed by the promoted products/activities – promotion of investments acts, 1986, under processing of agricultural produce, livestock and livestock product ii. *Halal* food industry financing
MOH, DVS, JAKIM, SIRIM	Institution: 1. Accreditation 2. Health and safety standards. 3. Halal standards.	i. Code of practice for food hygiene ii. Good Manufacturing Practices (GMP) iii. Hazards Analysis, Critical Control Points (HACCP) certification iv. Veterinary Health Mark logo v. *Halal* certification vi. Malaysia *Halal* Standard
MATRADE, MITI	Promotion	i. Conduct international seminars, conferences and trade shows ii. Facilitate the trade-import and export of *halal* products internationally

Note: DVS: Department of Veterinary Services; MARDI: Malaysian Agricultural Research and Development Institute (MARDI); SIRIM: Standards Industrial Research Institute of Malaysia, UKM: Universiti Kebangsaan Malaysia; UPM: Universiti Putra Malaysia; UUM: Universiti Utara Malaysia; USM: Universiti Sains Malaysia; MIDA: Malaysia Industrial Development Authority; MOH: Ministry of Health; MDTCC: Ministry of Domestic Trade, Co-operatives and Consumerism; MATRDE:Malaysia External Trade Development Corporation; MITI: Ministry of International Trade and Industry Malaysia.
Source: pico.neofission.com/websites/agribdccom and HDC (2011).

al. 2006)), economic policy (e.g. liberalisation, deregulation, and so on (see Pacheco-López 2005)) as well as regional factors (e.g. belonging to a certain region such as ASEAN, linkage to certain trade agreements such as NAFTA, or belonging to certain unions such as the EURO currency union (see Kucera and Sarna 2006; Lee *et al.* 2008)). To a certain degree, they can all be pooled into one group reflecting additional costs that exporters have to bear, besides those intrinsic costs such as transportation and customs duties. For instance, similarity in language will help to smooth communications without the

requirement to employ an interpreter. Sharing borders, or whether the two countries are landlocked, also implies lower costs of transportation. This is particularly true if there is a train service connecting the two trading partners, such as Malaysia and Thailand, which will further lower the cost of transportation. Similarity of cultures will ease the process of finding features suitable to include in the products to be exported and, thus, lower the risk of being rejected by the importers. A sense of belonging, through regional trade agreements, such as the ASEAN Free Trade Area (AFTA) and the North America Free Trade Area (NAFTA), or a common currency, such as the EURO, is also expected to induce lower trading costs as trading partners are forced to reduce their barriers among the members while maintaining their barriers against non-members. Thus, under the same argument of similarity, we introduce the concept of *halal. Halal* is an Arabic word meaning permissible or consumable. As all selected WACs and Malaysia are Islamic countries, this similarity will ease the process of penetrating and gaining acceptance into WAC markets without the need to spend too much capital to explain what *halal* is. Hence, theoretically, *halal* development will increase confidence among Muslim consumers in WACs to accept and consume Malaysian exports. In short, *halal* in itself will induce cost-savings and thus will promote bilateral trade between Malaysia and WACs.

3.2 Empirical Model – Gravity Model

A gravity model is employed in this research to evaluate the relationship of trade between two countries. This model measures the relative importance of economic relationships between the source countries and the host countries. Countries that are close to each other and share certain similarities have a tendency to trade more with each other (Obashi 2010). Theoretically, the above three points have set the basis for the gravity model. Generally, trade flows are found to be higher between countries with larger economies, as if these exerted a larger gravitational pull. In addition, the higher the cost of trading between the two trading partners, the lower will be the volume of trade that takes place. Higher cost tends to be associated with longer distance between partners. In short, the basic gravity model is as follows:

$$BT_{ij,t} = AY_{i,t}^{\alpha_1} Y_{j,t}^{\alpha_2} D_{ij,t}^{\alpha_3} \quad (1)$$

where $BT_{ij,t}$ is bilateral trade between country *i* (Malaysia) and *j* (each country in WACs), Y_i represents the size (or mass) of country *i*, Y_j represents the size (or mass) of country *j*, D_{ij} represents the distance between country *i* and its export markets (WACs). *A* is a constant. So, to allow us to estimate a solution to equation (1), we replace *BT* with exports (EXP), proxy *Y* with GDP and transform equation (1) into log form as follows:

$$\ln EXP_{ij,t} = \alpha_0 + \alpha_1 \ln GDP_{i,t} + \alpha_2 \ln GDP_{j,t} + \alpha_3 \ln D_{ij,t} \quad (2)$$

EXP refers to total exports rather than total food exports for two reasons. Firstly, *halal* is not limited to food production. According to a Euromonitor Report (*http://www.tradeandexportme.com/2014/02/a-landscape-of-malaysia-halal-industry/*) the global *halal* industry is composed of processed food and beverages (36%), pharmaceuticals (22%), bakery (12%), primary meat (10%), cosmetic and personal care (9%), nutraceuticals (6%), and confectionery (5%). In other words, apart from food, global demand for *halal*

products and services also include personal care products, cosmetics, pharmaceuticals as well as services covering restaurants, hotels, banking and financing, tourism and logistics. Secondly, we have a separate study dealing with *halal* food exports which is available upon request. To make it self-explanatory, instead of *D* in equation (2), we replace it with *DIS*. Equation (2) is the basic specification for the gravity model. Nevertheless, equation (2) is unable to fully capture the trade behaviour between Malaysia and WACs. We augment equation (2) to include a purchasing power index (proxied by GDP per capita, or *GDPPC*) and *halal* development (*HD)* indicators. Hence, equation (2) becomes:

$$\ln EXP_{ij,t} = \beta_0 + \beta_1 \ln GDP_{i,t} + \beta_2 \ln GDP_{j,t} + \beta_3 \ln GDPPC_{i,t} + \beta_4 GDPPC_{j,t} + \beta_5 DIS_{ij,t} + \beta_6 \ln HD_{i,t} + \mu_t \quad (3)$$

Although equation (3) fits with the basic specification of the gravity model, it may reduce the degrees of freedom of analysis. In addition, as mentioned by Baldwin and Taglioni, (2006)[6] estimating both trading partners' GDP separately is possible, but very often is not rewarding.[8] Combining the GDP and GDP per capita of two countries, we end up with the need to estimate the following equation:

$$\ln EXP_{ij,t} = \beta_0 + \beta_{12} \ln(GDP_{i,t} * GDP_{j,t}) + \beta_{34} \ln(GDPPC_{i,t} * GDPPC_{j,t}) + \beta_5 DIS_{ij,t} + \beta_6 \ln HD_{i,t} + \mu_t \quad (4)$$

As part of a robustness test, we augment equation (4) to incorporate two commonly added explanatory variables, namely nominal exchange rate (ER) and political risk (PRISK). Both variables are among the important export determinants shown in recent studies. Martinez-Zarzoso and Nowak-Lehnman (2003) argued that the exchange rate is an important determinant of bilateral trade flow. Changes in the exchange rate can alter the relative prices of domestic and foreign goods and this shifts demand away from the goods that become more expensive and towards the ones that become cheaper (Yarbrough and Yarbrough 2006: 372). Dollar (1992) supported the idea that exchange rates can alter the relative prices of domestic and foreign goods. In summary, this study implies a strong effect of devaluation and the need for maintenance of a stable exchange rate to improve growth performance in many poor countries via export improvement. Institutional quality is also an important factor impacting trade performance. Poor institutional quality contributes to poor performance in export systems (Redding and Venables 2002). A stable structure condition of institutions will incline investors and traders to deal and trade with a country (Francois *et al.* 2006). Dollar and Kraay (2003) also concurred that countries that trade more are also countries with better institutions. This shows that institutional quality is significantly correlated to productivity (growth). In summary, political risk (PRISK), which is used as a proxy for institutional quality, is expected to exert a positive impact on EXP.

Thus, equation (4) will become:

[8] We tested equation (3). Although the results support the theoretical sign of the estimated coefficients, we have a problem with the magnitude or size of the coefficients. The results are available upon request. In this paper, we decided to pool the GDP as well as the GDPPC, as in studies such as those of Greenaway and Milner (2002), Sohn (2005), Kucera and Sarna (2006) and Lee *et al.*(2008).

$$\ln EXP_{ij,t} = \delta_0 + \delta_1 \ln(GDP_{i,t} * GDP_{j,t}) + \delta_2 \ln(GDPPC_{i,t} * GDPPC_{j,t}) + \delta_3 DIS_{ij,t} + \delta_4 \ln HD_{i,t} + \delta_5 \ln ER_{j,t} + \delta_6 \ln PRISK_{j,t} + \pi_t \quad (5)$$

The detail, measurement and data sources are as highlighted in Table 6.[9]

3.3 Estimation Procedures

Considering that we are having a problem with data on *halal* development, we inevitably have to conduct our analysis by using a panel data approach. In selecting the best model among a few competing models, we use the following steps. In the first place, we will compare the superiority between pooled model and cross-fixed effect model. We use redundant F-statistics to determine which one is superior. Based on past experience, we do expect the fixed effect model to outperform the pooled model and if confirmed, we will compare this result against random-effect model. In so doing, we rely on the Hausman test. Under the null hypothesis, random-effect model is superior to fixed-effect model. As we have six models for each approach, we only present the result of the most superior model, which is the cross-fixed effect.

Several factors contribute to the problem of the *halal* development indicator. Firstly, the data compilation only began a few years ago. It may take time although we plan to trace back to the inception of the *halal* logo. For the time being, as a preliminary

Table 6. Summary of variables – proxy and source

Variable	Proxy	Source
EXP	Malaysian exports to each WAC (as a percentage of total Malaysian exports).	Own calculation, based on UNCTAD (2011)
GDP	Gross domestic product	World Bank (2011a)
GDPPC	Gross domestic product per capita	World Bank (2011a)
DIS	Transportation cost	Malaysian International Shipping Corporation (MISC) Ltd.
HD	3 proxies are used, being the cumulative sum of: i. *Halal* certification every year (JAKIM) ii. *Halal* parks established (PARK). iii. Firms operating in *halal* parks (FIRM). Another 3 dummy proxies (DJAKIM, DPARK and DFIRM) for each of the above events.	JAKIM, HDC
ER	Nominal exchange rate (WAC currency against USD)	Own calculation
PRISK	Governance indicators	UNCTAD (2011) World Bank (2001b)

[9] Initially, we also planned to control the model by adding trade agreements among WACs, such as the Gulf Cooperation Council (GCC). The idea was to double-check whether GCC was creating trade diversion from Malaysian exports to WACs' exports, and thus trade creation with WACs' members. However, as the impact of GCC does not alter the overall model, as in equations (4) or (5), we decided not to add this variable. This scenario is understandable as out of 12 countries, 6 are members of GCC and, therefore, by using the cross-fixed effect, we can still expect the same results to appear.

analysis in the area, we focus only on the data available at JAKIM. Secondly, the second and third proxies for *halal* development are relatively short, as *halal* parks and the firms operating in the parks were only officially launched in 2007. Therefore, the results must be treated with caution. Given the limited observations that we have, we are confined to analysing our data by using the panel static effect only. Starting from pooled data analysis (assuming all pairs or countries are homogeneous), we gradually changed the unrealistic assumptions to control potential heterogeneity among the pairs of countries under study. For data collection, we only covered the period from 2002 to 2009. The constraints are mainly related to data availability.

4. Results and Discussion

We start our analysis by illustrating the descriptive analysis as tabulated in Table 7. What is interesting to note here is that if Malaysia is to be successful in penetrating WACs' markets, the potential of its income level to improve significantly is apparent from the GDPPC and GDP. Of course these figures are multiplied but foretell the opportunity to double. Another remarkable progress about *halal* is regarding the volume of *halal* approval by JAKIM (HJAKIM). From less than 1000, the figure jumped to more than 15 thousand. This means that the number of *halal*-certified products is growing over time, and surely the ability to penetrate WACs' market will allow *halal* producers to market their goods in that region.

We continue with the discussion on the results of correlation analysis, as shown in Table 8. A high correlation between EXP and GDP is as expected. Although identification of the direction of impact (EXP causes GDP or GDP causes EXP) requires detailed analysis, this figure confirms the importance of EXP and GDP to each other. A high GDP implies more capital (some are via retained earnings) that can be used to develop competitiveness

Table 7. Descriptive analysis

	GDP	GDPPC	DIS	HJAKIM	HFIRMS	HPARKS	ER
	(E+21)		(in thousand)				
Mean	9.86	53338. 8	735.85	9.04	8.67	1.67	72.02
Median	3.32	35534.2	738.59	10.43	2.50	1.00	0.99
Max	52.30	201000	981.94	17.29	28.00	6.00	451.91
Min	1.12	2400.9	504.39	0.01	0.00	0.00	0.08
Std. Dev.	13.50	52453.9	115.67	6.93	11.02	2.19	147.22

Table 8. Correlation analysis

	ln EXP	ln GDP	ln GDPPC	ln DIS
ln EXP	1.0000			
ln GDP	0.7288	1.0000		
ln GDPPC	0.2982	0.3852	1.0000	
ln DIS	0.3475	0.2289	0.1093	1.0000
ln PARK	0.2852	0.1882	0.0872	0.8476
ln JAKIM	0.3269	0.2210	0.1077	0.9410
ln FIRM	0.3160	0.1948	0.0918	0.8583

through activities such as R&D, expanding the size of operations and more extensive promotion. Surprisingly, a high correlation is observed for each proxy for HD – 84.8 per cent for PARK, 94.1 per cent for JAKIM and 85.8 per cent for FIRM – with DIS. As the HD variable is introduced for the first time, and no specific study has been conducted in the past, we can only guess the possible explanation. The high correlation might be signaling the importance of addressing, developing and promoting the *halal* issue intensively, especially when a country like Malaysia wants to export its *halal* products to countries that are far apart. In other words, *halal* could be the selling point to promote Malaysia's exports and attract those targeted countries, such as WACs, to import its products.

Despite potential endogeneity issues in the model due to high correlation between DIS and each HD variable, we present the results based on panel OLS. The only elements that we control are the potential heterogeneity and serial correlation in the model. We control the first by using a White adjusted standard error and the second by using a fixed or random effect. We only weakly adjust for the potential endogeneity by using a dummy for each HD variable. The results are as demonstrated in Table 8. The basic gravity model of GDP and DIS consistently display a highly significant role in explaining the export behaviour from Malaysia to WACs in Model 1 to Model 6. Another interesting point to note is the significant impact but with a contrasting sign. For the first and second models (with JAKIM as proxy for HD), we obtained a consistently significant impact of ln JAKIM and DJAKIM on exports, but with a negative sign. The remaining models (3 and 4 for PARK as well as 5 and 6 for FIRM) demonstrate the anticipated results, which are significantly positive. Regardless of this, despite the low or elastic response of EXP on HD, HD seems to have exerted a positive signal and thus can be used as a primary policy variable to be targeted in order to spur exports, particularly to WACs.

However, the results highlighted in Table 8 are probably biased, as they are being distorted by serious endogeneity issues that occurred due to the high correlation between each HD variable and DIS. In order to solve or minimise the risk of being inefficient due to the endogeneity issue, we follow the procedure used by Bénassy-Quéré *et al.* (2007) in which we regress the two highly correlated variables and treat the residual as the new variable for the dependent. To illustrate this, assuming X and Y are highly correlated, we regress X on Y as follows:

$$X_t = c_0 + c_1 Y_t + \varepsilon_t \tag{6}$$

We will then instrument the original X with lagged ε. The modified X, or HD in our case, is the variable that has been isolated from the influence of Y, or DIS in our case. The results of models that employed the modified HD (MJAKIM, MPARK and MFIRM) are presented in Table 10. To check the robustness of the estimations, we also test the augmented model by including ER and PRISK. The impact of GDP and DIS remains intact as in the previous models, although the impact of DIS is slightly larger in the second model, as shown in Table 9. The effect of HD also now seems to be more consistent with our expected sign. All proxies enter positively but only MJAKIM and MFIRM make significant contributions to promoting Malaysian exports to WACs. More importantly, the results are robust to both specifications, with and without ER and PRISK. The final point that captures our interest is the low impact of HD variables on EXP. Two possible explanations can be provided here. Firstly, *halal* development in Malaysia has only recently been promoted extensively.

Table 9. Regression analysis

	Cross-fixed effect model					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-	-	-	-	-	-
	67.6179***	60.0945***	30.6694**	35.0207***	18.9782**	35.0207***
	[-10.6909]	[-6.5917]	[-2.4871]	[-4.1283]	[-2.0525]	[-4.1283]
ln GDP	2.0994***	2.1176***	2.0326***	2.0530***	2.2013***	2.0530***
	[5.1407]	[4.6685]	[4.6377]	[4.7111]	[5.3797]	[4.7111]
ln GDPPC	0.9361*	0.6335	0.8785	0.6248	0.7188	0.6248
	[1.6801]	[1.0879]	[1.5528]	[1.1624]	[1.4374]	[1.1624]
ln DIS	-2.7526**	-2.9795***	-4.9710***	-4.4543***	-6.1473***	-4.4543***
	[-2.5545]	[-2.6583]	[-3.5946]	[-4.0631]	[-5.3709]	[-4.0631]
ln JAKIM	-0.0294***	-	-	-	-	-
	[-4.0998]					
DJAKIM	-	-0.1379**	-	-	-	-
		[-2.4339]				
ln PARK	-	-	0.0678*	-	-	-
			[1.7602]			
DPARK	-	-	-	0.1118**	-	-
				[2.5719]		
ln FIRM	-	-	-	-	0.0732***	-
					[4.6955]	
DFIRM	-	-	-	-	-	0.1118**
						[2.5719]
Model criteria						
R^2	0.9945	0.9929	0.9941	0.9945	0.9955	0.9945
Adjusted R^2	0.9935	0.9916	0.9930	0.9935	0.9947	0.9935
S.E. of reg.	0.3369	0.3277	0.3432	0.3416	0.3379	0.3416
Durbin-Watson	1.8199	1.8575	1.8929	1.9038	1.8028	1.9038
F-statistic						
(overall)	979.19***	755.47***	904.17***	972.74***	1205.47***	972.74***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
F-statistic	284.99***	268.56***		316.64***	338.21***	316.64***
(fixed effect)	(0.0000)	(0.0000)		(0.0000)	(0.0000)	(0.0000)
Hausman test	16.6005***	-	14.4489***	-	14.4489***	-
(random effect)	(0.0023)		(0.0060)		(0.0060)	

Note: Dependent variable is ln EXP. *, ** and *** denote significance at 1%, 5% and 10%, respectively. Model 4 and Model 6 are in essence the same as the dummy periods, albeit having different names, are similarly set. Figures in [ ] are for *t*-values and figures in ( ) represent *p*-values.

The establishment of several *halal* parks, which was intended to further promote the production of *halal*-based products, only commenced a few years ago. Although they are expected to increase in the near future, the limited number of firms that have joined the parks currently offer a limited number of *halal* products. Secondly, *halal* certification is taking place across the globe. All core ASEAN members such as Singapore, Thailand, Indonesia and the Philippines also have their own *halal* certification and logo. Similarly, non-Islamic countries such as Australia, Canada, China and Scandinavian, South African and European countries have also provided *halal* certification for their products. In other words, *halal* certification will probably have a large bearing on altering the preferences of Muslim populations in WACs. However, since all *halal* certifications can be accepted

Table 10. Regression analysis – Modified HD

	Cross-fixed effect model					
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Constant	-	-	-	-	-	-
	52.562***	74.086***	42.879***	59.421***	39.919***	55.095***
	[-6.2241]	[-6.9337]	[-4.6454]	[-8.1935]	[-5.4187]	[-5.6863]
ln GDP	2.1420***	1.7948***	2.0116***	1.8149***	2.2410***	1.9053***
	[4.6663]	[3.5546]	[4.5481]	[3.3007]	[5.6281]	[3.9267]
ln GDPPC	0.3155	0.3321	0.8550	0.7441	0.8363	0.7995
	[0.5370]	[0.5191]	[1.4093]	[1.1389]	[1.6578]	[1.3727]
ln DIS	-	-	-	-	-	-
	3.2301***	1.4396	4.0492***	2.6911*	5.0070***	3.3039**
	[-2.8400]	[-1.1039]	[-3.2534]	[-1.7651]	[-4.8321]	[-2.5699]
ln MJAKIM	0.0343*	0.0592***	-	-	-	-
	[1.7946]	[2.8233]				
ln MPARK	-	-	0.0428	0.0430	-	-
			[0.9880]	[1.1496]		
ln MFIRM	-	-	-	-	0.0761***	0.0727***
					[4.9087]	[4.0659]
ln ER	-	-0.3546	-	-0.2674	-	-0.2053
		[-0.5102]		[-0.5921]		[-0.2938]
ln PRISK	-	8.0597***	-	5.5699**	-	4.9726**
		[3.4161]		[2.0619]		[2.2058]
Model Criteria						
R^2	0.9923	0.9914	0.9938	0.9916	0.9954	0.9935
Adj-R^2	0.9909	0.9896	0.9926	0.9898	0.9945	0.9921
S.E. of reg.	0.3361	0.3307	0.3448	0.3346	0.3317	0.3222
D-W stat.	1.8487	1.8694	1.8602	1.8713	1.7742	1.8691
F-statistic	692.23***	534.86***	859.24***	547.05***	1162.8***	704.73***
(overall)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
F-statistic	282.21***	117.70***	292.47***	118.18***	306.59***	143.41***
(fixed effect)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Hausman test	14.70***	17.89***				
(random effect)	(0.0054)	(0.0065)				

Note: Dependent variable is ln EXP. *, ** and *** denote significance at 1%, 5% and 10%, respectively. Figures in [ ] are for *t*-values and figures in ( ) represent *p*-values.

across the globe, not just Malaysian *halal* certificates, WACs can accept or import any *halal* certified products from any country and not necessarily from Malaysia.

5. Conclusions

This study has investigated the impact of *halal* development that is currently taking place to aggressively grow Malaysian exports to WACs. Applying the gravity model for the period between 2002 and 2009 and pooling 12 WACs as Malaysian trading partners, we observe that *halal* development has generally exerted a positive influence in promoting Malaysian exports to WACs. The low impact is understandable as this development has only recently become intensive. In other words, if the primary reason of low trade between Malaysia and WACs is the *halal* issue, with ongoing aggressive and comprehensive measures related to *halal* certification, the amount of trade is expected to improve in the near

future. For this reason, the low impact or insignificant impact of *halal* development on bilateral trade cannot be interpreted as *halal* development having no role to play. Rather, we can argue that it could be due to the process of replacing the non-certified products to *halal*-certified products of the same products. Hence, *halal* development seems to have zero contribution to expanding the amount of trade. In summary, although the result is not very impressive, it signals the positive role to be played by the *halal* sector in promoting Malaysian exports further. Hence, as Malaysia has already had a head start in the global *halal* market and aspires to be the 'Global *Halal* Hub', to strengthen Malaysia's position in becoming a global *halal* hub, the '*halal* eco-system' is to be solidified to focus on the production, manufacturing and supply of *halal* products and services. The system comprises of all *halal*-related matters namely standards development, training, research and development, innovation, logistics, port services and Islamic financial services. The '*halal* eco-system' will ensure the delivery of premium brands of *halal* products and services to the consumers and also serve as a platform for the *halal* industry players in venturing into the lucrative *halal* market worldwide.[10]

However, this study also observed a serious threat to bilateral trade between Malaysia and WACs posed by distance. DIS was found to be significant and huge in size. This implies that if cost of transporting *halal*-certified products from Malaysia to WACs is taken into account, there is almost no way for Malaysia to strengthen its exports to WACs and to fully exploit the potential to set up Malaysia as a *halal* hub in the world. The only solution left for Malaysia in this scenario is to encourage local entrepreneurs to engage in foreign investment to produce their product in each WAC in order to penetrate WACs' markets.

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