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The ASEAN Free Trade Agreement: How Effective?

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The ASEAN Free Trade Agreement: How Effective?

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Abstract

A careful assessment of intra-regional and extra-regional ASEAN trade volumes from 1970 to 2010 reveals that there has been no significant change during the pre- and post-AFTA era. However, researchers working on the effectiveness of the ASEAN Free Trade Agreement have consistently reported positive trade creationary effects of AFTA. By reassessing the impact of AFTA through the Balassa method of estimating trade creation and diversion, and applying it to traditional gravity estimates, we find that (a) while ASEAN countries have spent more money per dollar earned on foreign goods in the post-AFTA period, this is generally true for all countries in the world, and (b) being a small region with significant historic trade ties, ASEAN, as a whole has always traded more amongst themselves, when compared to the world average, and this fact has been misrepresented as the trade creationary effects of AFTA. By comparing the coefficients of the regionalism dummies of ASEAN, within the scope of the gravity model, we find that there has been no significant change in these coefficients, when the sample is divided into the pre-and post-AFTA years. We thus conclude that the free trade agreement in question has had no significant impact on intra-ASEAN trade.

Key Words: ASEAN, Free trade agreement, Trade creation, trade diversion, Regional trade.

JEL Classification: F12

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1. Introduction

The proliferation of regional trade agreements (RTAs) in the early 1990s has led many to debate as to whether this influx of regional blocs will undermine the WTO's multilateral trade negotiations or whether any un sourced form of trade liberalization is a positive reinforcement. The vast majority of studies that have tried to estimate the benefits of regional economic integration have centered on quantifying the sum of trade creation (TC) and trade diversion (TD) effects. Trade creation occurs when low price imports within a regional bloc, from a country's trading partner, replaces that of which would have been produced without a preferential trade agreement. Trade diversion is defined as trade that occurs within the regional trading bloc or PTA, replacing imports from extra-regional non-members. While "natural trading blocs" based on geographical proximity may be efficient and welfare-inducing, RTAs based on political ties may augment regional biases to the extent that trade flows may be welfare reducing if trade diversion effects outweigh trade creation effects.

The recent emergence of RTAs in Asia has augmented the need to scrutinize the impact of RTAs on intra-bloc trade, particularly the intra-regional trade amongst members and extra-regional trade with non-members. The aim of this study is to determine whether or not the formation of the ASEAN Free Trade Area has been a success, more specifically whether the increasing trade that has happened within AFTA is due to the signing of the agreement, or simply following a continued pattern of regionalism. By looking solely at post-FTA estimations,[1] much of the literature has misrepresented this aforementioned regionalism effect as trade creation due to FTA. The effect of AFTA on intra- and extra-regional trade flows is thus measured by utilizing three specific methodologies that compare trade patterns prior to and after the start of the AFTA process. The intention is to prove that the regional bias in ASEAN trade is being misreported as the trade creationary effect of the FTA, when in fact the regional bias has always been present. The paper is arranged as follows: Section 1provides a

[1] Elliot and Ikemoto (2004) conduct a similar post-1992 AFTA analysis, however, account for the currency depreciations and capital outflows following the Asian economic crisis of 1997. They extend the gravity model to assess whether ASEAN countries attempted to solve their problems through the newly strengthened ties that AFTA had allowed within intra-ASEAN relations, or whether the crisis itself was the cause of the structural changes that were evident in imports and exports.

brief overview of the current empirical literature providing an *ex post* measurement of trade creation and/or diversion due to AFTA, yielding conflicting results. Section 2 delineates the preliminary evidence of a continued pattern of regionalism within the ASEAN-6 economies, through observing the time trend and growth rates of intra- and extra-ASEAN bilateral and aggregate trade flows. Section 3 outlines the Balassian and augmented Gravity model methodologies, with pre- and post-FTA estimations. Section 4 discusses the results and Section 5 concludes.

1.1 Literature Review: the trade-creationary or diversionary effects of AFTA

There has been a significant amount of literature on the ASEAN Free Trade Are in measuring the trade creationary and diversionary effects, with very little consistency in the results. Some of the existing empirical literature has argued that the formation of AFTA has led to a strengthening in intra-regional trade. Elliot and Ikemoto (2004) employ a gravity model specification in order to detect and quantify any possible gains in intra-regional trade among the ASEAN-5. Their results show that although trade volumes have not been significantly impacted in the years immediately following AFTA's inception, extra-regional flows (ASEAN countries' outward economic activity) have been stimulated by a simultaneous collusion of the AFTA process and the Asian economic crisis. Furthermore, they found positive, albeit limited AFTA effects for intra-ASEAN trade.[2] Siah et. al (2009) utilize the gravity model within an ARDL framework to determine whether AFTA has promoted intra-ASEAN trade between the five founding member nations. While their empirical results on the trade-creating or inhibiting effect of the size of the economy on bilateral trade flows are mixed and inconclusive, they find that an increase in per capita GDP of an individual ASEAN member nation has the tendency to increase trade flows to a particular country. Okabe and Urata (2013) and Kien (2009) also use similar cross-sectional approaches of the gravity model to assess *ex-post* impact of AFTA on intra-AFTA trade. The latter study employs exchange rates and common language as factors impacting transaction costs of trade, incorporating three dummy variables to capture trade creation, import trade diversion and export trade diversion.[3] The Hausman-Taylor result achieved by Kien (2009) shows higher levels of intra-regional trade for AFTA, than the predicted benchmark contexts, with no import trade diversion effects, consistent with the results of this study.

On the other hand, other *ex-post* empirical analysis has yielded trade diversionary results due to the formation of AFTA. Hapsari and Mangunsong (2006) compare trade patterns of AFTA members with non-members to ascertain the impact of AFTA's creation on intra- and extra-regional trade flows. While they found that the

[2] Intra-regional ASEAN dummy contributed t an increase in trade volumes by 1.78%.

[3] The current study follows from the Kien (2009) approach in incorporating a dummy variable showing intra-regional trade to capture trade creation amongst members, as well as the extra-regional trade effect among non-members.

reduction of tariffs under AFTA significantly increased bilateral exports of ASEAN member nations, their gravity results yielded negative, insignificant trade creationary effects, but negative significant trade diversionary effects, indicating the existence of trade diversion.[4] Ramaswamy (1995) estimation of the negative impact of trade diversion on resource allocation amongst ASEAN members showed that Malaysia and Singapore exhibit trade diversion, while the reverse is true for Indonesia, Philippines and Thailand. Soloaga and Winters (2001) and Ghosh and Yamarik (2004) both use the gravity model analysis to test the effect of newly created PTAs and RTAs on inter-bloc trade, the latter study employing an extreme bounds analysis application to the gravity model to test the robustness of the trade creation hypothesis. By tracking extreme bounds across two priors, Ghosh and Yamarik find that very few RTAs (AFTA included) can be considered trade creating, implying that unacknowledged prior beliefs implicit within the gravity model structure has led to the trade creation hypothesis, rather than a robust statistical relationship. Soloaga and Winters (2001) similarly find negative intra-bloc trade coefficients, with a pronounced negative trend four years prior to, and four years post- implementation.[5]

In this plethora of works, it is hard to determine to what extent the FTA has actually been effective. In arriving at such an opinion, one should also consider that the post-AFTA period has been a period of rapid globalization and increasing world trade. Also it has been a period where tariffs across the globe have fallen, such that the difference between intra-AFTA tariffs and extra-AFTA tariffs has been reduced over the years through the CEPT scheme[6] ("ASEAN Statistics"). Thus, there are very important reasons for the increasing volumes of trade among the AFTA countries, apart from the FTA.

2. Preliminary evidence: Regionalism in ASEAN-6 economies

The Association of South East Asian nations was established on August 8, 1967 in Bangkok by five original member countries: Indonesia, Malaysia, Singapore, Philippines and Thailand,[7] with their first attempts at promoting intra-regional trade emerging in 1977 through the formation of a PTA (Elliott and Ikemoto 7).[8] The

[4] Their coefficient -.13 for div dummy shows that after the establishment of AFTA, bilateral exports from ASEAN countries to those countries outside the region decreased by almost .13 percent with other variables *cetris paribus*.

[5] Frankel and Wei (1993) found a positive coefficient for intrabloc trade using the same methodology. This may be due to the fact that Soloaga and Winters (2001) simultaneously captures overall intra-bloc openness to exports, undermining the marginal effect of belonging to a particular trade bloc.

[6] Common Effective Preferential Tariff Scheme (CEPT) scheme applies a sectoral and reciprocal approach, encompassing all products (CEPT Inclusion List) originating ASEAN member countries that had at least 40% ASEAN content, and whose tariffs would be reduced to no more than 5%.

[7] Expansion of ASEAN membership included Brunei in 1984, Vietnam in 1995, Myanmar and Laos in 1997, and Cambodia in 1999.

[8] Existing studies however have found sparse evidence of its success, possibly due to an intra-regional trade structure that was competitive rather than complementary.

Free Trade Agreement in question was established in 1992, with a gradual preferential tariff scheme that would enable the eventual free trade area to form by 2008, comprised of the initial ASEAN-5 plus Brunei Darussalam.[9] The formation of AFTA was motivated primarily by the need to strengthen intra-regional economic cooperation and to narrow the economic gap amongst member nations through the trade-inducing effects of FTAs. AFTAs primary tool was thus the Common Effective Preferential Tariff (CEPT) Scheme, which eliminated high duties on traded goods and quantitative restrictions, as well as non-tariff barriers, which limited the entry of imports amongst member countries, with the ultimate goal of unifying Asia-Pacific's regional market ("ASEAN Statistics"). [10]

Preliminary evidence in observing overall trade shares within the ASEAN-6 economies, since the implementation of AFTA suggest that over time, ASEAN members have shown a more outward orientation, through increased exports over time. Figures I through III (see Annex) show the time trend in intra-regional and extra-regional gross trade flows, trade shares, and regional trade introversion for ASEAN-6 over a 40 year period, respectively. The growth of intra-regional gross trade flows seems to reach its peak in 1996, nearly four years after the enactment of AFTA, then once again after the 1997 crisis, which was triggered by the fall of the Thai Baht relative to the US dollar. During the period 1989-1992, intra-ASEAN gross trade flows grew at a rate of 21.89% per annum, compared to the extra-regional GTF growth of 17.09% per annum. After AFTA's formation, intra-AFTA GTF grew at an annual rate of 25% during the years 1993-1996, with extra-regional trade flows growing at a rate of 18.58% per annum. Looking at the first figure, it is evident that intra-regional trade flows have always been rising faster than extra-regional flows. The intra-regional trade shares and trade intensity indices paint a similar picture. Intra-regional trade shares grew from 13% to its height of 19% between 1975 and 1983, the period in which the PTA was being established and implemented. However, the late 1980s saw a very fluctuating trend in intra-regional trade shares, oscillating between 17% and 16% before rising back to 18% between 1992 and 1993, and continuing to rise steadily to 20% and 21% in the decades following. The regional trade introversion index[11] depicted in figure III shows a much stronger intra-regional bias during the mid- to late-1980s, reaching a height of .73 between 1956 and 1986, before tapering off to .66 in 1989 and gradually declining to .59 in 1993, during AFTA's enactment. Once again, the only positive indication occurs nearly 5-6

[9] The ASEAN Free Trade Area was a result of the Fourth Summit Meeting, in which the ASEAN heads of government formally agreed to and signed the Singapore Declaration, which proposed the creation of the ASEAN Free Trade Area within a span of 15 years, beginning from January 1st 1993. The CEPT scheme was to cover nearly 98% of all tariff lines in ASEAN by 2003, excluding sensitive agricultural products and those within the General Exceptions category.

[10] Contrary to other PTA schemes, the CEPT scheme applies a sectoral and reciprocal approach, encompassing all products (CEPT Inclusion List) originating ASEAN member countries that had at least 40% ASEAN content, and whose tariffs would be reduced to no more than 5%

[11] The index's range is -1 to 1, independent of the size of the region. The index rises (or falls) only if the intensity of intra-regional trade grows more (or less) rapidly than that of extra-regional trade. Values greater than zero indicate an intra-regional bias for that region's trade, and values less than zero indicate an extra-regional bias of the same.

years post-AFTA, reaching .66 in 1998 and substantially rising in the following decade. The first few figures indicate that there is no discernible change in intra- or extra-regional gross trade flows, or trade intensity during the immediate pre- and post-AFTA periods. In fact, the most evident changes occur only during the decade prior to and following AFTA's enactment.

Figures IV and V depict the pre- and post-FTA growth rates for aggregate ASEAN-6, the member nations, as well as bilateral [country pairs] growth rates. Excluding Brunei from figure IV, all countries, with the exception of the Philippines have seen higher growth rates in gross trade flows during the pre-FTA period, than the post-FTA period. Thailand, Malaysia, and Singapore specifically show particularly high growth rates in intra-regional Gross trade flows prior to the enactment of AFTA. Singapore's and Thailand's post-FTA growth rates fall the sharpest, and closely mirrored that of aggregate ASEAN-6. Despite a significant drop in Malaysia's and Singapore's share of intra-regional gross trade flows, both member countries still account for a large portion of intra-ASEAN trade, partly due to Singapore's role as a transportation and distribution hub within the region, leading to significant levels of entrepôt trade. Furthermore, Singapore's significant role in promoting its trade with Malaysia (also a relatively high income country) possibly explains the sharp growth of Malaysia's post-FTA growth rates. When looking at the country pairs' bilateral growth rates between the pre-FTA and post-FTA enactment periods, and discounting Brunei, the decline in shares of Singapore and Malaysia in ASEAN's gross trade flows during the decade following AFTA is evident, as many other ASEAN countries simultaneously increased their shares, notably Indonesia, Thailand and the Philippines. The top three bilateral trading partners, reflecting the highest growth rates pre-AFTA, were Indonesia-Malaysia, Singapore-Thailand, and Philippines-Thailand (545%, 188%, and 267% respectively). However, in the post-FTA period, the top three bilateral trading partners, in terms of growth rates in intra-regional gross trade flows, are Philippines-Thailand, Malaysia-Philippines, and Indonesia-Thailand (505%, 410% and 246 respectively). This shift in large increases in growth rates for the latter country pairs indicates a more active involvement of Indonesia, Thailand, and the Philippines in regional production networks.

It is also interesting to note that only seven country pairs how higher growth rates in intra-regional gross trade flows, during the post-FTA period, when compared to the eight country pairs that boasted higher pre-FTA growth rates. Of those seven country pairs which had higher post-AFTA growth rates, either Indonesia or the Philippines account for being one of the bilateral trading partners for six of the seven. Thus, a preliminary analysis of the overall trade shares and growth rates does not clearly indicate that the free trade agreement in

question has had a significant impact. In fact, this purported regional bias seems to have been present since the formation of the preferential trade agreement in the late 1970s and early 1980s.

2.1 Structural breaks analysis

[12] Structural breaks analysis entails is the standard dummy variable method, with a simultaneous break in the intercept and slope. The original equation is $Xt = \alpha_0 + \beta_0 t$. The equation is adapted to accommodate the following changes in order to compare the pre-break and post-break trade ratios, and correctly identify positive changes as a result of the AFTA reforms between the post-FTA years 1992 and 1996. The eventual assessment is to determine whether or not positive structural breaks can be attributed to the formation of the ASEAN Free Trade Area. The original equation thus becomes the following two equations:

$$ln\,(Ex_I) = \alpha_0 + \beta_0 t + (\alpha_1 - \alpha_0)\,D_i + (\beta_1 - \beta_0)\,D_i t$$
$$ln\,(Ex_E) = \alpha_0 + \beta_0 t + (\alpha_1 - \alpha_0)\,D_i + (\beta_1 - \beta_0)\,D_i t$$

Where Ex_I and Ex_E refer to intra-regional and extra-regional exports from the years 1970-2010, respectively, and the break dummy variable, D_i taking the following values:

$$D_i = \begin{cases} 0 \; if \; t \leq i \\ 1 \; if \; t > i \end{cases}$$, where i=1992,…, 1996

If the ASEAN free trade agreement had any impact on the trade flows both within ASEAN, as well as with ASEAN and the rest of the world, then they should be observed in the time-series plots of these two trade flows. One way of determining whether there are any discontinuities in the time series trend of these trade flows, is to see whether there are any structural breaks in these flows that may be associated with the formation of the FTA. Since AFTA was formed in 1992, there is anticipated to be a structural break for that period, and the years following. In particular, the FTA should affect intra-ASEAN trade flows positively (the trade creation effect) and ASEAN –extra ASEAN flows negatively (the trade diversion effect). In the jargon of structural breaks, therefore, there is expected to be a positive shift in the intercept, the slope, or both in the intra-ASEAN trade series, around 1992, and a negative shift of the same in the ASEAN-extra ASEAN trade during the same period.Whether this has happened or not is reported in Figure VI. Here, a time lag of four years has been allowed for the effect to take shape. Figure VI shows that as far as intra-ASEAN trade was concerned, there was a positive change in the

intercept both in 1994 and 1995. However, there were negative changes in the slope during the same time period. It is difficult to conclude, therefore, that the FTA has a positive effect on intra-ASEAN trade. Though it appears that there were some minor trade creationary effects of the FTA, they started to be realized two years after the FTA had formed.

When looking at the trade diversion effects, one may interpolate strong anti-diversion results. For the years 1992-1996, both the slope and intercept have changed positively for this series, implying a rapid growth in ASEAN's trade with the rest of the world. Since there is no reason to expect that extra-ASEAN trade would increase *due* to the formation of AFTA, one must conclude that it is a result unrelated to the free trade agreement. An exogenous factor, possibly rapid globalization of the world in this period, may have contributed to this increase.

The structural breaks analysis, therefore, cannot find any significant impact of the FTA on intra- and extra-ASEAN trade flows. The effects that have been seen are not always consistent with the standard expectations surrounding the creation of FTAs, and the suspicion remains that such effects were caused by an external reason.

3. Methodology

In this paper, a variety of methods have been utilized to ascertain the impact of the ASEAN Free Trade Agreement on intra-AFTA trade. In addition to the aforementioned structural breaks analysis, an OLS regression was also run on the intra-regional, extra-regional, aggregate ASEAN and extra-ASEAN gross trade flows with the following time-trend regression equation:

$$\log Y_t = \alpha + \beta_1 t$$

The second methodology that has been adapted is the applied Balassian approach to measure trade creation and diversion effects of AFTA, as a preliminary *ex post* analysis technique. The basic model compares the change in income elasticity of import demand pre- and post-integration, to explain trade creation and diversion caused by regional integration (assuming that the income elasticities of import demand remain unchanged in the years prior to and following integration). Thus, a rise in income elasticity of total or intra-regional import demand indicates gross trade creation, while a fall in income elasticities for extra-regional imports indicates gross trade diversion, following the basic Vinerian logic of trade creation and diversion (Balassa 5). Balassa's basic equation is as follows: $M_r = \alpha Y_r^b \mu$, where M_r: import of country *r*; Y_r: GDP per capita of country *r;* α: constant; μ: error term; *b:* income elasticity of import demand. Using the log function, the aforementioned equation becomes the following: $ln\, M_r = \alpha + b\, ln\, Y_r + \mu$. To assess the trade creationary or diversionary effects, the above equation is adapted

to the following three equations in order to determine income elasticities of aggregate, intra-regional, and extra-regional imports:

$$\ln MT_r = \alpha_t + b_t \ln Y_r + \mu_t$$
$$\ln MI_r = \alpha_i + b_i \ln Y_r + \mu_i$$
$$\ln ME_r = \alpha_e + b_e \ln Y_r + \mu_e$$

where MT_r, MI_r and ME_r refer to aggregate imports, intra-regional imports and extra-regional imports of country/region *r*, respectively. When the slope coefficients of the total and intra-regional import demand equations in the post-integration period are larger than those of the pre-period, one can arrive at the conclusion that there exists net trade creation due to a shift from domestic production to imports from intra-regional partners. When the slope coefficient of the intra-regional import demand equation is larger in the post-FTA period, and the slope coefficient of the extra-regional import demand equation is smaller in the pre-FTA period, there exists net trade diversion. This is due to the replacement of imports from extra-regional non-members by intra-regional members. Since the data range is too short, standard time-series techniques, such as finding the unit root and searching for co-integration yielded inconsistent results. Hence simple OLS regressions were run and autocorrelation analysis was conducted to correct for auto-correlated error terms, where applicable.

The final methodology used is the gravity model[13], which provides a useful multivariate approach to assess the impact of regional trading blocs on the level and direction of bilateral trade flows through the inclusion of the following chief explanatory variables: GDP, population and distance. It postulates that the bilateral trade between two countries is directly proportional to their respective size (with GDP, population and per capita growth rates being the proxy variables) and inversely proportional to the geographic distance between them (with distance functioning as a proxy for trade costs). The measurement of trade creation and diversion within the gravity structure is one of the more recent and common applications. Haveman and Hummels (1998) studied the effect of PTAs on bilateral and aggregate trading patterns of member countries by adding dummy variables to the gravity model, that would capture the PTA's intra- and extra- bloc effects Through the inclusion of a regional dummy, where the first dummy variable takes the value of 1 when only one member of the country pair is a member of the regional bloc, and the second dummy takes the value of one when both the members of the

[13] See Helpman and Krugman (1985); Bergstrand (1985); Baier and Bergstrand (2001); Evenett and Keller (1998) for theoretical applications of the gravity model within imperfectly competitive market settings and firm-level product differentiation. See Anderson (1979); Deardorff (1995); Anderson and Van Wincoop (2001) for applications within a perfect competition setting, with product differentiation at the national level, by country-of-origin assumption and explanations for the presence of income variables in gravity model. See Bergstrand (1985): for the inclusion of price effects in the form of GDP deflators as an additional variable. Finally, see Glick and Rose (2002); Rose and Van Wincoop (2001) for the use of the gravity model for an *ex-post* analysis of the trade impact of currency unions.

country pair belong to the regional bloc, the study captured the trade creation and net trade diversion from a Vinerian outlook. Soloaga and Winters (2001) conduct a similar analysis[14] that quantifies the effects of PTAs on intra-bloc trade, separating the diversionary effects of imports and exports, although ignoring the possible effect of regional integration on extra-regional exports. Finally Urata and Okabe (2007) extend previous studies by enlarging the time-period of the and using disaggregated trade data to analyze the impact of FTAs for different sectors, finding positive trade creationary effects when analyzing aggregate trade effects of FTAs, but finding individual trade diversion effects for several products in the EU, NAFTA and MERCOSUR.

This study's approach varies slightly in that it uses the standard gravity model application to assess trade creation and diversion, but employs an application of Balassa's pre- and post- period estimates to assess the FTA's impact. In order to re-examine the impact of AFTA among member states, with respect to the trade creationary and regional dummy variables, the following augmented gravity equations are used:

$$ln(IM_{ijt}) = \alpha + \beta_1 GDP_{it} + \beta_2 GDP_{jt} + \beta_3 D_{ij} + \beta_4 area_i + \beta_5 area_j + \beta_6 POP_{it} + \beta_1 POP_{jt} + \sum_{i=1}^{k} \lambda_i \vartheta_i + TC_i + TD_i$$

$$ln(IM_{ijt}) = \alpha + \beta_1 GDP_{it} + \beta_2 GDP_{jt} + \beta_3 D_{ij} + \beta_4 area_i + \beta_5 area_j + \beta_6 POP_{it} + \beta_1 POP_{jt} + \sum_{i=1}^{k} \lambda_i \vartheta_i + exreg_i + inreg_i$$

IM_{ijt} is the US dollar value of import of country *i* from trade partner *j*. GDP_{it} and GDP_{jt} are country *i's* and *j*'s GDP, respectively. D_{ij} is the distance between capital cities, and POP_{it} and POP_{jt} are the respective population sizes of countries *i* and *j*. $Area_i$ and $area_j$ represent the land area in millions of square km, for countries *i* and *j*. $\lambda_i \vartheta_i$ measures a host of dummy variables, the most significant of which are *contig* (=1 if countries have a contiguous border); *comlang* (=1 for common official of primary language); *comcol* (=1 for common colonizer post 1945). The remaining four dummy variables (TC_i, TD_i, $exreg_i$, $inreg_i$) capture the impact of the free trade agreement. The latter two are ASEAN dummies or country group dummies, indicating whether the partner country is an ASEAN country irrespective of the year in which it joined the FTA. The former two dummy variables are the Trade Creation and Trade Diversion dummies. If AFTA results in trade creation, the coefficient of the TC dummy is expected to be positive and significant. On the other hand, if there is trade diversion within AFTA, the coefficient TD dummy will be negative and significant. If there is only trade creation as a result of AFTA, however, the TC dummy will be positive and significant, while the TD dummy will be insignificant. On

[14] Both Elliot and Ikemoto (2004) and Soloaga and Winters (2001) assume an augmented gravity model approach with real exchange rate variables (country I's real exchange rate relative to country i), however both discovered that the inclusion of exchange rate variables made little difference to overall results, furthermore, found mixed evidence from previous studies as well.

the other hand, if there is only trade diversionary effects as a result of AFTA, the TD dummy is expected to be negative and significant, while the coefficient of the TC dummy is insignificant. Unlike previous studies, the former equation (with the TC and TD dummy variables) is estimated for the duration of AFTA's key implementation period (1992-1997), as well as for each respective year during said period. The latter equation, containing the regionalism dummy variables, is estimated for a clearly demarcated pre-AFTA period (1980-1991), and a post-AFTA period (1992-2003), as well as for each decade since 1980. This application of pre-FTA and post-FTA estimates within a regionalism context, therefore tracks the pattern of regionalism independent of the FTA as a control group against the estimation of trade creation and diversion during the FTA implementation period.

All of the data used in the gravity model was from Christopher Magee's compilation of bilateral trade and gravity data for 218 countries from 1970-2010.[15] OLS regressions, as well as Zero-inflated Poisson regressions were used to estimate the cross-sectional data, using White heteroskedasticity-consistent standard errors and covariance, with a correction for first-order autocorrelation in the disturbances. The results were interpreted through the regression residuals, which intimate the impact of any trading agreements through trade dummy variables.

4. Results

4.1 Pre-post AFTA growth rates

As a precursor to analyzing the purported trade creationary and/diversionary effects of AFTA, a simple time trend regression was run on the ASEAN-6 gross trade flows (intra-regional, extra-regional, extra-ASEAN, and aggregate ASEAN) for the 40 year estimation period, as well as demarcated into pre-FTA and post-FTA periods, the results of which are displayed in Figure VII. If there was a significant impact of AFTA on Intra regional and extra-regional growth rates of gross trade flows, this would be reflected in a higher coefficient of the same during the post-FTA period, than that of the pre-FTA period. Alternatively, one could have expected a higher coefficient of the intra-regional growth rates in the post period, and a lower coefficient of extra-regional growth rates. Comparing the pre- and post-FTA period, consistent with the results derived in Section 2, intra-regional ASEAN trade flows rose less sharply in the post-FTA period than extra-regional trade flows. During this same period, it is also interesting to note that there is, however, a rise in the growth rates of both global gross trade flows, as well as extra-ASEAN gross trade flows. This signifies that there is neither an increase in extra- regional nor intra-regional trade of ASEAN, but rather there appears to be a exogenous, pervasive global trend, without any real evidence of trade creation nor diversion. It is also interesting to note that the coefficient of growth rate for

[15] For further reference, see Magee (2008)

intra-regional ASEAN trade in the pre-FTA period most closely resembles that of the 40-year time span of the model. While it is not only evident that during 1970-2010, intra-regional ASEAN trade has been rising more than extra-regional and far greater than global or extra-ASEAN gross trade flows, the pre-AFTA growth rate coefficient is also consistent with that of the entire estimation period. This means that, on average, the post-FTA period growth rates did not show to have had a significant overall impact on the growth of intra-regional ASEAN gross trade flows. On the other hand, the post-FTA growth rates for extra-regional trade more closely resemble that of the 40-year time period, showing that the post-AFTA period did have a noteworthy *overall* impact on the growth of extra-regional ASEAN gross trade flows.

4.2 Balassian Model

Figure VIII shows the results for the Balassian model estimates, for ASEAN-6 countries collectively, as well as the welfare effects for individual countries.[16] By comparing the hypothetical income elasticities for intra-regional and extra-regional imports to their observed values during the pre- and post- FTA period, one can deduce the effect of integration. This method abstracts from changes in the growth rate of domestic income to provide a comparable estimate of trade creation and trade diversion. Of all the ASEAN nations, Indonesia is the only one to show consistent levels of trade creation and no trade diversion, closely mirroring the estimates of aggregate ASEAN-6. The Philippines and Thailand report neither trade creationary nor trade diversionary results, as the income elasticity of intra-regional imports falls n both cases, and the income elasticity of extra-regional imports falls for the Philippines, and actually rises for Thailand. Malaysia and Singapore are the only countries that report both trade creationary and diversionary effects, with both containing similar magnitudes of trade diversion, and Malaysia reporting stronger trade creationary effects, in terms of intra-regional imports. In fact, the growth in income elasticity between the pre-FTA and post-FTA periods for Singapore is almost negligible.

The overall results for aggregate ASEAN-6 shows only trade creationary effects with the income elasticity's of total and intra-regional imports rising between the pre- and post-FTA periods, and no [positive] diversionary effects, with a rise in the same for extra-regional imports. As will be evident in the next section, these results are consistent with the gravity model estimation. With import tariffs of member countries already low, and the gradual process of tariff liberalization, the extent of trade diversion is similarly low for aggregate ASEAN, as well as Indonesia, Philippines and Thailand. To extend the analysis further, the income elasticity for total imports of extra-regional ASEAN-6 is calculated, and there exists a similar rise in terms of direction and magnitude between the pre-AFTA and post-AFTA periods. When combined with the previous Balassian estimates of the

[16] Balassian estimates for individual countries' trade creation and trade diversion effects seem to be consistent with Ramaswamy (1995)

ASEAN-6 trading bloc, the conclusion stands that although ASEAN countries have spent more money per dollar earned on foreign goods in the post-AFTA period , this is generally true for all countries in the world.

4.3 Gravity model

Figure IX presents the results for the gravity equation, inclusive of the trade creation and trade diversion dummy variables. The regional (intra- and extra) dummy variables are included in a separate application of the gravity model, the results of which are presented in Figure X. A more thorough listing of the estimations of all the gravity coefficients is present in the appendix. The signs of the coefficients of the explanatory variables are as expected, and generally highly significant. The coefficient on GDP is positive, and generally between 0.9 and 1, suggesting the possibility that the smaller the economic value of the importing nation, the greater the trade/production ratio. The results also indicate the expected negative sign on the distance coefficient, once again reflecting the fact that bilateral trade is inversely proportional to the geographic distance between country pairs. As has already mentioned in the methodology, AFTA is trade creating if the trade creation coefficient is positive and significant after the FTA process started, and AFTA is trade diverting if the trade diversion coefficient is negative and significant. Both the OLS and the Zero-inflated Poisson estimations of the coefficients of the trade creation and trade diversion dummies are both positive and significant for the pooled time-series (inclusive of entire pre-and post-FTA period, as well as the post-FTA period leading to the Asian financial crisis), as well as the cross-sectional yearly estimates, post AFTA. However, note that the coefficient of trade creation actually falls up until 1995, when it rises to its peak at 1.378, before falling to 1.131 in 1996. In fact, the trade creation coefficient only begins to revert to an upward trend at the cusp of the Asian economic crisis, which would lead us to assume the possibility that it took a regional economic shock, such as the one presented by the currency crisis, to stimulate the intra-regional, trade creationary effect of AFTA.

Because both the trade creation and diversion dummies report positive and significant coefficients for all time periods, both ASEAN-6 member countries, as well as extra-regional non-members have trade with each other more than the hypothetical trade level. Again, when looking at the cross-sectional yearly estimates post-AFTA, in Figure IX, the trade diversion coefficient actually seems to rise in the post-FTA period (with the exception of 1994), before falling in the midst of the financial crisis. When assessing both coefficients in tandem, the trade diversion coefficient actually reflects an extra-regional trade bias in the post-AFTA period. This *reverse* trade diversion effect signifies that bilateral trade volumes between intra-regional members and extra-regional non-Members has been increasing, relative to each other, rather than falling and giving way to welfare loss to the non-member nations. The only minute evidence of a possible intra-regional bias, is the minute weakening of the *reverse* trade diversion coefficient in 1997, as ASEAN members begin to favor intra-regional imported goods

from members rather than non-members. However, this marginal weakening is outweighed by the overall increase in the trade creation coefficient.

In order to understand whether this supposed "trade creation" effect has been brought upon by virtue of the ASEAN free trade agreement, or whether it is simply a continued pattern of regionalism that has been present in ASEAN since the early 1980s, the gravity equation is rerun with an intra-regional and extra-regional dummy, the results of which as reported in Figure X. When applying the pre- post- comparison of intra- and extra-regional trade from the Balassian estimation method to the augmented gravity structure, it is evident that there has been *no change* in the regionalism coefficient between the pre and the post-period.[17] In fact, the slight increase in the post-AFTA coefficient of the intra-regional dummy variable may be capturing the augmented regionalism effect of the last decade (2000-2010). If AFTA indeed had evidence of trade creationary effects, this would be reflected in the pre- and post-AFTA estimates of the regional dummy, showing a marked rise in the post- AFTA period. Rather, it seems that the regionalism effect did not take effect until the last decade, well after the implementation of the FTA. Furthermore, the coefficient of the extra-regional dummy rises sharply during the AFTA decade, continuing a moderate upward trend over the last decade. This, once again, is a weak reflection of the *reverse* trade diversion effect that was seen in the previous gravity regression estimates.

When taking a closer look at the trade creation component in the *ex-post* AFTA analysis of the gravity model, this often misreported effect of the FTA is nothing more than a regionalism effect, as the pre- and post-coefficient of the ASEAN regionalism variable remains static. Even after AFTA has formed, the ASEAN regional coefficient has shown a constant upward trend over time. Only after the Asian economic crisis, over the last decade, has intra-ASEAN trade really accelerated. The simultaneous upward trend in extra-regional imports from non-member nations, over the last three decades, suggests that it was not the impact of AFTA that has led to a sudden augmentation of intra-regional trade. Rather ASEAN countries have retained their openness and outward orientation despite AFTA.

5. Conclusion

This study has found no significant change in neither intra-regional nor extra-regional ASEAN trade volumes during the pre- and post-AFTA era, and thus concludes that the free trade agreement in question has had no significant impact on intra-ASEAN trade. This begs the question as to why the growth in intra-regional trade has

[17] The positive, significant intra-regional impact of AFTA is consistent with the previous studies by Elliot and Ikemoto (2004) and Endoh (1999), although differ from studies conducted by Soloaga and Winters (2001), who observe a negative relationship through the dummy variables, albeit for a different estimating equation.

not significantly changed between the pre- and post-FTA levels. There are several possible explanations with the first and foremost being that AFTA itself involves a heterogeneous group of economies and thus faces challenges in internal implementation. In fact, with AFTA's current scheme, each nation acts on its own accord rather than fostering a collaborative or complementary consensual relationship. Furthermore, as Section 2 outlined, the tariff liberalization scheme of AFTA has been a very gradual process, commencing from the formation of the PTA in 1977. The weighted preferential tariffs through the CEPT scheme were also severely underutilized in the early years of implementation. In fact, in 2002 the CEPT tariffs were higher than MFN tariffs, so import values of products whose CEPT tariffs were lower than MFN tariffs were not significant relative to total imports. While assessing the impact of the CEPT scheme on bilateral trade flows is beyond the scope of this paper, one could assume that AFTA was not particularly successful in lowering preferential tariff rates. Finally, the minimal extent of trade diversion in the ASEAN economies may have overestimated the regionalism effect to inaccurately show a trade creationary bias. Ramaswamy (1995) shows that the extent of trade diversion in the ASEAN Free Trade Area will be minimized if regional partners have significant historic trade ties prior to forming a preferential trading agreement. While important trading partners in the case of ASEAN still include the United States and Japan, the member countries remain equally important trading partners for exports to other Asia-Pacific countries. Another possible interpretation for the lack in magnitude of the trade diversion effects could be attributed to the dynamism of AFTA's production networks, coupled with foreign investment projects in AFTA countries that have led to a preference for importing from extra-regional non-members.

Previous literature delineating the estimates of AFTA has produced confounded and often times, mixed results. This study makes ideal use of the Balassian method of estimating trade creation and diversion and applying it to traditional gravity estimates with a comprehensive source of panel data to ascertain that the prevailing pattern of regionalism within the ASEAN-6 economies has been misreported as trade creation due to the FTA.

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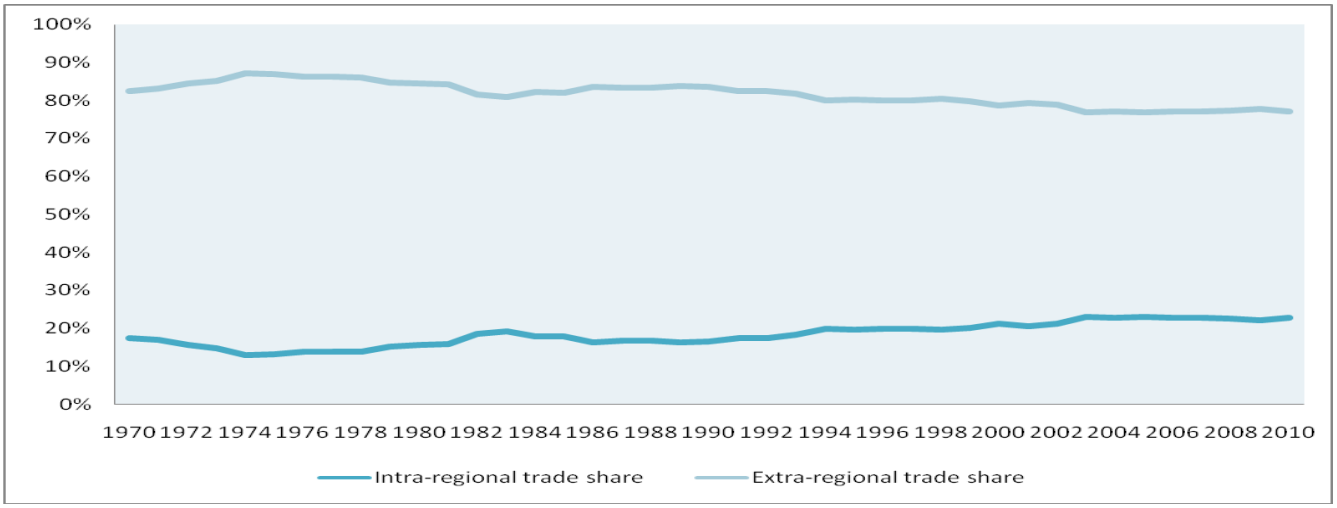
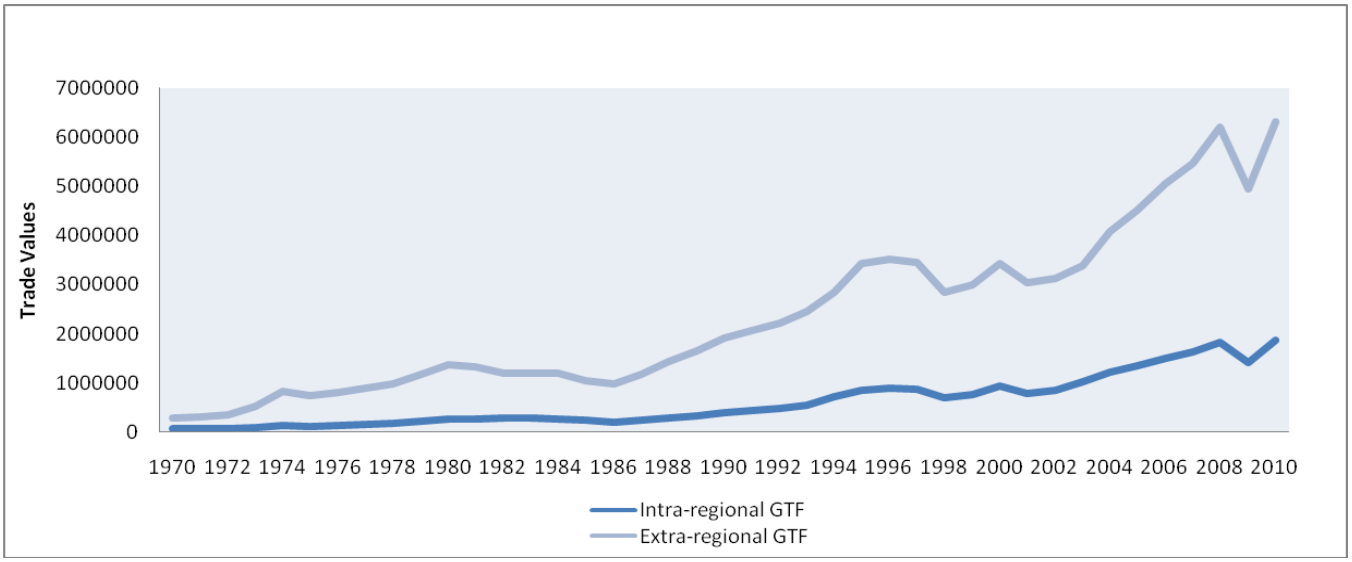
Annex

Figure I. **Intra and Extra- regional GTF for ASEAN- 1970 – 2010**



Source: UN COMTRADE, accessed through WITS
All trade values (1000 USD) have been deflated by average annual CPI Indices

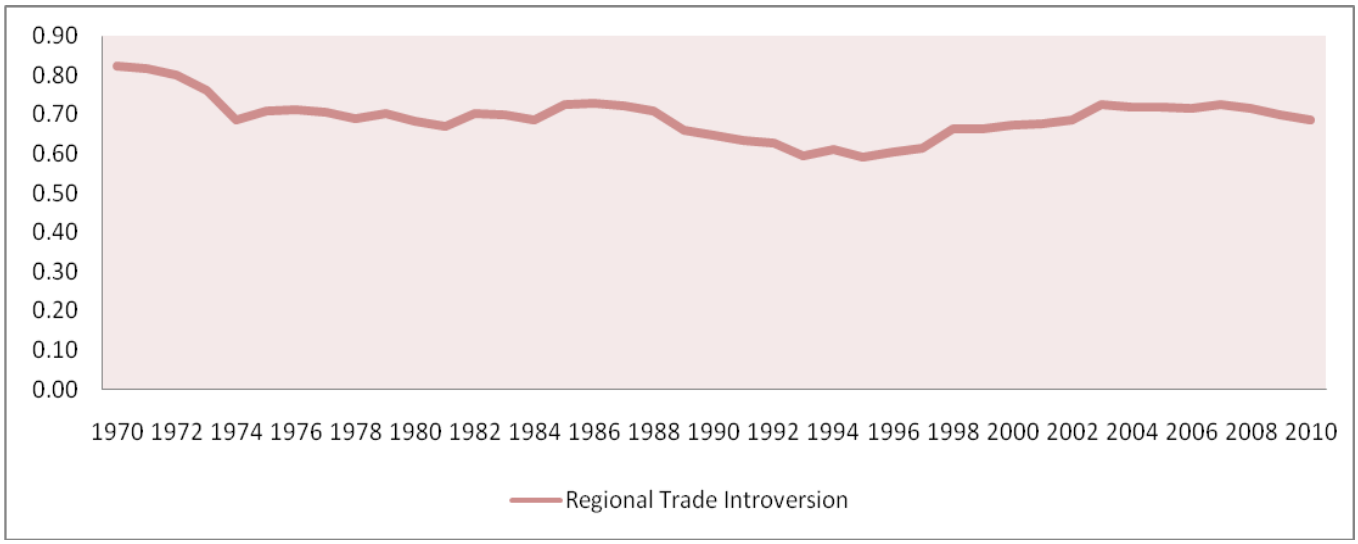
Figure II. Intra and Extra – regional trade shares of ASEAN-6, 1970-20



Source: UN COMTRADE, accessed through WITS
All trade values (1000 USD) have been deflated by average annual CPI Indices
Intraregional Trade Share$_i = \frac{Tii}{Ti}$
where T_{ii} *= exports of region i to region i plus imports of region i from region i*

T_i *= total exports of region i to the world plus total imports from region i from the world*

Figure III. Regional Trade Introversion for ASEAN -6 , 1970 - 2010,



Regional Trade Introversion Index$_i = \frac{(HIi-HEi)}{(HIi+HEi)}$ *where* $HI_i = \frac{Tii/Ti}{Toi/To}$ *and* $HE_i = \frac{1-(Tii/Ti)}{1-(Toi/To)}$
T_{ii} *= exports of region i to region i plus imports of region i from region i*

T_i = total exports of region i to the world plus total imports from region i from the world
T_{oi} = exports of region i to outsiders plus imports of region from outsiders
T_o = total exports of outsiders plus total imports from outsiders

Figure IV. ASEAN-6 country pairs' bilateral growth rates, pre-&post-FTA

Country Pairs	Growth rate (1983-93)	Growth rate (1993-2003)
Brunei, Indonesia	1298%	98%
Brunei, Malaysia	211%	37%
Brunei, Philippines	-48%	-96%
Brunei, Singapore	-8%	-48%
Indonesia, Malaysia	545%	149%
Indonesia, Philippines*	-44%	159%
Indonesia, Singapore*	-47%	48%
Indonesia, Thailand*	88%	246%
Malaysia, Philippines*	50%	410%
Malaysia, Singapore	132%	22%
Malaysia, Thailand*	100%	134%
Philippines, Singapore*	123%	199%
Philippines, Thailand*	188%	505%
Singapore, Thailand	267%	19%
Thailand, Brunei	33%	15%

Source: WITS, COMTRADE
Note: All trade values (1000 USD) have been deflated by average annual CPI Indices

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Indonesia, Thailand*	88%	246%
Malaysia, Philippines*	50%	410%
Malaysia, Singapore	132%	22%
Malaysia, Thailand*	100%	134%
Philippines, Singapore*	123%	199%
Philippines, Thailand*	188%	505%
Singapore, Thailand	267%	19%
Thailand, Brunei	33%	15%

Source: WITS, COMTRADE
Note: Starred values indicate a post-FTA growth rate level which exceeds that of pre-FTA levels

Figure VI. Structural Breaks Estimation

ASEAN-6 ln(gross trade flows) exports+imports						
	t_{intra}	D_{intra}	Dt_{intra}	t_{extra}	D_{extra}	Dt_{extra}
1992	0.08*	36.33	-0.02	0.07*	51.44*	-0.03*
1993	0.08*	42.43	-0.02	0.07*	54.48*	-0.03*
1994	0.08*	48.34*	-0.02*	0.07*	56.93*	-0.03*
1995	0.09*	49.01*	-0.02*	0.08*	56.23*	-0.03*
1996	0.09*	42.08	-0.02	0.08*	47.76	-0.02

Note: starred values indicate a t-value that is significant at 5%

Figure VII. Pre- & Post- FTA time trend
(OLS regressions for growth rates)

OLS time-trend regressions of ASEAN-6 trade flows			
Type of trade	**1970-2010**	**Pre-1993**	**Post-1993**
Aggregate ASEAN trade,	0.069	0.075	0.050
Intra-regional ASEAN trade	0.081	0.083	0.062
Extra-regional ASEAN trade	0.066	0.074	0.062
Global gross trade flows	0.045	0.042	0.062
Extra-ASEAN gross trade flows	0.044	0.040	0.058

Note: all coefficients are statistically significant at the 5% level

Figure VIII. Balassian Model Estimates

Income Elasticity of Import Demand			
	Item	**1970-1991**	**1992-2010**
Extra ASEAN-6	**Total import**	1.53*	2.31*
Aggregate ASEAN-6	**Total import**	1.95*	2.95*
	Intra-regional import	2.07*	4.00*
	Extra-regional import	1.93*	2.69*
Brunei	**Total import**	-0.02	-0.55
	Intra-regional import	-0.38	-0.80
	Extra-regional import	0.19	-0.39
Indonesia	**Total import**	1.68*	2.81*
	Intra-regional import	1.94*	5.34*
	Extra-regional import	1.65*	2.21*
Malaysia	**Total import**	1.81*	1.61*
	Intra-regional import	1.86*	2.04*
	Extra-regional import	1.80*	1.50*
Philippines	**Total import**	3.08*	1.85*
	Intra-regional import	4.73*	4.36*
	Extra-regional import	3.00*	1.35*
Singapore	**Total import**	1.54*	1.31*
	Intra-regional import	1.49*	1.50*
	Extra-regional import	1.55*	1.26*
Thailand	**Total import**	1.75*	2.37*
	Intra-regional import	3.45*	2.68*
	Extra-regional import	1.61*	2.32*

Note: starred values indicate a t-value that is significant at 5%
Newey West adjusted covariance matrix used to correct for serial correlation and heteroskedasticity

Figure IX. and X. Gravity Model estimates

ASEAN FTA Dummy Variables	**TC**	**TD**
ZIP-aggregate (1980-2003)	0.076	1.503
OLS-aggregate (1980-2003)	0.054	0.738
1992-1997	1.346	0.955
1992	1.481	0.909
1993	1.355	0.994
1994	1.255	0.909
1995	1.378	0.972
1996	1.131	1.040
1997	1.378	0.871

Note: All t-values are significant at 5%

ASEAN Regionalism Dummy Variables	intra-regional ASEAN	extra-regional ASEAN
1980-1990	1.494*	0.615
1990-2000	1.474*	0.952
2000-2010	1.728	1.036
Pre-AFTA (1980-1991)	1.495*	0.647
Post-AFTA (1992-2003)	1.512*	0.966

Note: All t-values are significant at 5%

**Z-statistic indicates equality of coefficients*