

The Early Effects of Preferential Trade Agreements on Intra-Regional Trade Within ASEAN+6 Members

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This study analyses the early effects of recent bilateral and regional Preferential Trade Agreements (PTAs) involving the ten-member Association of Southeast Asian Nations (ASEAN) grouping, as well as Australia, New Zealand, China, India, Japan and Korea. We utilize an augmented gravity model with this ASEAN+6 group of countries to examine the impact of membership in a bilateral versus a plurilateral PTA for the period of 1994 to 2006. The traditional gravity model is augmented by separately estimating the effects of bilateral memberships against plurilateral PTA memberships. Disaggregated country-by-country results indicate that plurilateral PTAs have had a more significant impact, relative to bilateral PTAs, in stimulating trade among the ASEAN+6 countries, in this initial period of new regionalism in Asia.

Keywords: Preferential Trade Agreements (PTAs), Augmented Gravity model, ASEAN+6, Bilateral Trade Agreements (BTAs).

I. Introduction

Since the Asian Financial Crisis (AFC) of 1997–98, a new wave of regionalism has begun to emerge among the Asian economies through a network of bilateral and multilateral trade and economic cooperation agreements. This is with a view towards fostering trade and investment linkages and strengthening economies so that they become more resilient to external shocks (Kawai and Wignaraja 2009). While this new regionalism was initiated with Singapore inking a bilateral preferential trade agreement (PTA) with New

Zealand in 2001,¹ it has since proliferated rapidly to include members of the ten-member Association of Southeast Asian Nations (ASEAN) grouping, as well as Australia, China, India, Japan and Korea.² This trend is likely to be sustained in the near future.

Such initiatives have been geared primarily towards Asian economic integration, wherein PTAs can promote market-driven integration³ through comprehensive coverage that goes beyond liberalization and the facilitation of trade in goods, into services and investments. However, there are

concerns that these PTAs could in reality have negative or negligible impacts on trade flows. This would potentially be the case if there are multiple overlapping PTAs involving the same members with complex rules of origin (ROOs) and numerous other customs provisions, which raise transaction costs (Schott 2001). This has been also referred to in the literature as the “spaghetti bowl” effect,⁴ or the “noodle bowl” effect in the Asian context.⁵ Consequently, questions are raised regarding the economic value of the proliferating wave of global PTAs.⁶ Nonetheless, policy-makers in Asia are of the view that well-designed and implemented FTAs should enhance trade and investment linkages both bilaterally and regionally among these economies.⁷

There have been several studies examining the impact of PTAs in the Asian context, focusing on separate regions, such as ASEAN, South Asia, East Asia,⁸ North East Asia, as well as the ASEAN+3. There are mixed results from studies that utilize a gravity model within the Asian context. Some have found that the ASEAN PTA is not fostering intra-regional trade in Southeast Asia. For example, Sharma and Chua (2000) observe that the ASEAN PTA did not increase intra-ASEAN trade during 1980–95. Interestingly, Sia and Choong (2009) have found evidence that the size of the economy impacts bilateral trade flows within ASEAN in ways that are either trade-enhancing or trade-inhibiting depending on the specific country. In contrast, Lee and Park (2005) observe that the trade creation effect expected from the proposed East Asian FTAs would be significant enough to outweigh the effects from trade diversion. A study by Ando and Urata (2006) concludes that the ASEAN+3 FTA was more desirable than the bilateral FTAs (ASEAN-China, ASEAN-Japan, and ASEAN-Republic of Korea) for all member countries at the macro level. Batra (2007) also establishes the strength of the ASEAN+4 as a potential trade bloc in Asia by determining the extent of trade distortion and trade diversion that could occur with each country’s participation in the proposed trade bloc. Finally, a more recent study by Ekanayake, Mukherjee, and Veeramacheni (2010) examining the years 1980 to 2009 further

suggests that multilateral trade agreements tend to enhance trade flows more than bilateral trade agreements.⁹

To the best of our knowledge, there has been no specific investigation on the impact of bilateral versus multilateral PTAs on intra-ASEAN+6 trade. Based on this gap in the literature, this paper attempts to analyse how the bilateral trade of these economies has been affected after entry into bilateral and regional PTAs (which in some cases are overlapping in membership).¹⁰ This is undertaken by employing an augmented gravity model to examine the impact on bilateral trade flows for the eleven largest members of the ASEAN+6 grouping over 1994 to 2006. This paper examines Australia, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, and Thailand. Other ASEAN members (Cambodia, Brunei, Lao PDR, Vietnam, and Myanmar) are not included in this study due to the lack of comparable data. It is important to understand that at the end of our sample period (2006), many of the PTAs under study were still in their gestational phase (under five years); therefore this research is focussed on the early effects of such PTAs on intra-regional trade within this grouping of countries.

The remainder of this paper is organized as follows. Section II briefly reviews the trends in PTA proliferation among these countries over the period under consideration. Section III reviews the relevant empirical literature in this context. Section IV describes the augmented gravity model and provides details on the data and estimation. Results and policy implications are discussed in section V, followed by concluding points and possible directions for future research.

II. Trends in PTA Proliferation Among ASEAN+6 Members

Table 1 provides a list of PTAs involving ASEAN+6 members that were either signed or enforced over the sample period of 1994 to 2006. It is observed that out of seventeen such PTAs, twelve were bilateral in scope. The Asia-Pacific Trade Agreement (APTA) has been the earliest plurilateral agreement in force since 1976. With

TABLE 1
PTAs Involving Selected ASEAN+6 Members Signed/Enforced Over 1994–2006

<i>Title</i>	<i>Members</i>	<i>Scope</i>	<i>Year signed</i>	<i>Year enforced</i>
Asia-Pacific Trade Agreement (APTA) (previously known as Bangkok Agreement)	India, China, Korea, Lao PDR, Bangladesh and Sri Lanka	Plurilateral	1975	2001 ^a
Australia-New Zealand Closer Economic Relations (CER) Agreement	Australia and NZ	Bilateral	1983	1983
ASEAN Free Trade Area (AFTA)	ASEAN	Plurilateral	1992	1993
Agreement between New Zealand and Singapore on a Closer Economic Partnership (ANZSCEP)	NZ and Singapore	Bilateral	2000	2001
Agreement between Japan and the Republic of Singapore for a New-Age Economic Partnership (JSEPA)	Singapore and Japan	Bilateral	2002	2002
Singapore–Australia Free Trade Agreement	Singapore and Australia	Bilateral	2003	2003
Thailand–India Framework Agreement for establishing a FTA	Thailand and India	Bilateral	2003	2003
United States–Singapore Free Trade Agreement (USSFTA)	U.S. and Singapore	Bilateral	2003	2004
Australia–US FTA	Australia and U.S.	Bilateral	2004	2005
Thailand–Australia Free Trade Agreement (TAFTA)	Thailand and Australia	Bilateral	2004	2005
ASEAN–China Free Trade Area (ACFTA)	ASEAN, China	Plurilateral	2004	2005
ASEAN–Korea Free Trade Agreement (AKFTA)	ASEAN, Korea	Plurilateral	2006	2007
Thailand–New Zealand Closer Economic Partnership Agreement	Thailand and NZ	Bilateral	2005	2005
India–Singapore Comprehensive Economic Cooperation Agreement	Singapore and India	Bilateral	2005	2005
Korea–Singapore Free Trade Agreement (KSFTA)	Korea and Singapore	Bilateral	2005	2006
Trans-Pacific Partnership Agreement (TPP)	Brunei, Singapore, NZ and Chile	Plurilateral	2005	2006
Malaysia–Japan Economic Partnership Agreement	Malaysia and Japan	Bilateral	2005	2006

NOTE: This table includes only those PTAs involving these eleven countries that have been signed/enforced and do not include those proposed/under negotiations. Note also that ASEAN members here constitute Indonesia, Malaysia, Philippines, Singapore and Thailand only.

a. Since APTA was named after China acceded to the Bangkok Agreement in 2001, the APTA PTA dummy is also modelled as coming into effect from 2001 instead of 1976 when China was not a part of this agreement.

For details on APTA, see <<http://www.unescap.org/tid/apta.asp>>.

SOURCE: FTA database available at Asian Development Bank (2010).

China acceding to this agreement in 2001, the APTA also potentially covers the largest market size given that Korea and two emerging economies, India and China, are parties to this agreement.

Among the bilateral PTAs, the Australia-New Zealand Closer Economic Relations (CER) is the earliest having been in force since 1983. Subsequently, and particularly since 2001, there has been a proliferation of bilateral PTAs, beginning with the bilateral PTA involving New Zealand and Singapore. This trend has intensified over the past decade. It is further observed that some countries have two or more FTAs with the same trading partner, one being bilateral and the other being regional in scope. Notably, New Zealand had signed two PTAs with Singapore prior to 2006. With the ASEAN-Australia-New Zealand FTA (AANZFTA) coming into force in 2009, it now has three operational FTAs with Singapore.

It is important to note that a number of the PTAs in Table 1 have been enforced since 2003, and were realistically still evolving in terms of their impact on stimulating bilateral trade and investment linkages as of 2006. Since new PTAs signed closer to 2006 are expected to typically take about five years post-enforcement to reach the full potential of their impact on trade flows, our analysis is focussed on the early (or short-run) effects of these PTAs.

III. Literature Review

Theoretical work on PTAs highlights that the possibility of trade creation and trade diversion stemming from joining an agreement depends on cost structures in partner countries versus cost structures in non-members countries (Baldwin and Venables 1995; Bhagwati, Greenaway and Panagariya 1998). Early work by Viner (1950) argues that regional trade agreements can be beneficial or harmful to participating countries because the preferential nature of these trade agreements generates both trade creation and trade diversion.

In essence, trade creation is the elimination of customs tariffs on the inner border of unifying states, resulting in a less costly source of supply

within the area. This is expected to be beneficial to both member countries, and to the global society, due to enhanced efficiency. On the other hand, trade diversion is the substitution of a more costly source of supply within the area for a less costly source outside the area. Empirical attempts to evaluate the economic impact of trade diversion involves determining if there are efficiency costs, by way of distortion, in the patterns of trade away from those expected on the basis of comparative advantage; or scale economies owing to increasing returns to scale. In this context, a number of studies have employed gravity models to analyse the impact of PTAs in general¹¹ and in the Asian region.¹²

III.1 The Gravity Model in the Empirical Literature

The gravity model of bilateral trade is based on the idea that trade between two countries is a function of the countries' size as well as the distance between them. In its most elementary form, the basic construct of the gravity model can be expressed as:

$$T_{ij} = \frac{KM_i^{b1}M_j^{b2}}{D_{ij}^{b3}} \quad (1)$$

where T_{ij} is volume of trade between countries i and j , K is a proportionality constant, M_i is the mass of the country of origin (in applications to bilateral trade patterns usually reflected by the country's GDP), M_j is the mass of the country of destination, D_{ij} is the physical distance between the two countries, $b1$ is the potential to generate flows, $b2$ is the potential to attract flows, and $b3$ is an impedance factor reflecting the distance decay in trade. The explanatory variables such as economic size (reflected by the country's GDP) is expected to have a positive effect on bilateral trade, while greater distance between countries is expected to yield a negative effect.

This model was first adopted by Tinbergen (1962) and Poyhonen (1963) for estimating bilateral trade flows within the European Union

(EU). Studies such as Anderson (1979), Bergstrand (1985), Sanso, Cuairan and Sanz (1993), Matyas (1997) and Anderson and van Wincoop (2003) have improved upon its theoretical foundations and these models have been applied by several empirical studies including Sharma and Chua (2000), Polak (1996), Lee and Park (2005), Kien and Hashimoto (2005) and Pusterla (2007) to the Asian context.

This basic model can easily be augmented to include other variables, such as whether countries i and j share borders, have the same language, or are members of a regional integration agreement (Feenstra 2004). Common language, common border or common currency is expected to have a positive effect on bilateral trade. Aitken (1973) was the first study to include a dummy variable to estimate the effect of a PTA, with the variable taking a value of one if the two trading countries are both members of the same agreement and zero otherwise. A positive coefficient on this variable indicates that PTAs tend to generate more bilateral trade among their members. Similar studies applying a gravity model to estimate the effect of a PTA for the Asia Pacific region include Hamilton and Winters (1992), Frankel (1993), Primo Braga et al. (1994), Frankel and Wei (1994), Bayoumi and Eichengreen (1997), Frankel and Wei (1998),¹³ Polak (1996), and Pusterla (2007).

IV. Empirical Specification and Data

Following Frankel (1993), we use the following augmented gravity model¹⁴ to estimate bilateral trade flows:

$$\begin{aligned} \ln(\text{Real Trade}_{ijt}) = & \beta_0 + \beta_1 \ln(\text{GDP}_i \text{GDP}_j)_t \\ & + \beta_2 \ln(\text{GDP}_i \text{GDP}_j / \text{POP}_i \text{POP}_j)_t \\ & + \beta_3 \ln \text{Dist}_{ij} + \beta_4 \text{Adj}_{ij} \\ & + \beta_5 \text{ComLang}_{ijt} + \beta_6 \text{BFTA}_{ijt} \\ & + \beta_7 \text{PFTA}_{ijt} + \beta_8 \text{AFTA}_{ijt} \\ & + \beta_9 \text{APTA}_{ijt} + \delta \text{YEAR}_t + \varepsilon_{ijt} \end{aligned} \quad (2)$$

where i and j denote countries, and t denotes time. Real Trade_{ijt} denotes the total real bilateral trade value (sum of exports and imports) between

country i and j in year t . This specification has been found to be relatively robust when there are no missing or zero-valued trade flows. This ensures that employing a logarithmic transformation will not hinder the estimation process (Linders and de Groot, 2006).¹⁵

Further, apart from the ASEAN+6 members, our analysis will also include the United States and the EU as additional trading partners. The motivation being that the U.S. and EU were among the top five trading partners of all the members of ASEAN+6 during this time period,¹⁶ and were the primary drivers in expanding the global production networks involving South and East Asian countries.¹⁷

All trade data between the eleven largest ASEAN+6 countries and their trade with the U.S. and EU are taken from the United Nations (2010), and are deflated by the country specific GDP deflator of country i with a base year of 2000 = 100. GDP is real GDP, POP is population, and Dist is distance between country i and j . Adj is a binary variable which is unity if i and j share a land border, while ComLang is also a binary variable which is one if i and j have a common language. Data on GDP and population is from the World Bank, and distance and language variables are taken from relevant Internet sources.¹⁸

The four PTA dummy variables that augment the traditional gravity model are defined as follows. BFTA_{ijt} measures the effect of being a member to a bilateral PTA and takes the value one if the j th country is a member to a bilateral PTA with country i at time t , and zero otherwise. These capture the effect of the twelve bilateral PTAs (listed in Table 1) on bilateral trade involving the eleven largest ASEAN+6 member countries. The variable PFTA_{ijt} measures the effect of being a member to a plurilateral PTA (except membership in the AFTA or APTA) and takes the value one if the j th country is a member to a plurilateral PTA with country i at time t , and zero otherwise. These capture the effect of the three plurilateral PTAs (ACFTA, AKFTA and the TPP) listed in Table 1. The last two dummy variables AFTA_{ijt} and APTA_{ijt} measure the effect of membership of our sample group in AFTA and APTA respectively

and take a value 1 if both countries i and j are members of AFTA or APTA at time t . Since China officially entered APTA in 2001, the APTA dummy measures its effect on bilateral trade from this period onwards. Finally, *YEAR*, encompasses dummy variables for each year of the sample time frame.

In estimating specification (2), our study employs a pooled cross-section panel data regression from 1994 to 2006. Our sample consists of 1,716 observations in total. Initially, both fixed and random effects regressions are employed with this panel data set.¹⁹ The former of these methodologies aids in controlling for unobserved heterogeneity that is time invariant and correlated with independent variables. In our subsequent analysis, we disaggregate the sample by individual countries, and for this research extension, the preferred specification is fixed effects. We also

motivate this choice via results from the Hausman and Taylor (1981) test.

V. Results and Policy Implications

For comparison purposes, Table 2 presents both the fixed and random effects estimates of the gravity model. It is observed that the coefficients of GDP, per capita GDP and distance have the expected signs and magnitudes in both models. For instance, in general, countries in our sample with a larger economic size have more intense trade flows. In the random effects model, the coefficients on adjacency and common language are not in the expected direction, but are statistically insignificant. Unfortunately, one limitation of the fixed effects approach is that since the fixed effects estimator exploits variation over time, one cannot obtain the estimates for time-invariant factors such

TABLE 2
Gravity Model Estimates of Bilateral Trade Flows
for ASEAN+6, 1994–2006

	<i>Fixed Effects</i>	<i>Random Effects</i>
GDP in pair	0.583*** (0.180)	0.729***(0.030)
Per capita GDP in pair	1.354*** (0.190)	0.368***(0.029)
Distance	—	−0.731***(0.082)
Adjacency	—	−0.103 (0.243)
Common Language	—	−0.272 (0.235)
AFTA	—	1.343***(0.194)
BFTA	0.928*** (0.035)	0.081** (0.038)
PFTA	0.066 (0.046)	0.292***(0.047)
APTA	0.189*** (0.072)	0.549***(0.070)
R-squared	0.659	0.815

NOTES: The dependent variable is the natural log of real bilateral trade. All explanatory variables except the dummy variables are in natural logarithms. Robust standard errors of the estimated coefficients are reported in parentheses. Intercept and year dummy variables are included (but not reported here). ***, **, and * indicate that the estimated coefficients are statistically significant at the 1 per cent, 5 per cent and 10 per cent level respectively.

as distance, adjacency, common language, area, etc. (Lee and Park 2005).

Turning our focus to the key variables of interest, it appears that the impact of joining a bilateral PTA increases bilateral trade flows within the chosen group of countries (the BFTA dummy is positive and statistically significant) in both models. With respect to plurilateral PTAs (excluding APTA and AFTA), the impact on bilateral trade flows is also positive and statistically significant, albeit only in the random effects model.²⁰ The impact

of APTA is found to be positive overall and statistically significant at a significance level of 1 per cent in both models.

To compare the fixed and random effects estimations, a Hausman (1978) test was run. A significant *p*-value was obtained from this test, indicating that the use of fixed effects estimation is more appropriate with this data set. Hence, the remaining analysis in this paper focuses on a fixed effects regression. In particular, Table 3 presents the estimates for sub-sample analysis for

TABLE 3
Country Specific Gravity Model Estimates (Fixed Effects)

	<i>BFTA</i>	<i>PFTA</i>	<i>APTA</i>	<i>R-squared</i>
Australia	0.058 (0.051)	—	—	0.839
China	—	0.014 (0.065)	0.247*** (0.085)	0.959
India	0.109 (0.099)	—	0.548*** (0.166)	0.849
Indonesia	—	0.116 (0.121)	—	0.888
Japan	-0.254*** (0.053)	—	—	0.849
Korea	-0.063 (0.109)	-0.115 (0.089)	0.198* (0.108)	0.834
Malaysia	-0.147 (0.154)	0.329** (0.129)	—	0.696
New Zealand	0.013 (0.067)	0.431*** (0.152)	—	0.805
Philippines	0.128 (0.209)	0.499*** (0.134)	—	0.566
Singapore	-0.014 (0.048)	0.247*** (0.088)	—	0.889
Thailand	0.191** (0.085)	0.513*** (0.170)	—	0.771

NOTES: The dependent variable is the natural log of real bilateral trade. Robust standard errors of the estimated coefficients are reported in parentheses. Intercept, year dummy variables and all other explanatory variables indicated in Table 2 are included (but not reported here). ***, **, and * indicate that the estimated coefficients are statistically significant at the 1 per cent, 5 per cent and 10 per cent level respectively.

individual countries. This disaggregated analysis produces interesting results that are worthy of further discussion.

First, the coefficient on BFTA is not consistent across countries, in terms of direction and significance. For instance the impact of country-specific bilateral PTAs appears to be insignificant for Australia, India, Korea, Malaysia, New Zealand and Singapore. However, in the case of Thailand, bilateral PTAs appear to significantly increase trade among its members, at the 5 per cent level. In contrast, and unexpectedly, the BFTA dummy is negative and significant at the 1 per cent level for Japan. It is possible that this observed negative impact is capturing the early effect of only one bilateral PTA involving Japan — the Japan-Singapore FTA which was implemented in 2002. Ando (2007) argues that this FTA attracted very low rates of utilization from Japanese firms as there was a perception of limited scope for tariff reduction, and the primary sector in particular was largely ignored in the FTA. Further, Japanese firms were found to use Singapore more as a sales and local headquarter base than a production base thus contributing to a lower incentive by firms to use this PTA. As a result of this there is a likelihood that bilateral trade in services rather than goods, might have expanded due to this PTA for Japan. However, estimating this is beyond the scope of this study. It is also possible that future analyses of the long-term impact of this PTA on bilateral trade may uncover results that flow in the opposite direction of the short term impact found. Additionally, the incentive for firms to make use of this PTA may have strengthened, post-2006, with Japan entering into an ASEAN-wide economic partnership agreement.

Second, except for Korea, all the remaining ASEAN+6 members who entered into a plurilateral PTA (apart from AFTA and APTA) have benefitted from their membership in our sample time frame via registering a positive effect on their bilateral trade. Most of these results are significant (at either the 1 per cent or 5 per cent level), except for China and Indonesia. In the case of Indonesia, the largest economy among the ASEAN+6, it is surprising to find an insignificant effect on its bilateral trade

for any plurilateral PTAs. This includes AFTA, which Indonesia has been a member of for more than a decade. The same result was also found when employing a random effects regression with the sub-sample of Indonesia. One potential explanation of this finding is that Singapore started reporting official bilateral trade statistics with Indonesia post-2003. Data prior to 2003 stems only from the Indonesian side, and this may have resulted in the bilateral trade flows reported prior to 2003 being an underrepresentation of the real trade volumes.²¹

Third, consistent with the results in Table 2, APTA has benefitted all of its members (India, China and Korea). Fourth, Thailand stands out as the only country within the ASEAN+6 that has a positive and significant coefficient on both BFTA and PFTA. This is possibly attributable to better rates of FTA utilization in Thailand. A recent study by Wignaraja et al. (2010) focuses on exporting firms in Thailand and observes that both the Thailand-Australia FTA, and the Thailand-India FTA Early Harvest Programme attracted high rates of utilization, particularly in autos/auto parts for the former and in electronics for the latter.

The fifth and final finding that is worthy of further discussion is the case of Singapore. This is an important case study as it has the most number of overlapping PTA memberships during the period under study. While the plurilateral PTAs exhibit positive and significant influence on bilateral trade, it appears that the relevant bilateral PTAs have exerted a negative (albeit statistically insignificant) influence on trade flows. The positive effect of the plurilateral PTAs is a likely reflection of the strong regional manufacturing and transshipment hub role that Singapore plays among the ASEAN countries. On the other hand, the insignificant result for its bilateral PTAs is a bit unexpected and therefore needs to be carefully interpreted. This is particularly so as several important characteristics of Singapore's trade and trade policy separates itself from the other countries under analysis. For instance, Singapore's bilateral PTAs have undertaken substantial liberalization commitments in services trade, investment, manpower flows, as well as deeper regulatory measures pertaining to

reduction or removal of non-tariff barriers, none of which can be explained by the above model as the data pertains to goods trade only. Thus, bilateral PTAs may have had a positive impact in expansion of Singapore's bilateral services trade rather than goods trade, thus reflecting the insignificant coefficient for the BFTA dummy variable for trade in goods only. Thus the error term in our specification may be capturing the deeper liberalization in a PTA beyond trade in goods, and any correlation between this residual term and the BFTA variable will bias our estimate for the case of Singapore (Baier and Bergstrand 2007).

Also, as explained in the Japanese case above, Singapore is mostly used as a major sales and headquarter base by firms unlike Thailand and Indonesia, thereby reducing incentives for PTA utilization to expand production. This is well reflected from the evidence based on firm-level surveys involving 841 manufacturing firms based in China, Japan, Korea, the Philippines, Singapore, and Thailand (Kawai and Wignaraja 2011). This study found that it is the Chinese firms that tend to have the highest current rate of PTA utilization, whereas Singapore firms reported the lowest PTA utilization rate.²²

Finally, while the above response may be interpreted as an early indication of the "noodle-bowl" effect of complex ROOs, it is also important to be cautious in interpreting trade data on account of re-exports measuring transshipment value for Singapore.²³ Notably, the share of re-exports to total exports in Singapore's exports to Malaysia in 2004 was estimated at 62 per cent (Singapore Department of Statistics 2005). This implies that the negative effect of Malaysia's bilateral PTA dummy, capturing the impact of only the Malaysia-Japan EPA for its first year and on few goods, also accounts for the portion of trade between Japan and Malaysia that is not directly shipped between the two countries, but instead transhipped through Singapore. Unfortunately, the data on the proportion of such trade is unavailable, and is also subject to product-specific fluctuations, with manufacturing goods involving parts and components more likely to involve such transshipment.

Overall the above early effects of PTAs on bilateral trade involving ASEAN+6 members provide three important policy implications. First is the fact that membership in a plurilateral PTA seems to have stimulated trade linkages much more than in a bilateral PTA for these countries. This could be a result of increased opportunities for greater market access and sharing similar ROOs involving a group of countries. With the ASEAN+6 involved in several new plurilateral PTAs since 2006,²⁴ it is expected that these effects are likely to strengthen in the near future, and that these PTAs could promote economic integration between the Asian countries. Second, there is clearly no evidence as yet that bilateral PTAs in the ASEAN+6 are emerging as a building block towards global free trade, or even towards Asian economic integration. However, one important limitation while interpreting the above results is that some only capture the impact of PTAs after one or two years of signing the agreement, therefore further research once these PTAs have had a longer time to have impact is needed. Third, the early effects of the gravity model results suggests that it might not be a prudent policy to negotiate a bilateral and a regional plurilateral PTA with the same country, as it may affect their utilization and effectiveness on stimulating trade linkages.²⁵

VI. Concluding Remarks

Amid the economic downturn following the Global Financial Crisis (GFC) and the stalled multilateral trade negotiations, regionalism through PTAs in Asia is likely to gain momentum as a means to promote trade liberalization. With more and more of such PTAs being proposed, negotiated and implemented across the ASEAN+6 and worldwide, this study has attempted to examine the impact of being a member to a *bilateral* PTA versus being a member to a *plurilateral* one, on bilateral trade flows for the eleven largest members of the ASEAN+6 grouping over 1994 to 2006. Utilizing an augmented gravity model, it provides a strong rationale for negotiating plurilateral rather than bilateral PTAs among the ASEAN+6 countries based on the early years of

new regionalism. Future analysis on the individual effects of these PTAs by country, corroborated by

firm level survey evidence is the next step in this research pathway.

NOTES

The authors would like to thank Barrett Owen for valuable research assistance and two anonymous referees for their comments and suggestions on an earlier version of this paper. The usual disclaimer applies.

1. The acronyms PTA and FTA (Free Trade Agreement) have been used interchangeably in this paper, PTA being a preferred term by academics and FTA preferred by policy-makers, government officials and the media.
2. According to a latest study by Kawai and Wignaraja (2009), there were nearly 54 FTAs concluded within these countries, with 78 more in the stage of negotiations or discussions.
3. Providing opportunities to generate economies of scale within a larger integrated market size, improving efficiency gains by reducing price distortions (see Helpman and Krugman 1985; Bhagwati 1998).
4. See Bhagwati (1995); Bhagwati, Greenaway and Panagariya (1998).
5. See Baldwin (1998); Kawai and Wignaraja (2010).
6. Baldwin (1993) introduces the Domino theory to capture the rapid expansion of regional trading blocs, generating gains from free trade for members only and thus driving the government of other non-member countries to join the membership in order to avoid the disadvantages (of isolation) caused by preferential trade liberalization.
7. See Kawai and Wignaraja (2009).
8. East Asia encompasses the People's Republic of China (PRC), Japan, Korea, Hong Kong, and Chinese Taipei.
9. This study included ASEAN, the Bangkok agreement, the Economic Cooperation Organization and the South Asian Association for Regional Cooperation as multilateral agreements.
10. As an example, Singapore has a bilateral Comprehensive Economic Partnership Agreement (CECA) and a regional PTA (ASEAN-India FTA) now operational with India; New Zealand has a bilateral PTA with Singapore and also is a member with it in the regional ASEAN-Australia New Zealand FTA (AANZFTA) and the Trans-Pacific Partnership (TPP) agreement that is currently being negotiated.
11. For various approaches undertaken to study the impact of RTAs, see Panagariya (1999, 2000), DeRosa (1998), Harrison, Rutherford and Tarr (2003), Robinson and Thierfelder (2002), Scollay and Gilbert (2000), and Lloyd and MacLaren (2004).
12. See Sharma and Chua (2000), Lee and Park (2005), Kien and Hashimoto (2005), Pusterla (2007), Batra (2007), Ando (2007), Kawai and Wignaraja (2007), Ekanayake et al. (2010).
13. Bayoumi and Eichengreen (1997) and Frankel and Wei (1998) captured the effects of extra-bloc trade and controlled for cross-regional or intra-regional membership by augmenting the traditional gravity model with relevant dummy variables.
14. For further research employing this approach, see Frankel (1993); Frankel, Stein and Wei (1995); and Soloaga and Winters (2001).
15. For future research, it is important to note that in the presence of missing or zero-value trade data, this estimation method can yield biased results. The Poisson and negative binomial distribution have been proposed as alternative methodologies in such cases — see Silvera and Tenreyo (2006) and Westerlund and Wilhelmsson (2006) for evidence on the former; and see Burger, Van Oort and Linders (2009) and Bair and Bergstrand (2009) for evidence on the latter of these methodologies.
16. Notably, the United States also implemented two bilateral PTAs with Singapore and Australia during this period.
17. See Athukorala (2010) and WTO (2011).
18. See <http://www.maritimechain.com/port/port_distance.asp>.
19. Several studies have used fixed effects in the gravity model, including Harrigan (1996) and Hummels (1999).
20. These findings remain when a sensitivity analysis is carried out and the major player of Singapore is removed and the regression re-run.
21. See Guerin (2003) for further explanation.
22. See Table 2 in Kawai and Wignaraja (2011).
23. Studies such as Sen (2000) have observed that trading partners of Singapore that have a high entrepot component of re-exports from Singapore viz. Malaysia, report import data according to country of origin, and therefore does not include Singapore's reported re-exports in their import data. This often creates substantial discrepancies

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- between Singapore's total exports reported to its trading partners and the latter's imports reported from Singapore as an origin country.
24. Notably, ASEAN now has a plurilateral PTA involving all +6 countries separately, and ASEAN+6 countries are now negotiating a Regional Comprehensive Economic Partnership (RCEP) agreement. Further, the United States is involved in negotiating the Trans-Pacific Partnership (TPP) agreement which is another big plurilateral PTA involving a number of ASEAN+6 countries including Singapore, Australia, New Zealand, Vietnam and Japan.
 25. Kawai and Wignaraja (2011) argue that the design and implementation of these PTAs have had a significant impact on their effectiveness.

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