

Taming the Dragon: An Explanation for Varied Complementarity Levels Found Between Latin American Countries and China

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Abstract:

Why do Latin American countries exhibit different levels of complementarity with China as China increases its investments and presence in the region? This paper argues that a Latin American country's trade policy (strategic or liberal) determines its economic complementarity with China. It uses cluster analysis in order to categorize 15 Latin American countries as strategic or liberal and a trade complementarity index number as an indication of complementarity. Time-series cross-sectional analysis is used to provide empirical evidence for findings.

China's presence in Latin America has increased steadily over the past decade, particularly after joining the World Trade Organization in 2001 and the Inter-American Development Bank in 2005. As China decreased its trade barriers and increased its trade ties with Latin America, it has rapidly become a major trading partner for the region. Since China has an insatiable demand for the raw materials needed to sustain its current rate of economic growth and Latin America has a comparative advantage in raw materials, Latin America should be one of the most complementary regions for China in terms of trade and thus experience a positive effect from increased Chinese presence in the region (Lall and Weiss 2005). At the very least, indirect positive effect, such as better terms of trade and favorable commodity price effects, should result from China's increased presence in Latin America (Blézquex-Lidoy, Rodriguez, and Santiso 2006).¹

However, the effects and degree of complementarities of trade with China are not evenly distributed throughout Latin America nor are the benefits felt equally throughout the region. Countries such as Mexico and Colombia have suffered economically from increased Chinese presence in Latin America, displaying a low degree of complementarity in terms of trade with China (Devlin, Estevadeordal, and Rodriguez-Clare 2006). On the other hand, countries such as Brazil, Argentina, and Chile have displayed a high level of complementarity with China as all have experienced positive economic growth and benefits from increased Chinese investment in the region (Devlin et al. 2006). Part of this phenomenon could be attributed to each countries' natural complementarity levels with China in terms of trade. However, even among Latin

¹ Favorable commodity price effect should occur regardless of direct trade with China. For instance, if China increases its demand for crude oil, oil-producing countries will raise their production, or prices will increase. In 2006, due to China's growing thirst for oil, oil prices reached their highest level since oil futures started trading on the New York Mercantile Exchange in 1983 (Blazquez-Lidoy, Rodriguez, and Santiso 2008).

American countries with similar natural complementarity levels, there exists a varying degrees of benefits accrued from Chinese trade (i.e. Costa Rica, Argentina, Brazil).

Thus, the question and puzzle for this paper is “Why do Latin American countries exhibit different levels of complementarity with China as China increases its investments and presence in the region?” Not only is answering this question relevant in explaining the varied economic effects felt throughout the region due to increased Chinese investment, it is also pertinent in determining which policies current negatively effected Latin American countries should advocate in order to increase their complementarity with China and to experience positive effects.

In this paper, I argue that Latin American countries exhibit different levels of complementarity with China due to their trade policies. Specifically, I argue that the Latin America countries (LACs) that accrue the most benefits from increased Chinese activity are the ones that pursue strategic trade policies—while enjoying natural complementarity in terms of trade—thus effectively allowing them to make the most of increased intra-Asian trade and the transnational production network.² The countries that experience no benefits or even detrimental effects are the countries that pursue liberal trade policies—while experience low levels of natural complementarity with China. Liberal trade policies in this case are defined as traditional liberal economic policies implemented by a government that promote an overall open trade system. These policies generally include low tariff rates in almost all sectors, export subsidies, participation in free-trade agreements (NAFTA, CAFTA, etc). Strategic trade policies refer to

² It is important to note that a Latin American country’s (LAC) natural complementarity level is an antecedent and coincidental variable in answering this question, but it is not the determinant variable for my argument. This is because natural complementarity levels are factors that cannot be controlled or changed by governments. Thus, natural complementarity levels’ effects are the same for every theory (i.e. export structure, FDI, etc.).

policies that are implemented by a government to make the economy uniquely competitive in certain sectors. This idea stems from the recognition that there are certain sectors at the margins that are more valuable to the economy than others (Krugman 1986). In sectors such as these, “imperfectly competitive” markets exist, meaning these firms (or the government in this paper) can make *strategic* moves designed to affect their competitors’ actions (Krugman 1986). For the purposes of this paper, strategic trade policies are ones that most effectively shape a country’s ties to China in order to make the most of its growing presence in the region. These policies include high tariff rates in special sectors, lack of or smaller number of free-trade agreements, etc.³ The four possible effects a Latin American country can experience as a result of trade with China are outlined in Table 1.

The majority of the current literature on the economic relationship between China and Latin America seek to answer the question of how the rise of China as a global economic power will affect the ability of Latin American countries to compete in world markets. In order to examine the nuances of the terms of trade between China and various Latin American countries, most of scholars focus on two aspects of the Sino-Latin relationship: foreign direct investment (FDI) trade-off between China and Latin America and trade competition from China. However, what is missing in the current discussion on trade complementarity is any consideration of how strategic trade policies impact complementarity levels. Nonetheless, it’s important to examine the current arguments for varied effects of increased Chinese economic activity and why they fail to explain certain cases in Latin America.

First, one of the main concerns of scholars researching the Sino-Latin relationship is whether there is a trade-off between inward Chinese FDI and FDI in Latin America. In the last

³ East Asian nations generally employed strategic trade policies during their time of economic expansion. Embedded neoliberal policies are also an example of strategic trade policies.

few years, China has emerged as the largest recipient of FDI in the world and this phenomenon has led many analysts and governments to wonder if China has been diverting FDI from other developing countries, in particular, in Latin America (Chantasawat, Fung, Iizaka, and Siu 2004). However, scholars have found that there is no strong relationship between FDI flowing into China and FDI leaving Latin America (Gallagher and Porzecanski 2008). Moreover, even when the correlation between inward Chinese FDI and decreased FDI in Latin America is positive, it's only mildly positive or insignificant (Brambilla 2004). Further assessment show that the degree to which China and Latin American share the same group of countries as a source of FDI flows is also not statistically significant (Carvino, Lederman, and Olarrega 2006). Meaning, the countries that are investing FDI into Latin America and China are not the same countries and even when they are the same (as in the case of United States and Japan), there is no correlation between growth in FDI flows to China and decreases of FDI to Latin America (Devlin et al. 2006). Since there is no trade-off between inward Chinese FDI and FDI in other developing countries in Latin America, FDI alone does not explain *why* there's been a range of effects evident in the region due to the growing presence of China.

Second, in order to determine China's potential threat to Latin America in terms of trade competition, scholars examined the extent of trade overlap—specifically export goods—between China and individual Latin American countries as well as similarities between the Chinese export structure and individual countries' export structure. When examining trade overlap between China and Latin America, scholars generally agree that there are only five potential outcomes of head-to-head competition between China and Latin America: No threat, partial threat, reverse threat, direct threat, and mutual withdrawal (Lall and Weiss 2005).⁴ In order to

⁴ For clear definitions of each term, see Table 2.

determine which Latin American country falls in each category, scholars have constructed various indices to help measure the extent of trade competition from China. For instance, Blézquex-Lidoy, Rodriguez, and Santiso constructed the coefficient specialization (CS) index as well as the coefficient of conformity (CC) index to examine potential trade competition from China on a scale of 0 to 1, 0 representing no trade competition and 1 representing perfect trade competition. Most of the Latin American countries fell closer to the 0 end of the spectrum, rather than 1 (see Table 3). This finding—along with several others conducted by the OECD, IDB, and World Bank—indicates that Latin American countries, in general, do not face competition threat from China’s growing presence in the region.

This conclusion is further supported by several examinations of the export structure of China and Latin American countries. Although trade with China and Chinese investment has increase significantly over the last few years, most of the Latin American countries export structures are different enough from China’s that these nations are not in direct competition of one another (Gallagher and Porzencanski 2008). The current trade structure between China and Latin America is relatively straightforward: Latin America supplies China with raw materials and commodities. In return, China exports manufactures to Latin America (Li 2007). Additionally, the correlation of goods exported by China and by Latin America is generally low (see Table 3), meaning China poses a very small threat to Latin American exports (Feenstra and Kee 2007).

However, Costa Rica proves to be an exception to this general conclusion. Despite having a very similar export structure to that of China’s, it has faired significantly better than what the export structure argument would predict for the Latin American country (Sanchez-Ancochea 2009). Costa Rica experiences a significant overlap in exported goods with China, but

doesn't experience the negative effects of an increased Chinese presence in the region (Lall and Weiss 2005). In fact, Costa Rica remains one of the clearest cases of a Latin American Country having been positively influenced by China (Gallagher and Paus 2007). Clearly, the export structure argument does not apply to the case of Costa Rica.

Moreover, the case of Mexico provides an even further conundrum to the export structure theory. Several authors explain that because Mexico has a similar export structure to China's it is therefore likely to face strong commercial competition (Gallagher, Moreno-Brid, and Porzecanski 2008). Several studies have confirmed that Mexico's comparative advantage is consistently decreasing in the face of a rising China (Lederman, Olarreaga, and Rubiano 2007). Lall and Weiss further conclude that Chinese exports overlap a significant amount with that of Mexico's exports, whereas other Latin American countries show no such overlap (Lall and Weiss 2005). This overlap has led to direct competition between China and Mexico with over 70% of Mexico's exports under some sort of "threat" from China, specifically exports to the United States (Matthews and Sargent 2009). This conclusion proves especially true for Mexico's manufacturing sector (Dussel Peters 2005).

Due to the conflicting results of Mexico and Costa Rica, the export structures argument is not adequate in explaining why Latin American countries exhibit different levels of complementarity with China. Thus for my paper, I seek to explain this quandary by examining the trade policies, strategic or liberal, enacted by the Latin American countries and determining if trade policies help explain the varying degrees of complementarity with China.

The current literature on Chinese investment in Latin America deals mainly with *how* and to what extent increased Chinese investment has affected Latin America economies in terms of global trade and investment. Most of the literature does not explain *why* the effect on Latin

American countries—due to increased Chinese investment—has been varied across Latin America. My paper seeks to answer what exactly determines whether a Latin American country enjoys benefits from increased China investments in the region and to what degree the benefits are felt throughout the country. I will do so by using quantitative data and hope to ultimately provide some policy changes that could alter the currently negatively impacted nations to being positively benefited.

I argue that the effects a Latin American country experiences in regards to trade with China is determined by its trade policies, strategic or liberal, and the natural complementarity level found between the two nations. There are four possible outcomes for a Latin American country, as described in Table 1. Again, it is important to note that natural complementarity levels are an antecedent and coincidental variable, not a determinant variable for my argument. First, if a country is pursuing strategic trade policies and experiences a naturally high complementarity level with China, then it will experience positive effects from increased Chinese activity in the region. This is because nations that pursue strategic trade policy are more likely to alter their trade policies to take advantage of the incoming high-volume of Chinese investment, subsequently experiencing a positive economic effect. Second, if a country is pursuing strategic trade policies but lack a naturally high complementarity level, then it will still experience some benefits, but not to the same extent as countries that are naturally complementary and pursue strategic trade policies. Third, if a country has a naturally high complementarity level with China, but is only pursuing liberal trade policies, then it too will experience some benefits. However, this country could maximize their benefits if they pursued more strategic trade policies. Finally, if the country pursues an overall liberal policy and has a naturally low complementarity level, then it's more likely to experience no benefits and may

even experience negative impacts. The liberal trade policies enacted would allow Chinese goods to flood the domestic market and could potentially negatively affect the economy.

In order to answer the question “Why do Latin American countries exhibit different levels of complementarity with China as China increases its investments and presence in the region?” I will first utilize cluster analysis to classify 15 Latin American countries into homogenous groups based on numerous variables.⁵ The results from this test will act as one of my independent variables for my second test, time-series cross-sectional analysis.

Cluster analysis will group the 15 Latin American countries based on the means or medians of the variables discussed below and divide them into distinct “clusters.” By using this method, I can group the countries into four clusters, each reflecting a possibility from Table 1. The goal of this analysis is to group n units into r clusters where r is much smaller than n (Lewis-Beck, Bryman, and Liao 2004). A key advantage of using cluster analysis is that each group identified will be internally homogenous as possible, but also as distinct as possible from all other groups (Rudra 2007). Moreover, cluster analysis will find similarities between units under each classification as opposed to interrelationships among variables.

To begin the cluster analysis, a clustering method must first be selected. Given the structure of the data (across years and countries), I apply the hierarchical agglomerative linkage method, which starts by considering each observation (one country during a certain year) as a separate group and then proceeds to combine them until all observations belong to one cluster (Ender 1998).⁶ There are several agglomerative linkage methods for conducting a cluster

⁵ The Latin American countries used will be: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Paraguay, Peru, Uruguay, and Venezuela.

⁶ The other hierarchical cluster analysis method is the divisive method, which starts with all observations in one cluster and then proceeds to split them into smaller clusters.

analysis (single linkage, complete linkage, average linkage, and Ward's method), but—following the standard practice in the social sciences—I will use the Ward's method. The Ward's linkage method is distinct from all the other methods because it uses an analysis of variance approach to evaluate the distances between clusters (Ender 1998). A unique advantage of this method is that it minimizes the variance (sum of squares) of any two clusters that can be formed at each step (Ender 1998 and Rudra 2007). However, while this method is very efficient, it tends to create clusters of small size. Thus, I will also be using the weighted average linkage method as a robustness check.

For the cluster analysis, I included the variable Cim, which is not included in the time-series cross-sectional part of my method, but only in the cluster analysis. Cim is a single aggregated index of the specialization coefficient index (CSm) and the conformity coefficient (CCm).⁷ It's important to note that while these indices have the same name as the ones described previously in relation to Blazquez-Lidoy, Rodriguez and Santiso, the indices I first referred to measure export structure. The ones I'm referring to now and used in my analysis measure potential trade. Thus, while a 1 in the previously described indices indicate high competition and less complementarity, a 1 in the indices I used would indicate high complementarity. Page 4 of the appendix describes each element of the equation and has further explanation.

The two indices compare the export structures of 15 Latin American countries with the import structure of China. If a country's exports are similar to Chinese imports (i.e. the index value approaches one), then a potential trade gain for that Latin American country exists (Blézquex-Lidoy et al. 2006). Both indices are equal to one if there is a perfect correspondence between Chinese imports and the exports of the Latin American country (Blézquex-Lidoy et al.

⁷ Both indices were calculated using data from UNCOMTRAD (1996-2006) as by the equations found in Blazquez-Lidoy, Rodriguez and Santiso (See Appendix 4 for equations).

2006). These two indices help determine the impact of the current trade policy each Latin American country is pursuing, strategic or liberal.⁸ By conducting a cluster analysis, I will confirm which Latin American countries pursue strategic trade policies and which pursue liberal trade policies.

The primary goal is to determine what exactly explains the varied effects of Chinese trade across Latin America. Since both the FDI and structuralist arguments have been proven ineffective with a number of Latin American countries, I contend that it's the trade policies—in conjuncture with complementarity levels—that ultimately determine the effects. In order to test this hypothesis, I operationalized trade policy with several variables and calculated the trade complementarity level for each Latin American country between the years 1996 and 2008.

Trade Policy Variables

The independent variables I will examine are intended to operationalize trade policy using empirical data and to help categorize each country as pursuing strategic trade policy or pursuing liberal trade policy. The trade policy variables include the cluster analysis results, bilateral trade agreement with China, manufacturing tariff levels as compared with the European Union's manufacturing tariff levels, and manufacturing tariff revenues as a percentage of gross domestic product (GDP). The cluster analysis results will give a basic categorization of which Latin American countries are pursuing more strategic trade policies and which are pursuing more liberal trade policies. Bilateral trade agreements with China would clearly indicate a strategic trade policy and thus should result in higher complementarity between China and a Latin American country. Additionally, the European Union manufacturing tariff levels serve as a proxy

⁸ It's interesting to note the changes in the Latin American countries since Blézquex-Lidoy, Rodriguez, and Santiso's work in 2006. Table 5 indicates how the countries rankings have changed from the original findings, based on data from 2000-2004.

for manufacturing tariff levels found in OECD countries. Since OECD and EU nations tend to have more liberal trade policies, a Latin American country that has higher manufacturing tariff levels can be viewed as pursuing strategic trade policy. Thus, the greater the manufacturing tariff levels found in a Latin American country than that found in an EU nation, the more complementary and strategic the Latin American country should be in relations with China. Finally, if a Latin American country has manufacturing tariff revenues as a high percentage of GDP, then its complementarity level with China should be lower. This is because most of China's exports are in manufactured goods and if manufacturing revenues were high, then trade between the two countries should be lower (Moreira 2007).

It is important to note that while the logic behind manufacturing tariff levels as compared to the EU and manufacturing tariff revenues as a percentage of GDP seem contradictory, they are not. Rather, even if a Latin American country has higher manufacturing tariffs than most EU nations, this doesn't mean the Latin American country is trying to bar most Chinese exports. In fact, even if the LAC has a higher manufacturing tariff rate, the manufacturing tariff rate could make up only a small part of its overall GDP. The same country could still have significantly higher other tariffs—tariffs that make up most of its GDP. The higher manufacturing tariff levels are merely an indication of strategic trade. However, if manufacturing tariff *revenues* make up a majority of the Latin American country's GDP, then that's an indication of trade policy that's purposefully trying to bar the import of most Chinese goods and rely on manufacturing tariffs as a source of revenue. Ultimately, the manufacturing tariff levels are less indicative of a Latin American country's direct relation to China and more indicative of its *overall* strategic trade policy. Whereas the manufacturing tariff revenues indicate a potentially direct relationship between China and a Latin American country.

Trade Complementarity Level

I also calculate the trade complementarity index number for each of the 15 Latin American countries for the years 1996-2008. This trade complementarity index is intended to measure the exact intensity of trade between two nations (one Latin American country and China). I will calculate the index number for each of the countries for every year from 1990 until 2008 based on the same equation defined by Ramesh Sharma (2008).⁹ The formula is computed as follows:

$$TCI_{ij} = 100 - \sum (|m_{ik} - x_{ij}| / 2)$$

Where x_{ij} is the share of good i in global export of country j and m_{ik} is the share of good i in the global import of country k . This index measures the level of similarity between the export supply of a country and the import demand of one of its partners. The index is zero when no good exported by one country is imported by the other, and 100 when the export-import shares match exactly (Sharma 2008). Therefore, a higher index value would indicate a higher complementarity level between the two countries. I will be calculating the trade complementarity index for manufactured goods for each of the 15 LACs and for China. The manufactured good sector makes up the majority of Chinese exported goods and would provide an accurate indication of increased flow of Chinese goods (proxy for increased trade activity) into Latin America. Moreover, current literature emphasizes the manufactured goods sector as the source of disparity between complementarity levels of each nation and China. Therefore, the manufactured good sector would provide a good indication of complementarity levels between individual Latin American nations and China.

⁹ This trade complementarity index is based on the “revealed comparative advantage” index of trade specialization proposed by Balassa (1965).

After calculating the necessary variables, I will be conducting a time-series cross-sectional analysis in order to show empirically whether trade policy does determine a Latin American country's complementarity with China. Not only would conducting a time-series cross-sectional analysis allow me to model complementarity behavior over time and space, but it will also allow me to generalize my findings across them.

My findings from the cluster analysis produced five distinct groups based on the variables Cim, trade agreement, manufacturing tariff level as compared with the EU, and manufacturing as a percentage of GDP (see Table 6). However, one of these groups composed solely of Mexico. Mexico was the sole outlier in the cluster analysis because of its confounding results based on the means of the variables analyzed (see Table 7). Most variables indicated that Mexico should be categorized as a strategic trade country, despite current literature and Mexico's experience. However, once Mexico's results were included in the time series cross sectional analysis, it became apparent that Mexico's unusual data was skewing the overall results. Thus, I decided to run the time-series cross sectional analysis using only the first four classifications of groups.

Using these four groups, I ran a time-series cross sectional analysis with TCI acting as the dependent variable. My findings indicated all variables to be significant with the exception of one variable.

The variable cluster analysis results (CA Results) were significant at the 0.05 level (see Table 7). The negative coefficient indicates that complementarity (or TCI) decreases as the number of the cluster group increases. This means group 4 is the least complementary to China and group 1 is the most complementary. This finding supports my trade policy argument since the cluster analysis groups were numbered from most strategic to most liberal.

The trade agreement variable produced an interesting result. While significant at the 0.000 level (see Table 7), the coefficient is negative. This indicates that as trade agreement increases (closer to 1), TCI or complementarity decreases. This is against the literature and my argument since a trade agreement of 1 would indicate a bilateral trade agreement with China and thus better complementarity. However, the negative trade agreement coefficient could be explained by the fact there's an overwhelming amount of panels that were coded as having no bilateral trade and little data indicating bilateral trade agreements. Due to the sheer volume of panels coded as having no bilateral trade agreement—yet still experiencing positive development with China—the lack of trade agreement data could have skewed the results.

The other variable that proved to be significant was manufacturing tariff as a percentage of GDP. The negative coefficient indicates that as manufacturing tariffs make up more of a Latin American country's GDP, less complementarity is found between said country and China. The negative sign does logically explain complementarity levels between China and Latin American countries. Specifically, since the majority of Chinese exports are manufactured goods, high manufacturing tariffs would indicate potentially less manufactured goods imported from China and thus lower complementarity between the two countries. This variable was also significant at the 0.000 level.

Manufacturing tariff averages as compared with the European Union had an interesting positive coefficient. Since I used the EU as a basis of liberal trade policy, this positive coefficient indicates that as Latin American countries become LESS liberal (or more strategic) its complementarity with China decreases. However, this variable didn't prove to be significant.

Overall, the independent variables explained 32% of the data—116 observations from 15 Latin American countries across 10 years (see Table 7). While it does not explain the majority of

the data, my research does provide evidence that trade policy is key in helping determine the complementarity levels between China and various Latin American countries. Specifically, the cluster analysis conducted and its subsequent results used in the time-series cross sectional analysis prove that pursuing a strategic trade policy is significant in increasing complementarity between China and a Latin American country.

For future studies, the case of Mexico should be closely examined. Perhaps other variables that are not related to its manufacturing sector would be better indicators for the type of trade policy Mexico is pursuing. Given the fact that Mexico and China's export structures are very similar—particularly the manufacturing sectors—it's reasonable for Mexico to enact high tariffs against China concerning manufacturing goods. All of these indicate that Mexico should be complementary with China. However, current scholars and evidences indicate that Mexico is one of the least complementary countries with China (Jenkins 2008). Moreover, the time series cross-sectional analysis as well as the cluster analysis proves Mexico is an outlier when attempting to explain complementarity levels between China and Latin America, heavily skewing the data and results.

Additionally, more data is needed for the trade agreement variable. Since Latin American countries have only recently begun to develop and sign bilateral trade agreements with China, the effects of these bilateral trade agreements are not readily apparent. Once the bilateral trade agreements have been in place for a few years—and as more Latin American nations finalize their agreements—the trade agreement variable could prove to be significant and have a positive relationship with TCI.

More analysis is also needed to examine other tariffs as a way of operationalizing trade policy. Clearly manufacturing tariffs present a confound problem since the majority of exported

Chinese goods are manufactured items. While high manufacturing tariffs indicate strategic trade policy, it also leads to less complementarity between China and a Latin American nation. Other tariffs that indicate strategic trade policy and are *not* expected to produce a negative effect on complementarity should be examined.

Appendix

Table 1- Possible Results for LACs when Trading with China

	Naturally High Complementarity Level	Naturally Low Complementarity Level
Strategic Trade Policy	Most Benefits	Some Benefits
Liberal Trade Policy	Some Benefits	No Benefits or Negative Effects

Table 2- Matrix of Competitive Interactions between the PRC and Another Country in Export Markets

Chinese Export Market Shares	
Rising	Falling
<p>A. No threat Both the PRC and the other country have rising market shares, and the latter is gaining more than the PRC</p>	<p>C. Reverse threat No competitive threat from the PRC. The threat is the reverse, from the other country to the PRC.</p>
<p>B. Partial threat Both are gaining market share but the PRC is gaining faster than the other country.</p>	<p>E. Mutual withdrawal: no threat Both parties lose shares in export markets to other competitors.</p>
<p>D. Direct threat The PRC gains market share and the other country loses. This may indicate a causal connection unless the other country was losing market share in the absence of Chinese entry.</p>	

Source: Lall and Weiss 2005.

Table 3- Chinese Trade Competition, 1998-2004

	CS*	CC*	CI*	CI 2002**
Paraguay	0.08	0.02	0.05	0.07
Venezuela	0.10	0.03	0.06	0.10
Bolivia	0.12	0.04	0.08	0.11
Panama	0.11	0.06	0.08	0.11
Chile	0.14	0.04	0.09	0.11
Honduras	0.14	0.05	0.09	0.13
Russia	0.15	0.06	0.10	0.12
Uruguay	0.18	0.07	0.12	0.17
Peru	0.19	0.08	0.13	0.17
Argentina	0.20	0.08	0.14	0.17
Guatemala	0.24	0.11	0.17	0.16
Colombia	0.25	0.12	0.18	0.20
El Salvador	0.31	0.21	0.26	0.25
Brazil	0.30	0.21	0.26	0.28
Pakistan	0.30	0.26	0.28	0.32
Slovakia	0.40	0.23	0.31	0.33
Spain	0.42	0.22	0.32	0.34
Costa Rica	0.34	0.32	0.33	0.29
India	0.42	0.25	0.34	0.38
Japan	0.41	0.35	0.38	0.38
Philippines	0.40	0.37	0.39	0.33
Bulgaria	0.43	0.36	0.39	0.41
Croatia	0.45	0.34	0.40	0.42
Poland	0.44	0.35	0.40	0.46
Turkey	0.43	0.38	0.41	0.49
Indonesia	0.46	0.39	0.43	0.42
USA	0.43	0.44	0.44	0.44
Romania	0.45	0.45	0.45	0.52
Singapore	0.45	0.52	0.48	0.43
Czech R.	0.50	0.52	0.51	0.43
Malaysia	0.48	0.57	0.53	0.46
Mexico	0.52	0.54	0.53	0.50
Korea	0.50	0.60	0.55	0.48
Hungary	0.54	0.66	0.60	0.55
Thailand	0.57	0.71	0.64	0.57

*Average 2002-2004 **Average 2000-2002.

Source: Blézquex-Lidoy, Rodriguez, and Santiso 2006

(4) Equations and explanation-

$$CSm = 1 - .5 \sum |a_{it}^n - a_{jt}^n|$$

$$CC = \frac{\sum a_{it}^n - a_{jt}^n}{\sqrt{\sum (a_{it}^n)^2 \sum (a_{jt}^n)^2}}$$

Where a_{it} represents the share of goods “n” in total exports of the Latin American country “i” in period “t” and a_{jt} is the share of goods “n” in total Chinese imports in the same period. The export structure indices use total exports for *both* the Latin American country and for China. Therefore, the previously mentioned indices only analyze export structure between China and a Latin American country.

Table 5- Potential Trade with China, 1996-2006

Country	Cim	Santiso
Dominican Republic	0.212	*
Venezuela	0.231	+8
Ecuador	0.254	*
El Salvador	0.308	+5
Honduras	0.319	-3
Paraguay	0.323	-2
Peru	0.420	-3
Uruguay	0.425	-1
Colombia	0.425	+3
Chile	0.439	-8
Bolivia	0.459	-5
Argentina	0.516	+1
Costa Rica	0.568	-2
Brazil	0.717	0
Mexico	0.719	0

- (-) Increased complementarity
- (+) Decreased complementarity
- (*) N/A

Source: Own data, 2010 and Blézquex-Lidoy, Rodriguez, and Santiso 2006

Table 6- Cluster Analysis Results

Complementarity Level	Countries
1	Chile, Costa Rica, Honduras
2	Peru, Colombia, Brazil, Uruguay, Venezuela
3	El Salvador, Dominican Republic, Argentina
4	Paraguay, Bolivia, Ecuador
5	Mexico

Groups are numbered from most strategic to most liberal. Group 1 represents the countries pursuing the most strategic trade policy.

Source: Own data based on UN COMTRADE 2010 Data

Table 7- Mean Statistics for Cluster Analysis Results

Cluster Number	Cim	Trade Agreement	MT Compared w/ EU	MT (% GDP)
1	0.442	0.667	1.493	19.80%
2	0.444	0.200	7.398	18.49%
3	0.345	0.000	4.547	24.43%
4	0.345	0.000	6.463	12.68%
5	0.719	0.000	12.21	18.70%

Source: Own data 2010

Table 8- Time Series Cross-Sectional Analysis of Latin American Trade, 1996-2006

Variables	Model 1
CA Results	-0.003(0.014)**
Trade Agreement	-0.041(0.000)***
Manufacturing Tariff Levels Compared w/ EU	0.000(0.052)
Manufacturing Tariff (% GDP)	-0.002(0.000)***
R-Squared	0.320
N	116

p>0.000***, p>0.005**, p>0.05*

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