

Cultural Affinity, Political Ties, and Endogenous Regional Trade Agreements[#]

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Abstract

Probability of forming regional trade agreements (RTAs) will be greater if two countries are closer in geographical distance. This paper extends the meaning of 'closer' by considering not only the geographical distance, but also the socio-political distance as well. This paper empirically analyzes whether a causal relation exists between the socio-political factors—the cultural affinity measured by cultural indices (common language, same region, and a new composite index of power distance, individualism, masculinity, and uncertainty avoidance) and political ties measured by the existence of a military alliance and the level of democracy—and the likelihood that RTAs will form. For such quantitative analysis, this paper applies the estimation techniques of a qualitative choice model (pooled probit model with cluster-robust standard errors) to the panel data, which covers bilateral country-pairs among 136 countries between 1998 and 2009. The interdependence of the formation of RTA is also investigated by considering the third country effects. In addition, we estimate the probability of forming the proposed RTAs in the Asia-Pacific region as an empirical application. We find that the interdependence of RTA formation has been strongly and significantly driven by the deepening of socio-political linkages between members and as well as with third countries. We also find that closer political and cultural linkages between countries in the Asia-Pacific region are necessary in order to realize the formation of the proposed regional RTAs.

Keywords: cultural affinity, political ties, regional trade agreements, qualitative choice model

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Table of Contents

I. Introduction

II. Determinants of Endogenous RTAs

III. A Qualitative Choice Model Analysis

IV. Results

V. Probability of Forming RTAs in the Asia-Pacific Region

VI. Concluding Remarks

References

I. INTRODUCTION

Regional trade agreements (RTAs) are endogenously and interdependently formed¹. Ever since Viner (1950) addressed the topics of trade creation and diversion effects of the customs union (CU), numerous studies have analyzed the trade and welfare effects of RTAs from both theoretical and empirical bases. Most of the existing studies, however, have primarily focused on analyzing the trade effects of exogenously formed RTAs, ignoring the endogeneity of RTA formation. In particular, unlike the extensive body of theoretical literature devoted to countries' choices of forming RTAs, empirical investigations of endogenously determined RTA formation have been relatively few and are rather new. The studies of Baier and Bergstrand (2003, 2004) and Magee (2003) can be considered as the pioneering works that partially fill this research gap. Each study develops an econometric model that empirically analyzes the determinants of RTA formation and predicts the likelihood of country-pairs forming RTAs.

More specifically, the welfare effects of RTAs are influenced by the pre-union economic interdependence and trade costs between potential members. Baier and Bergstrand (2004) emphasize the importance of economic geography as a determinant of RTA formation for positive trade creation effects. However, together with economic interdependence and proximity, socio-political proximity, such as political ties and cultural affinity, influences the welfare effects of RTAs. This paper contributes to the literature by investigating whether a causal relation exists between the socio-political determinants along with the likelihood that RTAs will form by introducing a new composite index of cultural affinity.

On the other hand, as in Baier et al. (2011), RTA interdependence, which is defined as the effects of other RTAs on the probability of a country-pair creating an RTA, should be carefully dealt with. However, empirical research on the interdependence of RTA—featuring a focus on the possible enlargement of existing RTAs and the competitive formation of new RTAs among nonmembers—has only recently gained currency. Baldwin and Jaimovich (2010) emphasize the trade-diversion effect as another benefit to the members of an RTA, at

¹ For the endogenous RTA, see Baier and Bergstrend (2003, 2004), Magee (2003), and Egger, Egger, and Greenaway (2008). For the interdependent RTA, see Egger and Larch (2008) and Baier et al. (2011).

the expense of third countries. This paper quantitatively investigates the third country effects of endogenous RTA formation.²

For econometric analysis, this paper applies the qualitative choice model estimation, which is a pooled probit model with cluster-robust standard errors, to the panel data covering bilateral country-pairs among 136 countries between 1998 and 2009. In particular, (i) we include some omitted socio-political determinants of RTA formation—the cultural affinity measured by common language, same religion, and a new composite index of cultural distances and political ties measured by the existence of a military alliance and the level of democracy—to the model; (ii) we investigate the interdependence of RTA formation by estimating the third country effects; (iii) we control the remoteness of the country-pair by adopting a multilateral resistance index developed by Baier et al. (2011); and (iv) we also control the problems of endogeneity by using lagged time varying explanatory variables. In addition, as an application of our empirical experiments to reality, we estimate the probability of forming the proposed RTAs in the Asia-Pacific region, such as the China-Japan, the China-Korea, the Japan-Korea, the China-Japan-Korea, the ASEAN+3, RCEP, and TPP.

This paper is organized as follows. Section II investigates the determinants of endogenous RTAs, particularly focusing on some omitted variables such as political ties and cultural affinity. Section III describes the model specifications and the data used. Section IV summarizes the estimation results. Section V compares the probability of forming RTAs in the Asia-Pacific region as a policy study. Section VI concludes this research.

II. DETERMINANTS OF ENDOGENOUS RTAs

² The third-country effect on the probability of a country-pair having an RTA explains the formation of interdependent RTAs. Baldwin and Jaimovich (2010) and Chen and Joshi (2010) each empirically test the third-country effects of enlarged RTAs by measuring the net welfare effect; each discover that the third-country effect plays a crucial role in each country's decision-making regarding the establishment of new RTAs. Egger and Larch (2008) test the third-country effects which relates to enlarged RTAs and new RTAs. They find that the enlargement of existing RTAs is more likely to occur compared to the possible formation of new RTAs. Further, they realize that interdependent linkages will be weakened by higher trade costs, measured in terms of bilateral distance, and strengthened by bilateral trade volume. Baier et al. (2011) simultaneously estimate the two sources of RTA interdependence using a formal theoretical model and successfully decompose RTA interdependence into cases of RTA enlargement and new RTA formation. They find that, as sources of RTA interdependence, the effects of RTA enlargement are much stronger than those of new RTAs.

Why do countries form RTAs? The answer to this question is because they expect positive welfare gains from freer trade. Ever since Tinbergen (1962) introduced the gravity regression econometric technology, gravity equations have been commonly accepted as the work horse for the quantitative analyses of RTAs on bilateral trade flows. As Baier and Begstrand (2003) mentioned, the probability of RTAs will be significantly affected by standard gravity equation regressors, such as GDP, population, bilateral distance, remoteness, difference in factor endowment, adjacency, historical background, and common language. However, the econometric analysis suffers from the endogenous bias mainly due to measurement errors, omitted variables, and simultaneity (Baier and Begstrand, 2003). In particular, some omitted variables such as cultural affinity and political ties will significantly influence RTA formation and consequently affect RTAs on trade flows. This paper considers both the standard regressors and the omitted variables as the independent variables which determine the likelihood of country-pairs forming RTAs.

1. Standard Determinants

According to the hypothesis proposed by Baier and Bergstrend (2004) and the natural trading partnership argument by Wonnacott and Lutz (1989), Summers (1991), and Krugman (1993), the gains from RTA formation will be greater if

- (i) the economic size of the two countries (measured by the sum of GDP) is bigger,
- (ii) the difference between the two countries' economic size (measured by difference in GDP) is smaller,
- (iii) the difference in factor endowment between the two countries (measured by the difference in per capita GDP) is bigger, and
- (iv) the trade costs measured by a closer bilateral distance, border sharing, remoteness, and sharing colonial links are cheaper.

2. Omitted Determinants

A. Political Ties

The formation of RTAs is a policy decision conducted by governments (Baier and Bergstrend, 2004; Márquez-Ramos et al., 2005; Vicard, 2006; and Kohl and Brouwer, 2011). Such policy decision is strongly driven by political interests. Trade blocs formed in the EU and ASEAN are clear evidences of the role of political factors on RTA formation (Ugur, 2003 for EU and Selmier and Oh, 2013 for ASEAN). In this paper, we hypothesise that country-pairs engaged in a military alliance will have a higher probability to form RTAs. We also understand that RTAs will be inactive and will not be sustainable if members fail to fulfill the legal commitments of bilateral liberalization with one another. Therefore, the participating countries' level of democracy (Magee, 2003) can be an important determinant of RTA, which will be included into the standard equation.

B. Cultural Affinity

Probability of forming RTA will be greater if two countries are closer in geographical distance. This paper extends the meaning of 'closer' by considering not only the geographical distance, but also the cultural distance as well. Common language and same religion are commonly specified in order to estimate the gains from forming trade blocs, as in Kang and Fratianni (2006), Helble (2007), Fratianni and Marchionne (2009), and Capannelli et al. (2010). In addition to the two cultural factors, this paper introduces a new composite index of cultural barriers across borders, which includes power distance, individualism, masculinity, and uncertainty avoidance, as surveyed by Hofstede et al. (2010).

Power distance measures the unequally distributed social powers. It indicates the degree of acceptance and the expectation level that the less powerful members of the society can afford. In contrast to collectivism, individuals are expected to stand up for themselves. Individualism affects how deeply the individuals are integrated into groups. Masculinity highly evaluates competitiveness, assertiveness, materialism, ambition and power compared to human relationships and quality of life within a feminine cultural society. Uncertainty avoidance measures a society's tolerance for uncertainty and ambiguity. It reflects how easily members of a society can escape from anxiety by minimizing the uncertainties.³ In this paper, we take the average of four index values for a composite index of cultural distance between country *i* and *j*.

³ For a brief summary of Hofstede's index, visit Wikipedia (http://en.wikipedia.org/wiki/Hofstede's_cultural_dimensions_theory)

Appendix Table 1 reports Hofstede’s four cultural index values by country, ranging from the lowest 1 to the highest 120. Table 1 measures the mean and standard deviation of the four index values by utilizing both the existing and proposed RTAs of great significance. As presented in Table 1, we find that power distance is much higher and less volatile between the developing members of RTAs, particularly those in East Asia and South America, such as CJK, AFTA, ASEAN+3, and MERCOSUR. Individualism is very strong in developed members-dominated RTAs, such as TTIP, NAFTA, and EU. RECEP is an exception. Masculinity is relatively strong in the three Northeast Asian countries (China, Japan, and Korea) and NAFTA. Standard deviation (SD) is highly volatile in CJK, EU, and TTIP. Uncertainty avoidance is strong in developing members-dominated RTAs, such as CJK and MERCOSUR. EU is an exception. From this observation, we predict the cultural barriers of RTAs in the East Asian region, such as CJK, ASEAN+3, RCEP, and TTP, which are much stronger than those of Western RTAs, such as NAFTA, EU, and TTIP. This prediction indirectly supports the conventional argument—*unlike the European integration, East Asian regionalism is purely market driven, where cultural diversity is an impediment to the formation of East Asian RTAs.*

[Table 1 here]

III. A QUALITATIVE CHOICE MODEL ANALYSIS

1. Model Specifications

We employ a qualitative choice model of RTA formation—as do each of Baier and Bergstrand (2004), Egger and Larch (2008), Chen and Joshi (2010), and Baier et al. (2011)—to estimate the likelihood of country-pairs forming an RTA by considering the third-country effects of interdependent RTAs. The model is based on the concept that the formation of an RTA between two countries is a discrete decision that is primarily based on the welfare effects of trade creation and trade diversion.

The empirical specification is as follows:

$$\Pr(RTA_{ijt} = 1) = \Phi(X'_{ij,t-1}\alpha + Y'_{ij,t-1}\beta + \gamma_1 \cdot IMRTA_{i,t-1} + \gamma_2 \cdot JMRTA_{j,t-1} + \gamma_3 \cdot RowRTA_{kl,t-1} + \varepsilon_{ijt}),$$

where RTA_{ijt} is the binary variable that takes the value of 1 if two countries have an RTA, and 0 otherwise, with the response probability (Pr) for RTA. $\Phi(\cdot)$ is the cumulative probability function, $X'_{ij,t-1}$ is a vector of control variables representing the country-pair's economic characteristics, and $Y'_{ij,t-1}$ is a vector of the country-pair's socio-political determinants of an endogenous RTA. Third-country effects are investigated by *IMRTA* and *JMRTA* for enlarged RTA membership and by *RowRTA* for new RTA membership. To preclude any endogeneity bias, all explanatory variables are lagged by one period.

A. Country-pair's Economic Characteristics: $X'_{ij,t-1}$

The economic characteristics of a country-pair—including economic size, trade costs, similarity, and external linkages—are the main factors that determine the welfare effects of RTA formation and thus influence the decision to form an RTA. We introduce the country-pair's economic characteristics as follows (expected signs are in parentheses).

- *SumGDP* (+) is the country-pair's market size, measured as the natural log of the sum of i 's and j 's real GDP.
- *DiffGDP* (-) presents the dissimilarity of economic size, which is measured as the absolute value of the difference in the natural log of each country's real GDP.
- *DKL* (+) refers to the difference between two countries' relative factor endowments, measured as the absolute difference in real per-capita GDP.
- *SqDKL* (-) is the square of *DKL*.
- *Dist* (-) presents the natural log of the bilateral distance between country-pair i and j .
- *Cont* (+) is a binary variable that takes the value of 1 if two countries are on the same continent, and 0 otherwise.
- *MDist* (+) is the natural log of remoteness of the country-pair from the rest of the world (Row).
- *MCont* (-) refers to the remoteness measured on the basis of the binary variable, *Cont*.

To measure the remoteness of the country-pair, we adopt the multilateral resistance index for each country-pair, as in Baier et al. (2011):

$$MDist_{ij} = \ln (1/N) \cdot (\sum_{k=1}^N Dt_{ik} + \sum_{k=1}^N Dt_{jk}),$$

where Dt is the bilateral distance between countries i (j) and k . Similarly, for country i 's multilateral resistance index for the binary variable $Cont$, we define

$$MCont_i = (1/N) \cdot (\sum_{k=1}^N Cont_{ik} + \sum_{k=1}^N Cont_{jk}).$$

B. Country-pair's Socio-political Determinants: $Y'_{ij,t-1}$

The country-pair's socio-political determinants of endogenous RTA are specified as follows (expected signs are in parentheses).

- *MilAlliance* (+) is a binary variable that takes the value of 1 if two countries are on a military alliance in year $t-1$, and 0 otherwise.
- *Democracy* (+) is the country pairs' level of democracy measured by the sum of the index
- *Common Language* (+) is a binary variable that takes the value of 1 if two countries are using a same language, and 0 otherwise.
- *Religion* (+) is a binary variable that takes the value of 1 if two countries believe in the same religion, and 0 otherwise.
- *Cultural Distance* (-) is a composite index of cultural distance between country i and j defined as:

$$Cultural\ Distance_{ij} = \ln |\sum_k (I^k_i - I^k_j) / SD^k|,$$

where $k \in \{ \text{power distance, individualism, masculinity, and uncertainty avoidance} \}$ and SD is the standard deviation of k index.

C. Third-country Effects: $IMRTA_{i,t-1}$, $JMRTA_{j,t-1}$, and $RowRTA_{kl,t-1}$

For the third-country effects of an interdependent RTA, we define the multilateral index of country i 's (j 's) RTAs with every other country, excluding j (i , respectively), as in Egger and Larch (2008).

$$IMRTA_{i,t-1} = \sum_{k \neq j} RTA_{ik,t-1}$$

$$JMRTA_{j,t-1} = \sum_{k \neq i} RTA_{jk,t-1}$$

$$RowRTA_{kl,t-1} = \sum_{k \neq i, j} \sum_{l \neq i, j} RTA_{kl,t-1}$$

For the domino effect of an enlarged RTA membership, $IMRTA_{i,t-1}$ ($JMRTA_{j,t-1}$) is defined as the sum of country i 's (j 's) RTAs with all other countries, excluding j (i); this is a binary variable that takes the value of 1 if i (j , respectively) and k have an RTA in year $t - 1$, and 0 otherwise. For the likelihood of forming a new RTA, $RowRTA_{kl,t-1}$ is defined as the sum of Row (rest of the world's) RTAs between k ($\neq i, j$) and l ($\neq i, j$); this is a binary variable that takes the value of 1 if k and l have an RTA in year $t - 1$, and 0 otherwise.

In sum, we estimate 3 different model specifications as follows:

- ① Model 1 without considering the third-country effects and the cultural distance index,
- ② Model 2 with considering the third-country effects but ignoring the cultural distance index,
- ③ Model 3 with considering the third-country effects and the cultural distance index.

2. Data

The panel data on RTAs come from Baier et al. (2011), which provide all bilateral trade country-pairs among 195 countries for 46 years (1960–2005). We extend the time period to 2009 by using the WTO Regional Trade Agreements Database. We then reconstruct our annual data set, covering 136 bilateral country-pairs⁴ for the 1998–2009 period⁵. Due to

⁴ For the regression analysis including the cultural distance index (Model 3), the data set covers 66 country-pairs because Hofstede et al. (2010) survey only 66 countries.

⁵ The year 1998 has been chosen because we observed a proliferation of RTAs right after the outbreak of the financial crisis in East Asia.

the fact that the annual variations are limited, we account every three years as a single time period.

We use Maddison (2011) for the data on countries' GDP and per-capita GDP values. Data on distance, continents, and common language are taken from Centre d' Études Prospectives et d'Informations Internationales (CEPII). The data regarding political ties come from the COW (Correlates of War) project and Polity IV project⁶. Religion data for this study are inter-country data obtained from the Association of Religion Data Archives (ARDA, 2005). The data set provides religious affiliations of 248 countries based on the survey results collected from 2003 to 2005. The religion category within the data identified 15 different religions. We regrouped the ARDA religious categories into six dominant religions: Buddhism, Christianity, Catholicism, Hinduism, Judaism, and Islam. A country pair is assigned a value of 1 when both countries share a dominant religion. As mentioned earlier, the four cultural distance indices are collected from Hofstede et al. (2010).

3. Summary Statistics

The qualitative choice model analysis in this study utilizes the annual data which consists of 117,298 country-pairs in total. The dataset features a panel structure that covers 136 countries from 1998 to 2009. Summary statistics for the data used in the estimations are presented in Table 2. Of 117,298 observations, 8,089 country-pairs (6.9 percent) belong to the membership of existing RTAs within the given year; 109,209 country-pairs (93.1 percent) are not members of any existing RTAs.

In Table 2, we present some notable findings. First, the economic size measured by the logarithmic sum of GDP of existing RTA members (*SumGDP*) is larger than those of the whole sample as well as those of countries without RTAs. Second, there is no significant difference in economic size (*DiffGDP*) and remoteness from Row (*MDist* and *MCont*) in terms of membership in existing RTAs. Third, the country-pairs of existing RTAs have much smaller variations in factor endowment, as measured by the logarithmic mean of real per-capita GDP and its square value (*DKL* and *SqDKL*). Fourth, the logarithmic mean of the geographical distance (*Dist*) between members of existing RTAs ($RTA = 1$) is shorter than those of the whole sample or those between countries excluded from existing RTAs

⁶ See <http://www.correlatesofwar.org/> for the COW project and <http://www.systemicpeace.org/polity/polity4.htm> for the Polity IV project.

(RTA = 0). This finding is supported by the higher mean of geographical location sharing (*Cont*) in the existing RTAs. Fifth, the mean values of the existing RTA members are much higher in terms of political ties (*MilAlliance* and *Democracy*) and are the commonly accepted cultural factors (*Common Language* and *Religion*). Sixth, the cultural distance between members of existing RTAs is not significantly shorter.

[Table 2 here]

While the aforementioned observations are informative, they are subject to some limitations. For example, when each variable is interpreted, the other variables are not appropriately controlled. A more systematic approach is outlined in the next section, where we apply more comprehensive econometric experiments.

IV. RESULTS

1. Estimation Results for the Probability of RTA Formation

A. General Results

We empirically investigate the relationship between the likelihood of forming an RTA and the economic and socio-political characteristics of countries within a country-pair, using the pooled probit-model estimation within a given year. Columns (1), (2), (3), and (4) in Table 3 present the probit results for the probability of RTA formation without considering the third-country effect of interdependence. As we interpret the estimated coefficients, most of the country-pairs' economic and socio-political characteristics behave in the way the model predicts. Further, the estimated coefficients are statistically significant when excluding the differences in factor endowment (*DKL*), continental partnership (*Cont*) and multilateral resistance variable (*Mdist*). To summarize, the probability of forming an RTA between country-pair i and j increases if (i) the bilateral distance (*Dist*) between them decreases, (ii) the country-pair's market size (*SumGDP*) increases, (iii) dissimilarity in economic size between them (*DiffGDP*) decreases, (iv) difference in factor endowment between them (*SqDKL*) decreases, (v) military alliance between them (*MilAlliance*) exists, (vi) the country-

pair is highly democratized (*Democracy*), (vii) the country-pair uses a common language (*Common Language*), and (viii) the country-pair believes in the same religion (*Religion*).

[Table 3 here]

B. Third-country Effects

Table 4 reports the probability of RTA formation while considering the third-country effects. The interdependence term strengthens the explanatory power of the model, as observed in higher pseudo-R square values, than those of Table 3. Unlike the estimation which does not consider the third-country effect in Table 3, religion negatively affects RTA formation and is statistically less significant. With regards to the third country effects, on one hand, we find that i 's and j 's existing RTAs with third countries increase the incentive for the country-pair to form a bilateral RTA and also enlarge the existing RTA, thereby supporting the results of Baier et al. (2011) and Egger and Larch (2008). We also find that an increase in i 's (j 's) membership with third countries by one standard deviation induces an increase in RTA membership probability by 0.1 (0.1, respectively) percentage points, according to the marginal effects figured in the column (8).

On the other hand, however, we cannot support the existing findings regarding the competitive formation of new RTAs, as initiated by the existing RTAs of other country-pairs in the row. The estimated coefficients are statistically insignificant.

[Table 4 here]

C. Cultural Affinity

Table 5 estimates the effects of the cultural distance on the likelihood of forming an RTA while considering the third-country effects. The cultural proximity term has proven to be a significant barrier against the formation of RTA. In addition, the inclusion of this important determinant to the model strengthens the explanatory power of the model, as seen in higher pseudo-R square values, than those of Table 4. Unlike the estimations which do not consider the cultural distance in Tables 3 and 4, all of the country-pair's economic characteristics behave in the way as predicted by the model, and all the estimated coefficients

are statistically significant. However, the estimates of political ties and same religion become statistically insignificant in affecting the formation of RTA. In particular, we find that enhancing the cultural affinity between country i and j by one standard deviation induces an increase in RTA membership probability by 3.3 percentage points, according to the marginal effects figured in column (12).

[Table 5 here]

2. Robustness

In order to check the robustness of the estimation results, we compare the estimation results in the columns with different model specifications in Tables 3, 4, and 5. Whether the regressors are included or excluded, it becomes clear that the estimates are quantitatively and statistically similar to each other, thus supporting the robustness of the estimation results.

3. Prediction

In order to investigate how well the predictions of this study's empirical model align with the actual data, we measure the fitted probabilities of country-pairs' RTA formation in a given year by controlling the effects of existing RTA relationships. As in Baier and Bergstrand (2004), we use a cut-off probability of 0.5 to determine whether or not an RTA had been predicted. As in Table 6, the model predicts the formation of existing RTAs ranging from the lowest 33%, without considering the socio-political proximity and the third-country effects, to the highest 76%, with considering the socio-political proximity and the third-country effects.

More specifically, (i) as we compare column (1) to columns (2), (3), and (4) and to columns (5) to (6), (7), and (8), the existence of a military alliance, high level of democracy, use of common language, and sharing the same religion all enhance the prediction power; (ii) as we compare columns (1)~(4) to columns (5)~(8), we find that third-country effects for the interdependence formation of RTAs should be controlled in order to enhance the prediction power; and (iii) as we compare columns (5)~(8) to columns (9)~(12), the newly introduced regressor of cultural affinity, which measures the cultural distance, significantly contributes

to the improvement of prediction power.⁷ Based on this finding, we may argue that the interdependence of RTA formation has been strongly and significantly driven by the deepening socio-political linkages between members and as well as with third countries.

[Table 6 here]

V. PROBABILITY OF FORMING RTAs IN THE ASIA-PACIFIC REGION

We investigate the feasibility of the proposed RTAs, such as the CJ (China-Japan), the CK (China-Korea), the JK (Japan-Korea), the CJK (China-Japan-Korea), the ASEAN+3 (ASEAN+CJK), the RCEP (Regional Comprehensive Economic Partnership), and the TPP (Trans Pacific Partnership), in the Asia-Pacific region by calculating the probability of RTA formation based on the estimates in our qualitative choice model analysis in Section IV. The probability of forming an RTA is calculated by taking a simple average of the bilateral probabilities between members of the corresponding RTAs.

Table 7 reports the probability of forming proposed RTAs in the Asia-Pacific region. For the probability covering the whole sample, we find that by controlling the third-country effects insignificantly raises the probability from 10.58% to 10.60% on average, and the newly introduced cultural proximity significantly raises the probability to 29.34% on average. We also find that the political ties and conventional cultural factors do not contribute to raising the probability. Unlike the whole-sample case, probabilities of forming RTAs in the Asia-Pacific region with the third-country effects and cultural distance index are significantly decreased. This implies that the interdependence of the proposed RTAs and the lack of cultural similarity in the region can be interpreted as significant obstacles for forming an RTA in the region. This finding logically proves the conventional belief, arguing that *East Asian regional integration has not been successful due to the diversity in culture and a lack of political will, when compared to the European case*. In contrast, the probability of forming a region-wide RCEP and TPP significantly increases when we consider the interdependence, political ties, and cultural affinity.

For feasibility of each proposed RTA, we find that RTAs including the three

⁷ It is much stronger than the predicted power of 53%, as estimated by Egger and Larch (2008).

Northeast Asian countries are highly feasible, but dramatically drops as we consider the political ties as figured in columns (2), (6), and (10). In particular, as we ignore the complicated political stances of the three countries, the probability of forming RTAs between the three Northeast Asian countries is the highest in the Japan-Korea RTA and the lowest in the China-Japan RTA. Hence, the trilateral China-Japan-Korea RTA is likely to be formed. The common cultural proximity does not affect the probability of forming RTAs in the region as figured in columns (3), (7), and (11). Contrasting to the bilateral and plurilateral RTAs in the region, the region-wide RTAs, ASEAN+3, RCEP, and TPP are less likely to be formed. Among them, ASEAN+3 is more feasible compared to RCEP and TPP.

From our observations in this feasibility test, we find that closer political and cultural linkages between countries within the region are necessary in order to realize the formation of regional RTAs.

[Table 7 here]

VI. CONCLUDING REMARKS

Similar to geographical distance, socio-political proximity, such as cultural affinity and political ties, can be an important determinant for forming RTAs. With regards to controlling the endogeneity and interdependence of RTA formation, we empirically investigated whether a causal relation exists between the socio-political factors, particularly the newly introduced composite index of cultural distance, and the likelihood that RTAs will form by applying a probit regression analysis to the panel data, which covers bilateral country-pairs among 136 countries between 1998 and 2009.

We found that the probability of forming an RTA between country-pair i and j increases if the socio-political proximity increases; further, the prediction power has proven to be significantly stronger. Regarding the interdependence of RTA formation, we find that a country-pair of existing RTAs with third countries increase the incentives for that country-pair to form a bilateral RTA as well as enlarge the existing RTA. However, we cannot support the existing findings on the competitive formation of new RTAs as well as the notion that they are initiated by existing RTAs in other country-pairs in the row. Based on this finding, we argue that the interdependence of RTA formation has been strongly and

significantly driven by the deepening socio-political linkages between members and as well as with third countries.

From the feasibility test for the proposed RTAs in the Asia-Pacific region, we could empirically prove the following conventional belief—*Unlike the European case, East Asian regional integration has not been successful due to the diversity in culture and a lack of political will*. From our observation in this feasibility test, we argue that closer political and cultural linkages between countries in the region are necessary in order to realize the formation of regional RTAs.

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Table 1. Cultural Distance Values by the Major Existing and Proposed RTAs

RTAs	Power Distance	Individualism	Masculinity	Uncertainty Avoidance
MEAN (I)				
Whole Sample	59.29	43.41	50.50	66.35
CJK	64.67	28.00	66.67	69.00
AFTA	80.67	22.00	47.00	38.33
ASEAN+3	72.67	25.00	56.83	53.67
NAFTA	53.33	67.00	61.00	58.67
MERCOSUR	65.00	33.00	54.00	84.50
EU	50.57	60.57	50.65	70.74
RCEP (ASEAN+6)	51.92	60.50	57.96	48.42
TPP	58.82	47.36	55.00	55.91
TTIP	45.28	75.78	56.33	58.37
STANDARD DEVIATION (II)				
Whole Sample	21.82	24.07	18.67	23.72
CJK	13.61	15.62	28.01	33.96
AFTA	15.27	6.20	10.18	18.86
ASEAN+3	16.00	9.70	18.91	27.31
NAFTA	23.97	32.51	8.54	20.23
MERCOSUR	13.47	14.65	14.67	11.36
EU	22.03	17.06	24.79	24.54
RCEP (ASEAN+6)	22.87	25.15	16.30	23.44
TPP	23.62	31.02	17.60	27.30
TTIP	21.65	17.80	24.36	24.52
Coefficient of Variation (II/I, %)				
Whole Sample	36.79	55.45	36.98	35.75
CJK	21.05	55.79	42.01	49.21
AFTA	18.93	28.17	21.66	49.21
ASEAN+3	22.02	38.78	33.27	50.89
NAFTA	44.93	48.52	14.01	34.49
MERCOSUR	20.72	44.40	27.17	13.44
EU	43.56	28.16	48.94	34.69
RCEP (ASEAN+6)	44.05	41.57	28.13	48.41
TPP	40.16	65.49	31.99	48.82
TTIP	47.81	23.49	43.24	42.02

Notes:

- (i) CJK (China-Japan-Korea), AFTA (ASEAN Free Trade Area), ASEAN+3 (ASEAN+CJK), NAFTA (North American Free Trade Agreement), MERCOSUR (Southern Common Market), EU (European Union), RCEP (Regional Comprehensive Economic Partnership), TPP (Trans Pacific Partnership), TTIP (Transatlantic Trade and Investment Partnership).
- (ii) Some member countries are excluded due to missing data from Hofstede et al. (2010).

See the country list in Appendix Table 1.

Source: Calculated based on data in Hofstede et al. (2010).

Table 2. Summary Statistics

	All (N =117,298)		RTA (N =8,089: 6.9%)		No RTA (N =109,209: 93.1%)	
	Mean	Standard Deviation (SD)	Mean	Standard Deviation (SD)	Mean	Standard Deviation (SD)
Log of Sum in GDP (SumGDP)	11.88	1.63	12.34	1.53	11.84	1.63
Log of Difference in GDP (DiffGDP)	11.21	2.11	11.43	2.09	11.19	2.11
DKL	1.37	0.97	0.74	0.59	1.42	0.97
SqDKL	2.81	3.39	0.90	1.37	2.95	3.46
Log of Distance (Dist)	8.66	0.77	7.36	0.87	8.76	0.67
Cont	0.02	0.15	0.17	0.37	0.01	0.11
Mdist	17.85	0.28	17.68	0.34	17.86	0.27
Mcont	0.04	0.02	0.04	0.02	0.04	0.02
MilAlliance	0.09	0.39	0.41	0.66	0.07	0.35
Democracy	3.37	25.32	13.46	12.79	2.63	25.85
Common Language	0.14	0.35	0.19	0.39	0.14	0.35
Religion	0.44	0.50	0.72	0.45	0.42	0.49
Cultural Distance	1.66	0.52	1.63	0.56	1.67	0.51

**Table 3. Standard Results (Model 1):
Probability of RTA Formation**

	(1)	(2)	(3)	(4)	
				Coefficient	Marginal Effect
(+) <i>SumGDP(-1)</i>	0.419 (0.028)***	0.357 (0.028)***	0.423 (0.029)***	0.362 (0.029)***	0.014 (0.001)***
(-) <i>DiffGDP(-1)</i>	-0.173 (0.020)***	-0.164 (0.020)***	-0.177 (0.020)***	-0.167 (0.020)***	-0.007 (0.001)***
(+) <i>DKL(-1)</i>	-0.006 (0.088)	0.018 (0.087)	0.001 (0.088)	0.022 (0.088)	0.001 (0.003)
(-) <i>SqDKL(-1)</i>	-0.127 (0.033)***	-0.121 (0.033)***	-0.126 (0.033)***	-0.121 (0.033)***	-0.005 (0.001)***
(-) <i>Dist</i>	-1.028 (0.037)***	-1.000 (0.036)***	-0.983 (0.037)***	-0.973 (0.036)***	-0.039 (0.003)***
(+) <i>Cont</i>	-0.095 (0.121)	-0.077 (0.124)	-0.096 (0.120)	-0.075 (0.122)	-0.003 (0.004)
(+) <i>MDist</i>	0.095 (0.085)	0.015 (0.085)	0.005 (0.086)	-0.046 (0.086)	-0.002 (0.003)
(-) <i>MCont</i>	-4.038 (0.989)***	-2.862 (1.003)***	-4.047 (0.993)***	-2.925 (1.005)***	-0.117 (0.041)***
(+) <i>MilAlliance(-1)</i>		0.258 (0.040)***		0.227 (0.041)***	0.009 (0.002)***
(+) <i>Democracy(-1)</i>		0.020 (0.002)***		0.018 (0.002)***	0.001 (0.000)***
(+) <i>Common Language</i>			0.158 (0.056)***	0.152 (0.057)***	0.007 (0.003)***
(+) <i>Religion</i>			0.300 (0.045)***	0.212 (0.047)***	0.009 (0.002)***
Year fixed effects	Yes	Yes	Yes	Yes	
Pseudo R ²	0.41	0.43	0.41	0.44	
No of observations	107,523	107,523	107,523	107,523	

Notes:

(i) Expected signs are in parentheses.

(ii) Standard errors are reported in parentheses, and *, **, and *** denote significance at the 10%, 5%, and, 1% levels, respectively.

**Table 4. Results of Third-Country Effects (Model 2):
Probability of RTA Formation**

	(5)	(6)	(7)	(8)	
				Coefficient	Marginal Effect
(+) <i>SumGDP(-1)</i>	0.154 (0.033)***	0.134 (0.034)***	0.156 (0.033)***	0.129 (0.034)***	0.003 (0.001)***
(-) <i>DiffGDP(-1)</i>	-0.103 (0.023)***	-0.103 (0.023)***	-0.105 (0.023)***	-0.102 (0.023)***	-0.002 (0.001)***
(+) <i>DKL(-1)</i>	-0.018 (0.096)	0.019 (0.096)	-0.013 (0.097)	0.028 (0.097)	0.001 (0.002)
(-) <i>SqDKL(-1)</i>	-0.128 (0.036)***	-0.126 (0.036)***	-0.130 (0.036)***	-0.131 (0.036)***	-0.003 (0.001)***
(-) <i>Dist</i>	-1.127 (0.045)***	-1.073 (0.044)***	-1.125 (0.046)***	-1.088 (0.045)***	-0.026 (0.002)***
(+) <i>Cont</i>	0.012 (0.139)	-0.021 (0.138)	0.022 (0.139)	-0.007 (0.139)	-0.000 (0.003)
(+) <i>MDist</i>	1.359 (0.108)***	1.256 (0.108)***	1.344 (0.111)***	1.304 (0.110)***	0.031 (0.004)***
(-) <i>MCont</i>	0.856 (1.151)	1.109 (1.202)	0.857 (1.147)	1.257 (1.202)	0.030 (0.029)
(+) <i>MilAlliance(-1)</i>		0.448 (0.044)***		0.470 (0.046)***	0.011 (0.001)***
(+) <i>Democracy(-1)</i>		0.007 (0.002)***		0.008 (0.002)***	0.000 (0.000)***
(+) <i>Common Language</i>			0.156 (0.063)**	0.154 (0.065)**	0.004 (0.002)**
(+) <i>Religion</i>			-0.008 (0.051)	-0.128 (0.054)**	-0.003 (0.001)**
(+) <i>IMRTA</i>	0.048 (0.002)***	0.050 (0.002)***	0.049 (0.002)***	0.051 (0.002)***	0.001 (0.000)***
(+) <i>JMRTA</i>	0.048 (0.002)***	0.049 (0.002)***	0.048 (0.002)***	0.051 (0.002)***	0.001 (0.000)***
(+) <i>RowRTA</i>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	
Pseudo R ²	0.53	0.54	0.53	0.55	
No of observations	107,523	107,523	107,523	107,523	

Notes:

(i) Expected signs are in parentheses.

(ii) Standard errors are reported in parentheses, and *, **, and *** denote significance at the 10%, 5%, and, 1% levels, respectively.

**Table 5. Results of Cultural Distance and Third-Country Effects (Model 3):
Probability of RTA Formation**

	(9)	(10)	(11)	(12)	
				Coefficient	Marginal Effect
(+) <i>SumGDP(-1)</i>	0.307 (0.066)***	0.305 (0.066)***	0.318 (0.068)***	0.308 (0.068)***	0.051 (0.011)***
(-) <i>DiffGDP(-1)</i>	-0.174 (0.042)***	-0.178 (0.042)***	-0.181 (0.043)***	-0.182 (0.043)***	-0.030 (0.007)***
(+) <i>DKL(-1)</i>	0.312 (0.211)**	0.307 (0.209)	0.360 (0.209)*	0.374 (0.209)*	0.062 (0.035)*
(-) <i>SqDKL(-1)</i>	-0.266 (0.093)***	-0.250 (0.091)***	-0.280 (0.094)***	-0.273 (0.093)***	-0.045 (0.016)***
(-) <i>Dist</i>	-1.314 (0.070)***	-1.278 (0.077)***	-1.308 (0.071)***	-1.281 (0.076)***	-0.212 (0.016)***
(+) <i>Cont</i>	0.334 (0.315)**	0.352 (0.309)	0.359 (0.314)	0.381 (0.308)	0.079 (0.077)
(+) <i>MDist</i>	0.627 (0.204)***	0.554 (0.210)***	0.575 (0.204)***	0.538 (0.210)***	0.089 (0.035)***
(-) <i>MCont</i>	-7.837 (2.288)***	-7.601 (2.306)***	-7.811 (2.278)***	-7.416 (2.304)***	-1.228 (0.375)***
(+) <i>MilAlliance(-1)</i>		0.185 (0.122)		0.191 (0.123)	0.032 (0.020)
(+) <i>Democracy(-1)</i>		0.009 (0.007)		0.011 (0.008)	0.002 (0.001)
(+) <i>Common Language</i>			0.281 (0.118)**	0.283 (0.118)***	0.053 (0.025)**
(+) <i>Religion</i>			0.021 (0.095)	-0.048 (0.099)	-0.008 (0.017)
(-) <i>Cultural Distance</i>	-0.185 (0.094)**	-0.195 (0.095)**	-0.187 (0.093)**	-0.197 (0.093)**	-0.033 (0.015)**
(+) <i>IMRTA</i>	0.055 (0.005)***	0.055 (0.005)***	0.056 (0.005)***	0.055 (0.005)***	0.009 (0.001)***
(+) <i>JMRTA</i>	0.054 (0.004)***	0.053 (0.004)***	0.054 (0.004)***	0.054 (0.004)***	0.009 (0.001)***
(+) <i>RowRTA</i>	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	
Pseudo R ²	0.60	0.60	0.61	0.61	
No of observations	17,523	17,523	17,523	17,523	

Notes:

(i) Expected signs are in parentheses.

(ii) Standard errors are reported in parentheses, and *, **, and *** denote significance at the 10%, 5%, and, 1% levels, respectively.

Table 6. Predictions of RTA Formation

Standard Model Specification	(1) Without Socio-political Factors		(2) With Political Ties (Military Alliance & Democracy)		(3) With Cultural Proximity (Common Language & Religion)		(4) With Political Ties & Cultural Proximity	
	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0
Actual Prediction								
RTA = 1	0.33	0.05	0.39	0.01	0.37	0.01	0.42	0.01
RTA = 0	0.67	0.95	0.61	0.99	0.63	0.99	0.58	0.99
With Third-Country Effects	(5) Without Socio-political Factors		(6) With Political Ties (Military Alliance & Democracy)		(7) With Cultural Proximity (Common Language & Religion)		(8) With Political Ties & Cultural Proximity	
	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0
Actual Prediction								
RTA = 1	0.48	0.01	0.51	0.01	0.50	0.01	0.52	0.01
RTA = 0	0.52	0.99	0.49	0.99	0.50	0.99	0.48	0.99
With Third-Country Effects & Cultural Distance Index	(9) Without Socio-political Factors		(10) With Political Ties (Military Alliance & Democracy)		(11) With Cultural Proximity (Common Language & Religion)		(12) With Political Ties & Cultural Proximity	
	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0	RTA=1	RTA=0
Actual Prediction								
RTA = 1	0.76	0.03	0.76	0.03	0.76	0.03	0.76	0.03
RTA = 0	0.24	0.97	0.24	0.97	0.24	0.97	0.24	0.97

Note: The figures in each cell represent the percentage of observations for which $RTA_{ijt}=1$ (form an RTA) or 0 (do not form an RTA), and are predicted to have $RTA_{ijt}=1$ or 0 with a probability > 0.5 .

Table 7. Probability of Forming RTAs in the Asia-Pacific Region

Standard Model Specification	(1) Without Socio-political Factors	(2) With Political Ties (Military Alliance & Democracy)	(3) With Cultural Proximity (Common Language & Religion)	(4) With Political Ties & Cultural Proximity	Average
Whole Sample	0.1080	0.1053	0.1051	0.1048	0.1058
CJ	0.6448	0.5416	0.6604	0.5573	0.6011
CK	0.8630	0.7821	0.8651	0.7885	0.8247
JK	0.8900	0.8482	0.8914	0.8511	0.8702
CJK	0.7993	0.7240	0.8056	0.7323	0.7653
ASEAN+3	0.4651	0.3944	0.4411	0.3826	0.4208
RCEP	0.1611	0.1586	0.1601	0.1577	0.1594
TPP	0.1594	0.1522	0.1558	0.1498	0.1543
With Third-Country Effects	(5) Without Socio-political Factors	(6) With Political Ties (Military Alliance & Democracy)	(7) With Cultural Proximity (Common Language & Religion)	(8) With Political Ties & Cultural Proximity	Average
Whole Sample	0.1064	0.1055	0.1061	0.1062	0.1060
CJ	0.3842	0.2796	0.3720	0.2529	0.3222
CK	0.7076	0.5810	0.6959	0.5534	0.6345
JK	0.6464	0.5273	0.6328	0.4944	0.5752
CJK	0.5794	0.4626	0.5669	0.4336	0.5106
ASEAN+3	0.3434	0.2698	0.3434	0.2734	0.3075
RCEP	0.2342	0.1854	0.2371	0.1920	0.2122
TPP	0.1798	0.1763	0.1804	0.1795	0.1790
With Third-Country Effects & Cultural Distance Index	(9) Without Socio-political Factors	(10) With Political Ties (Military Alliance & Democracy)	(11) With Cultural Proximity (Common Language & Religion)	(12) With Political Ties & Cultural Proximity	Average
Whole Sample	0.2919	0.2914	0.2951	0.2951	0.2934
CJ	0.2644	0.2207	0.2537	0.2020	0.2352
CK	0.6634	0.5933	0.6484	0.5670	0.6180
JK	0.7236	0.6826	0.6977	0.6443	0.6871
CJK	0.5505	0.4989	0.5332	0.4711	0.5134
ASEAN+3	0.3319	0.2994	0.3311	0.2987	0.3153
RCEP	0.2022	0.1830	0.2053	0.1865	0.1942
TPP	0.1618	0.1608	0.1618	0.1615	0.1615

Notes: (i) CJ (China-Japan), CK (China-Korea), JK (Japan-Korea), CJK (China-Japan-Korea), ASEAN+3 (ASEAN+CJK), RCEP (Regional Comprehensive Economic Partnership), TPP (Trans Pacific Partnership).

(ii) Brunei Darussalam and Myanmar are excluded due to data problems.

Appendix Table 1. Hofstede's Cultural Index Values by Country

Country	Power Distance	Individualism	Masculinity	Uncertainty Avoidance
Arab World	80	38	52	68
Argentina	49	46	56	86
Australia	36	90	61	51
Austria	11	55	79	70
Bangladesh	80	20	55	60
Belgium	65	75	54	94
Brazil	69	38	49	76
Bulgaria	70	30	40	85
Canada	39	80	52	48
Chile	63	23	28	86
China	80	20	66	30
Colombia	67	13	64	80
Costa Rica	35	15	21	86
Czech Republic	57	58	57	74
Denmark	18	74	16	23
East Africa	64	27	41	52
Ecuador	78	8	63	67
El Salvador	66	19	40	94
Estonia	40	60	30	60
Finland	33	63	26	59
France	68	71	43	86
Germany	35	67	66	65
Greece	60	35	57	112
Guatemala	95	6	37	101
Hong Kong	68	25	57	29
Hungary	46	80	88	82
India	77	48	56	40
Indonesia	78	14	46	48
Iran	58	41	43	59
Ireland	28	70	68	35
Israel	13	54	47	81
Italy	50	76	70	75
Jamaica	45	39	68	13
Japan	54	46	95	92
Luxembourg	40	60	50	70
Malaysia	104	26	50	36
Malta	56	59	47	96
Mexico	81	30	69	82
Morocco	70	46	53	68
Netherlands	38	80	14	53
New Zealand	22	79	58	49
Norway	31	69	8	50

Country	Power Distance	Individualism	Masculinity	Uncertainty Avoidance
Panama	95	11	44	86
Peru	64	16	42	87
Philippines	94	32	64	44
Poland	68	60	64	93
Portugal	63	27	31	104
Romania	90	30	42	90
Russia	93	39	36	95
Singapore	74	20	48	8
Slovakia	104	52	110	51
South Africa	49	65	63	49
South Korea	60	18	39	85
Spain	57	51	42	86
Surinam	85	47	37	92
Sweden	31	71	5	29
Switzerland	34	68	70	58
Taiwan	58	17	45	69
Thailand	64	20	34	64
Trinidad	47	16	58	55
Turkey	66	37	45	85
United Kingdom	35	89	66	35
United States	40	91	62	46
Uruguay	61	36	38	100
Venezuela	81	12	73	76
Vietnam	70	20	40	30
West Africa	77	20	46	54
Mean	59.29	43.41	50.50	66.35
Standard Deviation	21.82	24.07	18.67	23.72

Source: Hofstede et al. (2010).