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13. July 2014

Online at <http://mpra.ub.uni-muenchen.de/57279/>

MPRA Paper No. 57279, posted 13. July 2014 21:52 UTC

Political and Economic Determinants of Free Trade Agreements in the Presence of Foreign Lobbying

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Abstract Will a free trade agreements (FTAs) between nations be politically viable? Under political lobby what incentives determine whether FTAs will be signed or not? Will FTAs include steadily more countries until we reach worldwide free trade? The paper addresses these questions using a theoretical analysis model of free trade agreement under imperfect competition, with Grossman and Helpman's "protection for sale" model as the foundation. The validity of theoretical results is tested by econometric analysis with a panel probit model. The data spans 25 key trade nations and covers the period of 2007, 2010 and 2013. It is shown that: the FTA will be endorsed if and only if the aggregate welfare under FTA, combing lobby contributions with social welfare of both pair nations, is higher than the counterpart without FTA. Otherwise, the agreement is rejected. The possibility of concluding a FTA by a pair of nations has significant positive correlation with both of their market sizes and the number of countries with which they have both previously concluded FTAs; the possibility has significant negative correlation with the distance between pair nations; If both of the pair nations' market sizes are enough large, the possibility has positive correlation with government's sensitivity to social welfare; Otherwise, the correlation is negative. Although FTAs are characterized by the regionalism, they will contribute to multilateral free trade in the long run.

Keywords new political economics, free trade agreements, international trade pattern

JEL Classification D72, F02, F13

1 Introduction

Recently, regionalism has strengthened all around the world. For example, The United States has concluded bilateral free trade agreements (FTAs) with Israel, Canada, and Mexico and will pursue talk with Chile and perhaps other Latin American countries about Free Trade Area of Americas (FTAA). Meanwhile, a lot of members of the Association for South East Asian Nations (ASEAN) have been calling for the formation of East Asian Free Trade Area (EAFTA). According to the data published by Regional Trade Agreements (RTAs) database of WTO, RTAs have become increasingly prevalent since the early 1990s. By the end of 2013, some 561 notifications of RTAs had been received by the GATT/WTO. Among these, 323 were in force. Undoubtedly, bilateral or regional free trade agreements are the main form of RTAs. The current revival of interest in such FTAs can be characterized as the Third Regionalism, contrasting it with the First Regionalism that broke out in the latter half of the 1950s and in the 1960s and the Second Regionalism that broke out in the 1990s. (Bhagwati, 1993)

The recent revival of interest in “regionalism” especially in the kind of bilateral or regional free trade agreement sanctioned by Article XXIV of the GATT, has triggered a parallel revival of academic interest in FTAs. However, the new theoretical developments are characterized by two entirely different approaches. (Krishna.P, 1998). One simply asks if nations sign FTAs arbitrarily, what would occur to their social welfare. And the other asks why such arrangements instead of multilateral, non-preferential free trade are finally arrived at. Unfortunately, it is worth noting that most researchers don’t take the political pressures into account, which are brought to bear on a government as it contemplates whether to enter into a new trading arrangement. In fact, when an opportunity arises for two countries to negotiate a FTA among themselves, the more interesting and political economic theoretic question is that: Will a FTA between these nations be politically viable? Under political lobby what incentives determine whether FTA will be signed or not? Are there incentives for FTAs to keep expanding with more members so as to move

toward multilateral free trade eventually or will there be incentives instead to keep new members out?

In this paper, we take on these questions. Firstly, FTA potential nations' policy stances reflect the relative political power of their organized special factor owners and also the extent of the government's concern for the plight of the average voter. Secondly, whether FTA will be signed or not is highly affected by government's sensitivity to social welfare as well as by economic circumstances, such as market sizes, the distance and the number of FTAs previously signed, in the nations considered. Finally, although FTAs are characterized by the regionalism now, they will contribute to multilateral free trade in the long run. To evaluate the robustness of our results, a panel probit model is used to test. As we discuss in greater detail later, the results are highly robust to changes in data handling and econometric methodology.

The theoretical foundation developed in this paper to motivate estimating models borrows extensively from the well-known framework of endogenous policy determination constructed by Grossman and Helpman (1994). In this framework, they assume a government that trades off its desire to deliver a higher level of welfare to its polity with its desire for political contributions from organized industry lobbies which, in turn, provide political contributions to the government so it may move policy in a direction that would suit them.(Gawande.K, Krishna.P and Robbins.M., 2006) Then Grossman and Helpman (1995) use above analytical framework to describe what form the agreement will take under domestic political pressure , which is altered here suitably to account for the role of foreign lobbies. Other pioneering works were done by Gawande.K 、 Sanguinetti.P and Bohara.A.K (2001) and Endoh (2006) both of which empirically presented the high explanatory power of their prediction, but still neglect the existence of the foreign lobbies. Hence we think this paper has been the only formal study, so far, of economic and political factors which explain the presence or absence of free-trade agreements between pairs of countries, taking domestic and foreign lobbies into account.

The rest of this paper proceeds as follows. Section 2 develops the analytical

model of imperfect competition with a simplified structure to examine the conditions under which a bilateral arrangement will be supported by partner countries, and to investigate the economic and political factors which affect countries' decisions to form FTA. Section 3 presents the econometric model and discusses data and estimation issues in detail. Section 4 describes our results. Section 5 concludes.

2 A Three-country Model

2.1 Objectives of Economic and Political Agents

Consider the circumstance in which the world comprises three nations, x (home nation), y (partner nation) and z (rest of the world). Each of them can choose to sign FTA with other two nations. The aggregate utility in country j can be assumed to take the form:

$$U_j(Q) = Q_{0j} + (A_j Q_j - \frac{1}{2} Q_j^2) \quad (1)$$

where Q_{0j} is consumption of the numeraire good, good 0, Q_j is the total sales of the imperfect-competition good, A_j denotes a measure of market size, in nation j . From the above equation, domestic demand for the imperfect-competition good in nation j is assumed to take the linear form:

$$P_j = A_j - Q_j \quad (2)$$

where P_j is the price of the imperfect-competition good.

The numeraire good is assumed to be produced from labor alone by Ricardian technology with input output coefficient equal to one and is assumed to be freely traded internationally in perfectly. The imperfect-competition good is presumed to be produced with constant returns technologies using specific factor, as in Grossman and Helpman(1994).

Each nation has only one firm which produces the imperfect-competition good.¹ The market structure is one type of imperfect competition, with oligopolistic firms

¹ Our resulting expressions don't change if we were to allow for plural firms as in Krishna.P (1998).

producing goods that perfectly substitute for each other. Recognizing that markets indifferent countries are segmented, each firm decides the quantity of exports to each country, taking tariffs and transportation costs into consideration. The equilibrium concept is that of Cournot–Nash. Under the Cournot assumption, firms are expected to be maximizing profits by taking other firms’ outputs as given, with all firms deciding their quantities simultaneously. Firm i chooses the quantity of exports to country j , q_j^i , by solving the following problem:

$$\max_{q_j^i} \pi_j^i = q_j^i (A_j - Q_j - \alpha - t_j - d_j^i) \quad (3)$$

where, q_j^i is the quantity supplied by a firm in nation i , firm i , to nation j 's market, t_j is the *ad valorem* tariff nation j imposes on its import of the imperfect competition good from nation i , d_j^i is the transportation cost between nations i and j . The rate of the import tariff is presumed to be given below the prohibitive level as t or zero.² Transportation cost is treated under the “iceberg” cost. α is the marginal cost of special capital.³ Solving and rearranging (3) yields:

$$q_j^i = \frac{1}{4} (A_j - \alpha + \sum_k t_j^k + \sum_k d_j^k) - t_j - d_j^i, k = x, y, z \quad (4)$$

since α is constant, it is standardized as 1. (4) can be rewritten as:

$$q_j^i = \frac{1}{4} \left[A_j - 1 + (2 - n_j)t + \sum_k d_j^k \right] - t_j - d_j^i, k = x, y, z \quad (5)$$

where n_j is the number of FTAs nation j has signed, $n_j = 0, 1, 2$. Obviously, $Q_j = \sum_k q_j^k, k = x, y, z$. From equations (3) and (4), the profit of firm i gained by

² The existing papers concerning FTAs, such as Riezman (1985), Kennan and Riezman (1990), Bond and Syropoulos (1996), Yi (1996), and Bagwell and Staiger (1999), expect the import tariffs to be adjustable to optimal rates. Here, however, the value of t is treated as given, because there is little likelihood that FTA member nations will change their external tariffs for the non-member nations by the formation of a FTA. Thus, the choice of tariff for every nation is simplified to whether it imposes t or not on its imports.

³ We should note that the assumption here that marginal costs of production are constant is made just for *notational* convenience. Different costs cannot impact our result.

supplying the good in the amount of to country j 's market is: $\pi_j^i = (q_j^i)^2$. Let the total profits of firm i from each country's market be:

$$\Pi^i = \sum_k \pi_k^i, k=x, y, z \quad (6)$$

As is modeled by Grossman and Helpman (1994, 1995), trade policy is determined by interactions between the government and organized lobbies here representing separately domestic and foreign special factor owners. The government not only calculates the social welfare but also lobbying contributions. Therefore, the government's objective function is expressed as a weighted function in the following form:

$$G_i = C_i + a(L_i + \Pi^i + \sum_k t_i^k q_i^k + U_i - P_i Q_i) + C_j, k=x, y, z, \quad (7)$$

where social welfare W_i is express as $W_i = L_i + \Pi^i + \sum_k t_i^k q_i^k + U_i - P_i Q_i$, L_i is nation i 's endowment of labor, Π^i is the total firm profit, $\sum_k t_i^k q_i^k$ is the tariff revenue, and $U_i - P_i Q_i$ is the total consumer surplus. C_i denotes lobbying contributions by the domestic lobby I , C_j denotes lobbying contributions by organized foreign lobbies, a is a constant reflecting the government's preference for welfare relative to campaign contributions.

Each domestic or foreign firm contributes to its government in order that the government adopts a trade policy favorable to increasing the firm's own profit. The interaction between the various lobbies and the government that we take into account has the structure of a "menu-auction" problem exactly as in Grossman and Helpman (1994). Contribution schedule of the lobbies are further presumed to be "truthful", which is terminology used by Bernheim and Whinston (1985). It means they definitely reflect the true preferences of the lobbies because they donate to the government the excess of the lobby's gross welfare for any given policy relative to net welfare B_i , which is endogenously determined and thought as the base level. Formally C_i can be subject to the following equation:

$$C_i = \max \left[0, \Pi^i + \partial \left(\sum_k t_i^k q_i^k + U_i - P_i Q \right) - B_i \right] \quad (9)$$

Because there is only one producer in a nation, special capital owners comprise a negligible fraction of the total number of population. Thus, lobbies can overcome the “collective action problem” described by Olson.M (1965) and that they work together for their common political goals. In other words, $\partial=0$. Equations (9) can be expressed as:

$$C_i = \max \left[0, \Pi^i - B_i \right] \quad (10)$$

2.2 Incentive to Conclude FTA

The existing literature all maintained the assumption that a lobby group can offer contributions only to its own, native government. We allow lobbies in each country to seek influence over the other's policy. Lobby in every nation that will lose under the agreement gives donations to each government that exhausts its potential to benefit by preserving the status quo. This is because each such lobby could block the pact by swaying either one of the two governments, and no such lobby needs to pay its offer when both governments actually endorse $F=N$ (regime F denotes FTA is reached. N denotes FTA is not reached). Furthermore, no lobby that will benefit from the agreement donates the two governments combined more than what it stands to gain under the FTA. Finally, we find that an equilibrium outcome with pressured stances in both countries in support of the regime F requires:

$$\Pi_F^i + \Pi_F^j + aW_F^i + aW_F^j \geq \Pi_N^i + \Pi_N^j + aW_N^i + aW_N^j, i \neq j \quad (11)$$

Now, we examine the effects of economic and political factors on the incentive to liberalize trade through concluding a new FTA between countries x and y . For firm x , as a result of the newly concluded FTA, its profit has changed. The difference in profit between at $n_y + 1$ (after the formation of FTA) and at n_y (before the formation of FTA), derives from two effects : $\Delta\pi_y^x$, the increase of exports from country x to country y that increases profit from the new partner's market, and $\Delta\pi_x^x$, the increase of import from country y to country x , that intensifies competition and

decreases profit from the home market. According to (3), (4) and (5), the two effects can be expressed as:

$$\begin{cases} \Delta\pi_y^x = \pi_{yF}^x - \pi_{yN}^x = \frac{3t}{16} \left[(2A_y - 1) - (1 + 2n_y)t - 6d_y^x + 2d_y^z \right] \\ \Delta\pi_x^x = \pi_{xF}^x - \pi_{xN}^x = -\frac{t}{16} \left[(2A_x - 1) + (3 - 2n_x)t + 2d_x^x + 2d_x^z \right] \end{cases} \quad (12)$$

where n_x or $n_y = 1$ if nation x or y has already concluded a FTA with country z and n_x or $n_y = 0$ if nation x or y hasn't been concluded. $\Delta\pi_y^x$ is always positive, i.e. the profit of firm x from the new member market y always increases upon forming a FTA with it. $\Delta\pi_x^x$ is always negative, i.e. the profit of firm x from the home market always decreases.

When concluding the new FTA, tariff revenue in country x , TR_x , decreases and total consumer surplus in country x , CS_x , increases as follows:

$$\begin{cases} \Delta TR_x = -tq_x^y + (1 - n_x)t\Delta q_x^z = -\frac{t}{4} \left[A_x - 1 - (1 + 2n_x)t - 3d_x^y + d_x^z \right] \\ \Delta CS_x = \frac{1}{2} \Delta Q_x^2 = \frac{t}{32} \left[6(A_x - 1) - (3 - 2n_x)t - 2(d_x^y + d_x^z) \right] \end{cases} \quad (13)$$

Because of symmetry, the total effects for firm y by FTA can be calculated similarly. Thus, from (11) to (13), both governments will sign the FTA when the following inequality is satisfied:

$$\begin{aligned} \Lambda = & \Delta\Pi^i + \Delta\Pi^j + a(\Delta W^i + \Delta W^j) = \frac{1}{16} \left[(4t + 3ta)(A_x + A_y) + (5t^2 a - 4t^2)(n_x + n_y) \right. \\ & \left. + (4t - ta)(d_x^z + d_y^z) - (40t + 40ta)d_y^x - \nabla \right] > 0 \end{aligned} \quad (14)$$

where $\nabla = 8t - 6ta + 5t^2 a$. Equation (15) implies that the more Λ , the greater the possibility of a FTA between X and Y conclusion. Equation (15) also indicates that the range of Λ , which ensures that both governments will increase their policy objectives by the formation of an FTA, changes with $A_x + A_y$, $n_x + n_y$, $d_x^z + d_y^z$, d_y^x and a . To see this closely, partially differentiate Λ with these factors and we find

$$\frac{\delta\Lambda}{\delta(n_x + n_y)} = (5t^2 a - 4t^2) > 0, \frac{\delta\Lambda}{\delta d_y^x} = -(40t + 40ta) < 0, \frac{\delta\Lambda}{\delta(A_x + A_y)} = 4t + 3ta > 0. \text{ It is}$$

worth noting that according to the results from Goldberg and Maggi(1999), Gawande and Bandyopadhyay(2000), a is far greater than zero. From these theoretical findings, the first set of hypotheses to be empirically examined in the next section can be stated follows:

Hypotheses I: *The possibility of concluding a FTA by a pair of nations increases as the number of countries with which they have both previously concluded FTAs increases.*

Hypotheses II: *The possibility of concluding a FTA by a pair of nations increases as the distance between them decreases.*

Hypotheses III: *The possibility of concluding a FTA by a pair of nations increases as both of their market sizes increase.*

As for the other factors, the signs of $\frac{\delta\Lambda}{\delta(d_x^z + d_y^z)} = 4t - ta$,

$\frac{\delta\Lambda}{\delta a} = 3t(A_x + A_y) + 5t^2(n_x + n_y) - t(d_x^z + d_y^z) - 40d_y^x - 6 - 5t$ are indeterminate. It can be

seen, though, that if both of the pair nations' market sizes are enough large, there is a positive correlation between the possibility of concluding a FTA, and government's sensitivity to social welfare relative to its taste for political contributions. If the market sizes are comparatively small, the correlation will be negative. These findings support the second set of hypotheses:

Hypotheses IV: *If both of the pair nations' market sizes are enough large, the possibility of concluding a FTA increases as government's sensitivity to social welfare increase. Conversely, the correlation is negative.*

3 Econometric Specification, Data and Estimation Methodology

3.1 Econometric Specification

Equation (14) motivates our basic estimating equation. After the introduction of an additive error term ε , it can be expressed as:

$$fta = \beta_0 + \beta_1(n_x + n_y) + \beta_2 \ln(A_x + A_y) + \beta_3 a + \beta_4 \ln(d_{xy}) + \beta_5 \ln(d_{xz} + d_{yz}) + \alpha' X + \varepsilon \quad (15)$$

Clearly, β_1 and β_2 are predicted to be greater than zero and β_4 is less than zero.

When $A_x + A_y$ is enough large, β_3 is greater than zero. Otherwise, β_3 is less than zero.

3.2 Data

Our sample spans G20 nations and other five important trade economies (Singapore, Columbia, Egypt, Chile and Nigeria).⁴ Along the time dimension, our sample covers the period of 2007, 2010 and 2013, which allows our analysis to capture the effects of the incentives during this period of time. We choose this dataset to investigate the plausibility of those **Hypotheses I-IV**, since the amount of GDP of above 25 nations account for more than 90% of the total world's GDP and the trade volume between them account for more than 80% share of the volume of world trade according to World Bank. Therefore, the sample reflects the situation and characteristics of world economy and trade comprehensively and objectively. Finally, the dataset contains 900 observations.

The dependent dummy variable adopts the FTAs notified to the GATT/WTO by December 2013 and in force at the time. In RTAs database of WTO, there are three kinds of RTAs: Free trade Agreements (FTAs), Customs Unions (CUs), and "Other" types of agreements. In FTAs, member nations are required to move trade barriers among themselves, but can hold their own trade policies toward nonmembers. In contrast, CUs further require its members to establish a common trade policy toward nonmembers. "Other" types of agreements, including interim agreements which may bring about the formation of FTAs or CUs, are all based on an Enabling Clause. The Enabling Clause allows under-developed nations to form RTAs under less strict conditions with respect to both the rate of tariff and the coverage of goods. In fact, many of agreements based on the Enabling Clause haven't fully been completed yet.

⁴ The 25 countries included in the econometric model are: USA, Japan, Germany, France, Britain, Italy, Canada, Russia, Australia, South Africa, Argentina, Brazil, Chinese, India, Indonesia, Mexico, Saudi Arabia, South Korea, Turkey and New Zealand. Here, New Zealand takes the place of EU.

If we employ a set of dependent dummy variables composed of Enabling Clause, it may make the dependent dummy variable inaccurate. Thus, dependent dummy variables have a value of unity for a pair of nations that only conclude a FTA, and 0 otherwise. In addition, managing the FTAs notified to the GATT/WTO as a proxy for actual FTAs also might lead to discrepancy. However, as there isn't a precise definition of actual FTAs, we consider that the difference between the nominal and actual FTAs is negligible in the case of FTAs.

$n_x + n_y$ are the number of nations with which both nations x and y have signed FTAs, as of December 2007, 2010 and 2013. Data are also from RTAs database of WTO.

$A_x + A_y$ is GDP of nations x and y combined. Here, market size, A , in the theoretical model, is measured with GDP in this econometric analysis. GDP data are from the World Bank Indicators database, using the data of 2007, 2010 and 2013.

α is a constant reflecting the government's preference for welfare relative to lobby contributions. We take the Gini index as a proxy for α . The index is a measure of statistical dispersion intended to represent the income distribution of a nation's residents. A Gini index of zero expresses perfect equality, where everyone, whether labors or special factor owners, has the same income. A Gini index of one expresses maximal inequality among values (for example where the a handful of special factor owners have all the income). In other words, the more Gini index is, the more sensitive the government is to lobby contributions. Therefore, α is calculated from the average Gini index of nations x and y .⁵ Gini index data are also from the World Bank Indicators database, using the data of 2007, 2010 and 2013.

d_{xy} is the great circle distance between the capitals of nations x and y . Distance data are from Geobytes, which is the authoritative website on geography and Fitzpatrick and Modlin (1986).

$d_{xz} + d_{yz}$ is the combined distance of nations x and y from the rest of the world. d_{xz} , d_{yz} are the average distances from nations x and y to the other nations,

⁵ We should note that the direction of α is converse to Gini index.

excluding the distance between nations x and y , respectively. So, $d_{xz} = \sum_{k \neq x, y} d_{xk} / 23$, $d_{yz} = \sum_{k \neq x, y} d_{yk} / 23$. Although the relation between Λ and $d_{xz} + d_{yz}$ is indeterminate in above theoretical analysis, the econometric results can help us to answer whether FTAs will include steadily more countries until we reach worldwide free trade.

X vector contains time and regional dummy as the control variables. Asia Europe Africa Latin America and Northern America are the regions considered in the dummy variables. Dummy variables will have the value of one if a pair of nations both belong to the one region and zero otherwise. They incorporate the characteristics of each region.

3.3 Estimation Methodology

Because the dependent dummy variable is binary variable, we use probit of panel data to perform our econometric analysis. Lagrange Multiplier test for random effects, following the method of Breusch and Pagan (1980) specifically designed for probit models, strongly supported the random effects in our data. The Baltagi.Li (1995) test for first-order serial correlation rejected the hypotheses of serial correlation. In the section of Sensitivity Analysis, we use the data of 2007, 2010 and 2013 respectively to check the robustness with probit model.

4 Econometric Results

4.1 Descriptive Statistics

Table 1 displays the descriptive statistics of our dependent and independent variables. As can be seen from Table 1, the mean of fta across all the nations in our sample is 0.2, and the average of $n_x + n_y$ is 9.126 surprisingly. It shows that the average signature rate of FTAs reaches 20% and the number of FTAs each nation conclude is more than 4, which reflects the phenomenon of revival of FTAs all around world. The indicator of market sizes, $\ln(A_x + A_y)$, hits the maximum at 26.16 and bottom out at 30.8s, standard deviation of which is 0.968. Because the indicator is the log data, these summary statistics of it imply the significantly difference of market

Table 1 descriptive Statistics

<i>Var</i>	<i>obs</i>	<i>Mean</i>	<i>Std</i>	<i>Min</i>	<i>25th</i>	<i>Median</i>	<i>Max</i>
<i>fta</i>	900	0.200	0.400	0.000	0.000	0.000	1.000
<i>nx+ny</i>	900	9.126	4.398	0.000	6.000	9.000	21.000
<i>In(Ax+Ay)</i>	900	28.530	0.968	26.160	27.874	28.580	30.800
<i>average_gini</i>	900	41.060	6.853	26.500	35.873	40.618	62.640
<i>In(dxy)</i>	900	8.974	0.690	5.838	8.691	9.137	9.895
<i>In(dxz+dyz)</i>	900	9.837	0.107	9.648	9.761	9.830	10.160

sizes among sample nations. The mean of average Gini index is 41.06, which is higher than the average level of the world, 44.0, implying that compare to other nations, the sample countries' government pay more attention to the social welfare.

4.2 Pearson Correlation Test

The results from the Pearson correlation test in Table 2 offer useful hints to our main econometric analyses to be conducted in the subsequent section. For instance, $nx + ny$, $In(A_x + A_y)$ are positively correlated with the binary dependent variable fta at the 1% significance level, which verify the **Hypotheses I and III** preliminarily. $In(d_{xy})$ is negatively correlated with the binary dependent variable fta at the 1% significance level, which verify the **Hypotheses II** preliminarily. $average_gini$ is not negatively correlated with the binary dependent variable fta at the 1% significance level, implying that the more government of pair nations pay attention to the social welfare the higher the possibility of concluding a FTA is. This may not seem

Table 2 Pearson Correlation Test

<i>Var</i>	<i>fta</i>	<i>nx+ny</i>	<i>In(Ax+Ay)</i>	<i>average_gini</i>	<i>In(dxy)</i>	<i>In(dxz+dyz)</i>
<i>fta</i>	1.000					
<i>nx+ny</i>	0.356***	1.000				
<i>In(Ax+Ay)</i>	0.108***	0.158***	1.000			
<i>average_gini</i>	-0.099***	-0.200***	-0.359***	1.000		
<i>In(dxy)</i>	-0.352***	-0.043	-0.104***	0.166***	1.000	
<i>In(dxz+dyz)</i>	-0.004	-0.101***	-0.276***	0.240***	0.341***	1.000

Notes: t statistics in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

surprising, as there is significantly negative correlation among $In(A_x + A_y)$, $nx + ny$ and $average_gini$. Of course, the precise analysis needs to depend on panel probit model in the next section.

4.3 Panel Probit Model Estimates

Table 3 presents the regression results of a panel probit model. The results based on all sample observations are listed on *all*. Similar to the results of Table 2, $n_x + n_y$, $\ln(A_x + A_y)$ are positively correlated with the binary dependent variable *fta* at the 1% significance level, which verify the **Hypotheses I and III**. And $\ln(d_{xy})$ is also negatively correlated with the binary dependent variable *fta* at the 1% significance level, which verify the **Hypotheses II**. It is interesting that $\ln(d_{xz} + d_{yz})$ is positively correlated with *fta*, implying that the possibility of concluding a FTA by a pair of nations increases if both of them are far away from the rest of the world. Moreover, absolute value of coefficient of $\ln(d_{xy})$ is greater than the counterpart of other variables. Thus, we can suppose that FTAs are still characterized by the regionalism

Table 3 Empirical Results of Panel Probit Model

<i>Var</i>	<i>all</i>	<i>large_size</i>	<i>small_size</i>
n_x+n_y	1.003*** (9.94)	2.053*** (11.48)	0.812*** (3.52)
$\ln(A_x+A_y)$	1.319*** (3.25)	-1.003 (-1.60)	3.862* (1.78)
average_gini	0.037 (0.62)	-0.351** (-2.12)	0.344*** (3.74)
$\ln(d_{xy})$	-6.745*** (-12.90)	-12.860*** (-12.93)	-6.600*** (-3.67)
$\ln(d_{xz}+d_{yz})$	21.456*** (6.20)	41.955*** (8.91)	26.535*** (2.96)
_cons	-208.444*** (-5.59)	-316.841*** (-6.52)	-311.259*** (-2.78)
dummy	Yes	Yes	Yes
Log-likelihood	-164.6	-129.6	-31.89
N	900	675	225
Pse_R2	0.1345	0.131	0.2105

Notes: t statistics in parentheses, * p<0.1, ** p<0.05, *** p<0.01, pseudo-R-squared in Pse_R2.

now. In order to test **Hypotheses IV**, thresholds were used to determine the measurement of total market sizes. We take the 25th percentile as the threshold. If $\ln(A_x + A_y)$ is larger than the 25th percentile, the relative observations belong to the

sample of *large_size*. Otherwise, the observations belong to the sample of *small_size*. We list the results based on the different market sizes on the last two column. We can find that if the total market size is large, *average_gini* is negatively correlated with the binary dependent variable *fta* at 5% significance level. By contrast, if the total market size is small, *average_gini* is positively correlated with *fta* at 1% significance level. Undoubtedly, **Hypotheses IV** is verified.

4.4 Sensitivity Analysis

In order to check the robustness of our results, we econometrically analyze the validity of theoretical results with probit methodology and the data of 2007, 2010 2013 and the pooled cross section, respectively. Table 3A and 3B presents the regression results. Table 3A does the sensitivity analysis based on all observations. Table 3B does the sensitivity analysis based on the observations divided on different market sizes. From results, we can find although $\ln(d_{xy})$ is negatively correlated with *fta* at the 1% significance level from 2007 to 2013, the absolute value of coefficient is

Table 3A sensitivity analysis based on all observations

<i>Var</i>	<i>2013</i>	<i>2010</i>	<i>2007</i>	<i>pool</i>
<i>nx+ny</i>	0.153*** (6.18)	0.160*** (5.86)	0.185*** (5.75)	0.153*** (-10.54)
$\ln(Ax+Ay)$	0.162* (1.47)	0.172* (1.52)	0.241** (2.03)	0.171** (2.66)
<i>average_gini</i>	-0.001 (-0.08)	-0.00100 (-0.06)	0.0110 (0.64)	0.00302 (0.33)
$\ln(d_{xy})$	-0.867*** (-6.09)	-0.867*** (-5.78)	-0.933*** (-6.44)	-0.880*** (-10.58)
$\ln(dxz+dyz)$	2.901*** (3.29)	3.050*** (3.34)	2.569** (2.44)	2.687*** (5.05)
<i>_cons</i>	-27.977*** (-2.91)	-29.101*** (-2.91)	-27.459** (-2.43)	-26.06*** (-4.52)
<i>dummy</i>	Yes	Yes	Yes	Yes
Log-likelihood	-121.2	-107.4	-90.91	-332.61
N	300	300	300	900
Pse_R2	0.267	0.284	0.3101	0.2837

Notes: t statistics in parentheses, * p<0.1, ** p<0.05, *** p<0.01, pseudo-R-squared in Pse_R2.

declining gradually, implying that FTAs won't let the world move toward the path of

regionalism in the long run. In other words, according to **Hypotheses I**, we can suppose that even FTAs are characterized by the regionalism now, they will contribute to multilateral free trade in the long run. In addition, the correlation between *average_gini* and *fta* regardless of the market sizes. It implies that attentional direction by government produces more impact on whether fta is signed or not. Overall, the results from sensitivity analysis are basically consistent with the above. Therefore, the results are seen to be quite robust to a variety of sensitivity analyses, which, in this context, appear to be important in order to make sturdy inferences.

Table 3B sensitivity analysis based on observations divided on different market sizes

Var	<i>large_size</i>				<i>small_size</i>			
	<i>2013</i>	<i>2010</i>	<i>2007</i>	<i>pool</i>	<i>2013</i>	<i>2010</i>	<i>2007</i>	<i>pool</i>
nx+ny	0.186*** (6.06)	0.219*** (5.80)	0.239*** (5.69)	0.194*** (10.40)	0.099* (1.77)	0.086* (1.71)	0.125* (1.71)	0.095*** (3.16)
ln(Ax+Ay)	-0.128 (-0.80)	-0.0690 (-0.40)	0.0220 (0.13)	-0.0670 (-0.72)	0.755 (1.35)	0.965* (1.80)	1.383* (1.65)	0.813** (2.40)
average_gini	-0.061* (-1.67)	-0.0340 (-0.94)	-0.0260 (-0.55)	-0.047** (-2.23)	0.024 (1.32)	0.0200 (1.02)	0.0150* (1.52)	0.026** (2.38)
ln(dxy)	-0.923*** (-5.42)	-0.929*** (-5.15)	-1.081*** (-5.88)	-1.006*** (-9.84)	-0.913*** (-3.13)	-0.894*** (-3.14)	-0.995*** (-2.83)	-0.825*** (-4.93)
ln(dxz+dyz)	3.490*** (3.09)	3.481*** (2.94)	3.589** (2.54)	3.397*** (5.06)	4.251** (2.22)	5.031*** (2.66)	2.239 (1.18)	3.406*** (3.14)
_cons	-26.157** (-2.29)	-26.409** (-2.16)	-31.667** (-2.21)	-26.313*** (-3.83)	-54.363** (-2.04)	-68.649*** (-2.64)	-52.275* (-1.77)	-48.647*** (-3.21)
dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-likelihood	-93.39	-78.87	-69.72	-248.6	-19.63	-21.34	-14.50	-53.94
N	225	225	225	675	75	75	75	225
Pse_R2	0.347	0.316	0.347	0.312	0.405	0.383	0.377	0.347

Notes: t statistics in parentheses, * p<0.1, ** p<0.05, *** p<0.01, pseudo-R-squared in Pse_R2.

5 Conclusion Remarks

Our primary interest in this paper is the study of incentives determine whether FTA will be signed or not under domestic and foreign political lobby. We have pursued it using a structural methodology where a theoretical framework was constructed and where the econometric model that followed was linked closely to this theory. Our results suggest the following conclusions. Firstly, the FTA will be

endorsed if and only if the aggregate welfare under FTA, combining lobby contributions with social welfare of both pair nations, is higher than the counterpart without FTA. Otherwise, the agreement is rejected. Secondly, the possibility of concluding a FTA by a pair of nations has significant positive correlation with both of their market sizes and the number of countries with which they have both previously concluded FTAs. Thirdly, the possibility has significant negative correlation with the distance between pair nations; If both of the pair nations' market sizes are enough large, the possibility has positive correlation with government's sensitivity to social welfare; Otherwise, the correlation is negative. Finally, Although FTAs are characterized by the regionalism, they will contribute to multilateral free trade in the long run.

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