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**FTA Negotiations in Asia-Pacific Region:
An Empirical Study on the Determinants
FTA among the Bilateral Trading Partners ***

Ruwan Jayathilaka^{**} · Nandasiri Keembiyahetti^{***}

Historically, Free Trade Agreements (FTAs) have been, and will continue to be, an important gateway for improving world trade, given that the world trading system is substantially hampered by man-made barriers. This paper examines into the deterministic key factors and their relative importance for FTA negotiations among the bilateral trading partners using a Probit Model based on 9,178 non-zero trading pairs having 705 active and operational bilateral FTAs. Based on the estimated model, the study projects the future potentiality of FTA negotiations in the Asia-Pacific region. The study works on eleven hypotheses regarding the dependency of FTA on the economic and non-economic characteristics of the bilateral trading partners and the findings support 9 out of the 11 hypotheses. The likelihood of forming an FTA between a pair of countries is higher: (1) the closer in distance the two trading partners are; (2) less remote a natural pair is relative to other countries; (3) economically larger the trading partners are; (4) more similar the trading partners are in economic size; (5) larger the differences in relative factor intensity are; (6) greater is the political stability; (7) more discontinued than connected by a common border; (8) for countries having higher import tariffs in the past; and (9) larger the number of FTAs the neighborhood countries have already signed up. These factors have economically important and statistically significant effects on the probability to form an FTA. However, this study rejected the null favouring alternative that (10) sharing a common

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language or having colonial relationships has no influence on negotiating for an FTA. Furthermore, our findings rejected (11) the null that countries having a higher degree of export/import intensity tend to form FTAs leading to the conclusion that the past trade or existing level of trade is not a good motivation to form FTAs. Based on the estimated model the study shows that the Asia-Pacific region is well beyond the South Asian region in terms of FTA potentiality, but the European region shows more potentiality than Asia-Pacific and any other region in the world.

JEL Classification: F14, F12, C25, O53

Keywords: Free Trade Agreements, international trade, Probit Model, Asia-Pacific Region

1. INTRODUCTION

There are over 300 Regional Trading Agreements (RTAs) currently in force with most countries in the world participating in at least one of them and around 80% of RTAs are FTAs. Though forming an FTA itself is a political decision by country leaders, there should be certain economic and non-economic factors that lead policy makers to negotiate for FTAs. This study in general attempts to identify the factors determining FTAs, their relative importance, and in particular, the causes explaining the future potentiality of FTAs in the Asia-Pacific region.

Baier and Bergstrand (2004) is the first systematic empirical analysis on the economic determinants governing the presence of FTAs among bilateral trading partners. This study developed an econometric model based upon a general equilibrium model of world trade with two monopolistically competitive product markets, two factors of production, and explicit intercontinental and intra-continental transportation costs among multiple countries on multiple continents and subcontinents. The main conclusion of the Baier and Bergstrand (2004) study shows that the chance for an FTA between a pair of countries are higher: i) the closer are two countries in distance, ii) the more remote a pair of continental trading partners are from the rest of the world (ROW), iii) the larger and more similar in economic sizes of two trading partners, iv) the greater the difference of capital-labour ratios between two partners whereas the smaller the difference of the members' capital-labour ratios compared to the ROW's capital-labour ratio. However, Baier and Bergstrand (2004) neglected some other economic and political factors which are important to form an FTA.

Our study extends the analysis of Baier and Bergstrand (2004) in several directions. Despite the excellent work by Baier and Bergstrand (2004) where they identify four major determinants of FTA, we believe that there are some other factors influencing FTA which still remain unidentified and unquantified. For example, given all the other economic factors are very conducive for an FTA, political instability may adversely affect a country to

get the desired counter-parties' consent to form an FTA. In that sense, our study is not a substitute, but is supplementary to the former study.

First, we improve the above empirical model taking into account selected economic and geographical fundamentals plus the political stability, border effect, import tariffs, the number of already established FTAs among the neighbouring countries, common language and post-colonial effect between two trading partners. These factors have been proven to have significant impacts on international trade and therefore, not necessarily but very likely, might influence the decision to form FTAs as well. Second, this study provides different interpretations for remoteness, and to the factor intensity differentials. Third, this study projects empirical results ascertaining the chances (a) for Asia-Pacific region countries to form FTAs within the region compared to other prominent economic regions in the world, (b) for East Asian countries to form FTAs with ROW.

The rest of the paper is organized as follows. In the next section we review the literature followed by the data and methodology in section 3. Section 4 assesses the empirical hypotheses and test results while section 5 presents the FTA anatomy among the major trading partners in the Asia-Pacific region. Finally, section 6 and section 7 carry limitations of the study and the concluding remarks respectively.

2. LITERATURE REVIEW

Starting from the basic form of gravity model which asserts the trade between two countries / regions is directly proportional to quantum of the two regions' Gross Domestic Product (GDP) and inversely proportional to the squared distance between them, there has been growing body of literature to examine the effects of socio-economic and political factors on free trade. Generally, physical distance negatively affects trade flows due to increasing transportation and transaction costs. Although, international trade related costs are gradually falling with development, Antonin and Coeurdacier

(2007) found that distance, which proxies information asymmetries, is a surprisingly very large barrier to cross-border trade. The distance as a proxy for transport cost has been remarkably successful in almost all trade studies, and perhaps, it has been the most robust estimator across different studies.

A great deal of studies empirically investigates the effect of cultural ties on merchandise trade, by introducing some dummy variables into a gravity model (Havrylyshyn and Pritchett, 1991; Foroutan and Pritchett, 1993; Boisso and Ferrantino, 1997; Guo, 2004; Noland, 2005). These studies, have consistently obtained a positive relationship between cultural ties and merchandise trade. The latest study of Rocco (2007) asserts that the cultural factors are also important as geographic ones in determining trade openness and prosperity.

A recent study by Alessandro and Raimondi (2007) uses a gravity model to investigate the level of trade integration among different OECD¹⁾ country 'blocs' through the border effect approach. Using gravity-based cross-sectional evidence Frankel and Rose (2002) claims that currency union stimulates trade up to the extent that a country belonging to a currency union trades more than triple the other members of the zone do. Yeyati (2003) found that the link between a common currency and bilateral trade flows is significantly stronger for common currency pairs comprising of unilaterally dollarized countries rather than for the members of a multilateral currency union. Bagwell and Staiger (1997a, b), in a couple of papers, study the interactions between the formation of free trade associations and custom unions and multilateral trade liberalization. Ludema (1996) focuses on the effect of regional trade agreements on multilateral trade negotiations. The study found that customs unions are generally more effective bargainers than free trade areas because of their commitment to common external tariffs. Also, the author demonstrates the possibility that regional trade agreements could be reached as a profound effect on the outcome of multilateral trade negotiations.

¹⁾ Organization for Economic Co-operation and Development.

The concept of border effect has been central to many of the literatures in international trade and has been formalized by the celebrated gravity model which trade economists have seemingly borrowed from Physics. Anderson (1979), Bergstrand (1985), McCallum (1995), and most recently Engel and Rogers (1996, 2000, 2001), Parsley and Wei (2001), Anderson and van Wincoop (2003), Gorodnichenko (2005) have contributed substantially to the literature on bilateral trade patterns using the gravity model.

According to Nitsch (2007), membership in the G7/G8 is consistently associated with a strong positive effect on trade. Nitsch (2007) also found that regional FTA, currency union, distance, real GDP, real GDP per capita, common language, land border, number landlocked, product land area, common colonizer, currently colonized also significantly affect trade. Nevertheless, negotiating an FTA is ultimately a political decision. Will an FTA between these countries be politically viable? And if so, what form will it take? Grossman and Helpman (1995) address these questions using a political economy structure that emphasizes the interaction between industry special interest groups and an incumbent government. Grossman and Helpman (1995) describes the economic conditions necessary for an FTA to be an equilibrium outcome, both for the case when the agreement must cover all bilateral trade and for the case when a few politically sensitive sectors can be excluded from the agreement.

As far as the enormous literature on trade is concerned, some of the common variables are used to explain bilateral trade and most of them can be easily found from gravity type studies. Many of these studies suggest that a common border has significant impact on trade. Such as studies by (Aitken, 1973; Montenegro and Soto, 1996; Bergstrand, 1985; Freund, 2000; Rose, 2000; Frankel and Rose, 2002; Soloaga and Winters, 2001; Feenstra *et al.*, 2001; Frankel and Romer, 1999; Thursby and Thursby, 1987; Frankel and Wei, 1993; Frankel and Wei, 1995; Frankel and Wei, 1996 and Toshihiro Okubo, 2004). In addition, T. Donny (2003) shows the impact of the difference in GDP per capita and other reviews (Soloaga and Winters, 2001; Feenstra *et al.*, 2001 and Rose, 2000) show the importance of remoteness.

On the other hand, Rose (2000), Soloaga and Winters (2001), Frankel and Wei (1995), Frankel and Wei (1996), Montenegro and Soto (1996), Feenstra *et al.* (2001) and Frankel and Rose (2002) have proven the importance of including common language effect on trade. Colonial relationship and common currency are also proven factors as determinants of trade. Rose (2000), Frankel and Rose (2002) and Freund (2000) play a major role in bringing these arguments to trade.

Although, extensive research has been done on the determinants of trade in general, there is little work done on FTAs. On theoretical grounds, Richardson (1993) shows that governments tend to reduce external tariffs to minimize the tariff revenue losses caused by the shift of imports from outsiders to FTA partners. Bagwell and Staiger (1999) assert that changing terms of trade in the presence of an FTA generates an extra force to lower external tariffs. On the contrary, Cadot *et al.* (1999) argues that countries entering an FTA may also have reasons to raise their non-preferential tariffs. On empirical ground, Baier and Bergstrand (2007) is the only published paper systematically analyzing average treatment effect of FTA on trade. In a study considering ASEAN countries' FTAs with U.S.A., Naya and Michael (2006) conclude that an important motivation for ASEAN countries in seeking FTAs with the United States is the need to "reclaim" most-favoured-nation (MFN) status in the U.S. market, which has been eroded due to U.S. FTAs with other countries. Almost all the literature reviewed above, driven by many other objectives, treated FTAs as exogenously determined and therefore are orthogonal to the other variables present in the model. Our claim is that FTAs are not necessarily exogenous, and that there are economic and non-economic determinants pushing countries into FTAs or pulling off FTAs. Therefore, there are many reasons to believe FTA might be an endogenously determined variable.

3. DATA AND METHODOLOGY

We used several data sources covering 184 countries which include 9,178 pairs of non-zero trading partners having 705 active and operational bilateral FTAs. Information to establish FTA dummy was directly taken from the World Trade Organization (WTO) official website.²⁾ The list of countries and the FTAs considered in this study are similar to the study done by Jayathilaka, R. and Nandasiri, K. H. (2009). Great circle distances between the two countries (capital to capital) are the authors' calculations using the geographical coordinates from Central Intelligence Agency (CIA) World Fact Book.³⁾ The CIA World Fact Book was also used to obtain qualitative data to create dummy variables such as common language and common border. Average import tariffs between years 2002 to 2004 in both countries were obtained from the United Nations Conference on Trade and Development (UNCTAD) TRAINS database. Country population was taken from the United States Census Bureau⁴⁾ and Political stability index was based on Kaufmann *et al.* (2003).⁵⁾ This Political stability index ranges from around -2.5 to around 2.5 and higher or positive values indicate greater political stability in 2002. PPP converted annual GDP series taken from the International Monetary Fund (IMF) World Economic Outlook Database⁶⁾ in April 2006.

The analytical tool used for the study is a Probit model with a dummy dependent variable that takes the value 1 if two countries have an active FTA, and 0 otherwise followed by a set of explanatory variables. Thus, the model to be estimated is

²⁾ <http://www.wto.org/>

³⁾ <https://www.cia.gov/library/publications/the-world-factbook/index.html>

⁴⁾ <http://www.census.gov/ipc/www/idb/>

⁵⁾ Kaufmann, Kraay, and Mastruzzi (2003).

⁶⁾ <http://www.imf.org/external/pubs/ft/weo/2006/01/data/index.htm>

$$\begin{aligned}
P(FTA = 1) = & Z_i(\alpha_0 + \alpha_1 natural + \alpha_2 remox_02 + \alpha_3 remoy_02 \\
& + \alpha_4 pppgdp2005 + \alpha_5 dpppgdp2005 + \alpha_6 dkl2005 \\
& + \alpha_7 sqdkl2002 + \alpha_8 psx_2002 + \alpha_9 psy_2002 \quad (1) \\
& + \alpha_{10} border + \alpha_{11} tax2_4 + \alpha_{12} langue + \alpha_{13} colony \\
& + \alpha_{14} fxneib7 + \alpha_{15} fyneib7 + \alpha_{16} Xinten2) + \varepsilon_{ij},
\end{aligned}$$

where, *natural* denotes the natural logarithm of the inverse of the distance between two countries. The variable *pppgdp2005* denotes sum of the logs of purchasing power parity (PPP) adjusted GDPs of countries coupled in pairs in 2005 and *dpppgdp2005* stand for the absolute difference between the log values of the PPP adjusted GDPs of both countries in 2005. The variables *remox_02* and *remoy_02* are index numbers representing relative economics remoteness of country x and y, respectively. These two indexes were calculated as follows by using 2002 data.⁷⁾

$$\begin{aligned}
remox_02 &= \sum_{\substack{n=1 \\ n \neq x}}^5 [(D_{xn}) / (PPPGDP_n)], \\
remoy_02 &= \sum_{\substack{n=1 \\ n \neq y}}^5 [(D_{yn}) / (PPPGDP_n)].
\end{aligned}$$

This index produces a positive number which is negatively dependent on the economic masses of the five geographically nearest countries and positively dependent on the direct distance to each of the five countries. There is no upper bound for the index and is also sensitive to scaling differences.⁸⁾ The variable *dkl2002* measures the absolute difference of the

⁷⁾ See Nandasiri, K. H. (2007) for more details of this index and the weaknesses of the alternative remoteness indexes used historically.

⁸⁾ The index calculated for any year ranks the countries according to their *relative remoteness*. Nothing prevents somebody else to use any number of countries instead of nearest “five” used in this study; still the index produces *relative remoteness* without loss of generality.

log values of the per capita GDP in 2005, which is a proxy for factor intensity differentials⁹⁾ in the two countries jointly with *sqdkl2002* which measures the square of *dkl2002* used to approximate the quadratic functional form in factor intensity differentials.

The variables named *psx_2002* and *psy_2002* are index numbers that vary -2.5 to 2.5 denoting the degree of political stability/instability of two countries coupled in pairs. *Border* variable is a dummy variable equal to 1 if both countries share a common border, 0 otherwise. *Tax2_4* variable represents the average import tariffs of the destination country for the period 2002 to 2004. Variable *langue* is a dummy variable equal to 1 if at least 30% of the population of one country shares a common language with the partner country, 0 otherwise.¹⁰⁾ The variable *colony* is also a dummy which is equal to 1 if one is a colony of the other or both countries had been colonized by the same colonizer, 0 otherwise.

Neighbourhood variables named as *fxneib7* and *fyneib7* measure the number of FTAs already in progress belonging to the 7 nearest countries. Variable *Xinten2* measures the export intensity between country *i* and *j* where the exports of country *j* is taken as a percentage of total imports of country *i* for year 2002. The underlying argument is that countries tend to select highly integrated trading partners as potential candidates for FTAs and this was calculated as follows.

$$X\text{inten}02 = [(X_{2002}^{ji}) / (\sum_{p=1}^n X_{2002}^{pi})].$$

Finally, ε is the disturbance term of the probit model.

⁹⁾ Higher per capita GDP means bigger output from relatively smaller population. Thus, production should be capital intensive! Lower per capita GDP implies that bigger population produces less. Thus, production is labour intensive.

¹⁰⁾ This is more realistic rather than taking official language of the country as traditionally used in Gravity models.

4. EMPIRICAL HYPOTHESES AND TEST RESULTS

This study works on eleven hypotheses related to interdependency of FTA negotiation and which will be empirically tested with the standard Probit model. The results are reported in table 1. However, the first five hypotheses are directly borrowed from the study of Baier and Bergstrand (2004). The estimates supporting the first five hypotheses are similar in sign and closer in magnitude to Baier and Bergstrand (2004) except the sign for factor intensity differentials. The hypotheses from six to eleven are novel to Baier and Bergstrand (2004) and all the hypotheses can be summarized as follows.

Hypothesis 1: $\alpha_1 > 0$

The likelihood of forming an FTA between two countries increases as the distance between them decreases.

Hypothesis 2: $\alpha_2 < 0$ and $\alpha_3 < 0$

Exporter's willingness to form an FTA with the importer will decrease as the remoteness of the importer increases and analogously the importer's willingness to form an FTA with the exporter will decrease as the remoteness of the exporter increases.

Hypothesis 3: $\alpha_4 > 0$

The likelihood of forming an FTA between a pair of countries increases the larger are their economic sizes.

Hypothesis 4: $\alpha_5 < 0$

Countries of similar economic size are more likely to form FTAs than the countries of dissimilar economic sizes.

Hypothesis 5: $\alpha_6 < 0$, $\alpha_7 > 0$ and $|\alpha_6| > |\alpha_7|$

Possibility of FTA is higher, the larger the difference between two

countries' relative factor intensities, but it happens only if the difference is large enough.

Hypothesis 6: $\alpha_8 > 0$ $\alpha_9 > 0$

The likelihood of forming an FTA between a pair of countries increases the greater the political stability.

Hypothesis 7: $\alpha_{10} < 0$

Possibility for an FTA between two adjoining countries is relatively less.

Hypothesis 8: $\alpha_{11} > 0$

Possibility of FTA is higher if the pair of countries had higher rate of average import tariffs in the past.

Hypothesis 9: $\alpha_{12} > 0$ and $\alpha_{13} > 0$

The likelihood of forming an FTA by a pair of countries increases when the pair of countries shares a common language and has a colonial relationship.

Hypothesis 10: $\alpha_{14} > 0$ and $\alpha_{15} > 0$

The probability of FTA is higher, the larger the number of FTAs already present in the neighbourhood is.

Hypothesis 11: $\alpha_{16} > 0$

The likelihood of forming an FTA by a pair of countries increases as export trade intensity increases.

The logic behind the Hypothesis 1 is that the transport and transaction cost of international trade becomes lower as the pair of countries get closer. This consequentially stimulates a higher trade volume between the pair of countries and very closer countries thus become natural trading partners. In order to capture motivation between any two natural trading partners to form

an FTA, this study uses the variable of natural that measures the log of the inverse of the great circle distance between two trade partners' capitals. By taking the inverse of the distance, it is expected to make shorter distances more sensitive to FTA than longer distances. The expected sign of this variable is positive. Specification in column 1 of table 1 reveals that the first hypothesis is supported. Thus, the countries that are closer to each other in geographical viewpoint, perhaps, located in the same continent exhibit a higher probability of FTA negotiation, given all else being equal. The estimated coefficient of the distance reveals that the 1% increase in the inverse of the great circle distance increases the probability of having an FTA between two trade partners by 33%, all other factors being constant. This could happen not only because the transport cost between the two countries increases with the distance but also it trims down familiarity of the two nations, and causes information asymmetries and weaker political ties that in turn affect FTAs.

The Hypothesis 2 is to capture how the exporter's and importer's willingness to form an FTA changes as the remoteness increases. This two way consideration makes it less likely for an FTA to occur between two too remote countries. Thus, the expected signs for both *remox_02* and *remoy_02* are negative. Recall that our remoteness index is totally different from that of Baier and Bergstrand (2004) and therefore opposite in expected sign. Column 2 in table 1 shows that both the exporter's and importer's willingness to form an FTA will decrease as the remoteness increases and findings comply with the expected results. Generally, *remox_02* shows that a 1% rise in economic remoteness will reduce the probability of an exporter's willingness to form an FTA by 9%. For the importer, this probability is approximately 2% higher. This happens because relatively more remote countries tend to be marginalized in international trade as trade by nature occurs as a network.

Intuitively, the likelihood of forming an FTA between a pair of countries increases when each other sees the potential market available from the counter party is larger. This represents the Hypothesis 3. Every country

Table 1 Pribit Results for the Probability of an FTA

Variable	Specification												
	1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Constant</i>	1.548 ^a	1.334 ^a	0.771 ^a	-0.004 ^a	-0.010 ^a	0.186	0.426	0.284	0.332	0.290	0.338	-0.856 ^a	-0.881 ^a
<i>Natural</i>	0.362 ^a	0.322 ^a	0.347 ^a	0.306 ^a	0.296 ^a	0.287 ^a	0.319 ^a	0.324 ^a	0.325 ^a	0.328 ^a	0.329 ^a	0.216 ^a	0.211 ^a
<i>remox_02</i>		-0.107 ^a	-0.116 ^a	-0.120 ^a	-0.122 ^a	-0.087 ^a	-0.085 ^a	-0.086 ^a	-0.085 ^a	-0.086 ^a	-0.085 ^a	-0.059 ^b	-0.060 ^b
<i>remoy_02</i>		-0.133 ^a	-0.133 ^a	-0.138 ^a	-0.136 ^a	-0.117 ^a	-0.114 ^a	-0.124 ^a	-0.123 ^a	-0.124 ^a	-0.123 ^a	-0.048 ^b	-0.047 ^b
<i>pppgdp2005</i>			0.061 ^a	0.136 ^a	0.135 ^a	0.095 ^a	0.099 ^a	0.106 ^a	0.103 ^a	0.108 ^a	0.105 ^a	0.074 ^a	0.068 ^a
<i>dpppgdp2005</i>				-0.184 ^a	-0.186 ^a	-0.167 ^a	-0.167 ^a	-0.171 ^a	-0.170 ^a	-0.171 ^a	-0.170 ^a	-0.155 ^a	-0.154 ^a
<i>dkl2002</i>					-0.079 ^a	-0.055 ^b	-0.060 ^c	-0.069 ^b	-0.071 ^b	-0.068 ^b	-0.071 ^b	-0.076 ^b	-0.076 ^b
<i>sqdkl2002</i>					0.011 ^a	0.009 ^a	0.009 ^b	0.011 ^a	0.011 ^a	0.011 ^a	0.011 ^a	0.010 ^b	0.001 ^b
<i>psx_2002</i>						0.217 ^a	0.208 ^a	0.204 ^a	0.201 ^a	0.204 ^a	0.201 ^a	0.173 ^a	0.172 ^a
<i>psy_2002</i>						0.137 ^a	0.132 ^a	0.173 ^a	0.172 ^a	0.174 ^a	0.172 ^a	0.109 ^a	0.110 ^a
<i>border</i>							-0.401 ^a	-0.398 ^a	-0.381 ^a	-0.382 ^a	-0.365 ^a	-0.232 ^b	-0.233 ^b
<i>tax2_4</i>								0.012 ^a	0.012 ^a	0.012 ^a	0.012 ^a	0.014 ^a	0.013 ^a
<i>langue</i>									-0.128		-0.126		
<i>colony</i>										-0.078	-0.076		
<i>fxneib7</i>												0.002 ^a	0.002 ^a
<i>fyneib7</i>												0.007 ^a	0.007 ^a
<i>Xinten02</i>													-0.075
Area under ROC Curve	0.7077	0.7229	0.7298	0.7957	0.7986	0.8134	0.8157	0.8136	0.8138	0.8133	0.8134	0.8203	0.8204
Pseudo R ²	0.5665	0.5812	0.5860	0.6433	0.6450	0.6582	0.6607	0.6628	0.6631	0.6629	0.6632	0.6796	0.6796
Log Likelihood	-2368.2	-2330.8	-2318.7	-2173.3	-2169.2	-2093.1	-2086.9	-2081.4	-2080.9	-2081.4	-2080.6	-2039.9	-2039.8
Number of Observations	9832	9832	9832	9832	9832	9178	9178	9178	9178	9178	9178	9178	9178

Note: a, b, c: significant at the 0.01, 0.05, and 0.10 level, respectively.

prefers to have an FTA with a country having a bigger market potentiality measured by GDP. Thus, expected sign of this variable is positive. Column 3 in table 1 shows that pairs of countries with larger average PPP GDPs have a higher probability of an FTA supporting the third Hypothesis. This implies that the probability of forming an FTA between a pair of countries is higher, the larger the economic sizes of trading partners are, after accounting for distance and remoteness. The probability of forming an FTA increases by 11% when the purchasing power parity adjusted GDPs of two trade partners improved by 1%. This implies that countries are concerned about the size of the market into which they get access via FTA. If the market size is smaller, countries have lesser interest to form an FTA as the gains arising from economies of scale necessarily depend on the potential market share. In reality, this finding will be true for the majority; perhaps, the only exception would be Singapore.

The Hypothesis 3 above implied that bigger countries are always much preferred and small countries are less preferred. This idea leads to the fourth hypothesis that the countries of similar economic size are more likely to form FTAs than the countries of dissimilar economic sizes do. Variable *dpppgdp2005* measures the absolute difference between the logs of PPP adjusted GDPs of a country pair in 2005, which is a proxy for market size similarity/dissimilarity. The probability of an FTA is to be lesser as the market disparity increases and thus, the expected sign is negative. Column 4 in table 1 demonstrates that pairs of countries with smaller differences in PPP adjusted GDPs have a higher chance to form an FTA, supporting the hypothesis that countries of similar size tend to form FTAs among themselves than those of dissimilar size do.

Coefficient of the *dpppgdp2005* shows that the probability of forming an FTA is decreased by 17% when the absolute difference between the logs of PPP adjusted GDPs of the two countries increases by 1%. This indicates that the FTAs require coincidence of needs of both parties in terms of market size. In other words, it is not enough for one of the two markets to be big; both markets need to be equally large to gain mutual benefits for the pair forming

an FTA. The probability of forming an FTA increases by 11% when the purchasing power parity adjusted GDPs of two trade partners improved by 1%. This implies that countries are concerned about the size of the market into which they get access via FTA. If the market size is smaller, countries have lesser interest to form an FTA as the gains arising from economies of scale necessarily depend on the potential market share. In reality, this finding will be true for the majority; perhaps, the only exception would be Singapore.

The Hypothesis 5 is about the countries' relative factor intensity differentials. Differences in relative factor intensities always stimulate trade based on comparative advantage because a capital intensive country would prefer to trade with a labour intensive country rather than with another capital intensive country. This is true for a labour intensive country as well. Thus, the larger the factor intensity differences are, the higher the probability of an FTA between them. However, this is only a necessary condition. A slight marginal difference in factor intensity might not be an adequate motivation to form an FTA. Therefore, this idea always needs to be supported by a sufficiency condition. This necessary condition is that there should be a difference in factor intensity. A sufficient condition is that the observed factor intensity difference should be large enough. To formalize necessary and sufficient conditions we expect $dkl2002$ to be negative and its quadratic form, $sqdkl2002$ to be positive and the former to be greater than later in absolute value. "U" shape of the quadratic relationship¹¹⁾ among the two variables of $dkl2002$ and $sqdkl2002$ show that a small difference in relative factor intensity between the two countries will not motivate for an FTA but as the difference gets larger, the chance to form an FTA is also getting higher.¹²⁾ The estimated results support the fifth hypothesis that the

¹¹⁾ As shown in the figure A1, this figure was developed based on the estimated coefficients and it shows the "U" shape of quadratic relationship.

¹²⁾ Technically, when a quadratic form is present in the probit model, simply the estimated coefficient does not produce probability. Instead, one needs to use calculus to drive the exact marginal effect. So, the estimated coefficients jointly show the direction but not the probability.

probability of an FTA is higher the larger the difference between two countries relative factor intensity and it could happen only if the difference is large enough. Coefficient of the *dpppgdp2005* shows that the probability of forming an FTA is decreased by 17% when the absolute difference between the logs of PPP adjusted GDPs of the two countries increases by 1%. This indicates that the FTAs require coincidence of needs of both parties in terms of market size. In other words, it is not enough for one of the two markets to be big; both markets need to be equally large to gain mutual benefits for the pair forming an FTA.

The logic behind the Hypothesis 6 is that the interactions between the countries are higher when the countries are politically stabilized. For that reason, the possibility of forming an FTA is higher for a politically stabilized pair of countries rather than a politically destabilized pair. Therefore, both variables *psx_2002* and *psy_2002* are expected to have positive signs. The results shown in the column 6 of table 1 are supportive of this hypothesis. Therefore, countries having higher degree of political stability tend to show a higher probability in negotiating an FTA among each other. The estimated coefficients of the political stability reveal that a one unit increase in the exporter's and importer's political stability, will increase the probability of having an FTA by 20% and 17% respectively, given all else being equal. FTAs are usually not signed for one or two years. They are by nature long term agreements which have time bound for liberalization but do not have a year of expiration. Therefore, the parties entering into an FTA are always concerned with its continuation regardless of the ruling party changes in the internal political arena. Thus, political stability becomes a decisive factor for FTAs at the negotiating table.

The explanation for the Hypothesis 7 comes from all gravity models where common border effect was found to be positively significant, suggesting that adjoining countries are already trading above the so called natural level of trade. This is always true except where they are separated by natural barriers or man-made barriers where the adjoining country is natural enemy rather than natural friend. Since they are already trading more than anticipated,

there would a lesser motivation for adjoining countries to form an FTA to liberalize trade any further. Thus, the expected sign of the *border* variable is negative and column 7 of table 1 shows, on average, that there is higher probability not to form an FTA between two adjoining countries. According to our findings, the probability of negotiating an FTA between two adjoining countries is 4% lower as compared to any other geographically discontinued country pair. Being the natural trading partner, the adjoining country already trades more than required. Motivation for FTA could be less as the additional gain arising from FTA could be very marginal.

Reduction of border tariffs, among many others, is the main target of an FTA. If the import tariff level is already low, trading partners do feel there is almost nothing more to gain from an FTA. On the contrary, it gives incentives for the other countries to negotiate for an FTA with a country where existing import tariffs are relatively high. Thus, the expected sign of the *tax2_4* is positive. As shown in the column 8 of table 1, the possibility of forming an FTA is greater among the countries experiencing higher average tariffs against each other and the results are supportive to the Hypothesis 8. The coefficient of the tax variable reveals that a one percentage point increase in the average import tariffs will increase 1% chance to form an FTA in a subsequent year. One to one relationship between import tariff rate and probability of FTA has a valid economic interpretation. The main target of an FTA is elimination or diminishing of existing import tariffs. If the existing import tariff rate is zero percent, trade is totally free, and there is no need for an FTA at all. This idea is reflected in the estimated coefficient. If tariff rate is reduced by 100% the probability of an FTA becomes zero because there is no need for an FTA any longer.

The Hypothesis 9 is to examine the language and colonial effect of forming an FTA among the bilateral trading partners. The sharing a common language and having colonial relationship have been proven to have positive impacts on trade. This study is intended to investigate whether there are any positive impacts on forming an FTA by using language and colony dummies. The expected sign of these two variables are positive. However, the column

9-11 in table 1 denotes that pairs of countries with common language and/or having colonial relationships historically are not significant factors to motivate for FTAs. Consequently, the results are not sympathetic to this hypothesis.

The Hypothesis 10 was introduced to capture the “exhibition effect” where one country might decide to form an FTA merely for the reason that neighbouring countries are negotiating for FTAs with ROW. The variables named *fxneib7* and *fyneib7* measure the sum of already in progress FTAs belonging to the 7 nearest countries, which is defined as the neighbourhood in this study. Peter and Mario (2006) was the first to show that this relationship is significantly important. Most of the researchers’ pre-mindset is that FTAs are formed to maximize gains from trade. Nevertheless, there could be situations where countries form FTAs not to maximize the gains but to minimize the possible losses that can be caused due to other countries forming FTAs with their potential markets depriving them of the favourable position so far enjoyed. In short, it follows the idea that one country’s decision to form a new FTA is dependent on the number of FTAs other countries are already dealing with. Therefore, both *fxneib7* and *fyneib7* are expected to be positive in signs. The results in the column 12 of table 1 justify that the number of FTAs in the close neighbourhood, enhances motivation to form an FTA for the country encircled. The probability of forming an FTA for the exporter country is increased by 7% when the neighbourhood countries establish additional 10 FTAs with ROW. For the importer country this probability is close to 2%. This can be explained in two ways. First, in international trade, countries always tend to follow world trends meaning that countries usually observe and do what other countries do. This is some kind of herd behaviour or exhibition effect. Second, some countries tend to form FTAs not to gain, but to minimize possible losses arising from other countries’ decisions to form FTAs with their own potential markets.

The rationale behind the last hypothesis is to see whether countries prefer to form FTAs with the countries with which they are currently trading

substantially. Thus, the expected sign for *Xinten02* is positive. Unexpectedly, our findings suggest, as long as other factors are adequately controlled, there is no significant relationship between the current level of trade and the FTA formation as shown in the column 13 of table 1.

The final probit model in the column 13 comes from 9,178 country pairs, out of which 705 pairs are having FTAs and 8,472 pairs not having FTAs. Using the rule described, it is amazing to note that the model correctly predicts 700 out of the 705 FTAs. Technically, the model has been 99.29% specific. Moreover, 8,458 of the 8,472 pairs without FTAs are also predicted correctly. Analogous to the former, the model has been 99.83% specific. In both scenarios, model failure is well below 1%. Thus, the last model appears to have plausibly a better fit and excellent predicting power.

5. FTA PROXIMITY AMONG THE MAJOR TRADING PARTNERS IN THE OF ASIA-PACIFIC REGION

In this analysis we put both East Asian and South-East Asian countries in a common pool known as East Asia. Thus, the selected sample includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, China, Hong Kong, Japan, North Korea and South Korea while East Timor and Taiwan are excluded due to data deficiency.

The top row of the table 2 shows the highest 49 economically powerful countries in the world ordered by PPP adjusted GDP per capita in 2005. Note that we have not taken economically insignificant small countries (for example Barbados) though having high per capita, in this ordering. In the hanging rows, each country is followed by a set of countries in chronological order of the predicted probability values for forming an FTA with the top row country. It can be seen that the upper rows are always occupied by European countries denoting that most part of the economically powerful countries are potential to have FTA with European countries. Nevertheless, several East Asian countries are included within the top 40 priorities of the

Table 2 Orders of Preferences to Form FTAs of Major Trading Partners in the World

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Luxembourg	Hong Kong	Ireland	Norway	USA	U.A. Emirates	Japan	Austria	Denmark	Switzerland	Australia	Finland	Iceland	Germany	Canada	Belgium
1	Switzerland	Poland	Netherlands	Denmark	Germany	Norway	Germany	Netherlands	Norway	Belgium	France	Denmark	Luxembourg	U.K	U.K	Switzerland
2	Slovenia	Australia	Norway	Netherlands	U.K	Finland	South Korea	Slovakia	Netherlands	Netherlands	Italy	Estonia	Norway	Italy	Germany	Slovenia
3	Slovakia	Hungary	Switzerland	Sweden	Canada	Switzerland	China	Sweden	Finland	Denmark	Netherlands	Sweden	Malta	Sweden	Netherlands	Slovakia
4	Denmark	Switzerland	Denmark	Switzerland	France	Denmark	U.K	Denmark	Switzerland	Sweden	New Zealand	Netherlands	Estonia	France	Spain	Denmark
5	Norway	Netherlands	Belgium	Austria	Japan	Sweden	France	Belgium	Austria	Norway	Sweden	Switzerland	Slovenia	Netherlands	Poland	Norway
6	Austria	Austria	Portugal	Belgium	Netherlands	Portugal	Netherlands	Poland	Belgium	Portugal	Germany	Austria	Finland	Norway	Luxembourg	Austria
7	Latvia	Finland	Sweden	Portugal	Spain	Austria	Canada	Norway	Portugal	Austria	Switzerland	Norway	Latvia	Spain	France	Latvia
8	Croatia	Norway	Finland	Finland	Italy	Netherlands	Poland	Switzerland	Poland	Luxembourg	Austria	Belgium	Sweden	Finland	Switzerland	Croatia
9	Sweden	Spain	Austria	Germany	Switzerland	Hungary	Italy	Finland	Czech Rep.	U.K	U.K	Portugal	Denmark	Denmark	Italy	Sweden
10	U.K	Belgium	France	Poland	Sweden	Greece	Spain	Hungary	Luxembourg	Finland	Spain	Hungary	Netherlands	Austria	Portugal	U.K
11	Finland	Denmark	Luxembourg	Hungary	Portugal	Belgium	Sweden	Portugal	Germany	Hungary	South Korea	Poland	Portugal	Russia	Japan	Finland
12	Czech Rep.	Portugal	Hungary	U.K	Norway	Luxembourg	Australia	France	U.K	Spain	Belgium	Germany	Switzerland	Hungary	Belgium	Czech Rep.
13	Portugal	South Korea	Germany	Luxembourg	Belgium	Romania	Switzerland	U.K	Slovakia	Czech Rep.	Norway	Latvia	Slovakia	Switzerland	Sweden	Portugal
14	Hungary	Sweden	Spain	Czech Rep.	Austria	Czech Rep.	Austria	Germany	France	Poland	Finland	Lithuania	Belgium	Slovakia	Norway	Hungary
15	Estonia	Germany	U.K	Slovakia	Denmark	Germany	Norway	Croatia	Greece	Slovakia	Portugal	Czech Rep.	Austria	Portugal	Austria	Estonia
16	Iceland	U.K	Czech Rep.	Finland	France	Finland	Slovenia	Finland	Czech Rep.	Lithuania	Canada	Slovakia	Lithuania	Czech Rep.	Finland	Iceland
17	Lithuania	France	Poland	Greece	China	Iran	Belgium	Luxembourg	Latvia	Slovenia	Denmark	Greece	Croatia	Poland	Denmark	Lithuania
18	Cyprus	Greece	Slovakia	Lithuania	South Korea	Poland	USA	Spain	Slovenia	Greece	Japan	U.K	Hungary	Japan	South Korea	Cyprus
19	France	Thailand	Greece	Spain	Russia	Lithuania	Denmark	Slovenia	Spain	Germany	Brazil	Luxembourg	U.K	Canada	USA	France
20	Poland	Singapore	Slovenia	Latvia	Australia	U.K	Portugal	Romania	Italy	Croatia	Poland	France	Cyprus	Slovenia	Australia	Poland
21	Spain	Canada	Italy	Estonia	Poland	Croatia	Russia	Lithuania	Estonia	Italy	Estonia	Spain	Germany	Lithuania	Russia	Spain
22	Greece	Italy	Iceland	Slovenia	Hungary	France	Hungary	Italy	Romania	Romania	Hungary	Romania	Czech Rep.	Luxembourg	Hungary	Greece
23	Germany	New Zealand	Lithuania	Italy	Brazil	Spain	Greece	Greece	Sweden	Lithuania	Greece	Slovenia	France	Latvia	Brazil	Germany
24	Romania	Luxembourg	Romania	Romania	Greece	Latvia	Slovakia	Latvia	Hungary	Latvia	Russia	Italy	Spain	South Korea	Greece	Romania
25	Italy	Slovakia	Croatia	Iceland	Luxembourg	Italy	Brazil	Russia	Iceland	Iceland	Luxembourg	Croatia	Poland	Romania	Slovakia	Italy
26	Bulgaria	Czech Rep.	Latvia	Croatia	Slovakia	New Zealand	New Zealand	Estonia	Russia	Canada	Chile	Iceland	Bulgaria	USA	Czech Rep.	Bulgaria
27	Canada	Russia	Estonia	Canada	Czech Rep.	Estonia	Czech Rep.	Canada	Canada	Estonia	Slovakia	Iran	Greece	Estonia	Iceland	Canada
28	Russia	Malaysia	Canada	Malta	Iceland	Israel	Iceland	Macedonia	Malta	Russia	Czech Rep.	Canada	Romania	China	Slovenia	Russia
29	New Zealand	Japan	Malta	Israel	Mexico	Iceland	Singapore	Iceland	Israel	Israel	Singapore	Israel	Costa Rica	Australia	Mexico	New Zealand
30	Israel	Romania	Russia	Australia	Slovenia	Cyprus	Lithuania	Malta	Macedonia	Australia	China	Russia	Italy	Iceland	Lithuania	Israel
31	Iran	Lithuania	Israel	South Korea	Romania	Malta	Romania	Israel	Australia	South Korea	Thailand	Malta	Canada	Singapore	Croatia	Iran
32	Malawi	Slovenia	Australia	Macedonia	Lithuania	Australia	Slovenia	Australia	Iran	Malta	Romania	South Korea	New Zealand	Greece	Romania	Malawi
33	Belarus	Latvia	Chile	Iran	Chile	Singapore	Iceland	South Korea	South Korea	Japan	Slovenia	Macedonia	Russia	Belgium	China	Belarus
34	Chile	Iceland	Macedonia	Russia	New Zealand	Jordan	Thailand	Japan	New Zealand	Iran	Lithuania	Australia	Belarus	Brazil	Chile	Chile
35	South Korea	Croatia	South Korea	New Zealand	Croatia	Macedonia	Latvia	Iran	Chile	Cyprus	Iceland	New Zealand	Chile	Malaysia	Peru	South Korea
36	Singapore	China	New Zealand	Chile	Latvia	South Korea	India	Cyprus	Cyprus	Chile	USA	Chile	South Korea	Malta	New Zealand	Singapore
37	Japan	Estonia	Iran	Japan	Estonia	Croatia	Croatia	Japan	Japan	New Zealand	Croatia	Cyprus	Australia	New Zealand	Latvia	Japan
38	Ecuador	Iran	Japan	Cyprus	Argentina	Canada	Estonia	New Zealand	Singapore	Albania	Latvia	Japan	Israel	Macedonia	Estonia	Ecuador
39	Mexico	Israel	Cyprus	Singapore	Malta	Chile	Chile	Chile	Croatia	Mexico	Argentina	Singapore	Japan	Israel	Indonesia	Mexico
40	Switzerland	Poland	Netherlands	Denmark	Germany	Norway	Germany	Netherlands	Norway	Belgium	France	Denmark	Luxembourg	U.K	U.K	Switzerland

	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	U.K	Netherlands	Sweden	France	Singapore	Italy	Israel	Spain	North Korea	New Zealand	Qatar	South Korea	Cyprus	Portugal	Bahrain	Greece
1	France	U.K	Denmark	U.K	Finland	Germany	Netherlands	Netherlands	Austria	Australia	Luxembourg	Russia	Luxembourg	Switzerland	Cyprus	Hungary
2	Netherlands	Switzerland	Netherlands	Germany	Sweden	U.K	Greece	U.K	Belarus	Finland	Slovenia	Japan	Slovenia	Netherlands	Malta	Switzerland
3	Germany	France	Austria	Netherlands	Norway	Netherlands	Finland	Germany	Belgium	Portugal	Malta	Netherlands	Malta	Norway	Slovenia	Austria
4	Belgium	Belgium	Switzerland	Belgium	Portugal	Spain	Switzerland	Switzerland	Bolivia	Norway	Slovakia	Germany	Macedonia	Denmark	Luxembourg	Portugal
5	Switzerland	Denmark	Norway	Switzerland	Hungary	France	Portugal	Italy	Brazil	Canada	Finland	Spain	Slovakia	Belgium	Latvia	Denmark
6	Spain	Sweden	Finland	Italy	Switzerland	Japan	Austria	Belgium	Bulgaria	Sweden	Switzerland	U.K	Estonia	Sweden	Slovakia	Finland
7	Italy	Austria	Belgium	Spain	Denmark	Belgium	Norway	Portugal	Canada	Switzerland	Sweden	China	Latvia	Austria	Portugal	Norway
8	Sweden	Norway	Poland	Austria	Croatia	Sweden	Denmark	France	Chile	Denmark	Portugal	France	Jordan	Finland	Finland	Sweden
9	Austria	Luxembourg	Germany	Sweden	Netherlands	Switzerland	Sweden	Austria	China	Netherlands	Norway	Sweden	Iceland	Hungary	Switzerland	Netherlands
10	Norway	Spain	Portugal	Denmark	Austria	Portugal	Hungary	Sweden	Czech Rep.	Hungary	Denmark	Australia	Greece	Spain	Croatia	Romania
11	Denmark	Finland	U.K	Portugal	Belgium	Denmark	Belgium	Norway	Denmark	Austria	Austria	Switzerland	Croatia	France	Norway	Slovakia
12	Portugal	Portugal	France	Norway	Malaysia	Hungary	Slovakia	Denmark	Ecuador	Slovakia	Croatia	Italy	Hungary	Greece	Denmark	Belgium
13	Finland	Germany	Czech Rep.	Luxembourg	Greece	Norway	Czech Rep.	Finland	Finland	Spain	Netherlands	Romania	Lithuania	U.K	Jordan	Poland
14	Luxembourg	Poland	Estonia	Finland	New Zealand	Austria	Poland	Canada	France	Belgium	Hungary	Canada	Portugal	Czech Rep.	Austria	Czech Rep.
15	Poland	Italy	Latvia	Hungary	Australia	Finland	Cyprus	Hungary	Gabon	Germany	Jordan	Portugal	Switzerland	Germany	Greece	Slovenia
16	Canada	Hungary	Slovakia	Canada	Czech Rep.	Greece	France	Poland	Germany	Greece	Greece	Austria	Finland	Poland	Netherlands	Germany
17	Hungary	Czech Rep.	Lithuania	Russia	Slovakia	Poland	Luxembourg	Greece	Greece	Luxembourg	Belgium	Finland	Austria	Slovakia	Sweden	Italy
18	Russia	Slovakia	Spain	Czech Rep.	Germany	Slovakia	Italy	Russia	Hungary	Chile	Romania	Norway	Sweden	Luxembourg	Belgium	Croatia
19	Czech Rep.	Greece	Greece	Slovakia	Poland	Russia	Slovenia	Luxembourg	India	Czech Rep.	Czech Rep.	Belgium	Romania	Italy	Romania	Spain
20	Slovakia	Slovenia	Luxembourg	Greece	Luxembourg	Czech Rep.	U.K	Slovakia	Indonesia	Slovenia	Germany	Denmark	Denmark	Slovenia	Bulgaria	France
21	Japan	Canada	Italy	Slovenia	South Korea	Canada	Lithuania	Czech Rep.	Italy	Romania	Iran	Poland	Norway	Romania	Iran	U.K
22	Greece	Russia	Slovenia	Japan	U.K	Croatia	Croatia	South Korea	Japan	France	Poland	Hungary	Netherlands	Croatia	Poland	Luxembourg
23	Slovenia	Lithuania	Russia	South Korea	Romania	Romania	Jordan	Slovenia	Malaysia	Poland	Spain	Singapore	Israel	Lithuania	Germany	Lithuania
24	South Korea	Croatia	Romania	Romania	Spain	South Korea	Germany	Croatia	Mauritius	Singapore	U.K	Greece	Bulgaria	Latvia	Hungary	Malta
25	Lithuania	Romania	Croatia	Lithuania	France	Malta	Latvia	Australia	Mexico	Croatia	France	Slovakia	Armenia	Canada	Spain	Latvia
26	Croatia	Latvia	Iceland	Australia	Thailand	Slovenia	Spain	Romania	Netherlands	Iceland	Bulgaria	Czech Rep.	Czech Rep.	Malta	U.K	Israel
27	Romania	Australia	Canada	Latvia	Slovenia	Lithuania	Malta	Japan	Peru	South Korea	Italy	Brazil	Belgium	Estonia	France	Estonia
28	Australia	Estonia	Hungary	USA	Lithuania	Australia	Estonia	Brazil	Poland	U.K	New Zealand	New Zealand	Poland	Russia	New Zealand	Cyprus
29	Iceland	South Korea	South Korea	Poland	Japan	Latvia	Russia	Lithuania	Portugal	Latvia	Australia	Luxembourg	Germany	Israel	South Korea	Russia
30	Latvia	Japan	Australia	China	Italy	Macedonia	Iceland	Iceland	Russia	Estonia	South Korea	Lithuania	Spain	Chile	Russia	Iran
31	USA	Malta	Malta	Estonia	Latvia	Brazil	Macedonia	Latvia	Singapore	Japan	Italy	Thailand	Italy	South Korea	Australia	Iceland
32	Estonia	Israel	Israel	Brazil	Estonia	USA	Romania	Malta	Slovakia	Italy	Russia	Slovenia	France	Macedonia	Singapore	Canada
33	China	Brazil	Japan	Malta	Canada	Estonia	Canada	Estonia	Slovenia	Malta	Canada	Latvia	Georgia	New Zealand	Canada	South Korea
34	Brazil	Iran	Macedonia	Macedonia	Iran	China	New Zealand	New Zealand	Spain	Malaysia	Sri Lanka	Croatia	Turkey	Australia	Sri Lanka	Chile
35	Malta	USA	Iran	Israel	Israel	Iceland	Australia	USA	Sweden	Israel	Chile	Estonia	Iran	Iran	Chile	Jordan
36	Macedonia	Chile	New Zealand	Iran	Malta	Israel	South Korea	China	Switzerland	Peru	Japan	USA	Russia	Cyprus	Italy	New Zealand
37	Israel	New Zealand	Chile	Chile	Russia	Luxembourg	Chile	Macedonia	Thailand	Iran	Turkey	Iceland	New Zealand	Brazil	Turkey	Australia
38	Chile	Cyprus	Cyprus	Cyprus	Jordan	Albania	Singapore	Chile	U.K	Cyprus	Malaysia	Malaysia	U.K	Japan	Japan	Albania
39	New Zealand	China	Singapore	New Zealand	China	Cyprus	Armenia	Israel	Uruguay	Mexico	Thailand	Chile	Costa Rica	Mexico	Malaysia	Singapore
40	Cyprus	Singapore	Mexico	Singapore	Sri Lanka	Iran	Japan	Iran	USA	Macedonia	Ecuador	Israel	South Korea	Singapore	Thailand	Japan

FTA Negotiations in Asia-Pacific Region

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
	Malta	Estonia	Hungary	Lithuania	Czech Rep.	Slovenia	Kuwait	Latvia	Slovakia	Saudi Arabia	Croatia	Oman	Argentina	Russia	Belize	Poland	Malaysia
1	Slovenia	Finland	Switzerland	Slovakia	Hungary	Slovakia	Slovenia	Finland	Austria	Switzerland	Slovakia	Luxembourg	Spain	Germany	Costa Rica	Austria	Singapore
2	Luxembourg	Lithuania	Slovakia	Finland	Denmark	Luxembourg	Luxembourg	Slovenia	Slovenia	Austria	Slovenia	Slovenia	Portugal	Netherlands	Honduras	Sweden	Finland
3	Macedonia	Latvia	Austria	Latvia	Switzerland	Croatia	Slovakia	Slovakia	Croatia	Portugal	Austria	Slovakia	Poland	Sweden	Nicaragua	Denmark	Portugal
4	Iceland	Slovenia	Denmark	Estonia	Netherlands	Switzerland	Latvia	Sweden	Hungary	Netherlands	Luxembourg	Estonia	Netherlands	U.K	Panama	Netherlands	Norway
5	Slovakia	Slovakia	Poland	Sweden	Norway	Latvia	Cyprus	Lithuania	Switzerland	Finland	Switzerland	Finland	Australia	France	Poland	Switzerland	Sweden
6	Croatia	Norway	Finland	Hungary	Austria	Czech Rep.	Estonia	Estonia	Lithuania	Sweden	Czech Rep.	Hungary	Switzerland	Italy	Guatemala	Hungary	Switzerland
7	Bulgaria	Denmark	Norway	Slovenia	Sweden	Estonia	Finland	Luxembourg	Luxembourg	Norway	Lithuania	Portugal	Sweden	Spain	Estonia	Finland	Denmark
8	Portugal	Iceland	Netherlands	Denmark	Finland	Lithuania	Portugal	Denmark	Denmark	Greece	Hungary	Switzerland	Greece	Austria	Latvia	Norway	Hungary
9	Greece	Hungary	Portugal	Norway	Slovenia	Austria	Hungary	Norway	Netherlands	Denmark	Latvia	Cyprus	Belgium	Switzerland	Bulgaria	Belgium	Iran
10	Estonia	Croatia	Greece	Portugal	Slovakia	Hungary	Croatia	Poland	Latvia	Poland	Netherlands	Sweden	Austria	Denmark	France	Portugal	Netherlands
11	Latvia	Poland	Belgium	Croatia	Belgium	Denmark	Switzerland	Croatia	Czech Rep.	Belgium	Romania	Norway	Chile	Belgium	Trinidad and Tobago	Latvia	Austria
12	Cyprus	Netherlands	Germany	Luxembourg	Portugal	Netherlands	Greece	Hungary	Finland	Hungary	Poland	Malta	Norway	Hungary	Croatia	Romania	Poland
13	Hungary	Austria	Lithuania	Czech Rep.	Luxembourg	Portugal	Jordan	Czech Rep.	Norway	Slovakia	Norway	Denmark	Finland	Portugal	Lithuania	Greece	Greece
14	Austria	Czech Rep.	Luxembourg	Austria	Norway	Sweden	Sweden	Austria	Sweden	Germany	Macedonia	Iceland	Denmark	Finland	Norway	U.K	Belgium
15	Netherlands	Switzerland	Slovenia	Switzerland	Germany	Belgium	Malta	Netherlands	Romania	Czech Rep.	Portugal	Greece	New Zealand	Slovakia	Switzerland	France	Slovakia
16	Denmark	Portugal	Croatia	Netherlands	Finland	Norway	Switzerland	Switzerland	Jordan	Spain	Finland	Germany	Czech Rep.	Sweden	Sweden	Slovakia	Czech Rep.
17	Finland	Macedonia	Italy	Poland	Greece	Sweden	Denmark	Iceland	Belgium	Romania	Sweden	Austria	Hungary	Greece	Netherlands	Slovenia	Romania
18	Norway	Belgium	France	Romania	Romania	Poland	Austria	Portugal	Portugal	U.K	Greece	Netherlands	Italy	Poland	Denmark	Czech Rep.	Australia
19	Lithuania	Germany	Latvia	Germany	Poland	Romania	Netherlands	Germany	Greece	Iran	Estonia	Japan	U.K	Canada	Austria	Croatia	South Korea
20	Sweden	Luxembourg	U.K	Belgium	France	Germany	Romania	Macedonia	Estonia	Slovenia	Malta	Czech Rep.	France	Norway	Ecuador	Spain	New Zealand
21	Italy	Romania	Romania	Greece	U.K	Greece	Iran	Belgium	Poland	Italy	Italy	Romania	Canada	Romania	Belgium	Italy	Germany
22	Belgium	Cyprus	Spain	Iceland	Spain	Iceland	Belgium	Romania	France	Lithuania	U.K	Belgium	Slovakia	Slovenia	Czech Rep.	Lithuania	Spain
23	Czech Rep.	Greece	Sweden	U.K	France	Poland	Malta	U.K	Croatia	Iceland	Croatia	Czech Rep.	Japan	Chile	Estonia	Lithuania	Lithuania
24	Romania	U.K	Estonia	France	Estonia	Albania	Germany	Greece	Malta	Russia	Albania	Poland	Brazil	Croatia	Romania	Macedonia	U.K
25	Spain	Sweden	Macedonia	Spain	Russia	Cyprus	Spain	Cyprus	Italy	Luxembourg	Spain	Iran	Romania	Lithuania	Greece	Russia	Slovenia
26	Poland	France	Malta	Italy	Malta	U.K	U.K	U.K	Spain	Estonia	Bulgaria	Germany	Mexico	Luxembourg	New Zealand	Luxembourg	France
27	Germany	Spain	Russia	Cyprus	Iceland	Spain	France	France	Iceland	Latvia	Cyprus	Spain	Slovenia	Australia	Spain	Canada	Luxembourg
28	France	Bulgaria	Iceland	Bulgaria	Latvia	Bulgaria	Italy	Spain	Cyprus	France	Jordan	U.K	Russia	Latvia	U.K	Iceland	Croatia
29	U.K	Italy	Israel	Russia	Israel	Italy	Bulgaria	Bulgaria	Russia	South Korea	Denmark	New Zealand	Luxembourg	South Korea	Germany	Japan	Latvia
30	Jordan	Russia	Cyprus	Iran	Iran	Russia	New Zealand	Italy	Bulgaria	Australia	Chile	France	Croatia	Brazil	Malta	Thailand	Chile
31	Switzerland	Belarus	Bulgaria	New Zealand	Cyprus	Israel	Russia	Armenia	Jordan	Cyprus	Belgium	Italy	South Korea	Estonia	Venezuela	Iran	Chile
32	Israel	Chile	Albania	Israel	Canada	New Zealand	South Korea	Azerbaijan	Israel	Canada	Singapore	Bulgaria	Lithuania	Iceland	Mexico	South Korea	Japan
33	Turkey	Azerbaijan	Canada	Armenia	Chile	Iran	Australia	Russia	Iran	Malta	Russia	Iran	Peru	Iran	Jamaica	Israel	Italy
34	Russia	New Zealand	Chile	Canada	Albania	Canada	Chile	New Zealand	New Zealand	Chile	Azerbaijan	Sri Lanka	Japan	Macedonia	Colombia	Germany	Estonia
35	New Zealand	Iran	New Zealand	Chile	New Zealand	Chile	Canada	Iran	Canada	New Zealand	Israel	South Korea	Singapore	Israel	Italy	Australia	Russia
36	Azerbaijan	Canada	South Korea	South Korea	South Korea	South Korea	Singapore	Israel	Azerbaijan	Germany	Australia	Iceland	USA	Australia	Chile	Canada	Canada
37	Canada	Israel	Iran	Belarus	Australia	Australia	Sri Lanka	Canada	Chile	Iceland	Iran	Singapore	Estonia	Malta	Japan	Cyprus	Israel
38	Iran	South Korea	Australia	Jordan	Ecuador	Mongolia	Chile	South Korea	Japan	Canada	Chile	Thailand	Cyprus	Turkey	Brazil	China	China
39	South Korea	Australia	Singapore	Singapore	Singapore	Singapore	Japan	South Korea	Australia	Singapore	New Zealand	Canada	Panama	China	South Korea	Bulgaria	Iceland
40	Chile	Japan	Japan	Japan	Japan	Japan	Malaysia	Georgia	Japan	Thailand	South Korea	Malaysia	Jordan	Chile	Canada	Thailand	Sri Lanka

Note: Top row shows the economically powerful countries in the world ordered by PPP per capita GDP from left to right. List of 40 countries hanging under each top-row country are ordered by highest probability to least probability for FTA which is based on the estimated probit model.

Table 3 Most Favoured East Asian Countries for FTA formation by ROW

Country	South Korea	Japan	Singapore	China	Malaysia	Thailand
Votes	46	42	35	16	13	11

economically powerful countries and it is interesting to observe that Japan, China and South Korea are of top priorities in most cases. Also, it is noteworthy that non of the SAARC countries stand prominently in the table except India and Sri Lanka, and they seldom occupy in the bottom rows of a few countries. This implies the fact that highest potential for FTA continues to exist among the EU countries while the least potentiality is with SAARC. The East Asian region shows a moderate picture in the sense that it has not been most favourably selected or adversely rejected by the ROW in FTA negotiation.

Table 3 summarizes revealed preferences from table 2 for East Asian countries. As shown in table 3 South Korea, Japan and Singapore are the most three favoured East Asian Countries for FTA formation by the major trading partners in the rest of the world (ROW). It can be also seen that countries such as Brunei, Cambodia, Hong Kong, Laos, Myanmar, North Korea, Philippines and Vietnam are not favourable East Asian Countries for FTA formation for the ROW.

Table 4 shows the order of probability for a presence of an FTA between two countries of which one party is an East Asian economy. According to the predicted probability values, it can be seen that there is a higher chance of FTA within the East Asian region itself, even though the first few priorities typically go to European countries. Japan, South Korea, Malaysia, Singapore, Thailand and China are the most preferred countries by the rest of the regional countries.

Table 4 Order of Preferences to form FTAs of Major Trading Partners in the World

	Hong Kong	Japan	Singapore	South Korea	North Korea	Malaysia	Thailand	China	Indonesia	Vietnam	Philippines	Myanmar	Laos	Cambodia	Brunei
1	Poland	Germany	Finland	Russia	Austria	Singapore	Sweden	Japan	Netherlands	Finland	Portugal	Luxembourg	Luxembourg	Latvia	Singapore
2	Australia	South Korea	Sweden	Japan	Belarus	Finland	Netherlands	Germany	Australia	Singapore	Finland	Estonia	France	Estonia	Switzerland
3	Hungary	China	Norway	Netherlands	Belgium	Portugal	Switzerland	U.K	France	Norway	Norway	Italy	Norway	Denmark	Portugal
4	Switzerland	U.K	Portugal	Germany	Bolivia	Norway	Austria	France	Poland	Portugal	Sweden	Sweden	Finland	Croatia	Finland
5	Netherlands	France	Hungary	Spain	Brazil	Sweden	Portugal	South Korea	South Korea	Thailand	Switzerland	Cyprus	Sweden	Portugal	Norway
6	Austria	Netherlands	Switzerland	U.K	Bulgaria	Switzerland	Belgium	Netherlands	Japan	Sweden	Denmark	Finland	Switzerland	Lithuania	Sweden
7	Finland	Canada	Denmark	China	Canada	Denmark	Poland	Italy	Germany	Switzerland	Hungary	Norway	Netherlands	Norway	New Zealand
8	Norway	Poland	Croatia	France	Chile	Hungary	Finland	Spain	Sweden	Denmark	Slovakia	Switzerland	Denmark	Switzerland	Denmark
9	Spain	Italy	Netherlands	Sweden	China	Iran	Norway	Sweden	Spain	Hungary	Netherlands	Portugal	Austria	Malaysia	Netherlands
10	Belgium	Spain	Austria	Australia	Costa Rica	Netherlands	Denmark	Switzerland	Malaysia	New Zealand	Denmark	Belgium	Netherlands	Austria	Austria
11	Denmark	Sweden	Belgium	Switzerland	Czech Rep.	Austria	South Korea	Austria	U.K	Netherlands	Austria	Netherlands	New Zealand	Austria	Belgium
12	Portugal	Australia	Malaysia	Italy	Denmark	Poland	Australia	Finland	Austria	Austria	Romania	Austria	Czech Rep.	Romania	Greece
13	South Korea	Switzerland	Greece	Romania	Ecuador	Greece	Hungary	Norway	Portugal	Slovakia	South Korea	Singapore	South Korea	New Zealand	Australia
14	Sweden	Austria	New Zealand	Canada	Finland	Belgium	Germany	Canada	Belgium	Czech Rep.	Singapore	Hungary	Germany	Sri Lanka	South Korea
15	Germany	Norway	Australia	Portugal	France	Slovakia	Singapore	Portugal	Norway	Poland	Czech Rep.	Belgium	Australia	Greece	Germany
16	U.K	Finland	Czech Rep.	Austria	Gabon	Czech Rep.	Greece	Belgium	Finland	Greece	Belgium	New Zealand	Malaysia	Belgium	U.K
17	France	Belgium	Slovakia	Finland	Germany	Romania	Spain	Australia	Italy	Belgium	Greece	Czech Rep.	Thailand	Thailand	Spain
18	Greece	USA	Germany	Norway	Greece	Australia	U.K	Poland	Thailand	Romania	Poland	Sri Lanka	U.K	Finland	Thailand
19	Thailand	Denmark	Poland	Belgium	Hungary	South Korea	France	Denmark	Denmark	New Zealand	Luxembourg	Malaysia	Spain	Sweden	Japan
20	Singapore	Portugal	Luxembourg	Denmark	India	New Zealand	Slovakia	USA	China	South Korea	Lithuania	South Korea	Japan	South Korea	France
21	Canada	Russia	South Korea	Poland	Indonesia	Germany	Czech Rep.	Hungary	Canada	Australia	Australia	Germany	Italy	Cyprus	Sri Lanka
22	Italy	Hungary	U.K	Hungary	Italy	Spain	Romania	Greece	Russia	Luxembourg	Slovenia	Thailand	Canada	Hungary	Italy
23	New Zealand	Greece	Romania	Singapore	Japan	Lithuania	Japan	Mexico	Hungary	Iran	Malaysia	Costa Rica	Russia	Australia	Malaysia
24	Luxembourg	Slovakia	Spain	Greece	Malaysia	U.K	Italy	Russia	Greece	Germany	Japan	Australia	Singapore	Germany	Iran
25	Slovakia	Brazil	France	Slovakia	Mauritius	Slovenia	China	Slovakia	Slovakia	Lithuania	Croatia	U.K	Israel	France	Canada
26	Czech Rep.	New Zealand	Thailand	Czech Rep.	Mexico	France	Russia	Thailand	Brazil	Slovenia	Thailand	France	China	U.K	China
27	Russia	Czech Rep.	Slovenia	Brazil	Netherlands	Luxembourg	Canada	Czech Rep.	New Zealand	Croatia	Germany	Iran	Indonesia	Spain	Turkey
28	Malaysia	Luxembourg	Lithuania	New Zealand	Peru	Croatia	New Zealand	Brazil	Czech Rep.	Spain	Iran	Spain	USA	China	Israel
29	Japan	Singapore	Japan	Luxembourg	Poland	Latvia	Malaysia	Romania	Romania	U.K	U.K	Japan	India	Bulgaria	Indonesia
30	Romania	Lithuania	Italy	Lithuania	Portugal	Thailand	Lithuania	Luxembourg	Malaysia	France	Spain	Russia	Japan	Argentina	
31	Lithuania	Romania	Latvia	Thailand	Russia	Chile	Iran	Lithuania	Iran	Latvia	France	Canada	USA	Italy	USA
32	Slovenia	Slovenia	Iceland	Slovenia	Singapore	Japan	Slovenia	Iran	Lithuania	Japan	Estonia	Israel		Chile	India

Note: Top row shows the East Asian Countries ordered by PPP per capita GDP (2005). Hanging list of countries under each denotes the order of preferences for an FTA measured by the predicted probability values. Shaded cells show potentiality for FTAs within the East Asian region. For example, Consider China, its first priority goes to Japan which is within the East Asian region and next five priorities go to Germany, U.K, France, South Korea and Netherlands respectively.

Table 5 Most Favoured East Asian Countries for FTA Formation by the Region Itself

Country	Votes	Country	Votes
Japan	13	Brunei	0
South Korea	12	Cambodia	0
Malaysia	11	Hong Kong	0
Singapore	11	Laos	0
Thailand	11	Myanmar	0
China	8	North Korea	0
Indonesia	2	Philippines	0
		Vietnam	0

Table 5 quantifies this result. The most favoured East Asian Country for FTA formation by the region itself is Japan having 13 preferences from the rest of the regional members, while South Korea, Malaysia, Singapore and Thailand stand next. Brunei, Cambodia, Hong Kong, Laos, Myanmar, North Korea, Philippines and Vietnam are not appearing among the top 32 choices of any East Asian Country for forming an FTA.

6. LIMITATIONS OF THE STUDY

Despite the higher degree of predicting power of the model, several limitations of this study need to be emphasized. First, some caution has to be exercised in the normative interpretation of the results, especially that pertaining to the cost of trade distance. The variable “*natural*” measures the great circle distance between partner countries' capitals and used as a proxy for transport cost. Capital-to-capital distance is misleading particularly for big countries, and heterogeneous when natural barriers are present in middle. This limitation is there due to the lack of good data for international trade transport cost.

Second, some variables having some important relationships to the

decision of negotiating an FTA are still omitted. For example, political friendship of the country leaders, political enemies, hidden objectives of the political leaders not necessarily revealed from trade relations, past success or failures to gain from FTAs, can play a major role in negotiating a new FTA. In addition, this study concerns only the factor intensity differences, but not the differences in factor endowment, which is a combination of countries' natural resources, climate, geographical location, geological factors etc. Further, countries' level of specialization or self-sufficiency may be a divisive factor influencing FTAs, which has not been taken into account in this study.

Third, the study used the FTAs which have been notified to WTO. A recent work by Roberto *et al.* (2007) reported that there are at least 70 FTAs yet to be notified to WTO. We have no evidence how accurately the estimated model predicts the presence of unreported FTAs.

Finally, this study used a binary variable to represent all FTAs regardless of the depth of trade liberalization agreed under each FTA. FTA naturally goes beyond trade and investment liberalization touching upon a country's more sensitive areas such as environment, natural resources, biodiversity, intellectual property rights, research & development, culture and health etc., that might result in irreversible and far-reaching effects on the community as a whole for generations. This follows the idea that considering all FTAs are equivalent is a poor simplification, which is hard to improve in a binary variable model.

7. SUMMARY AND CONCLUSION

The main objective of this study is to identify the deterministic key factors of FTAs between the bilateral trading partners. This study extends the determinants of FTA in several directions. The study tested for eleven hypotheses regarding the dependency of FTA on the economic and non-economic characteristics of the bilateral trading partners and the findings support 9 out of 11 hypotheses including the following. The likelihood of

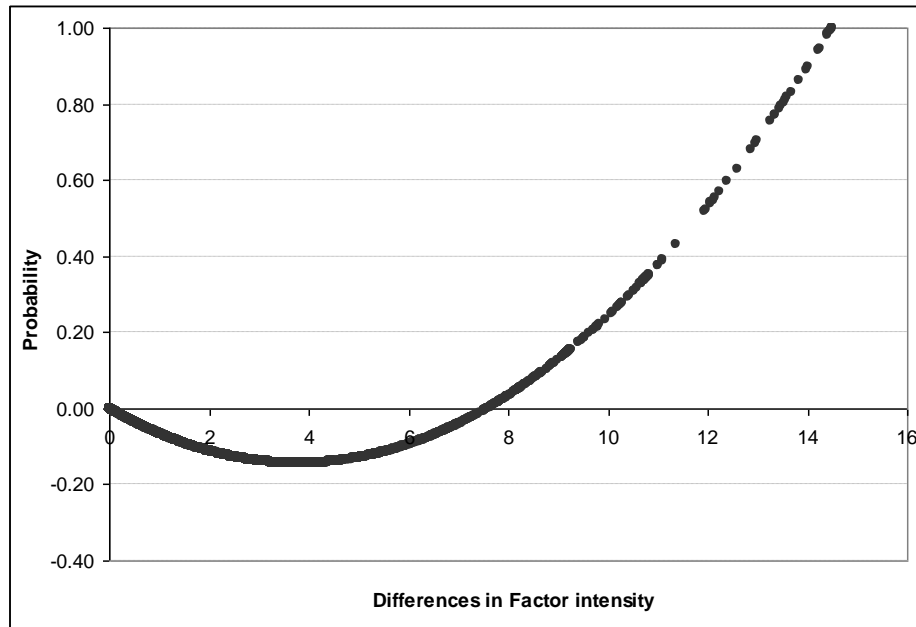
forming an FTA between a pair of countries is higher: (1) the closer in distance are two trading partners; (2) less remote a natural pair is relatively to other countries; (3) economically larger the trading partners are; (4) more similar the trading partners are in their economic size; (5) larger the differences of relative factor intensity of the two trading partners; (6) greater the political stability; (7) are more discontinued than connected by a common border (8) for countries having higher average import tariffs in the past; and (9) if the neighbourhood countries have already signed up for a larger number of FTAs. These factors have economically and statistically significant effects on the probability of forming an FTA.

However, this study rejected the null favouring alternative that (10) sharing a common language and having colonial relationships has no influence to negotiate an FTA among the bilateral trading partners. Furthermore, our findings rejected (11) the null that countries having higher degree of export/import intensity tend to form FTAs leading to the conclusion that the past trade or existing level of trade is not a good motivation to form a new FTA.

This study provides an economic benchmark for future political economic modules to enhance the explanation of FTA negotiations. To reach the above conclusions, the study focused on 184 countries using the probit model. The study correctly predicted 700 of the 705 existing FTAs (or 99.29%) and 8,458 of the 8,472 pairs for non-existence of FTAs (or 99.83%) among the total 9,178 country pairs evaluated.

Finally, with reference to the Asia-Pacific region, the study predicted that there is greater chance for a number of East Asian countries such as Japan, South Korea, Malaysia, Singapore, Thailand and China to have an FTA with economically important partners in ROW. The Asia-Pacific region is well beyond the South Asian region in terms of FTA potentiality, but the European region shows the highest potentiality among all other regions in the world. However, as European countries are already connected by EU, which is a customs union, the next era for FTA proliferation would be dominated by the East Asian economies.

APPENDIX

Figure A1 Probability of FTA vs Factor Intensity Differentials

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