THE EARLY EFFECTS OF PREFERENTIAL TRADE AGREEMENTS (PTAS) ON INTRA-REGIONAL TRADE WITHIN ASEAN+6 MEMBERS

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Abstract

This paper analyzes the early effect 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 (ASEAN+6) countries, using trade intensity indices and an augmented gravity model. The paper estimates the impact of being a member to a bilateral PTA versus one that is plurilateral in membership, on bilateral trade flows for the 11 largest members of the ASEAN+6 grouping over the period 1994-2006. The traditional gravity model is augmented by separately estimating the effects of bilateral and a plurilateral PTA membership.

JEL Codes: F14, F15, F17

Keyword(s): Preferential Trade Agreements, New Regionalism, Gravity model, ASEAN+6, Asia-Pacific Trade Agreement (APTA)

1. Introduction

Since the Asian financial crisis in 1997, a new regionalism has begun to emerge among the Asian economies through a network of bilateral and regional multilateral trade and economic cooperation agreements[i]. While this new regionalism was initiated with Singapore inking a bilateral preferential trade agreement (PTA) with New Zealand in 2001, 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[ii], and this trend is likely to be sustained in the near future.

The above has been geared primarily towards Asian economic integration, wherein FTAs can promote market-driven integration through a comprehensive coverage ranging from liberalization and facilitation of trade in goods, services, and investments. Policymakers in Asia are therefore of the belief that well designed and implemented FTAs should enhance trade and investment linkages both bilaterally and regionally among these economies[iii].

So far there has been no attempt in the empirical literature on the effects of these PTAs on intra-ASEAN+6 trade. This paper adds to that literature and specifically attempts to analyze how trade potential of these countries has been affected after entering into bilateral and regional PTAs, which in some cases are overlapping in membership. Since the gravity model of bilateral trade has been traditionally a very useful tool of assessing the impacts of trade agreements on bilateral trade flows, this paper estimates a augmented gravity model by adding dummy variables separately for bilateral PTA membership and plurilateral PTA membership, previously not been attempted by empirical studies in the ASEAN+6 context.

This study focuses on investigating the extent of the impact of entering into bilateral PTAs versus those that are plurilateral in their membership, on bilateral trade flows for the 11 largest members of the ASEAN+6 grouping[iv] over the period 1994-2006. Given that most of these countries trade heavily with the US and the EU which are both important parts of the global production networks, the following analysis will

include these two countries as additional trading partners.

The remainder of this paper is organized as follows. Section 2 briefly reviews the trends in PTA proliferation among these countries over the period under study. Section 3 analyzes the bilateral trade linkages in these countries using calculated trade intensity indices. Section 4 briefly reviews the empirical literature on the use of gravity model for measuring the effects of PTAs. Section 5 describes the model and provides the details on the data and estimation. Results and policy implications are discussed in Section 6, followed by conclusions and possible directions for future research.

2. Trends in PTA proliferation among ASEAN+6 members

Table 1 shows the list of PTAs involving ASEAN+6 members signed/enforced over 1994-2006. It is observed that out of 17 such PTAs, 12 were bilateral in scope rather than plurilateral ones. The oldest one among the plurilateral agreements has been the Asia-Pacific Trade Agreement (APTA) which has been in force since 1976. The APTA also potentially covers the largest market size with two of the emerging economies, viz. India and China as well as Korea being a member to this agreement, with China acceding to this agreement in 2001.

(Table 1 about here)

Among the bilateral PTAs, the Australia-New Zealand Closer Economic Relations (CER) has been the earliest one, in force since 1983. Subsequently, there has been a proliferation of bilateral PTAs since 2001 beginning with the bilateral PTA involving New Zealand and Singapore, a trend that has intensified in its pace 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[v]. Further, since most bilateral PTAs came into force from 2003 onwards, they are still evolving in terms of their impact on stimulating bilateral trade and investment linkages. This is more so as these countries have since entered into more bilateral and plurilateral PTAs among themselves. This implies that the gravity model estimates would be capturing only an early effect.

3. Trends in bilateral trade intensity among ASEAN+6 members

Trade intensity indices are often considered as a useful tool for analyzing bilateral trade linkages. It is a relative measure of bilateral trade shares of two countries with respect to their trade with the rest of the world. Yamazawa *et al.* (1991), Goto and Hamada (1994), Drysdale and Garnaut (1992) and Rajan et.al (2002) are examples of studies that have utilized the trade intensity index to analyse bilateral trade linkages involving Asian countries.

In the context of this paper, the indices are designed to capture the extent to which the ASEAN+6 member country regards its trading partner as being important in relation to the former's trade with the rest of the world (ROW), and vice versa. Data from United Nations Commodity Trade Statistics (Comtrade) database is used to compute the trade intensity indices.

An index value above 1 indicates a relative "over-representation" of the trading partner in the home country's trade[vi]. This also reflects the importance of a combination of factors such as distance, economic size, common borders, market-driven integration or membership to PTAs that may be responsible for such over-representation. Thus a bilateral or plurilateral PTA is very likely to reflect an increase in bilateral trade intensity continuously above 1, although they could be increasing due to market-driven integration without a PTA in place. Given the timeline of ASEAN+6 member PTAs in Table 1, it is possible to interpret whether observed increase in bilateral trade intensities are largely due to the PTA. Its effect however, can be better captured by estimating a gravity model, as shown in the following sections.

Figure 1 shows the trends in bilateral trade intensity of ASEAN-5 members with the +6 member countries (Australia, China, India, Japan, Korea, and New Zealand) and the EU and US over 1994-2006. It is observed that as of 2006, ASEAN-5 member countries had the strongest bilateral trade linkages with Australia, followed by Japan, New Zealand, India, Korea, and China. The EU is the only trading partner with whom ASEAN-5 did not have a strong bilateral trade linkage, with values estimated to be consistently below 1 during the entire period. It is also observed that PTAs with China, Australia and NZ could have been a contributory factor explaining the expansion of ASEAN-5's bilateral trade intensities with them post-2003.

(Figures 1 and 2 about here)

Figure 2 shows the trends in bilateral trade intensity of the +6 members with the five largest ASEAN members over the same period. Two distinct trends are observed. First, while Japan's strongest trade linkages with ASEAN-5 have been decreasing since 2000, that of China has been increasing very strongly among all the +6 members much before the ASEAN-China FTA actually came

into force. Second, New Zealand is the only country whose bilateral trade intensity with ASEAN-5, although increasing, has remained below 1, in spite of New Zealand signing two bilateral PTAs (with Singapore in 2001 and with Thailand in 2004), and a plurilateral PTA (P-4 also involving Singapore in 2006). On an average the trade intensities of Australia, India and Korea with ASEAN-5 members are also found to have increased, without the presence of a PTA during this period.

In order to estimate the effects of PTAs on trade within the +6 members, Figures 3 to 8 present the bilateral trade intensity trends of China, India, Australia, New Zealand, Japan and Korea respectively over 1994-2006. It is observed that China's bilateral trade linkages have expanded the most rapidly with the Philippines, as well as for Thailand, and declined with Singapore over this period (Figure 3). Notably, China's trade intensity with India surpassed the value 1, and increased with the US and EU over this period, in spite of the ASEAN-China FTA whose framework agreement was signed in 2002. In contrast, India recorded a rapid trade intensity increase with Indonesia over 2000-2003, as well as a consistent increase with Singapore since 2000. Its bilateral trade intensity declined with New Zealand over the period, improving only from 2005 onwards (Figure 4). India's trade intensity with China surpassed the value 1 in 2003, and has continually increased since. It has been however on the lower side with Japan and Korea. Figures 3 and 4 suggest that the enforcement of APTA and China's accession to it in 2001 are likely to have played an important role in expansion of China-India bilateral trade.

(Figures 3 and 4 about here)

Australia and New Zealand have had a very strong bilateral trade intensity (especially over the period 1994 to 1999) with a bilateral PTA (CER) enforced within them since 1983. However, a decline can be observed since 2002 (Figure 5a), with trade intensities of both countries have witnessed an upward trend with ASEAN-5 members (Figures 5b and 6). Notably, Australia's bilateral trade intensity has been increasing with the EU while declining with the US even after a bilateral PTA with the latter in 2004. Its trade linkages with other bilateral PTA partners, viz. Singapore and Thailand have however shown an increase, with a decline on an average for India and Korea (Figure 5b). Similar trends are observed for New Zealand, with its bilateral trade intensity with China being on an average higher than with the US and EU, and that with India being still under 1 (Figure 6).

(Figures 5a, 5b and 6 about here)

Figures 7 and 8 indicate that while both Korea and Japan have increased their bilateral trade intensity with the EU (in spite of no bilateral PTA) during this period, the same with most ASEAN-5 countries have declined in spite of bilateral PTAs signed during this period.

The overall results from the bilateral trade intensity trends seem to suggest that there is no evidence to indicate that signing or enforcing a bilateral PTA has significantly expanded bilateral trade within these countries relative to the ROW, except perhaps for ASEAN-5's bilateral trade with China, Australia and New Zealand since 2003, India-China bilateral trade since 2002[vii]. It is also observed that bilateral trade intensities in several country pairs have declined even after signing or enforcing a bilateral PTA, and have also increased wherein there has been no bilateral or plurilateral PTA involved.

(Figures 7 and 8 about here)

The above inconclusive results therefore prompts to utilize a gravity model of bilateral trade flows to analyse whether the effects of entering into bilateral or plurilateral PTAs have been significant or not for bilateral trade involving the chosen group of countries, controlling for the differences in economic size, distance and common borders among these countries.

4. 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. This model was first analysed by Tinbergen (1962) and Poyhonen (1963) for estimating bilateral trade flows within the EU countries. Studies such as Anderson (1979), Bergstarnd (1985), Sanso et.al (1993), Matyas (1997, 1998) and Anderson and Wincoop (2003) have improved upon its theoretical foundations and these models have been applied by several empirical studies including Sharma and Chua (2000), Lee and Park (2005) and Pusterla (2007) in the Asian context. The standard gravity model explanatory variables such as economic size and common language or currency are expected to have a positive effect on bilateral trade, while greater distance between countries are expected to yield a negative effect.

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, with a positive coefficient on this variable indicating that PTAs

tend to generate more bilateral trade among their members. Similar studies applying a gravity model to estimate the effect of a PTA include Frankel (1993) and Braga et al. (1994). A number of recent studies building upon this set of literature have have delved further into this issue and estimated the effect of trade creation and trade diversion due to the existence of PTAs[viii]. This has been done by augmenting the traditional gravity model with dummy variables for the purpose of estimating the effects of extra-bloc trade, and controlling for cross-regional or intra-regional membership.

While there is no clear consensus on what control variables are essential in an augmented gravity model, Yamarik and Ghosh (2005) have argued that a sensitivity analysis to assess the robustness of 47 commonly used control variables indicates that only 20 of them were the most robust variables. In particular, these included measures of levels of development, trade policy, common language, currency, geographic factors, relative population density, and most importantly, membership in selected regional trade agreements[ix].

5. Empirical Specification and Data

This paper contributes to the empirical literature in two ways. First, it separates the effects of inclusion in a bilateral PTA and a plurilateral or regional PTA, which has not yet been attempted by previous empirical studies involving the ASEAN+6 countries. Second, the paper also separates the effect of plurilateral PTAs to measure the effect of membership in very large regional trade agreements such as ASEAN Free Trade Area (AFTA) and the Asia-Pacific Trade Agreement (APTA) versus being a member to other plurilateral PTAs (viz. the ASEAN-China FTA, ASEAN-Korea FTA and P-4).

This research therefore augments a traditional gravity model as in Frankel (1993) with two dummy variables to capture the effect of bilateral and plurilateral PTAs and two dummy variables to capture the economic groupings of APEC and ASEAN. The resulting model estimated is:

$$\ln(\text{Real Trade}_{ijt}) = \beta_0 + \beta_1 \ln(GDP_i GDP_j)_t + \beta_2 \ln(GDP_i GDP_j / POP_i POP_j)_t + \beta_3 \ln Dist_{ij} + \beta_4 Adj_{ij} + \beta_5 ComLang_{ijt} + \beta_6 BFTA_{ijt} + \beta_7 PFTA_{ijt} + \beta_8 ASEAN_{ijt} + \beta_9 APTA_{ijt} + \delta YEAR_t + \varepsilon_{ijt} \quad (1)$$

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. Trade data are taken from the UN-Comtrade database, and are deflated by the US consumer price index (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.

The four PTA dummy variables are defined as follows. $BFTA_{ijt}$ measures the effect of being a member to a bilateral PTA and takes the value one if the jth country is a member to a bilateral PTA with country i at time t, and zero otherwise. These capture the effect of the 12 bilateral PTAs listed in Table 1, on bilateral trade involving the 11 largest ASEAN+6 member countries. The variable $PFTA_{ijt}$ measures the effect of being a member to a plurilateral PTA (except membership in AFTA or APTA) and takes the value one if the jth country is a member to a plurilateral PTA with country i at time t, and zero otherwise. These capture the effect of 3 plurilateral PTAs (ACFTA, AKFTA and the TPSEP or P-4) listed in Table 1, on bilateral trade involving the 11 largest ASEAN+6 member countries. The last two dummy variables $ASEAN_{ijt}$ and $APTA_{ijt}$ measure the effect of membership of the 11 largest ASEAN+6 countries in ASEAN and APTA respectively and take a value 1 if both countries I and j are members to ASEAN or APTA at time t. Finally, year denotes a set of binary variables which are unity if the specific year t.

This model is estimated for the period 1994-2006. All trade data is taken from the UN Comtrade database and data on GDP and population is from the World Bank, and distance and language variables are taken from internet sources[x]. A pooled cross-section panel data fixed effects estimation is initially employed when running specification (1). This is because if an omitted variable varies by country, but is constant over time, then inclusion of a country fixed effects term will eliminate this endogeneity bias. Feenstra (2002) clearly demonstrated that controlling for the 'relative distance effect', [which is an unobserved time-invariant omitted variable which refers to the likelihood that if country i and j are located relatively further away from the world market, they would trade more than otherwise], will provide more consistent estimates.

6. Results and Policy Implications

Column (1) of Table 2 presents the fixed effect 'within' estimates. This estimation technique provides more consistent estimates by controlling for the effects from omitted country specific factors. The disadvantage, however is that fixed

effects estimation produces no estimates for time-invariant factors such as distance, adjacency and common language. Although using fixed effects estimation with panel data results in consistent results, they may not always be the most efficient. Therefore, random effect results are also presented in Column (2) of Table 2. It is observed that in both cases, countries having a larger economic size have more intense trade flows as indicated by the positive and significant coefficients for GDP variable. For example, in our estimates in column (2), a 10% increase in GDP increases trade by 7.57%. A decline in distance also leads to an increase in bilateral trade, consistent with the gravity model. Surprisingly, the estimated coefficients on adjacency and common language are negative, albeit statistically insignificant.

Our primary focus is the impact of the four PTA variables. Under both the fixed and random effects estimation (columns (1) and (2) respectiavely), the impact of joining a bilateral PTA appears to be a small significant drop in bilateral trade, while that for a plurilateral PTA is positive and significant. Specifically, the estimated impacts on BFTA (-0.066 and -0.071) implies that a pair of countries joining a bilateral trade agreement experiences a decrease in bilateral trade of about 6.4% to 6.9%, with other variables held constant. This could be due to the fact that most BFTAs in this study involve Singapore as a member whose total trade involves a high component of trans-shipment measured by re-exports[xi], whose effects are not measured separately in this study[xii]. The estimated coefficients on PFTA point towards plurilateral agreements resulting in an increase in bilateral trade of about 16.6% to 33.5%. It is also worth noting that the positive impacts of plurilateral agreements extend to ASEAN and APTA.

Next, a Hausman (1978) test was run to test the null hypothesis that the coefficients estimated by the random effects model are the same as those estimated by the consistent fixed effects estimator. A significant p-value was obtained from this test, indicating that the use of fixed effects estimation is more appropriate with this data set. However, since the study is interested to analyse the effect of PTA membership, which is time invariant, the random effects model for country-specific results are estimated in Table 3.

The country-specific results reveal a diverse and interesting range of impacts of PTAs on bilateral trade between the selected countries. First, the strongest negative and significant effect of bilateral PTAs on trade within ASEAN+6 is found to be in case of Japan, consistent with its bilateral trade trends over this period in Figure 7. Second, except for Indonesia and Korea, all the remaining ASEAN+6 members who entered into a plurilateral PTA (apart from AFTA and APTA) registered a strong positive effect from membership on their bilateral trade. Surprisingly, Indonesia, the largest economy among the ASEAN+6 is found to have a positive but insignificant effect on its bilateral trade both for any plurilateral PTAs, including the AFTA, of whom it has been a member since more than a decade[xiii]. Third, consistent with both results in Table 2, bilateral trade of all three members of the APTA (India, China and Korea) are observed to have been significantly positively benefitted from its membership. Next, with the exception of Thailand, it appears that the bilateral trade of no ASEAN+6 member country has yet significantly positively benefitted from both bilateral and plurilateral PTAs.

In the case of Singapore, the ASEAN+6 country with the most overlapping PTA memberships during the period under study, bilateral PTAs seem to have had a negative and significant impact while plurilateral PTAs had the opposite effect. While this may be interpreted as an early effect of overlapping PTA membership of the same country in a bilateral and a plurilateral agreement, it is important to note that this could also be due to the effect of re-exports especially for entrepot city-state economies such as Singapore[xiv]. It is also with this caveat in mind that similar results obtained for Malaysia (Singapore's largest trading partner with a high share of re-exports), and the significant positive impact of New Zealand's membership in a single plurilateral FTA (the P-4 agreement) needs to be viewed.

For New Zealand's case, the impact of its bilateral PTAs during this period seem to have been positive, but insignificant, reflecting its low but increasing bilateral trade intensity with many ASEAN+6 countries. Finally, Australia's membership in bilateral PTAs over this period with Thailand, Singapore and the US do not seem to have had a significant impact on its bilateral trade with these major trading partners.

The above early effects of PTAs on bilateral trade involving ASEAN+6 members provides three important policy implications. First is the fact that membership in a plurilateral PTA seems to stimulate trade linkages more than in a bilateral PTA for these countries, particularly because of opportunities for a greater market access and similar Rules of Origin involving a group of countries. With ASEAN+6 involved in several new plurialteral PTAs since 2006, these effects are likely to strengthen in the near future, and these PTAs could promote economic integration between

the Asian countries. Second, there is clearly no evidence yet that bilateral PTAs in ASEAN+6 are emerging as a building block towards global free trade, or even towards Asian economic integration. Note however that this result is based only on the first one or two years of signing of some of these PTAs and could improve, as businesses in these countries take efforts to utilize them more effectively. Third, the early effects of the gravity model results suggests that it may not be a prudent policy to negotiate a bilateral and a regional plurilateral PTA with the same country, as it may affect its utilization and effectiveness on stimulating trade linkages. Several studies have argued that design and implementation of these PTAs have a significant impact on their effectiveness, and stronger business survey evidence such as Kawai and Wignaraja (2011) are needed on understanding how businesses in Asia are likely to respond to these PTAs . Interestingly, Kawai and Wignaraja (2011) note in a firm survey involving 841 manufacturing firms based in China, Japan, Korea, the Philippines, Singapore, and Thailand that Chinese firms tend to have the highest current rate of FTA utilization, with Singapore firms having the lowest rate[xv], which is largely consistent with the FTA estimates in Table 3, with PTAs having a strong positive and significant effect on China's trade and a negative effect on Singapore's trade for BFTAs.

7. Concluding Remarks

Amid the economic downturn following the global financial crisis and the stalled multilateral trade negotiations, regionalism through FTAs in Asia is likely to gain momentum as a means to promote trade liberalization. This study provides a strong rationale for negotiating plurilateral rather than bilateral PTAs among the ASEAN+6 countries based on the early years of new regionalism. With more and more of such PTAs being proposed, negotiated and implemented across ASEAN+6 and worldwide, the above study has attempted to estimate only an early effect and therefore fills an important gap in the literature. Detailed research on individual effects of these PTAs by country, corroborated by firm level survey evidence needs to be more forthcoming to enhance the understanding of the complex effect of ever emerging noodle-bowl of PTAs on intra-Asian and on global trade.

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Table 1: List of PTAs involving selected ASEAN+6 members signed/enforced over 1994-2006[xvi]

Title	Members	Scope	Year signed	Year enforced
Asia-Pacific Trade Agreement (previously known as Bangkok Agreement)	India, China, Korea, Lao PDR, Bangladesh and Sri Lanka	Plurilateral	1975	1976
Australia-New Zealand Closer Economic Relations (CER) Agreement	Australia and New Zealand	Bilateral	1983	1983
ASEAN Free Trade Area (AFTA)	ASEAN	Plurilateral	1992	1993
Agreement between New Zealand and Singapore on a Closer Economic Partnership (ANZSCEP)	New Zealand 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)	US and Singapore	Bilateral	2003	2004
Australia-US FTA	Australia and US	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 Strategic Economic Partnership Agreement (TPSEP)	Brunei, Singapore, New Zealand and Chile	Plurilateral	2005	2006
Malaysia-Japan Economic Partnership Agreement	Malaysia and Japan	Bilateral	2005	2006

Source: FTA database available at ADB (2010)

Table 2: Gravity model of bilateral trade flows between selected ASEAN+6 member economies, 1994 – 2006

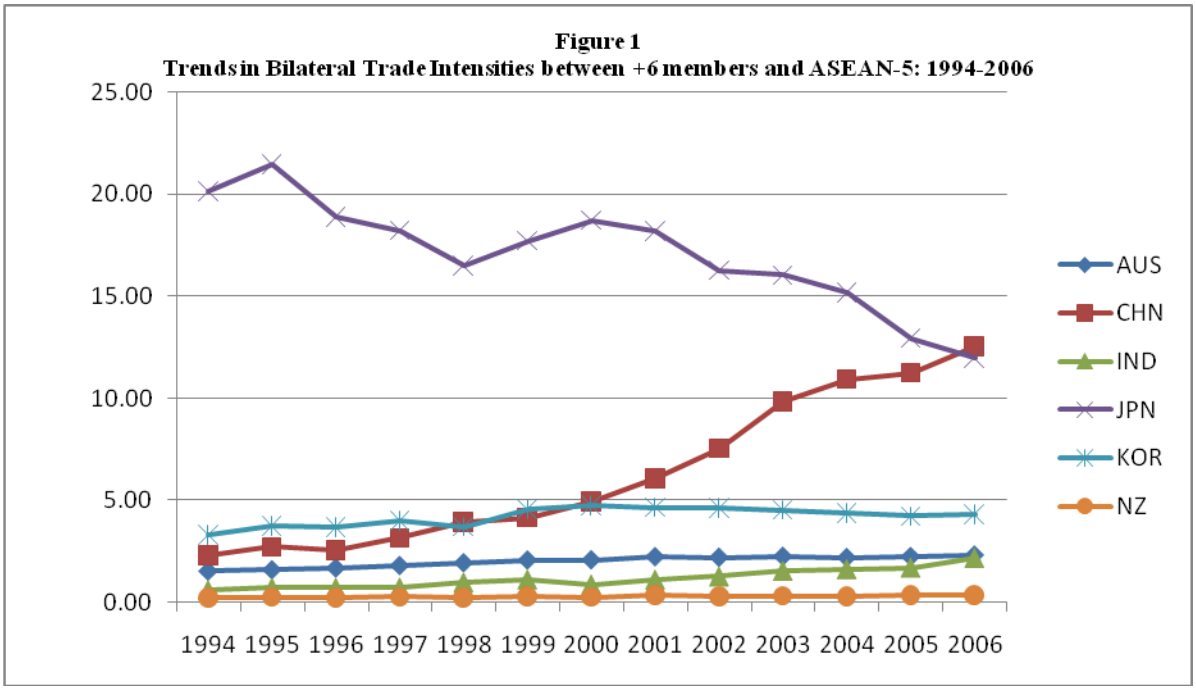
	Fixed effects	**Random effects**
GDP in pair	1.611*** (0.143)	0.757*** (0.029)
Per capita GDP in pair	0.015 (0.150)	0.358*** (0.028)
Distance	-	-0.749*** (0.081)
Adjacency	-	-0.091 (0.239)
Common language	-	-0.106 (0.231)
BFTA	-0.066** (0.028)	-0.071** (0.030)
PFTA	0.154*** (0.037)	0.289*** (0.037)
ASEAN	-	1.337*** (0.190)
APTA	0.306*** (0.057)	0.491*** (0.056)
R-squared	0.541	0.828

Notes: The dependent variable is the natural log of real bilateral trade. All explanatory variables except the dummy variables are taken 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 percent, 5 percent and 10 percent level respectively.

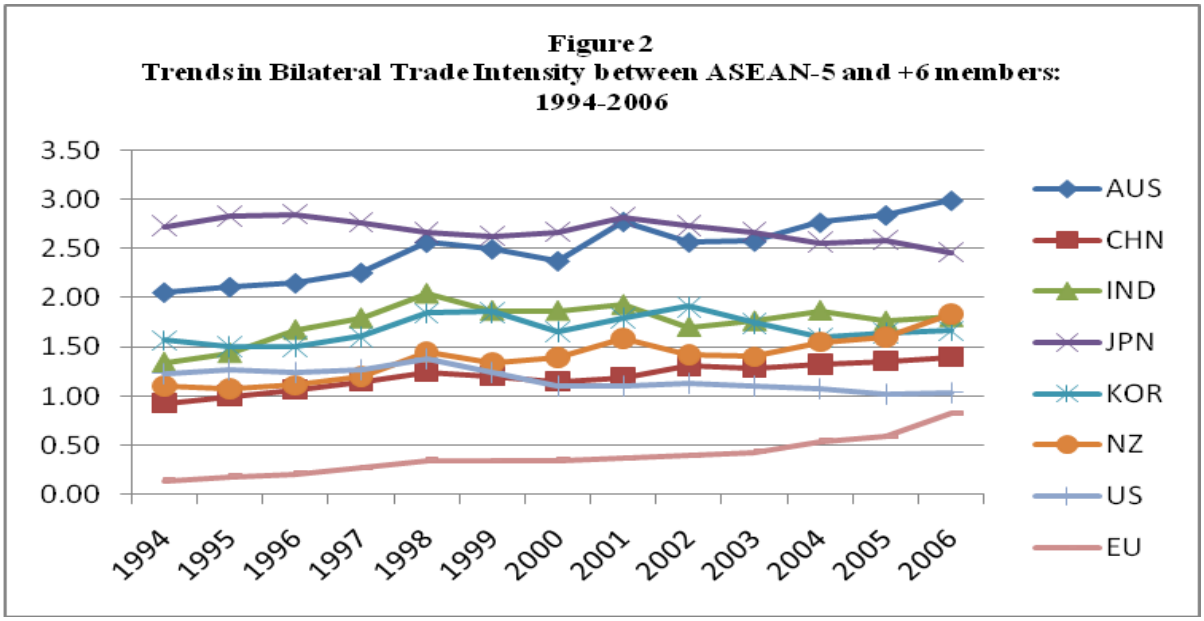
Table 3: Country specific gravity model of bilateral trade flows between Asian economies, 1994 – 2006

	BFTA	PFTA	ASEAN	APTA	R-squared
Australia	0.048 (0.055)	-	-	-	0.857
China	-	0.175** (0.072)	-	0.224*** (0.081)	0.899
India	0.126 (0.101	-	-	0.589*** (0.128)	0.885
Indonesia	-	0.068 (0.113)	0.065 (0.369)	-	0.942
Japan	-0.308*** (0.052)	-	-	-	0.682
Korea	-0.018 (0.123)	-0.119 (0.098)	-	0.416*** (0.085)	0.810
Malaysia	-0.335** (0.149)	0.336*** (0.111)	0.740** (0.311)	-	0.955
New Zealand	0.027 (0.067)	0.453*** (0.152)	-	-	0.879
Phillipines	-0.013 (0.207)	0.474*** (0.115)	1.643*** (0.236)	-	0.946
Singapore	-0.124** (0.057)	0.235** (0.100)	1.431** (0.612)	-	0.912
Thailand	0.196** (0.0858)	0.374*** (0.138)	0.977*** (0.239)	-	0.960

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 percent, 5 percent and 10 percent level respectively.

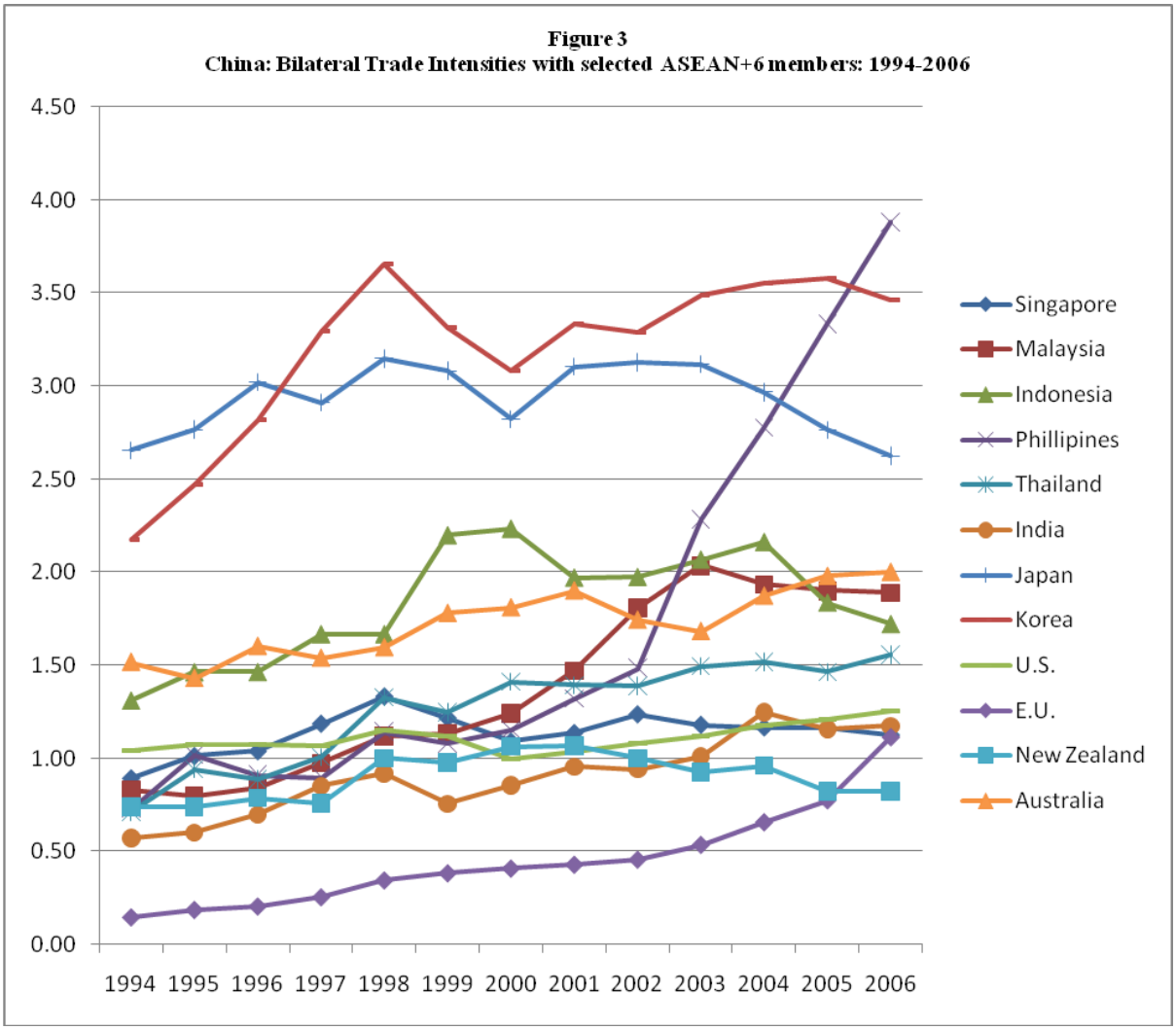


Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)



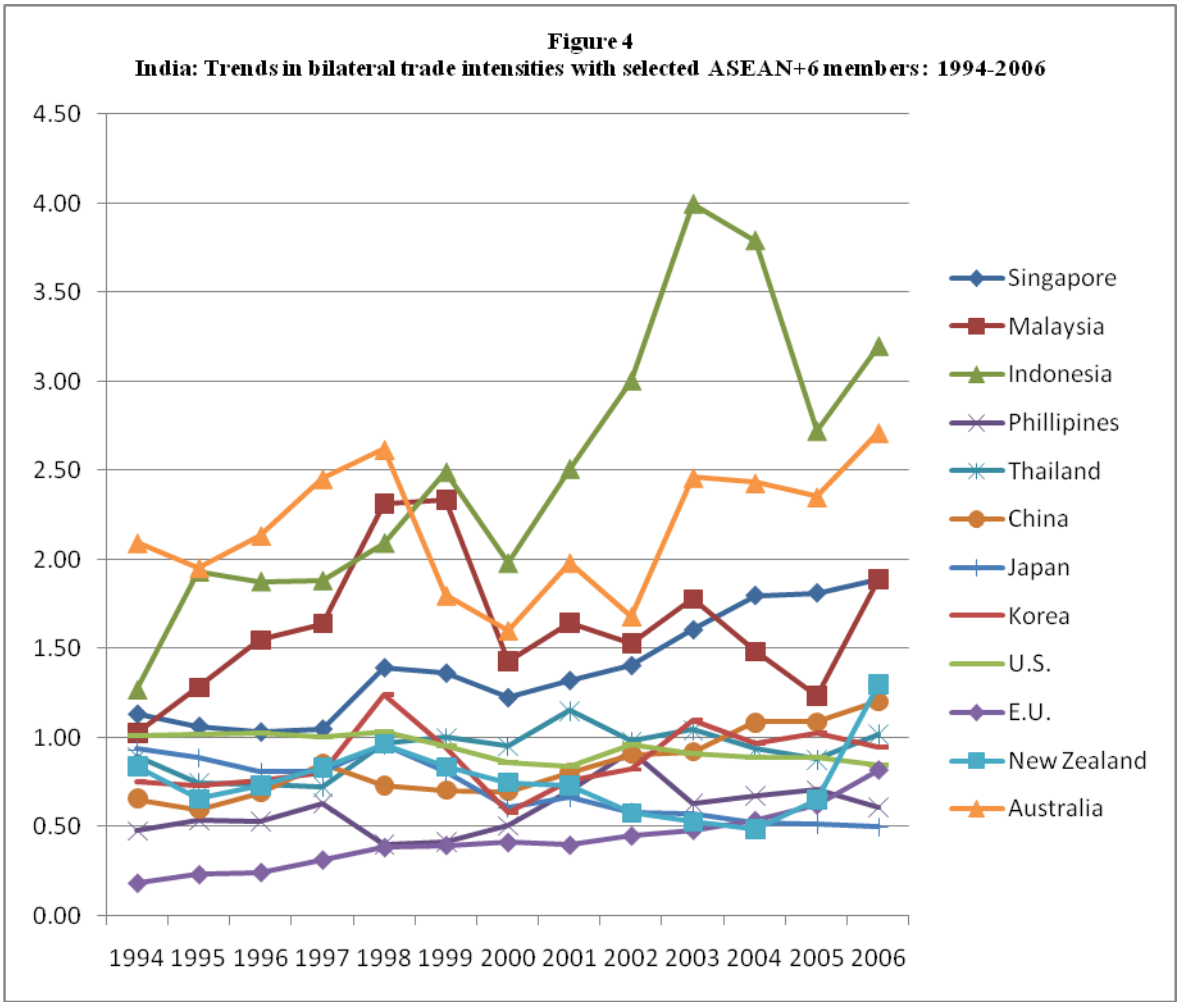
Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

Figure 3
China: Bilateral Trade Intensities with selected ASEAN+6 members: 1994-2006

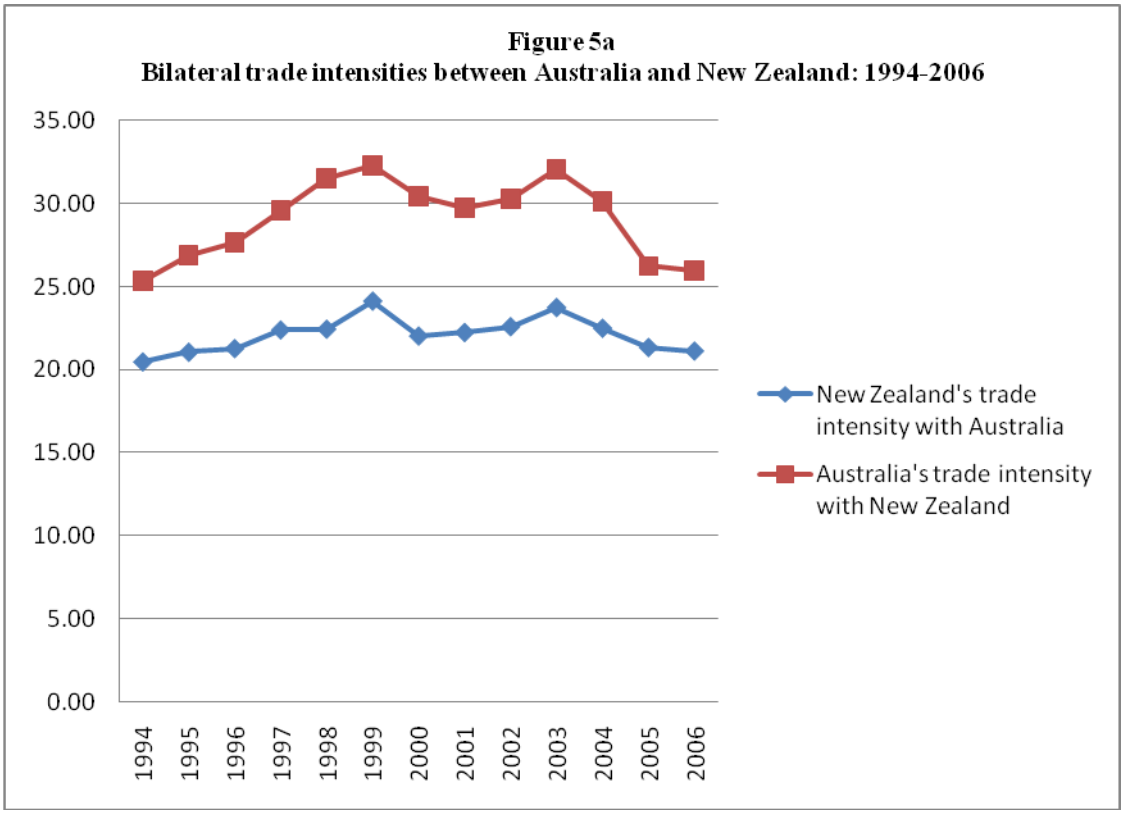


Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

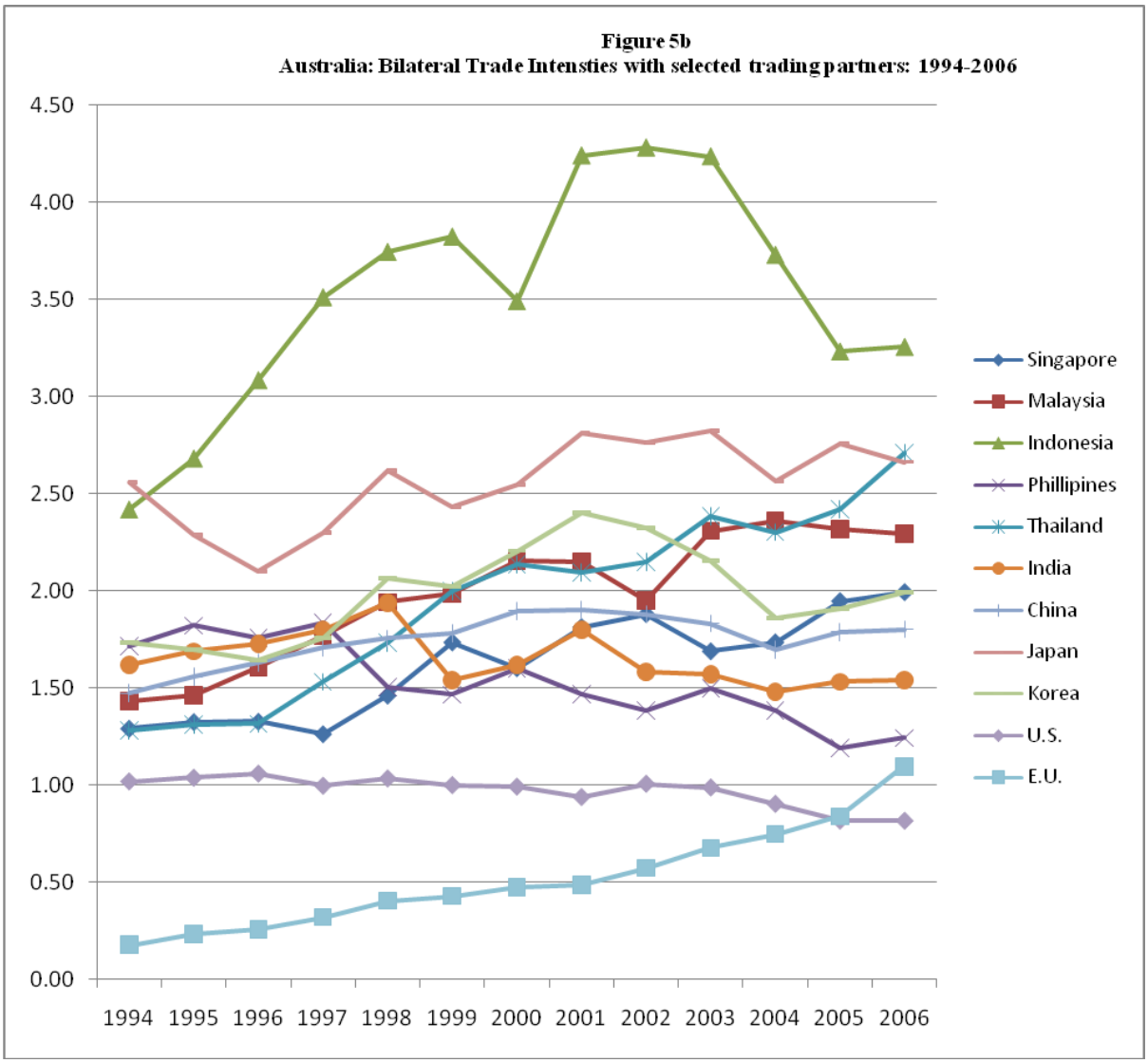
Figure 4
India: Trends in bilateral trade intensities with selected ASEAN+6 members: 1994-2006



Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

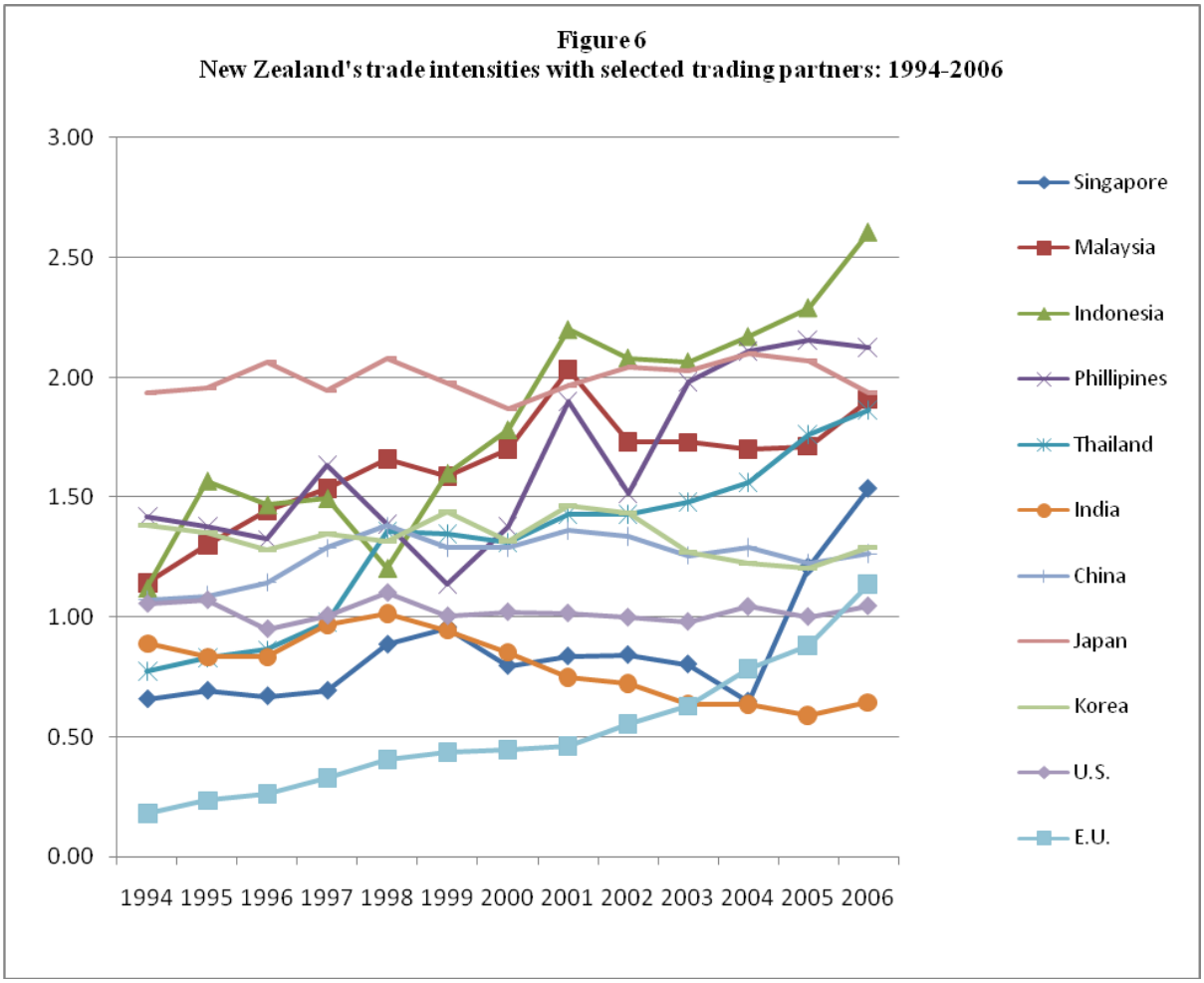


Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)



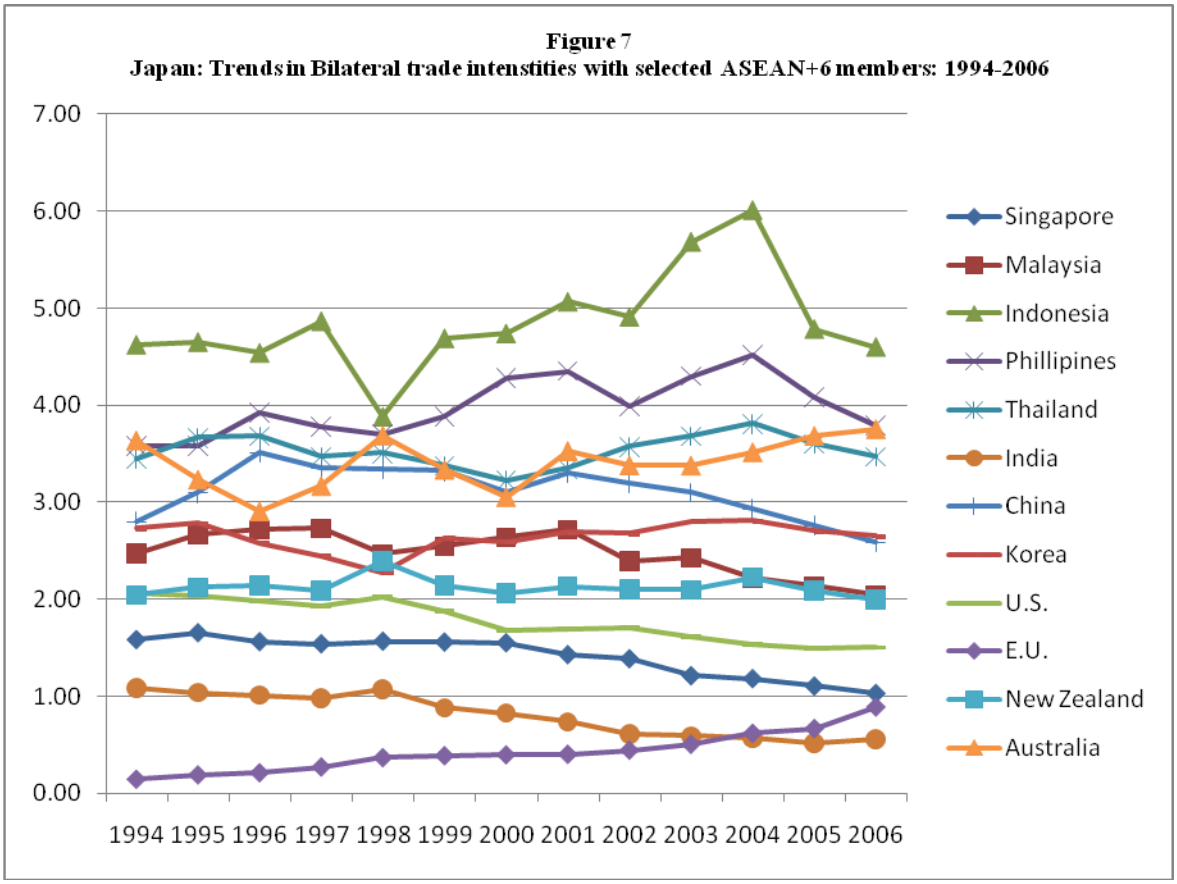
Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

Figure 6
New Zealand's trade intensities with selected trading partners: 1994-2006

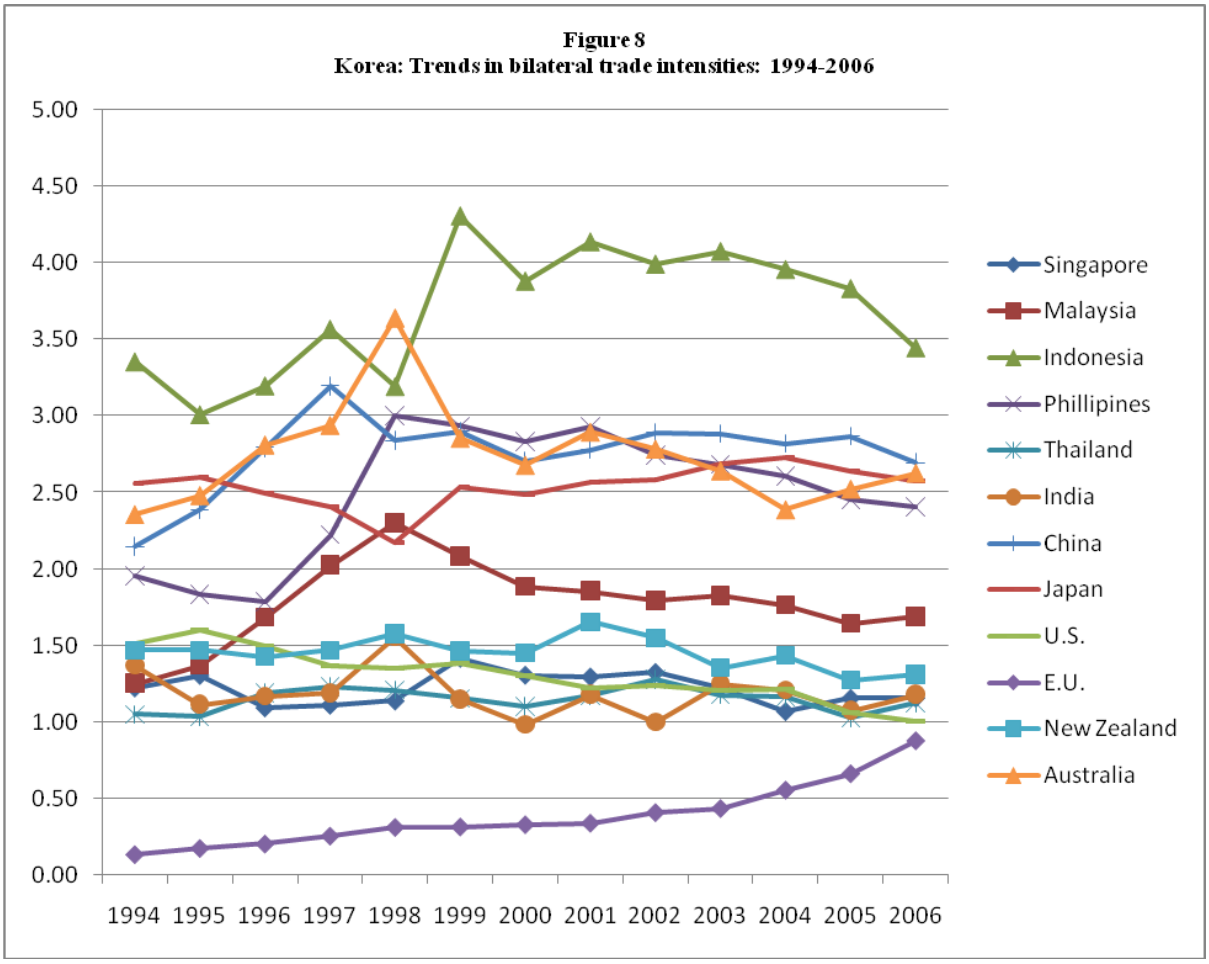


Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

Figure 7
Japan: Trends in Bilateral trade intenstities with selected ASEAN+6 members: 1994-2006



Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)



Source: Author's own calculations using UN Comtrade Database, see United Nations (2010)

Annex 1

Trade Intensity Indices

a) Total Trade Intensity

The bilateral trade intensity index for total trade is as follows:

$$T_{ij} = [(X_{ij}+M_{ij})/(X_i+M_i)]/\{[X_{wj}+M_{wj})-(X_{ij}+M_{ij})]/[(X_w+M_w)-(X_i+M_i)]\}$$

where: T_{ij} = Total trade intensity index of country i with country j; X_{ij} = Exports of country i to j ; M_{ij} = Imports of country i from j; X_i =Total exports of country i; M_i= Total imports of country i; X_{wj}= Total world exports to country j ; M_{wj} = Total world imports from country j; and X_w = Total world exports; M_w = Total world imports.

This index is interpreted as a relative measure of two ratios. The numerator represents the share of bilateral trade between country i and j as a percentage of total trade of country i. This forms the numerator of the total trade intensity index. The second ratio in the denominator represents the total trade of country j with the world excluding country i as a share of total world trade excluding country i. This forms the denominator of the total trade intensity index.

If the numerator exceeds the denominator, i.e. if the value of $T_{ij} > 1$, It implies that the bilateral trade intensity for country i with country j is greater than in comparison to country i's trade with the rest of the world (ROW). For instance, if New Zealand is regarded as country i and country j is represented by its trading partners, viz. Australia, then a value of $T_{ij} > 1$ implies that New Zealand prefers to trade more intensely with Australia than with the rest of the world.

NOTES:

[i] See Kawai and Wignaraja (2009) for details on reasons for FTA proliferation and their current trends.

[ii] 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.

[iii] In the New Zealand context, see http://www.mfat.govt.nz/Trade-and-Economic-Relations/Trade-Agreements/0-NZapproach.php

[iv] The countries chosen are Australia, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore and Thailand. Other ASEAN+6 members (Cambodia, Brunei, Lao PDR, Vietnam, and Myanmar) are not included in this study due to lack of data.

[v] 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.

[vi] See Annex 1 and Rajan (1996) for details on the formulation of these indices.

[vii] Similar trends are observed for import-intensity indices that have been computed by authors, and results are available from the authors on request.

[viii] See Bayoumi and Eichengreen (1997), Frankel (1997) and Frankel and Wei (1998)

[ix] These included the Central American Comm^on Market (CACM), Caribbean Community(Caricom), Mercado Comun del Sur (Mercosur), Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA), and Asian Pacific Economic Cooperation (APEC).

[x] See http://www.maritimechain.com/port/port_distance.asp

[xi] These refer to all goods exported from a country in the same form that they were imported, with some value added service. In Singapore, these would include goods that undersgoes minor processing such as re-packing and marketing.

[xii] According to Government of Singapore (2007), the share of re-exports in Singapore's total exports was estimated to be about 25% in 2006.

[xiii] Note that this could be due to the fact that Singapore started reporting official bilateral trade statistics with Indonesia only after 2003. See Guerin (2003) for further discussions.

[xiv] This is due to the fact that Singapore uses the GTS system under which, all goods imported into or exported from Singapore are included in its external trade statistics, barring a few exceptions. Studies such as Sen (2000) have observed that trading partners of Singapore that have a high

entrepot component of re-exports do report such discrepancies reports its imports from Singapore according to country of origin, and therefore does not include Singapore's reported re-exports in its import data.

[xv] See Table 2 in Kawai and Wignaraja (2010).

[xvi] This Table includes only those PTAs involving these 11 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. For details on APTA, see http://www.unescap.org/tid/apta.asp