

## The Impacts of Malaysian Free Trade Agreements on Margins of Trade (*Impak Perjanjian Perdagangan Bebas Malaysia ke atas Margin Perdagangan*)

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### ABSTRACT

*The proliferation of Free Trade Agreements (FTAs) is a phenomenon in the world trading system. The number of FTA establishments has increased tremendously, from 55 in 1995 to more than 250 by end of 2014. Malaysia alone has signed twelve FTAs involving twenty trading partners. Using the most aggregated data at the Harmonized System six-digit level from 1994 to 2014, this paper examines the impacts of twelve Malaysian FTAs on two trade adjustments: namely, extensive and intensive margins. Our results show that, for most of the FTAs, the trade is created along the intensive margin when FTAs enter into force. Interestingly, most of them are regional FTAs in which there has been a shift in overall trade patterns—a 4.0% reduction in trade of new products (extensive margin) generated from bilateral FTAs to a 41.6% increase in trade of existing products (intensive margin) from when regional FTAs entered into force. These findings may be contrary to the views that countries prefer to negotiate and sign more bilateral FTAs because of the trade benefits that may be gained from deeper market access than is possible with regional FTAs.*

*Keywords: FTA; liberalization; extensive margin; intensive margin; gravity model*

### ABSTRAK

*Percambahan Perjanjian Perdagangan Bebas (FTA) merupakan satu fenomena dalam sistem perdagangan antarabangsa. Bilangan FTA telah meningkat dengan ketara daripada 55 pada tahun 1995 kepada lebih 250 menjelang akhir tahun 2014. Malaysia sahaja telah menandatangani dua belas FTA yang melibatkan dua puluh rakan dagangan. Kajian ini menggunakan data panel Sistem Harmonisasi (HS) tahap enam digit dari tempoh 1994-2014. Kajian ini bertujuan meneliti kesan dua belas FTA Malaysia ke atas dua margin perdagangan iaitu margin perluasan dan margin intensif. Keputusan kajian menunjukkan bahawa majoriti daripada FTA tersebut memberi kesan lebih besar ke atas margin intensif. Sebahagian besar kesan ini adalah dari FTA serantau yang mana terdapat perubahan dalam keseluruhan pola perdagangan iaitu pengurangan sebanyak 4.0% terhadap perdagangan produk-produk baru (margin perluasan) daripada FTA dua hala kepada peningkatan 41.6% dalam perdagangan produk yang sedia ada (margin intensif) daripada FTA serantau. Penemuan kajian ini mungkin bertentangan dengan anggapan bahawa FTA dua hala lebih memberi manfaat melalui akses pasaran yang lebih mendalam.*

*Kata kunci: FTA; liberalisasi; margin perluasan; margin intensif; model graviti*

### INTRODUCTION

The conclusion of the Uruguay Round negotiations in 1994 and the establishment of the World Trade Organization (WTO) on January 1, 1995 were the two key achievements in further promoting trade liberalization through reduction of both tariffs and non-trade barriers. Nevertheless, since the progress of the Doha round trade talks has been slow and limited, countries have diverted their resources to Free Trade Agreements (FTAs) as a means of greater market access (Menon, 2007), and Malaysia is no exception. FTAs, in fact, have been part of the landscape of multilateral trading system since before the General Agreement on Tariffs and Trade (GATT) 1947 came into existence. The formal acknowledgement given to the customs unions and free trade areas is provided through Article XXIV of GATT, which exempts such

arrangements from the non-discriminatory principle of most-favored nation, as provided under Article I of GATT.

Despite the view that the multilateral approach is still the “first-best” liberalization policy (Baldwin & Freund 2011), the number of FTA establishments is undoubtedly growing in various forms and shapes. From approximately 55 FTA establishments that were in place at the time of the creation of the WTO in 1995, the number of FTAs in force has grown to more than 250 by end of 2014 (see Figure 1).

Figure 1 shows the proliferation of FTAs by types of agreements. Since the 1990s, there has been a drastic increase in the total number of FTAs. From 19 FTAs in force from 1958 to 1989, the number expanded to 43 FTAs by end of the 1990s. From Figure 1, we can observe a few crucial facts: (i) there was a rapid increase in FTAs after the mid-1980s, with an approximate increase of 144% from

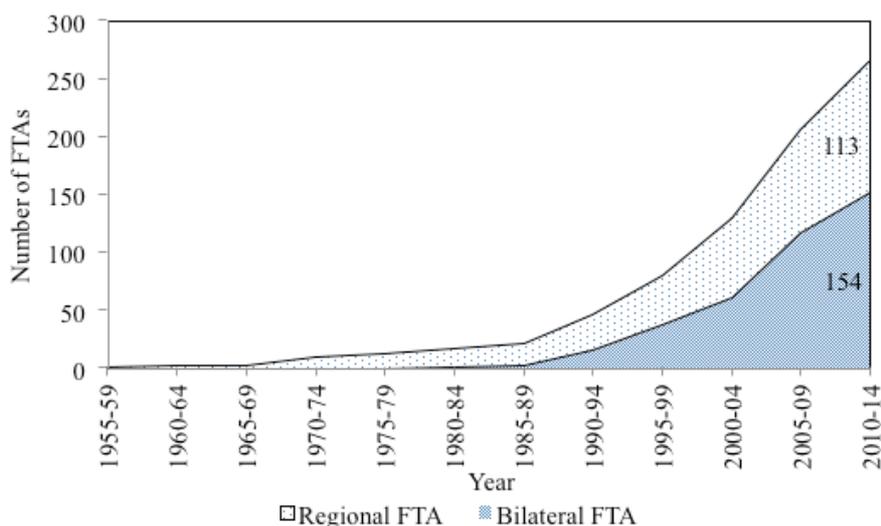


FIGURE 1. Cumulative number of FTA by types, 1955–2014  
 Source: WTO's regional trade agreements information system

the period of 1985–1989 to the period of 1990–1994; (ii) the enormous importance of bilateral integration vis-à-vis regional integration only emerged from the period 2005–2009, in which a total of 117 bilateral FTAs were in force, compared to 90 regional FTAs, and (iii) by the end of 2013, there was a clear shift of preference away from regional FTAs to bilateral FTAs, with a total of 267 FTAs consisting of 154 bilateral and 113 regional FTAs, already in force. Out of this number, 89 FTAs entered into force in ASEAN countries alone during the same period. At the end of 2014, Malaysia, which maintained its ASEAN centrality for more than a decade in its scope of regional trade policy—through AFTA (1992), ASEAN-China FTA (2002), and ASEAN-Korea FTA (2005)—also adopted an increasingly popular path of accelerating liberalization by signing seven bilateral FTAs.<sup>1</sup>

In the light of notable proliferation of FTAs, we observed a large number of studies measure the impact of FTAs on trade flows and welfare. We also found that emerging empirical literature has been devoted to FTAs and their impacts on trade that are created along with extensive and intensive margins. Our paper contributes to the emerging popularity of trade margins by focusing on a rarely explored area of the impacts of Malaysian bilateral and regional FTAs on extensive and intensive margins based on gravity model. Additionally, there is little evidence that the impacts of these FTAs on trade margins have been dealt with comprehensively in existing empirical research. This paper also utilizes the most recent and comprehensive disaggregated import data, compared to previous studies. In view of this, this paper aims to examine the impacts of Malaysian FTAs on extensive and intensive margins from 1994 to 2014. Our empirical findings show that most of the covered FTA dummy variables have significant and positive estimates on trade, which are created along the intensive

margin when FTAs enter into force. Additionally, and interestingly, most of them are regional FTAs in which there has been a shift in overall trade i.e., a 4.0% reduction in trade of new products (extensive margin) generated from bilateral FTAs to a 41.6% increase in trade of existing products (intensive margin) from regional FTAs.

This paper is organized as follows: section two presents the literature review; section three discusses the data, the model specification, and the methodology; section four presents the empirical findings; and the last section concludes the paper.

## LITERATURE REVIEW

Key contributions toward better understanding of economic integration and its impacts can be found in Balassa (1961) and McCarthy (2006), who based their work on the customs union framework laid out by Viner (1950). The merits of a customs union (or an FTA) for both member and non-member countries have long been an issue of contention for economic scholars and policymakers. Most discussions in the earlier literature focused on the issue of whether the changes in trade policies—e.g. FTAs or tariff instruments—either create or divert trade, and whether these impacts either improve or deteriorate welfare.

The research on the impacts of FTAs on trade flows is considered as a subset of a broad theme of trade liberalization literature. We observe that there have been numerous studies examining the impacts of liberalization of FTAs on trade flows, using methods such as computable general equilibrium (CGE) (e.g., Itakura, 2014; Kim et. al 2014) and a gravity model (e.g., Dai et. al 2014; Martínez-Zarzoso 2013; Sheng et. al 2014; Yean & Yi 2014). Most of these studies evaluate the

trade impacts at either aggregated or disaggregated level, based on the traditional Viner's (1950) trade creation and trade diversion FTA effects. Using the CGE method, Itakura (2014) examined the impacts of different types of economic integration in ASEAN and found that the reductions in tariffs have significantly improved ASEAN members' welfare. Meanwhile, Abe's (2010) CGE analysis found that Japan's FTAs brought only small gains to Japan. Earlier work employing a gravity model to examine FTA impacts on trade can be found in Baier and Bergstrand (2007). They employed panel data of 96 countries between 1960–2000, and the result shows that trade increased by approximately 100% after 10 years of entry into force.

The growing body of literature puts emphasis on imperfect competition and heterogeneous firms to further explain the patterns of trade into trade of new products (extensive margin) and existing products (intensive margin). We find that emerging empirical literature has been devoted to liberalization policies and their impacts on trade by decomposing trade along with extensive and intensive margins. Bensassi, Márquez-Ramos, and Martínez-Zarzoso (2012) examined the impacts of North Africa's EuroMed agreements on four African countries and found larger impacts on the intensive margin than on the extensive margin. In contrast, other research, such as Debaere and Mostashari (2010), that applies probit analysis has shown larger impacts on the extensive margin for goods exported to the US by North American Free Trade Agreement (NAFTA) trading partners, namely Canada and Mexico, in which has increased from 5% for 1989–1999 to 12% for 1996–2006. However, Foster (2012) found mixed results for European FTAs with a larger extensive margin for the European Union (EU) and a larger intensive margin for European Free Trade Association, or EFTA. A more recent study by Baier et. al (2014) looking at the trade margin impact from various types of FTAs. They found that deeper economic integration had a larger impact on the extensive margin

than did shallower integration. To the best of our knowledge, there have been no comprehensive empirical studies examining the impact of Malaysian FTAs on trade margins based gravity model. It is also interesting to observe how the impact of FTAs might vary between the two types of FTAs: bilateral and regional FTAs. These findings may be contrary to the views that countries prefer to negotiate and sign more bilateral FTAs because of the trade benefits that may be gained from deeper market access than is possible with regional FTAs (Kawai & Wignaraja 2014).

## DATA AND METHODOLOGY

This paper utilizes the gravity model to examine the impacts of trade liberalization following entry into force of Malaysian FTAs—six regional FTAs and six bilateral FTAs—on extensive and intensive margins of trade between trading partners. This study employs a panel dataset of manufactured goods imports based on the Harmonized System (HS) six-digit level compiled by the United Nations Commodity Trade, or COMTRADE, database from 1994 to 2014 for 48 countries in the Malaysian FTA network (see Table 1). These countries cover nearly 80 per cent of world trade, since the network includes large trading nations, such as EU-28 countries, the US, Japan, China, India, Australia, New Zealand, and ASEAN countries. There is an annual number of  $48 \times 47 = 2,256$  bilateral import flows between 48 importers and 48 exporters from 1994 to 2014. Overall, there are 6,292 products at the HS six-digit level, with 51,416,398 import flows between the 48 countries throughout a 21-year period. These import flows are later used to decompose the extensive and intensive margins. In dealing with these margins, we follow the approach of Nguyen (2014) and Foster (2012) in adapting the Hummels and Klenow (2005) (HK) methodology in decomposing the FTA impacts into the extensive and intensive margins.

TABLE 1 List of countries in the sample

Australia	Estonia	Latvia	Portugal
Austria	Finland	Lithuania	Romania
Belgium	France	Luxembourg	Singapore
Brunei	Germany	Malaysia	Slovakia
Bulgaria	Greece	Malta	Slovenia
Canada	Hungary	Mexico	Spain
Cambodia	India	Netherlands	Sweden
Chile	Indonesia	New Zealand	Thailand
China	Ireland	Pakistan	Turkey
Croatia	Italy	Peru	United Kingdom
Cyprus	Japan	Philippines	United States
Czech Republic	Rep. of Korea	Poland	Vietnam

Other data for explanatory variables are obtained from various sources. The GDP and the population of the importers and exporters are obtained from the World Development Indicators of the World Bank. The time-invariant data for common border, common official language, and geographical distance are obtained from the Centre D'etudes Prospective et D'informations Internationales, or CEPII.

DECOMPOSITION OF EXTENSIVE AND INTENSIVE MARGINS

The methods of decomposing the extensive and intensive margins vary, depending on how the importance of a product is perceived in a particular sector or industry in an economy. One method of decomposing the extensive margin simply follows the simple counting of the number of products or exporting firms. Decomposing the intensive margin relies on averaging the trade value per product category or value per exporting firm, such as in Dutt et. al (2013) and Foster (2012). However, this method suffers from a limitation since it does not take into account the relative importance of a product in one country's market because simple counting assumes that two products have similar extensive margins although these two products have different market shares. The advantage of the HK method is that there is no bias caused by a dominant of either any single product or a few products traded between countries.

Based on HK's methodology, the extensive margin is decomposed as:

$$EM_{ijt}^n = \frac{\sum_{n \in N_{ijt}} \sum M_{iwt}^n}{\sum_{n \in N_{iwt}} M_{iwt}^n} \tag{1}$$

where  $EM_{ijt}^n$  is the extensive margin calculated based on the value of imports of product  $n$  of countries  $i$  from  $j$  in year  $t$ .  $n$  is a product at the HS six-digit level.  $EM_{iwt}^n$  is the value of imports of product  $n$  of country  $i$  from the rest of the countries in year  $t$ .  $N_{ijt}$  is the subset of all products in which the importing country  $i$  has positive (non-zero) imports from country  $j$  in year  $t$ ; hence  $EM_{ijt}^n > 0$ .  $EM_{iwt}^n$  is the set of all products imported by  $i$  from the rest of the countries in year  $t$ . Therefore,  $EM_{ijt}^n$  can be said to measure the relative importance of each product of country  $j$  in country  $i$  vis-à-vis imports of that product from the rest of the countries. Construction of HK shows that the value of the extensive margin is between 0 and 1 ( $0 \leq EM_{ijt}^n \leq 1$ ), where getting closer to 1 means a greater diversity of country  $i$ 's imports from  $j$ , as compared to  $i$ 's imports from the rest of the countries. The extensive margin equals 0 when there are no imports by country  $i$  from country  $j$  and equals 1 if country  $i$  only imports from country  $j$ . In this context, the advantage of the HK methodology is that it does not allow a product to become too dominant if a country exports a large quantity in a subset of products, as per the simple counting method (Lee & Kim 2012).

The corresponding intensive margin of goods imported by country  $i$  from country  $j$  is as follows:

$$IM_{ijt}^n = \frac{\sum_{n \in N_{ijt}} \sum M_{ijt}^n}{\sum_{n \in N_{iwt}} M_{iwt}^n} \tag{2}$$

where  $M_{ijt}^n$  is the value of imports by country  $i$  from country  $j$  of product  $n$  in year  $t$ , while  $M_{iwt}^n$  is the value of imports by country  $i$  of product  $n$  from the rest of the countries. Therefore, the intensive margin, as defined by HK, represents the market share of product  $n$  of country  $j$  in country  $i$ 's total imports from the rest of the countries.

The properties of HK's methodology on extensive and intensive margins show that the ratio of the imports of country  $i$  from country  $j$  relative to the total import of country  $i$  from the rest of the countries in year  $t$  equals the product of the two margins in year  $t$ :

$$EM_{ijt}^n IM_{ijt}^n = \frac{\sum_{n \in N_{ijt}} \sum M_{ijt}^n}{\sum_{n \in N_{iwt}} M_{iwt}^n} = \frac{M_{ij}}{M_i} \tag{3}$$

where  $M_{ij}$  denotes country  $i$ 's imports from country  $j$ , and  $M_i$  denotes country  $i$ 's total imports from the rest of the countries.

GRAVITY MODEL OF INTERNATIONAL TRADE

This paper uses the gravity model to examine the impacts of FTA liberalization of both bilateral and regional FTAs on the parallel extensive and intensive margins of trade as:

$$EM_{ijt}^n = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln DIST_{ij} + \beta_6 BOR_{ij} + \beta_7 LAN_{ij} + \sum_k \beta_k FTA_{ijtk}^B + \sum_l \beta_l FTA_{ijtl}^R + \Omega_i + \theta_j + \varphi_{ij} + \delta_t + \varepsilon_{ijt} \tag{4}$$

$$IM_{ijt}^n = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln POP_{it} + \beta_4 \ln POP_{jt} + \beta_5 \ln DIST_{ij} + \beta_6 BOR_{ij} + \beta_7 LAN_{ij} + \sum_k \beta_k FTA_{ijtk}^B + \sum_l \beta_l FTA_{ijtl}^R + \Omega_i + \theta_j + \varphi_{ij} + \delta_t + \varepsilon_{ijt} \tag{5}$$

where  $EM_{ijt}^n$  and  $IM_{ijt}^n$  are the dependent variables for the extensive margin and the intensive margin, respectively, for country's  $i$  imports from country  $j$ . The right-hand side of equations (4) and (5) include a set of control variables that are proxies for both economic sizes and trade costs. The GDPs for both countries  $i$  ( $\ln GDP_{it}$ ) and  $j$  ( $\ln GDP_{jt}$ ) at time  $t$  are proxies for economic size, which represent the potential demand for country  $i$  and the potential supply for country  $j$ , respectively, and should positively impact trade. The populations in countries  $i$  ( $\ln POP_{it}$ ) and  $j$  ( $\ln POP_{jt}$ ) are interpreted as market size, and the expected signs should be positive. Distance (in km) between the capital cities of countries  $i$  and  $j$  ( $\ln DIST_{ij}$ ) represents trade cost and is expected to have a negative sign.  $BOR_{ij}$  and  $LAN_{ij}$  are the dummy variables for common border and common language, respectively, between countries

$i$  and  $j$ , and they take the value of one if both countries share a common border and a common language, and 0 otherwise.

$\sum_k \beta_k FTA_{ijt}^B$  is the sum of the bilateral FTA dummy variables<sup>3</sup> and  $FTA_{ijk}^B$  is a dummy variable for bilateral FTA membership, which assumes the value of one if an FTA formed between countries  $i$  and  $j$  in year  $t$  enters into force. The bilateral FTA dummy variables are applied to capture the effect of bilateral FTAs on extensive and intensive margins of trade.  $\sum \beta_l FTA_{ijlt}^R$  is a sum of regional FTA dummy variables,<sup>4</sup> with  $FTA_{ijlt}^R$  as a dummy variable for regional FTAs taking the value of one if both countries  $i$  and  $j$  are the members of the same regional FTAs. The expected signs for bilateral and regional FTA are positive since FTAs are expected to promote trade among member countries; hence, the impacts of FTA on extensive and intensive margins are also positive when these two types of FTAs enter into force.

To both deal with bias in gravity estimation and control unobserved heterogeneity, multilateral resistance terms (unobserved trade cost), and other unobserved country's specific characteristics, Anderson and Wincoop (2003), and Baldwin and Taglioni (2006) suggest including country-specific, country-pair, and time fixed effects in the augmented gravity model. The augmented gravity model in equations (4) and (5) includes  $\Omega_i$  to denote the importer fixed effects and importer-year fixed effects that address unobserved country heterogeneity and are added in turn.  $\theta_j$  denotes the exporter fixed effects and exporter-year fixed effects that are added in turn. To control for heterogeneity across country-pair, the country-pair fixed effects  $\varphi_{ij}$  are introduced. The country-pair fixed effects are used to capture time-invariant variables, such as language and common borders.  $\delta_t$  denotes a time fixed effect to control for cyclical changes.

## EMPIRICAL RESULTS

Prior to empirical estimates, such as Pooled Ordinary Least Squares, or POLS, which can lead to biased and inefficient estimates, this paper uses the Breusch–Pagan Lagrange multiplier test to determine the presence of an unobserved heterogeneity issue. The test shows that there is a significant variance across entities, a sign that unobserved heterogeneity is a problem. Further, we conduct a Hausman test to check for orthogonality between unobserved heterogeneity in error terms and the regressors. The test finds that the null hypothesis of no correlation between unobserved heterogeneity and regressors is insignificant, therefore the fixed effects model is most appropriate for empirical estimates.

Table 1 presents the regression results of the gravity model using the preferred fixed effects estimator. The gravity model imposes two coefficients on the FTAs, both bilateral and regional FTAs. Since different FTAs have different configurations for the levels of commitment,

scopes, and coverage, the model also allows for different coefficients across all twelve Malaysian FTAs. Following Kohl (2014), Magee (2008), and Santos Silva, and Teneyro (2006), this paper utilizes the robust standard errors estimator provided in STATA software to obtain coefficient estimates and standard errors that are unbiased and consistent.

The analysis begins with columns (1) and (2), and the year fixed effects are included for controlling any variation in time due to aggregate shock or cyclical changes. To reduce the bias and achieve consistent estimates, as suggested by Anderson and Wincoop (2003), columns (3) and (4) add the time-varying importer and exporter fixed effects to account for multilateral resistance terms that may jointly determine the trade between countries. The gravity models with country-year fixed effects are included in columns (5) and (6) to account for any unobserved country-specific factors that vary over time and may influence trade in a particular year. To control the impacts of unobserved time-invariant heterogeneity between partner countries, country-pair fixed effects are introduced in columns (7)–(10). Introduction of country-pair effects removes the cross-sectional variation, so that specifications in Equations (4) and (5) rely solely on the time series variation. Since border, language, and log of distance are perfectly collinear with country-pair fixed effects, they are dropped from the model. The two last columns introduce the grouping by types of FTAs—bilateral and regional—with controlling of fixed effects to evaluate how strongly these types of FTAs can impact margins of trade.

In columns (1) and (2), this paper presents the usual results of a typical gravity model for intensive and extensive margins. Controlling for the time fixed effects, the estimated coefficients of log GDP for both exporter and importer in columns (1)–(10) have significant and positive effects on both extensive and intensive margins, but with larger effects on the intensive margin. For the estimated coefficients of population, this paper finds that most of the coefficients with fixed effects are statistically significant, but the direction of the importing country's population becomes negative when country-pair fixed effects are included. These findings are, to a certain extent, similar to findings in the previous literature, including Ismail and King (2013), Foster (2012), Magee (2008), and Yang and Martinez-Zarzoso (2014).

For time-invariant variables of common border, common language, and log of distance, the analysis obtained the expected signs, which are statistically significant at the 1% level for most of the fixed effects models. This implies that countries that are interconnected socially and geographically tend to promote a higher flow of trade between them. This sign is similar to Felbermayr and Kohler (2006) that shows negative coefficient for common border for extensive margin after controlling for the time, country, and country-year fixed effects. The intuition for this is as follows: the reduction

of trade costs (e.g. transportation, import tariffs, and non-tariff restrictions) over the years has encouraged a country to trade with distant countries, beyond its usual trade with its natural trading partners. This increases the trade in the products that the countries have already traded in the past or intensive margin (Bensassi et al. 2012).

The main analysis in regard to the impacts of FTAs on extensive and intensive margins begins in the second half of Table 1. Most of the estimated coefficients are highly statistically significant for both margins, thus, the results fit the typical findings of FTA-trade literature. Moreover, this paper also finds that most of the FTA variables exert significant and positive effects through the intensive margin. This is comparable to some recent findings of Arata, Shujiro, and Kazuhiko (2016) and Bensassi et al. (2012). Specifically, the FTAs with a more pronounced intensive margin include AANZFTA (0.197), ACFTA (0.485), AITIG (0.591), AKFTA (0.206), and MPCEPA (0.463) (see Table 1). The increases in extensive margin are small for AFTA and MJPEA, at 6.8 per cent and 1.8 per cent, respectively. The results also show that the signs of estimated coefficients for the extensive margins for eight FTAs have changed to negative but that all of them are reasonably small compared to the positive coefficients of the intensive margins.

Interestingly, we observe that most of these FTAs are regional FTAs. This finding is consistent with the estimated results in column (10) that show a positive and statistically significant intensive margin coefficient when two FTA dummy variables are tested for the overall impact of bilateral ( $FTA_{ij}^B$ ) and regional ( $FTA_{ij}^R$ ) FTAs. This result leads us to conclude that there is a shift in overall trade, i.e., a 4.0% reduction in the trade of new products from bilateral FTAs to a 41.6% increase in the trade of existing products from regional FTAs. There are three possible explanations for the trade increase for the intensive margin in regional FTAs: (1) joining a new FTA requires new compliance with a product's rules of origin, technical standards, customs procedures, and other border measures. Therefore, importers can continue importing either the same or a larger amount of existing products (intensive margin) due to lower costs relative to venturing into new products (extensive margin) (Itakura, 2014; Lee, Park, & Shin, 2008); (2) FTAs with open and bigger membership are moving towards multilateralism and, therefore, may generate larger trade creation effects (Baldwin & Freund, 2011); and (3) bilateral trade among the natural trading partners tends to exhibit larger trade value—this can be true in the case of ASEAN-related FTAs.<sup>5</sup>

## CONCLUSION

The proliferation of FTAs is seen to have moved hand-in-hand with the multilateral trade liberalization evidenced by the number of FTAs that are established. The growing

number of FTAs negotiated and signed by neighboring countries in ASEAN region, in particular has created a strong motivation—economically and/or politically—for Malaysia to also negotiate FTAs, and this trend is expected to continue in the future.

In this paper, we evaluate the impacts of individual FTAs on the extensive and intensive margins. We further analyze how the impact might vary between two types of FTAs—regional and bilateral. We report the results of the analysis using the gravity framework. The interest shown by Malaysia and its trading partners in joining more FTAs provides some useful insights, particularly on the impacts of extensive and intensive margins. This paper finds that (1) most of the FTAs have significant and positive impacts on trade that are created along the intensive margin when FTAs enter into force; (2) interestingly, most of these intensive margins are produced through regional FTAs in which there has been a shift in the overall pattern of trade, i.e., a 4.0% reduction in the trade of new products (extensive margin) from bilateral FTAs to a 41.6% increase in the trade of existing products (intensive margin) from regional FTAs. This result is consistent with Foster, Poeschl, and Stehrer (2011), who find that the increase in imports is largely contributed to by an increase in imports along the extensive margin.

The findings of this research bring some policy implications. The significant positive impact of regional FTAs on intensive margin shows a significant role of regional FTAs can play in spurring improvements in trade in existing products. Since negotiating FTAs is an on-going process, a key improvement can include reduction in FTA compliance cost, which can be achieved through, among others, simplification of regional rules such as rules of origin, customs procedures, and technical standards in the regional FTAs.

Further work is required to empirically determine the reasons why, at least in the case of Malaysian FTAs, the impacts to trade are largely stimulated by regional FTAs. The findings are contrary to the views that countries opt for bilateral FTAs because they find these bilateral FTAs more attractive for attaining better market access (Kawai & Wignaraja, 2014).

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## NOTES

- 1 Malaysia–Japan Economic Partnership Agreement (MJPEA) (2005); Malaysia–Pakistan Closer Economic Partnership Agreement (MPCEPA) (2007); Malaysia–New Zealand FTA (MNZFTA) (2009); Malaysia–India Comprehensive Economic Cooperation Agreement (MICECA) (2010); Malaysia–Chile Free Trade Agreement

- (MCFTA) (2010); Malaysia–Australia Free Trade Agreement (MAFTA) (2012); and Malaysia–Turkey Free Trade Agreement (MTFTA) (2010).
- 2 Hummels and Klenow (2005) define as the value of product  $n$  of country  $i$  imported from the rest of the world ( $w$ ), which a total imports of all countries. We define  $w$  as a total of product  $n$  from rest of the countries, which practically rest of the countries in networks of Malaysian FTAs.
  - 3 Between 1994 and 2014, Malaysia signed and entered into force six bilateral FTAs: Malaysia–Japan; Malaysia–Pakistan; Malaysia–New Zealand; Malaysia–India; Malaysia–Chile; and Malaysia–Australia.
  - 4 Between 1994 and 2014, Malaysia was a member of six regional FTAs which: ASEAN–China; ASEAN–Korea; ASEAN–Japan; ASEAN–India; and ASEAN–Australia–New Zealand.
  - 5 See Frankel (1997) and Magee (2008). “Natural trading partner” hypothesis argues that an FTA is more likely to increase trade and raise welfare if member countries already trade disproportionately with each other.

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TABLE 1. Impacts of FTAs on extensive and intensive margins of trade

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	lnEM	lnIM	lnEM	lnIM	lnEM	lnIM	lnEM	lnIM	lnEM	lnIM
lnGDP <sub>i</sub>	0.116*** (0.002)	0.028*** (0.006)	0.019* (0.007)	0.094*** (0.026)	-0.069 (2.759)	-0.227 (7.144)	0.0166*** (0.002)	-0.165*** (0.013)	0.0163*** (0.002)	-0.164*** (0.013)
lnGDP <sub>j</sub>	0.221*** (0.002)	0.802*** (0.005)	0.022** (0.007)	0.812*** (0.024)	0.166*** (0.009)	0.585*** (0.039)	0.0340*** (0.002)	0.556*** (0.013)	0.0341*** (0.002)	0.555*** (0.013)
lnPOPI	-0.012*** (0.002)	0.049*** (0.006)	-0.095** (0.035)	0.184 (0.113)	0.662 (10.001)	1.043 (25.878)	-0.0341*** (0.010)	-0.0429 (0.079)	-0.0338*** (0.010)	-0.0457 (0.079)
lnPOP <sub>j</sub>	-0.030*** (0.002)	0.114*** (0.005)	-0.065* (0.032)	-0.971*** (0.110)	-0.076** (0.025)	-0.606*** (0.121)	-0.0236* (0.011)	-1.204*** (0.085)	-0.0235* (0.011)	-1.208*** (0.085)
BOR <sub>ij</sub>	-0.176*** (0.010)	0.725*** (0.028)	-0.151*** (0.009)	0.325*** (0.028)	-0.149*** (0.009)	0.321*** (0.029)				
LAN <sub>ij</sub>	0.130*** (0.006)	0.512*** (0.024)	0.0413*** (0.007)	0.304*** (0.024)	0.0423*** (0.007)	0.311*** (0.025)				
lnDIST <sub>ij</sub>	-0.224*** (0.002)	-0.714*** (0.007)	-0.227*** (0.003)	-1.122*** (0.009)	-0.225*** (0.003)	-1.125*** (0.009)				
MCFTA	0.204* (0.097)	1.001*** (0.121)	0.0879*** (0.016)	-0.564* (0.222)	0.118*** (0.033)	-0.191 (0.159)	-0.0586* (0.023)	-0.390** (0.144)		
MICEA	0.163*** (0.042)	0.641 (0.481)	-0.125** (0.040)	0.180 (0.186)	-0.102** (0.036)	0.299 (0.230)	-0.0395*** (0.012)	-0.297 (0.189)		
MJEPA	0.112*** (0.028)	0.784** (0.269)	-0.121*** (0.035)	0.201 (0.158)	-0.105** (0.035)	0.216 (0.154)	0.0174** (0.006)	-0.228*** (0.066)		
MPCEPA	0.318*** (0.043)	1.179* (0.507)	0.331*** (0.025)	0.302 (0.217)	0.365*** (0.026)	0.481 (0.255)	-0.0699*** (0.019)	0.463*** (0.094)		
MNZFTA	0.294*** (0.029)	0.751* (0.300)	-0.0170 (0.024)	0.115 (0.139)	0.0117 (0.032)	0.112 (0.165)	-0.0375* (0.017)	0.0045 (0.102)		

MAFTA	0.0578 (0.044)	0.356 (0.405)	-0.193*** (0.023)	0.0659 (0.230)	-0.173*** (0.036)	0.319 (0.284)	-0.0078 (0.007)	-0.0195 (0.089)
AFTA	0.272*** (0.012)	0.992*** (0.051)	0.267*** (0.018)	-0.249*** (0.059)	0.271*** (0.019)	-0.302*** (0.060)	0.0655* (0.026)	0.375 (0.199)
AKFTA	0.166*** (0.019)	1.574*** (0.094)	0.120** (0.037)	0.374** (0.145)	0.159*** (0.039)	0.338* (0.169)	-0.0273*** (0.006)	0.206*** (0.059)
AANZFTA	0.248*** (0.020)	1.444*** (0.122)	0.149*** (0.021)	0.366** (0.134)	0.163*** (0.023)	0.591*** (0.144)	-0.0228*** (0.006)	0.197** (0.075)
ACFTA	-0.0335 (0.022)	0.785*** (0.063)	0.0369 (0.026)	-0.0198 (0.083)	0.0447 (0.028)	-0.193* (0.095)	-0.00073 (0.009)	0.485*** (0.118)
AICEPA	-0.104*** (0.023)	1.401*** (0.122)	0.111*** (0.031)	0.577*** (0.154)	0.153*** (0.034)	0.824*** (0.169)	-0.0358*** (0.005)	-0.186*** (0.050)
AITIG	0.0610* (0.030)	0.220 (0.163)	0.113*** (0.028)	0.0801 (0.181)	0.127*** (0.029)	0.00827 (0.209)	-0.0028 (0.012)	0.591*** (0.142)
FTA <sup>B</sup> <sub>ij</sub>							-0.0399*** (0.007)	-0.104* (0.053)
FTA <sup>R</sup> <sub>ij</sub>							-0.0077 (0.004)	0.348*** (0.048)
Observations	45014	45014	45014	45014	45014	45014	45014	45014
R <sup>2</sup>	0.539	0.669	0.735	0.786	0.741	0.805	1167.7	801.2
BIC	46168.6	147122.1	22289.0	128480.6	23289.8	128114.0	0.980	0.905
AIC	45820.0	146773.5	21121.2	127312.9	20474.9	123852.5	-71707.7	114776.8
RMSE	0.402	1.235	0.305	0.994	0.308	0.969	-91464.0	95020.5
Fixed effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Country	No	No	Yes	Yes	No	No	No	No
Country-year	No	No	No	No	Yes	Yes	No	No
Country-pair	No	No	No	No	No	No	Yes	Yes

Note: Robust standard errors are in parentheses. \* p<0.05, \*\* p<0.01, \*\*\* p<0.001. MCFTA=Malaysia-Chile Free Trade Agreement; MICECA=Malaysia-India Closer Economic Cooperation Agreement; MJPEPA=Malaysia-Japan Economic Partnership Agreement; MPCEPA=Malaysia-Pakistan Closer Economic Partnership Agreement; MNZFTA=Malaysia-New Zealand Free Trade Agreement; MAFTA=Malaysia-Australia Free Trade Agreement; AFTA=ASEAN Free Trade Area; AKFTA=ASEAN-Korea Free Trade Area; AANZFTA=ASEAN-Australia-New Zealand Free Trade Area; ACFTA=ASEAN-China Free Trade Agreement; AICEPA=ASEAN-Japan Closer Economic Partnership Agreement; and AITIG=ASEAN-India Trade in Goods Agreement.