BILATERAL TRADE FLOWS BETWEEN U.S TPP COUNTRIES: COUNTRY PAIR ANALYSIS

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Abstract

The Trans-Pacific Partnership (TPP) is a proposed regional free trade agreement (FTA) among 12 countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam. The TPP by eliminating more than 18,000 taxes and other trade barriers on American products across the 11 other countries is expected make it easier for American entrepreneurs, farmers, and small business owners to sell Made-In-America products abroad. This paper attempts to examine the factors that affects trade creation and trade diversion between the US and TPP countries using the gravity model by applying both panel pooled data from 1991 to 2015 to four gravity equations (agricultural related products, bulk agricultural products, consumer oriented agricultural products, and intermediate agricultural products) in each case. The factors include traditional trade variables GDP of US (exporting country), GDP of importing countries, FTA's, border, language, real exchange rate, arable land and population for U.S. Three models (One-way random effect, the two-way random effect and pooled) were applied to each of the four products. In all, the pooled model showed the highest predictive power and with consistent parameters. Similarly, considering the specific products, consumer oriented and intermediate products are the most sensitive to these factors while bulk agricultural products are the least.

Keywords: Bilateral trade, Gravity model, TPP, FTA's

1. Introduction

The Trans-Pacific Partnership (TPP) is a proposed regional free trade agreement (FTA). On October 4, 2015, Ministers of the 12 Trans-Pacific Partnership (TPP) countries – Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States, and Vietnam announced conclusion of their negotiations. Canada and Mexico were the countries to join the negotiations mid October 2012 (Office of United States Trade Representative). Overtime the TPP is expected to evolve into a major integration arrangement covering most of the members of the Asia Pacific Economic Cooperation (APEC) forum. It goes beyond its driving force to trade and investment. It serves as an in structure negotiating laboratory that could yield important precedents for other trade initiatives (Schott, Kotschwar, & Muir, 2012).

The Office of the United States Trade Representative describes The Trans-Pacific Partnership (TPP) as a trade agreement that writes the rules for global trade—rules that will help increase Made-in-America exports, grow the American economy, support well-paying American jobs, and strengthen the American middle class.

These countries make up $27.7 trillion representing 40 percent of the world's Gross Domestic Product and, combined, they would form one third of the world's trade. The TPP builds on the Trans-Pacific Strategic Economic Partnership Agreement formally known as Pacific-4 (P4), a free trade agreement (FTA) between New Zealand, Chile, Singapore and Brunei that began with negotiations at the APEC leaders' summit in 2002. It had an objective of creating a model agreement that could attract new Asia-Pacific members (Schott et al., 2012).

The Bush Administration in 2008 notified Congress of its intention to join what became the TPP negotiations. Australia, Peru and Vietnam joined shortly thereafter, followed by Malaysia in

October 2010. TPP will make it easier for American entrepreneurs, farmers, and small business owners to sell Made-In-America products abroad by eliminating more than 18,000 taxes & other trade barriers on American products across the 11 other countries; barriers that put American products at an unfair disadvantage today. American manufactured goods currently face tariffs of up to 100% on certain goods in TPP markets, and agriculture exports face tariffs of over 700% on some products. For example in Vietnam, American poultry faces tariffs as high as 40%, while poultry from Australia and New Zealand face tariffs of only 20%. These imbalances favor foreign products at the expense of American exports (Office of United States Trade Representative). The TPP as a group of countries are the largest goods and services export market of the United States. In 2013 U.S. goods exports to TPP countries totaled $698 billion, this represents 44 percent of total U.S. goods exports. Also U.S. exports of agricultural products to TPP countries totaled $63 billion in 2013, 42 percent of total U.S. agricultural exports. U.S. private services exports totaled $172 billion in 2012 and 27 percent of total U.S. private services exports to the world. Small- and medium-sized enterprises in America alone exported $247 billion to the Asia-Pacific in 2011.

TPP also aims to increase trade in services by expanding market access in this area by prohibiting quantity restrictions on imported services, outlawing discrimination against Foreign Service providers, and encouraging the open exchange of services in all sectors (Varas, 2015). Services make up a substantial portion of U.S. trade, accounting for $711 billion of exports in 2014 (Fefer, 2015).

The TPP does not only aim at providing new and meaningful market access for American goods and services exports, but it also seeks to set high-standard rules for trade, and tackle vital 21st-century issues within the global economy (Office of United States Trade Representative).

Source: www.nytimes.com

2. Literature review

2.1 Bilateral Trade

Bilateral trade agreements are entered into by two or more countries under which the participants agree to reduce tariffs, quotas and other restrictions on trade between them. The agreements cover both trade in goods and trade in services and also deal with issues such as the protection of intellectual property. They also frequently contain provisions or whole chapters dealing with protection for foreign investments (Brownsell, 2012).

Bilateral trade agreements have become an increasingly prominent feature of international trade over the last two decades. Statistics available by WTO shows that 205 bilateral and regional trade

agreements were in force in July 2007 and increased to approximately 4003 in 2010. Trade between two countries is posited to increase with their size (this is proxied by their GDPs and populations) and to decline with transactions costs which is also proxied by the geographic distance between the countries and by whether or not they share a common border (Eichengreen & Irwin, 1998).

Countries with a history of trading with one another for reasons related to politics, policies, or other factors-generally continue doing so. Historical events that allow costs to be sunk can be associated with persistent increases in the level of trade. These events can be anything from a history of colonialism to purely events that happen by chance. The existence of economies of scale and scope in the production of goods and services can cause trade to flow in particular geographical channels for historical reasons; thus, a large share of South African exports has long been destined for Britain because economies of scale implied the existence of only one international gold market, which for historical reasons was located in London (Eichengreen & Irwin, 1998).

2.2 Country Pair analysis

Country-pair analysis has been one of the ways of analyzing bilateral trade between countries. It has an advantage of giving a thorough insight about the individual country characteristics in terms of bilateral trade. Country-pair analysis also explains better the cross country variation in terms

of the variables influencing imports and exports between countries. Several studies on trade have been done using this approach (Hertel, Hummels, Ivanic, & Keeney, 2007).

Carre`re in 2006 used a gravity model in a country pair analysis to access the effects of ex-post regional trade agreements. In the findings of his study, covering seven Regional Trade Agreements (RTAs), showed that most of these RTAs resulted in an increase in intra-regional trade beyond

levels predicted by the gravity model, often coupled with a reduction in imports from the rest of the world.

2.3 Gravity Model

In attempts to assess Iran's trade potential, explore over and under-trade countries and determine factors affecting export development, Esmaeli and Pourebrahim used the gravity model. Seventy countries, which are considered the major markets for Iran agricultural products, were divided into 50 developing and 20 developed ones. Equations for each group of countries regressed by applying the augmented gravity model and the results were compared with actual figures. The results showed that Iran was more over-traded with developing countries relative to developed ones (Esmaeili & Pourebrahim, 2011).

Based on the basic trade gravity model and Xinjiang's practical situation, Chen, Yang et al. introduced new explanatory variables (GDP, GDPpc and Shanghai Cooperation Organization (SCO) to build an extended trade gravity model fitting for Xinjiang's bilateral trade. From the empirical analysis of the model, it was proposed that those three variables affect the Xinjiang's bilateral trade positively. On the other hand, geographic distance was found to be a significant factor influencing Xinjiang's bilateral trade negatively. They also by the extended trade gravity model analyzed the present trade situation between Xinjiang and its main trade partners quantitatively in 2004. Their results indicated that Xinjiang cooperates with its most trade partners successfully in terms of present economic scale and developing level (Chen, Yang, & Liu, 2008).

Said and Shelaby also in their paper in 2014 aimed at evaluating the determinants of agricultural bilateral trade flows of Egypt with the Arab countries. A gravity model was used in addition to some other indicators such as relative importance of intra-trade, tendency to export and import,

and degree of openness. Two models were estimated; one for the Egyptian agricultural exports and the other for the imports. Their results revealed that the gross domestic product had a positive impact on both agricultural exports and imports, and the distance between Egypt and the target countries had a negative impact. Both factors were however statistically significant. Their recommendation was that Egypt encourage foreign investment within the agriculture sector and maintain the road transportation with Arab countries (Said & Shelaby, 2014).

A recent study done by Bellos and Subasat suggest that poor governance is a source of attraction rather than a hurdle for multinational companies in selected transition countries. By employing a panel data gravity model, Subasat and Bellos in their article aimed to verify these unusual and interesting results in the context of selected Latin American countries. Their results confirm that the FDI enhancement role of poor governance exists not only in the transition countries but also in Latin America (Subasat & Bellos, 2013).

Rahman and Dutta also applied generalized gravity models to analyze Bangladesh's bilateral trade pattern using the panel data estimation technique. Their results reveal that Bangladesh's trade is positively determined by the size of the economies, per capita gross domestic product differential and openness of the trading countries. Bangladesh's exports are positively determined by its income, partner countries' total import demand and openness, but negatively determined by partner countries' income and domestic inflation. On the import side, they found that Bangladesh's imports are positively determined by income of trading countries and degree of openness of the partner countries and negatively determined by partner countries' inflation. Transportation costs also affect Bangladesh's trade negatively (Rahman & Dutta, 2012).

Basic and augmented gravity model was applied to estimate India’s trade potential with Central Asian States. Panel data for the period 2000 to 2012 was employed in the analysis and the

coefficients obtained from the gravity equations were then used to predict trade potentials between the regions. Malik and Mir's results revealed that India's trade potential is tremendous with this region, and that there are currently few geo-political issues that hinder the pathways of trade between the two regions. They also stated that, specifically the political tensions in neighboring countries, particularly Pakistan and Afghanistan, are the major hindrances. Revival of historical and cultural links between India and Central Asian republics may prove positive in boosting bilateral trade (Ishfaq Ahamd Malik & M Afzal Mir, 2014).

3. Methodology

3.1 The Gravity Model: Theoretical Background

The gravity model follows the concept of Newton's gravity equation in physics and is commonly used in regional science for describing and analyzing spatial flows and was pioneered in the analysis of international trade (Tinbergen, 1962). Newton's law of gravity states that two objects are subjected to a force of attraction that depends positively on the product of their masses and negatively on their distance (Esmaeili & Pourebrahim, 2011).

The general form of Newton's gravity model is as follows:

$$(1) \qquad GF_{ij} = \frac{M_i \, M_j}{D_{ij}}, \quad i \neq j$$

Where ***(GFij)*** is Newton's law of gravitational force between two objects i and j. M_i *and* M_j are the masses of the objects i and j and D_{ij} is the distance between the two objects. In the above equation, the gravitational force is directly proportional to the masses of objects (i.e. M_i and M_j) and indirectly proportional to the distance between them (i.e. D_{ij}).

The basic gravity model of international trade is often expressed as

$$(2) \qquad EX_{ij} = \frac{GDP_i \; GDP_j}{D_{ij}}$$

EX_{ij} which replaces the gravitational force represents trade flows between two countries or exports from country *i* to country j, GDP_i and GDP_j represents the income of countries i and j, D_{ij} represents the geographical distance separating the capitals of the two trading partners.

Exports from country to country are explained by their economic sizes (i.e. GDP or GNP), their populations, direct geographical distances and a set of dummies incorporating some kind of institutional characteristics common to specific flows.

(Tinbergen, 1962) and (Pöyhönen, 1963) were the first authors to apply the gravity equation to analyze international trade flows. It has since then become a popular instrument in empirical foreign trade analysis. Anderson in 1979 derived the gravity equation directly from a theoretical model using Armington assumption that products were differentiated by country-of-origin. He also obtained the gravity equation by using properties of a Cobb-Douglas expenditure system (Anderson, 1979).

Bergstrand in his study in 1985 used Anderson's approach. He however used a reduced form by using constant elasticity of substitution and generalized by introducing prices (Bergstrand, 1985). Yet another study done by Bergstrand in 1989 was employing the monopolistic competition on assumption that goods are differentiated among firms (Bergstrand, 1989).

In 1998, Deardorff in his study also proved that the gravity equation characterizes many models and can be justified from standard trade theories (Deardorff, 1998). I. A Malik and M. A Mir in their study stated that the microeconomic approach emphasized the assumption of perfect

substitutability of product of conventional gravity model is not realistic as proved recently that as trade flow changes by place of origin but price variables not specify gravity model (Ishfaq Ahamd Malik & M Afzal Mir, 2014).

Trade theories only explain trade between countries with different products, but do not explain why some countries have strong trade links and vice versa and also why levels of trade fluctuate over time. These limitations of trade theories are eliminated in this regard by the gravity model. The gravity model takes into account all factors of international trade (Ishfaq Ahamd Malik & M. Afzal Mir, 2014).

3.2 Gravity Model Specifications

The basic gravity model states that trade flows are positively related to the economic size (i.e. GDP or GNP) of country i and j and are negatively related to the distance between the two countries. The basic gravity model is estimated in natural logarithm (ln) form as

(3) $\ln (Tij) = \alpha_0 + \alpha_1 \ln (Yi * Yj) + \alpha_2 \ln (Dij)$

The above mentioned equation shows the basic equation for the gravity model. Many adjustments to the model has however been made by several researchers in order to include more variables in the model. The adjusted model is considered in this study this study with, variables considered included: GDP of countries, distance between countries, population, real exchange rate, arable land and labor. The dummy variables used in this study are common language, common border and free trade agreements. Hence, the model to be used in this paper can be identified as following:

(4) $\ln Xij = \alpha_0 + \alpha_1 \ln Yi + \alpha_2 \ln Yj + \alpha_3 \ln N + \alpha_4 \ln ExR + \alpha_5 \ln Dij + \alpha_6 \ln A\_land + \alpha_6 \ln labor + \alpha_6 \ln Lang\_cc + \alpha_6 \ln Bor\_cc + \alpha_6 \ln FTAs + euij$

Where:

i = US

j = TPP countries.

Xij: the total exports from i to j for total agricultural related products; total bulk agricultural product; total consumer agricultural related products; and total intermediate agricultural products

Yi and Yj: GDP of countries i and j.

N: Population density

ExR: Real Exchange rate i.e. the importing country currency per US dollars

A_land: Arable land of countries

Lang_cc: dummy variable indicating having common language or not.

Bij: dummy variable indicating having common borders or not.

FTAs: variable indicating involvement in RTAs or not.

euij: the random error term.

Ln = natural logarithm.

3.3 Estimation Procedures

In this analysis, three alternative models were estimated to account for potential spatial variation (one-way random panel model), spatial and temporal variation (two-way random panel model) and pooled model. Each dependent variable defined in equation (4) is regressed on the traditional trade

variables also explained in (4). The Haussmann test was conducted to examine the model that was most efficient.

4. Data

The gravity model is applied using panel data for the period of 1991 to 2015 for both exports and imports. Data on the quantities and values were collected for exports and imports for all the 12 TPP countries (i.e. Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and United States).

Data on exports were collected from the Global Agricultural Trade Systems (GATS) of the Foreign Agricultural Services of USDA website (https://apps.fas.usda.gov/gats/ExpressQuery1.aspx) for four categories for each of the 12 countries. These categories are:

1. Agricultural Related Product Total
2. Consumer Oriented Agricultural Total
3. Bulk Agricultural Total
4. Intermediate Agricultural Total

Data on arable land in hectares, GDP in current US dollars for 1991 to 2015 were taken from World Bank website (http://data.worldbank.org/data-catalog/world-development-indicators) i.e. World Development Indicators (WDI) database.

Real annual exchange rate in the importing country per US dollar was collected for all 12 countries from 1990 to 2015 from World Bank website.

Dummies were created for the variables common language and common border. Dummy variable for common language was created using the official common language of the United States i.e. English. For each of the 11 TPP countries that speak English, the value "0" assigned otherwise the value "1" is assigned.

In the case of a common border between the United States and the 11 other TPP countries, a country sharing a common border with the United States was assigned a value of "0" otherwise a value "1" is assigned.

For Free Trade Agreements, two main categories were developed in this study. The first category considered Free Trade Agreements that exist within the TPP countries. It took into consideration trade agreements that involved only members of the TPP.

With the second category of this variable, this study took into account trade agreements between the TPP countries and other non-TPP countries. Every trade agreement that had at least one member of the TPP as well as other non-TPP country was regarded as a non-TPP trade agreement.

Information on Free trade agreements was taken from the World Trade Organization website (http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx). In both categories (i.e. free trade agreements within the TPP and Free trade agreements outside the TPP), the number of free trade agreements that satisfies the defined category was counted and the number obtained assigned to the country in question. This was done for all the twelve TPP countries being considered under this study.

5. Results and Discussions

Tables 1 through 3 presents the estimation results of one-way random effects panel model (REM 1), two-way random effects panel model (REM 2) and Pooled regressions models for the four dependent variables: total agricultural related products, total bulk products, total consumer related products, and total intermediate products.

Importing country GDP is significant and positive in all the four models under REM1 as expected. For example, the coefficient of 1.7844 implies that a 1% rise in the importing county's GDP increases the exports of agricultural related products by 1.8%. That is the product is very income elastic as it concerns with importing countries. The GDP of U.S. is only significant but negative in agricultural related products and consumer oriented products. The sign of the latter product is consistent with theory-exports of consumer related products rise as the GDP of the importing country falls. Real exchange rate, which is constructed as a ratio of importing country currency to the U.S. dollar is only significant in intermediate agricultural products. However, the positive sign implies a depreciation of the importing country's currency relative to the U.S. dollar leads to more imports.

FTA within and outside TPP countries are only significant in consumer oriented agricultural products and intermediate agricultural products. The coefficients of -0.4512 and 0.1357 for within and outside implies an existence of one extra FTA within TPP reduces U.S. exports by about 0.45% while an outside FTA raises exports by about 0.14%. These results are consistent with trade theory since FTAs within a broader FTA diverts trade. However, FTA outside TPP is negative in intermediate agricultural products. Countries sharing border with U.S. also significant in consumer oriented products. Based on the way the variable was constructed ("0" sharing a border, otherwise,

"1"), the negative -0.9188 coefficient means U.S. exports to countries that do not share border reduces exports by 0.92%.

The results of the REM1 are significantly different from that of the REM2 presented in table 2. of the REM2. GDP of importing country is significant and positive in all the four models. GDP of U.S. is only significant in two models- agricultural related products and consumer oriented products but again, negative. The same can be said of exchange rate. It is only significant in intermediate products and positive. FTAs inside and outside TPP have the same signs in bulk agricultural products and intermediate agricultural products. Border sharing is significant and expected sign for consumer oriented products.

Presented in table 3 are the results of the POOLED which show on the average, a high predictive power with the individual R-squares higher than 0.80 in all the four models, and of course, most of the parameters are significant. As usual, the importing country GDP are all significant and positive; and U, S. GDP, though significant, are all negative. Real exchange rate is significant and positive in bulk and intermediate products but negative in consumer related but only is significant at 10% level and negative. FTAs outside and inside are significant in all four models. The same can be said of border and language. However, language has the only expected sign (negative) in agricultural related products. Language dummy was just constructed as "0" for English otherwise,"1". The -0.3290 coefficient for language in agricultural related products implies that U.S. exports are reduced by 0.33% for countries that are Non- English speaking.

6. Summary and Conclusions

This paper attempts to examine the factors that affects trade creation and trade diversion between the US and TPP countries using the gravity model by applying both panel pooled data from 1991

to 2105 to four gravity equations (agricultural related products, bulk agricultural products, consumer oriented agricultural products, and intermediate agricultural products) in each case. The factors include traditional trade variables GDP of US (exporting country), GDP of importing countries, FTA's, border, language and real exchange rate ; and arable land and population for U.S Three models (One-way random effect, the two-way random effect and pooled) were applied to each of the four products.

In all, the pooled model showed the highest predictive power and with consistent and significant parameters. The results of the one-way and two-way random effect models were not different. In terms of the role of specific variables, the importing country GDP, Border, and the existence of FTAs within and outside TPP are the main factors that explain all the models. Similarly, considering the specific products, consumer oriented and intermediate products are the most sensitive to these factors while bulk agricultural products are the least.

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Table 1. One-way Random Effects Panel Gravity Model Results

Parameters	Estimate	StdErr	tValue	Probt
Agricultural Related Product Total				
Intercept	62.2316	42.5101	1.46	0.1448
GDP of the US	-6.0878	1.5476	-3.93	0.0001
GDP of Importing country	1.7844	0.1603	11.13	0.0000
Real Exchange Rate	0.1144	0.1411	0.81	0.4185
US Land	1.4440	8.6017	0.17	0.8669
US Population density	23.2843	7.6035	3.06	0.0025
FTA within TPP	-0.2849	0.2363	-1.21	0.2294
FTA outside TPP	0.1469	0.0887	1.66	0.0993
Border	-0.7488	0.7982	-0.94	0.3493
Language	-0.4979	0.5953	-0.84	0.4039
R-square	0.6540			
Bulk Agricultural Total				
Intercept	33.9149	43.8265	0.77	0.4400
GDP of the US	-0.4370	1.6230	-0.27	0.7880
GDP of Importing country	0.5646	0.2452	2.30	0.0224
Real Exchange Rate	0.2428	0.3296	0.74	0.4621
US Land	-3.4961	8.8799	-0.39	0.6942
US Population density	-1.9240	7.9828	-0.24	0.8098
FTA within TPP	-0.2671	0.6610	-0.40	0.6867
FTA outside TPP	-0.1803	0.2401	-0.75	0.4536
Border	-1.7301	2.2452	-0.77	0.4419
Language	2.9179	1.8018	1.62	0.1069
R-square	0.0777			
Consumer Oriented Agricultural Total				
Intercept	37.9217	20.7300	1.83	0.0689
GDP of the US	-1.8381	0.7535	-2.44	0.0156
GDP of Importing country	1.1879	0.0744	15.97	0.0000
Real Exchange Rate	0.0040	0.0626	0.06	0.9487
US Land	-4.8480	4.1923	-1.16	0.2489
US Population density	5.4016	3.6947	1.46	0.1453
FTA within TPP	-0.4512	0.1041	-4.34	0.0000
FTA outside TPP	0.1357	0.0396	3.43	0.0007
Border	-0.9188	0.3530	-2.60	0.0099
Language	0.0304	0.2611	0.12	0.9073
R-square	0.8276			
Intermediate Agricultural Total				
Intercept	37.4804	40.8949	0.92	0.3605

GDP of the US	-0.0492	1.4884	-0.03	0.9737
GDP of Importing country	0.4600	0.1531	3.00	0.0030
Real Exchange Rate	0.3438	0.1339	2.57	0.0110
US Land	-6.6364	8.2742	-0.80	0.4235
US Population density	-1.9983	7.3108	-0.27	0.7849
FTA within TPP	-0.1317	0.2239	-0.59	0.5570
FTA outside TPP	-0.1872	0.0842	-2.22	0.0273
Border	-2.1584	0.7566	-2.85	0.0048
Language	0.6499	0.5636	1.15	0.2502
R-square	0.3284			

Table 2. Two-way Random Effects Panel Gravity Model Results

Parameters	Estimate	StdErr	tValue	Probt
Agricultural Related Product Total				
Intercept	62.4092	58.7510	1.06	0.2894
GDP of the US	-6.1750	2.1233	-2.91	0.0041
GDP of Importing country	1.7683	0.1687	10.48	0.0000
Real Exchange Rate	0.1528	0.1502	1.02	0.3102
US Land	1.7176	11.8479	0.14	0.8849
US Population density	23.8418	10.2980	2.32	0.0216
FTA within TPP	-0.3092	0.2509	-1.23	0.2192
FTA outside TPP	0.1433	0.0942	1.52	0.1300
Border	-0.7243	0.8476	-0.85	0.3938
Language	-0.5287	0.6347	-0.83	0.4058
R-square	0.5801			
Bulk Agricultural Total				
Intercept	33.8498	54.2819	0.62	0.5336
GDP of the US	-0.4984	1.9904	-0.25	0.8025
GDP of Importing country	0.5302	0.2459	2.16	0.0323
Real Exchange Rate	0.2495	0.3309	0.75	0.4517
US Land	-3.2350	10.9707	-0.29	0.7684
US Population density	-1.3747	9.7054	-0.14	0.8875
FTA within TPP	-0.2558	0.6645	-0.38	0.7007
FTA outside TPP	-0.1907	0.2422	-0.79	0.4321
Border	-1.7954	2.2605	-0.79	0.4280
Language	2.9315	1.8182	1.61	0.1085
R-square	0.0717			
Consumer Oriented Agricultural Total				
Intercept	37.9376	20.7499	1.83	0.0690
GDP of the US	-1.8279	0.7537	-2.43	0.0162
GDP of Importing country	1.1942	0.0730	16.36	0.0000
Real Exchange Rate	0.0035	0.0605	0.06	0.9544
US Land	-4.8931	4.1953	-1.17	0.2449
US Population density	5.3064	3.6931	1.44	0.1523
FTA within TPP	-0.4538	0.1002	-4.53	0.0000
FTA outside TPP	0.1376	0.0383	3.59	0.0004
Border	-0.9058	0.3406	-2.66	0.0085
Language	0.0272	0.2511	0.11	0.9137
R-square	0.8329			

Intermediate Agricultural Total				
Intercept	37.5572	53.9541	0.70	0.4872
GDP of the US	0.0050	1.9505	0.00	0.9980
GDP of Importing country	0.4926	0.1573	3.13	0.0020
Real Exchange Rate	0.3399	0.1365	2.49	0.0136
US Land	-6.8736	10.8829	-0.63	0.5284
US Population density	-2.4987	9.4685	-0.26	0.7921
FTA within TPP	-0.1446	0.2271	-0.64	0.5252
FTA outside TPP	-0.1773	0.0859	-2.06	0.0403
Border	-2.0925	0.7688	-2.72	0.0071
Language	0.6344	0.5729	1.11	0.2695
R-square	0.3134			

Table 3. Pooled Gravity Model Results

Parameters	Estimate	StdErr	tValue	Probt
Agricultural Related Product Total				
Intercept	61.3155	47.0441	1.30	0.1940
GDP of the US	-6.0582	1.6847	-3.60	0.0004
GDP of Importing country	1.6865	0.0561	30.08	0.0000
Real Exchange Rate	0.0099	0.0346	0.29	0.7748
US Land	1.6596	9.4495	0.18	0.8608
US Population density	23.8009	8.0446	2.96	0.0035
FTA within TPP	-0.1489	0.0551	-2.70	0.0075
FTA outside TPP	0.1130	0.0237	4.76	0.0000
Border	-1.1285	0.1961	-5.76	0.0000
Language	-0.3290	0.1345	-2.45	0.0153
R-square	0.9360			
Bulk Agricultural Total				
Intercept	35.9264	80.2251	0.45	0.6548
GDP of the US	-0.6990	2.8730	-0.24	0.8080
GDP of Importing country	0.6948	0.0956	7.27	0.0000
Real Exchange Rate	0.5161	0.0591	8.74	0.0000
US Land	-3.2070	16.1144	-0.20	0.8425
US Population density	-1.4683	13.7186	-0.11	0.9149
FTA within TPP	-0.5608	0.0939	-5.97	0.0000
FTA outside TPP	-0.1304	0.0405	-3.22	0.0015
Border	-1.0152	0.3344	-3.04	0.0027
Language	2.5516	0.2293	11.13	0.0000
R-square	0.8047			
Consumer Oriented Agricultural Total				
Intercept	38.2636	22.6860	1.69	0.0933
GDP of the US	-1.5377	0.8124	-1.89	0.0599
GDP of Importing country	1.3587	0.0270	50.26	0.0000
Real Exchange Rate	-0.0264	0.0167	-1.58	0.1163
US Land	-6.1347	4.5568	-1.35	0.1798
US Population density	2.6933	3.8794	0.69	0.4883
FTA within TPP	-0.5099	0.0266	-19.20	0.0000
FTA outside TPP	0.1875	0.0114	16.39	0.0000
Border	-0.5893	0.0945	-6.23	0.0000
Language	-0.0402	0.0649	-0.62	0.5366
R-square	0.9760			

Intermediate Agricultural Total				
Intercept	37.0408	45.3511	0.82	0.4151
GDP of the US	0.3007	1.6241	0.19	0.8533
GDP of Importing country	0.5577	0.0540	10.32	0.0000
Real Exchange Rate	0.2188	0.0334	6.55	0.0000
US Land	-7.8329	9.1094	-0.86	0.3909
US Population density	-4.4613	7.7551	-0.58	0.5658
FTA within TPP	-0.0750	0.0531	-1.41	0.1593
FTA outside TPP	-0.1614	0.0229	-7.06	0.0000
Border	-2.1382	0.1890	-11.31	0.0000
Language	0.7229	0.1296	5.58	0.0000
R-square	0.8883			