

The Effect of China on Mexico-U.S. Trade: Undoing NAFTA?

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Abstract

Chinese trade flows have increased uninterruptedly in the last two decades as a consequence of China's "open door" and economic liberalization policies undertaken since the late 1970s. This surge of Chinese exports has raised concerns among many developing countries competing with China in the same sectors/products. In this paper we focus on the competitive effects of China on Mexico's exports to its most important market, the United States. Although China has long enjoyed larger export shares in products such as footwear, toys, lamps and lighting fittings, and luggage, recently it has also surpassed Mexico in exports in other sectors such as computer hardware. Despite the privileged tariff status set by NAFTA, Mexico seems to be losing U.S. market share to China. Using detailed export data at the product line (HS-8) we assess to which extent China's increased exports can explain the trends observed in Mexican exports to the United States. We exploit the variation of NAFTA preferences at the product level as shifters of the elasticity of Mexican exports to U.S. total imports. While NAFTA did favor Mexican exports to the U.S., these seem to have been negatively affected by Chinese exports in the last years.

1 Introduction

Following the elimination of the system of quotas established under the Multi-Fiber Agreement (MFA) in early 2005, Chinese exports of textiles and apparel products to the European Union (EU) and the United States experienced dramatic increases. The flood of merchandise and the fall in prices urged the sectoral firm associations in the importing countries to call for protectionist measures that would contain the surge of Chinese exports.

The raise in Chinese exports is not limited to textiles and apparel. Chinese trade flows have increased uninterruptedly in the recent decades as a consequence of its “open door” and economic liberalization policies undertaken since the late 1970s. Attention to China’s exports growth has intensified with its accession to the World Trade Organization (WTO) in late 2001. More specifically, China’s entry to the WTO has raised concerns among other developing countries such the ASEAN members and other Asian countries, Mexico and South American countries that the lift of trade barriers on Chinese products will hurt their export shares to developed countries including the United States, Japan, and Europe Union. In addition, the Asian and Latin American countries will need to compete more aggressively with China to attract foreign direct investment as well as to keep the multinational firms in their territories.

In this paper we focus on the competitive effects of China on the Mexico-U.S. trade relationship. This study is mainly motivated by the decline in Mexican exports to the U.S. in the recent years. In particular, the production and employment of maquiladoras, that despite NAFTA preferences, have decreased since the end of 2000 (Gerber and Mundra, 2003). Although the downturn corresponds to the U.S. recession, to

which the maquiladoras are extremely sensitive (Hanson and Robertson, 2003) there are likely to be other factors such as the increased competition from other countries, particularly China. The U.S. imports from China increased by 25% between 2000 and 2002, while those from Mexico dropped by 0.74% (U.S Department of Commerce, cited in Watkins 2003). China has long enjoyed larger export shares in low-skilled intensive products such as footwear, toys, lamps and lighting fittings, and luggage, but recently it has also surpassed Mexico in exports of more skilled-intensive sectors such as computer hardware. China's accession to the WTO in 2001 and the removal of the import quotas with the termination of the Multi-Fibre Agreement in 2005 is likely to further heighten competition in the traditionally protected textile sector and could very well imply the end of the privileged position Mexico has enjoyed in the U.S. market in the last decade.

While this topic is of importance in the public arena particularly for Mexico and bordering cities in the United States, to our knowledge, there are few studies that offer a comprehensive analysis of this stylized observation. We contribute to the current literature by empirically testing the impact of the increased China exports on Mexican trade to its most important market, the United States. More specifically, we use highly disaggregated sectoral data which allows us to clearly decompose the relationship between China and Mexico in their exports to the United States.

The paper is organized as follows. Section 2 provides a review of literatures on preferential trade agreements and studies analyzing the impact of the increase in Chinese trade. A description of the data is presented in Section 3 while Section 4 offers the empirical estimation and results. The summary and conclusion are given in Section 5.

2 Literature Review

The focus of our paper is the extent to which China's increased presence in the export markets reverses the effect of NAFTA in terms of the U.S.-Mexico trade relationship.

We draw on two main strands of related literature: a) general works on preferential trade agreements (PTA) that assess the effects of tariff removals for non-member and member countries and b) studies on the effects of increased Chinese exports on competing countries, specifically dealing with China's accession to WTO.

2.1 Literature on preferential trade agreements

Most of the literature on PTA analyzes the effects that preferential trade liberalization has on the patterns of trade between the member countries as well as between member and non-member countries. These studies examine whether the agreements lead to trade creation (when the countries lowering their tariffs shift away from high-cost domestic production to imports from lower-cost partner countries) or trade diversion (when low-cost imports from non-member countries are displaced by higher-cost production in the partner countries). A few papers have also looked at the effects of preferential agreements on prices and the welfare of member and non-member countries. Some examples of ex-post studies of PTA are Clausing (2001) who looks at the effects of CUSFTA, Krueger (2000), Fukao et al (2003), and Romalis (2004) on NAFTA, Yeats (1997) and Chang and Winters (2002) on MERCOSUR, and Winters and Chang (2000) on the Spanish accession to the European Community.

The findings in the studies on NAFTA are of particular relevance to our paper. An overlook at the crude trade data would suggest that the advent of NAFTA increased the

U.S.-Mexico trade remarkably. In 1993 Mexican exports accounted for 6.9% of the total U.S. imports with this share raised to 11.5 % in 2001. During the same period, Mexican imports from the U.S. increased from 9.0 % to 13.9 %, becoming the second largest trading partner to the U.S. (Romalis, 2004). However, it is important to account for other factors that might have affected Mexican exports in addition to the tariff liberalization.

Several ex-post studies have attempted to disentangle the effects of NAFTA on the volume of intra-North American trade. Gould (1998) finds that NAFTA has increased U.S.-Mexico trade, but has had no effect on U.S.-Canada or Mexico-Canada trade, while Garces-Diaz (2001) finds that Mexico's export boom is not attributable to NAFTA. The same doubts are cast in Krueger (2000) who points out the difficulties in disentangling the effects of NAFTA from the effects of the peso devaluation in 1994 and Mexico's earlier trade liberalization policies. Fukao et al. (2001) finds that NAFTA resulted in trade diversion, especially in U.S. imports of textiles and apparel products from Mexico, at the expense of Asian suppliers. Indeed, an analysis of revealed comparative advantage indicates that the pattern of Mexican exports to the U.S. was significantly altered following NAFTA.

In a comprehensive analysis of NAFTA and CUSFTA Romalis (2004) studies not only the effects on trade quantities but also prices and overall welfare. His results suggest that the North American preferential agreements have had a substantial effect on the volume of trade, but less effect on prices and welfare of member and non-member countries. His findings also suggest that NAFTA led to trade diversion from non-member countries to highly protected, high-cost North American sectors.

2.2 Studies on China's increased trade

The accession of China to the WTO generated a stream of literature on the effects of increased Chinese trade on other competing countries. Given the lack of readily available data and that the full implementation of China's accession terms will not be completed until some years down the road, most of the studies to date are ex-ante simulations based on computable general equilibrium (CGE) models that produce predictions on trade quantities, prices, and welfare. (See for example Ianchovichina and Walmsley (2003), Yang (2003), IMF (2004)). Generally, these exercises predict a negative effect of the Chinese competition on the exports of other developing countries specializing in labor-intensive and low value-added exports, such as Malaysia, Indonesia, Thailand, Philippines, the Middle East and the countries in the northern regions of Africa.

The few empirical papers that analyze the challenges and opportunities of China's export expansion tend to focus on the dynamic country's impact on its Asian neighbors. Liu and Luo (2004), focusing on the ASEAN-5 countries (Indonesia, Malaysia, Philippines, Singapore and Thailand), conclude that the competition between China and its neighboring countries is limited in most sectors, rather the ASEAN-5 can expect more opportunities than challenges from China's accession to the WTO. Eichengreen, Rhee, and Tong (2004) carry out a more comprehensive analysis of the effects of China increased penetration of export markets on its Asian neighbors. In addition to the crowding-out effect in export markets, they also take into consideration the potential effect of the growth of Chinese income and demand for exports from its Asian neighbors. While China's exports seem to have a negative total effect on countries like Bangladesh, Cambodia, Malaysia, and Pakistan, who compete mainly in consumer goods, countries

such as Japan, Korea, and Singapore are likely to benefit from China's export and income growth via the consumption of capital goods.

These two streams of literature stress the benefits of membership in trade agreements while they also point to the rising threat China poses on some developing countries, particularly its Asian neighbors, in export markets such as the United States, Japan, and Europe. However, there is a lack of empirical studies documenting the impact of China exports on the U.S.-Mexico trade relationship. Our contribution is a detailed analysis using highly disaggregated sectoral data to empirically test whether the increased China exports compete or complement Mexican exports to the United States. More specifically, we study to what extent China's increased exports are eroding the privileged position Mexico has enjoyed in the U.S. import market since NAFTA went into effect.

3 Data Description

The data used in the main regression analysis runs from 1989 to 2004 and comes from two main sources. The first part is the U.S. tariff rates for 1989-2001 which are from John Romalis' website as described in Feenstra et al., (2002). It contains the tariff rates at the 8-digit HTS level. Later years are updated from the USITC Tariff Database. The second part of the data is from the USITC Interactive Tariff and Trade DataWeb. This source contains import value, import duty, and quantity at the 10-digit HTS level.

Others sources of the data include the industrial production index (at 2002 prices) from the Federal Reserve Statistical Release. The country risk rating for China is from the Political Risk Service Group. China GDP is from the National Bureau of Statistics

converted to U.S. dollars using exchange rates from the International Financial Statistics. Mexican exchange rates are obtained from the International Monetary Fund Statistics. The import values are deflated using the consumer price indexes from the Department of Labor, Bureau of Labor Statistics.

We also used longer data series on trade flows for the period 1980-2000 to provide background descriptive statistics on trade patterns for Mexico and China. This data which follows the Standard International Trade Classification comes from the UN and is compiled and documented in Feenstra et al (2005).

4 Empirical Methodology and Results

In this section we empirically assess the potential competitive effects of China on the Mexico-U.S. trade relationship. We begin with a presentation of descriptive analysis based on revealed comparative advantage. This allows us to gain an overall view of the relationship between Mexico and China exports to the United States.

4.1 Reveal Comparative Advantage

Following the Balassa (1965) approach, we compute indices of revealed comparative (RCA) for country $i = \text{Mexico, China}$ in sector s defined by the following:

$$RCA_s^i = \frac{(X_{is} / \sum_S X_{is})}{(\sum_i X_{is} / \sum_S \sum_i X_{is})}$$

where X_{is} denotes the exports of country i in sector s to the market of reference (i.e., the world), $\sum_S X_{is}$ refers to the total exports of country i , while $\sum_i X_{is}$ and $\sum_S \sum_i X_{is}$ represent the world imports in sector s and total world imports, respectively. A $RCA_s^i > 1$ indicates that

country i has a comparative advantage in sector s . We can study the evolving patterns of comparative advantage based on the changes of the RCA indices over time.

In order to gain an understanding of the sectors in which a country has an overall comparative advantage, the RCA indices need to be computed with respect to the world imports. However, since our main focus is on the competitive/complementary effects of China on Mexico exports to the U.S. market, we also compute the RCA indices using the U.S. as the reference market. Figures 3 through 8 show the evolution of the RCA indices over the period 1980-2000 for a number of Mexico's most important exporting sectors.

The simple correlation analysis of the Mexican and Chinese RCA indices presented in Table 1 provides an overall view of the Mexico and China export patterns to the U.S. market. In addition, it gives a general idea as to what extent we might expect the Chinese trade to crowd out Mexican exports. Taking the world imports as the market of reference, the comparative advantages of China and Mexico appear to be fairly similar. Regardless of whether we compute the RCA indices at the 2- or 4-digit SITC levels, we observe positive correlation indices between Mexican and Chinese RCA (columns 1 and 2). However, different patterns emerge when we focus on the RCA indices computed with respect to only the U.S. market. At the 2-digit SITC level, the correlations are mostly negative albeit insignificant (columns 3 and 5). These initial observations seem to imply a lack of competition between China and Mexico in export trade to the United States.

By contrast, when more disaggregated sectoral levels (4-digit SITC) are considered, the correlation between Mexican and Chinese RCA is clearly negative and significant after the advent of NAFTA (column 4). Moreover the correlation is also

negative and significant within the whole sample period if the sectors with zero exports are also included (column 6). Note that the correlation indices are smaller in absolute values before NAFTA. Finally, column 7 in Table 1 reports the correlation between the changes in RCA over 3-year periods for Mexico and China. This correlation is statistically insignificant for the overall period and also for the pre-NAFTA period but negative and significant for the post-NAFTA period. These results using the more disaggregated sector-level data suggest that post-NAFTA there is ongoing competition between Mexico and China in the U.S. import market. More importantly, analysis using broader sectors (such as SITC-2) could potentially be misleading.

4.2 Benchmark Specification

In what follows we empirically test the competitive effect of China on Mexico exports to determine whether the claims that increased Chinese exports are responsible for the downturn of Mexican exports to the U.S. are supported. Our first step is to analyze the evolution of Mexican market share of total U.S. imports. To that purpose, we examine the Mexican market share in sector s by means of a "pass-through" equation as follows:

$$\log M_{MEX,st} = \alpha \log Y_{US,st} + \beta X_{st} + \varepsilon_{st} \quad (1)$$

where $M_{MEX,st}$ denotes U.S. imports in sector s and time t from Mexico, $Y_{US,st}$ represents U.S. total imports in sector s , and X is a matrix of other control variables that affect the demand for imports. As both U.S. imports from Mexico and U.S. total imports are expressed in logs, the "pass-through" coefficient α can be interpreted as an elasticity. Other things equal, $\alpha > 1$ would indicate that an increase in total U.S. demand for imports

results in a more than proportional increase in Mexican exports to the United States, or equivalently there is a tendency for Mexico market share in the U.S. to increase. The case would be opposite for $\alpha < 1$.

4.3 Estimating the Differences in Preferential Treatment

To estimate the analysis, we use highly disaggregated data at the sector/product line (HS-8). We also exploit the variability in NAFTA preferences across product lines to identify the effect of the preferential treatment on the coefficient α . If the favorable tariff treatment introduced by NAFTA benefits Mexico exports to the U.S. there will be a tilting of the slope in equation (1). We capture this effect by interacting U.S. total imports with the difference between the most favored nation (NAFTA) rates and tariff rates introduced by NAFTA. The specification allowing for higher (lower) elasticities in certain products subject to more (less) favorable differential tariff treatments is given as follows:

$$\log M_{\text{MEX},st} = \alpha_0 \log Y_{\text{US},st} + \alpha_k (\text{NAFTA}_{st}^k \cdot \log M_{\text{US},st}) + \beta X_{st} + \varepsilon_{st} \quad (2)$$

where NAFTA_{st}^k is a set of dummy variables that captures the difference between MFN and NAFTA tariff rates. The dummy variables are characterized by the following four subcategories:

$$\begin{aligned}
NAFTA^1 &= \begin{cases} 1 & \text{if } 0 < (\text{MFN tariff} - \text{NAFTA tariff}) < 0.5\% \\ 0 & \text{otherwise} \end{cases} \\
NAFTA^2 &= \begin{cases} 1 & \text{if } 0.5\% \leq (\text{MNF tariff} - \text{NAFTA tariff}) < 5\% \\ 0 & \text{otherwise} \end{cases} \\
NAFTA^3 &= \begin{cases} 1 & \text{if } 5 < (\text{MFN tariff} - \text{NAFTA tariff}) < 10\% \\ 0 & \text{otherwise} \end{cases} \\
NAFTA^4 &= \begin{cases} 1 & \text{if } (\text{MFN tariff} - \text{NAFTA tariff}) \geq 10\% \\ 0 & \text{otherwise} \end{cases}
\end{aligned}$$

It follows that the coefficient α_0 gives the elasticity of Mexican exports with respect to U.S. total imports for sectors which do not enjoy a favorable tariff treatment relative to MFN rates, while the elasticity for those sectors which benefit from such favorable differential treatment is given by $\alpha_0 + \alpha_k$, where $k = 1, 2, 3, 4$.

Table 2 reports the estimation results for equation (2). In the matrix of control variables we include the peso-dollar exchange rates, an index of industrial activity in the U.S. at the HS-2 level to account for the effect of the U.S. economic cycle and product/sector fixed effects, at HS-6 and HS-8 levels. As an alternative to the exchange rate we included year dummies and obtained very similar results. The estimate of α_0 appears to be sensitive to possible omitted variable, as it ranges from a value larger than 1 when we use broader sector fixed effects (at the HS-6 level) to about 0.490 with HS-8 fixed effects, which account for greater heterogeneity. As we can also see, the favorable differential tariff treatment of NAFTA results in a larger "pass-through" coefficient ($\alpha_0 + \alpha_k$).

To deal with the potential endogeneity problem resulting from the inclusion of Mexico exports in total U.S. imports, we proxy U.S. total imports at a higher aggregation

level (HS-6). The results presented in column 3 show that the elasticity of Mexican exports with respect to total U.S. imports is slightly reduced.

4.4 Estimating the Effect of Chinese Exports

To gauge the effect that Chinese exports to the U.S. have on Mexican exports we estimate the following modified versions of equation (2):

$$\log M_{\text{MEX},st} = \alpha_0 \log Y_{\text{US},st} + \alpha_k (\text{NAFTA}_{st}^k \cdot \log M_{\text{US},st}) + \gamma_0 \log Y_{\text{CH},st} + \delta \log(Y_{\text{US},st} \cdot \log M_{\text{CH},st}) + \beta X_{st} + \varepsilon_{st} \quad (3)$$

For those sectors in which NAFTA do not confer a favorable differential treatment, Chinese exports would be crowding out or displacing Mexican exports in the U.S. market if γ_0 and/or $\delta < 0$, while the coefficients γ_k capture the differential impact of Chinese exports for those sectors subject to NAFTA advantages.

Before we estimate the modified specification, we address possible endogeneity issues such as common shocks affecting Mexican and Chinese exports simultaneously. With the inclusion of the U.S. industrial production index we control for American economic cycle, but there are likely to be other factors unaccounted for. To this purpose we take an instrumental variables approach. Namely, we use lagged values of Chinese exports as instruments, as well as China's GDP and a country risk index.

Table 3 reports the estimation of equation (3). Columns 1, 2 and 3 show the OLS estimation with sector fixed effects (at the HS-6 and HS-8 levels) while in column 4 we include sector dummies (HS-2) interacted with year dummies. The coefficient on Chinese exports to the U.S., γ_0 , is negative, ranging from -0.214 (in the specifications with HS-8 fixed effects) to -0.678, where we included HS-2 fixed effects interacted with year dummies. In all specifications this coefficient is highly significant, which suggests a

crowding out effect of Chinese exports on Mexican exports to the United States. By contrast, the coefficient on the interaction term of Chinese exports and U.S. total imports is positive. This coefficient may be picking up the positive correlation between U.S. total demand, Chinese and Mexican exports and thus it is likely to be biased upwards. However, the inclusion of the interaction term alleviates the endogeneity problem of Chinese exports, which is our variable of interest.

Columns 5 and 6 in Table 3 report the estimation results for variations of equation (3). In column 5, we add interaction terms of Chinese exports and the NAFTA dummies. The motivation is to allow for different effects of Chinese exports depending on the magnitude of NAFTA differential treatment. Compared to the baseline effect of Chinese exports in sectors where NAFTA preferences do not differ from those of the MFN rates, we obtain that China's competitive effect is slightly higher for sectors in which the difference between MFN and NAFTA rates are greater than 0.5 percentage points. However, China's competitive effect is less strong in sectors for which NAFTA tariffs are 0.5 percentage points or less than MFN tariffs. Finally, column 6 includes interaction terms of Chinese exports with dummies for two time periods: post-NAFTA and after 2001 when China entered the WTO. The coefficient on both interaction terms are statistically significant and negative, with the latter being larger (in absolute values) than the former. This indicates that the competitive effects of China on Mexican exports to the U.S. intensified after NAFTA went into effect and it has further intensified since China's accession to WTO.

To address the endogeneity issue we use an instrumental variable approach. Column 1 on Table 4 shows the IV estimation results where lagged values of the Chinese

exports (and the interaction term of those with U.S. total imports) are used as instruments. We control for sector fixed effect at a relatively aggregated level (HS-2). The IV approach improves only slightly with respect to the OLS regression with fixed effects. Note that the estimated effect of China on Mexico exports (-0.703) is quite similar to that of OLS with HS-2 fixed effects of column 4 in Table 3 (-0.678). Alternatively, in column 2 we use China's GDP and its country risk as instruments. It should be noted that these instruments vary only across time and not by sector. The estimated coefficient of Chinese exports is negative, but not higher in magnitude than the OLS estimates and it is statistically insignificant.

4.5 Estimating the Intensive and Extensive Margins

Looking at the total value of exports might mask important differences in the Mexican exports in response to the increased Chinese exports. In particular it is important to distinguish between the volume of exports within a sector or product line and the variety of product lines traded. These are the concepts of intensive and extensive margins respectively. Applying the methods in Hummels and Klenow (2002) we decompose the Mexico and China exports to the U.S. into the product of extensive and intensive margins. Then we estimate the correlation in the intensive margin of Mexico and China. Namely, we study whether an increase in Chinese exports to the U.S. leads to a competitive decrease in U.S. imports from Mexico. Similarly we test the relationship between the two countries' extensive margins to examine the impact of an increase in the variety of Chinese exports on the Mexican exports to the United States.

The intensive and extensive margins are given by the following:

$$IM = \frac{X_{i,US}}{\sum_{s \in X_{i,US,S}} X_{W,US,S}} \quad (4)$$

where $i = \text{Mexico, China}$, $X_{i,US}$ are country i exports to the U.S. aggregated across all products for each year, and $X_{W,US,S}$ denotes U.S. imports from the world summed across products in which country i exports to the U.S. for the given year.

$$EM = \frac{\sum_{s \in X_{i,US,S}} X_{W,US,S}}{X_{US}} \quad (5)$$

where X_{US} represents U.S. imports from the world at the aggregate level by year.

The results are presented in Table 5 where column 1 has the intensive margin with sector-fixed effects at the 6-digit HS level while column 2 gives the results for the intensive margin at the 8-digit HS level. The findings for the extensive margin at the 6-digit HS level and 8-digit HS level as sector-fixed effects are given in columns 3 and 4, respectively. The positive and statistically significant coefficients on China intensive margin in both columns 1 and 2 suggest that an increase in the value of exports from China to the U.S. leads to a decrease in exports from Mexico to its northern neighbor. By contrast, an increase in the variety of products from China has a positive and statistically significant impact on Mexico exports to the U.S. as shown by columns 3 and 4.

These results imply that while China imposes a competitive effect on Mexico for U.S. imports, the rivalry is largely contained within existing products. Namely, the increase in the volume of exports from China poses a negative impact on Mexico exports to the United States for currently traded products. An example would be the gradual displacement of Mexican made Barbie dolls by ones produced in China. However, new product varieties exported by China complements the exports of Mexico to its larger

neighbor. As an example, consider the import of flat-screen televisions. This relatively new product requires parts such as the glass component from China but due to its large size, specialized packing and assemble take place in Mexico before being transported to the United States.

5 Summary and Conclusion

The increased competition from Asia, and particularly from China, has been pointed out as one of the causes behind the downturn of Mexican exports and maquiladora activity. However, few studies offer a comprehensive analysis of this controversial observation. We contribute to the current literature by empirically testing for competitive or complementary effects of China on Mexico exports to its most important market, the United States.

In our correlation analysis of the revealed comparative advantages of Mexico and China, the results suggest that the study is sensitive to the level of data aggregation. Namely, estimations using aggregate sectoral data may lead to misleading conclusions. Our contribution is the use of very detailed export data at the product line (HS-8). We exploit the variation of NAFTA preferences at the product level as shifters of the elasticity of Mexican exports to U.S. total imports. While Mexico benefited from the lower trade barriers under NAFTA in exporting to the U.S. after 1994, these preferential treatments no longer provide American's southern neighbor an advantage over Chinese exports. According to our estimates a 10% increase in Chinese exports to the U.S. would displace between 2.1-6.7% of Mexican exports. Moreover, our results indicate that the

competitive effects of China on Mexican exports to the U.S. intensified after NAFTA, and even further after China entered the WTO in 2001.

However, a closer examination of the components of Mexican exports reveals that it is mostly the intensive margin of exports that has been affected, while the variety of products (or extensive margin) is positively correlated with China exports.

These results suggest that Mexico may slowdown or possibly reverse its declining share of the U.S. import market by focusing on new product varieties. Namely, Mexico may benefit by shedding low-skilled intensive goods such as toys in favor of products that are complementary to Chinese exports by taking advantage of its close proximity to its northern neighbor.

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Figure 1: Percentage of U.S. Imports from Mexico and China, 1980-2000

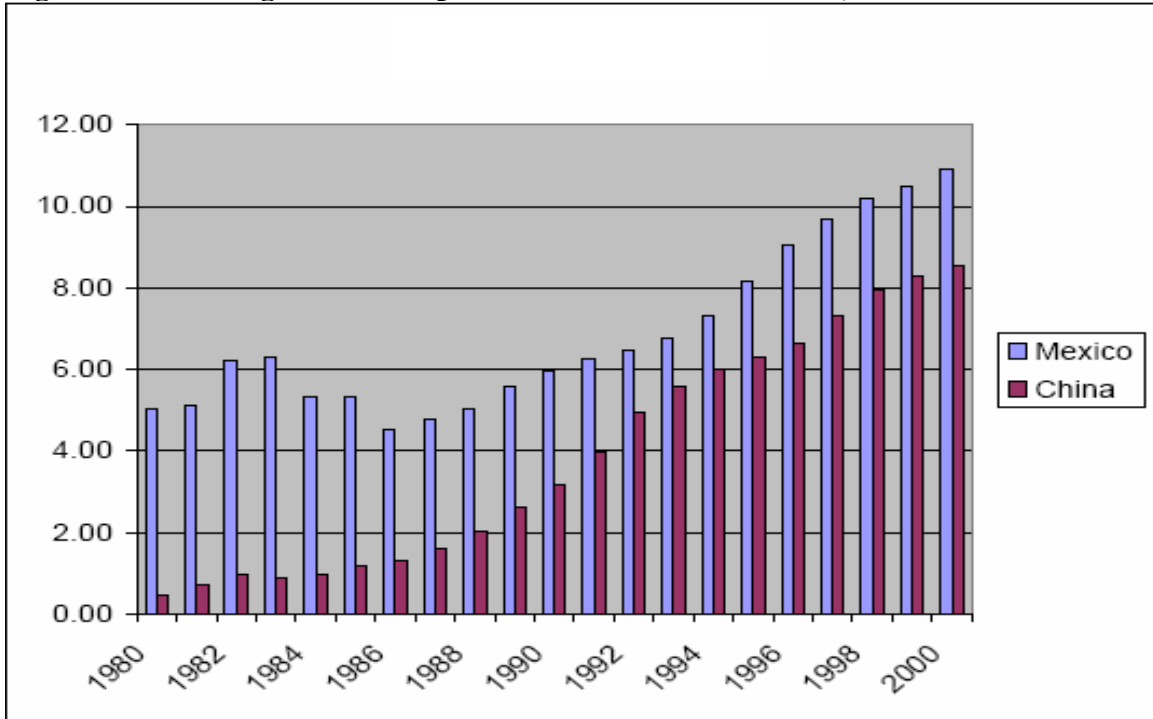


Figure 2: Percentage of World Imports from Mexico and China, 1980-2000

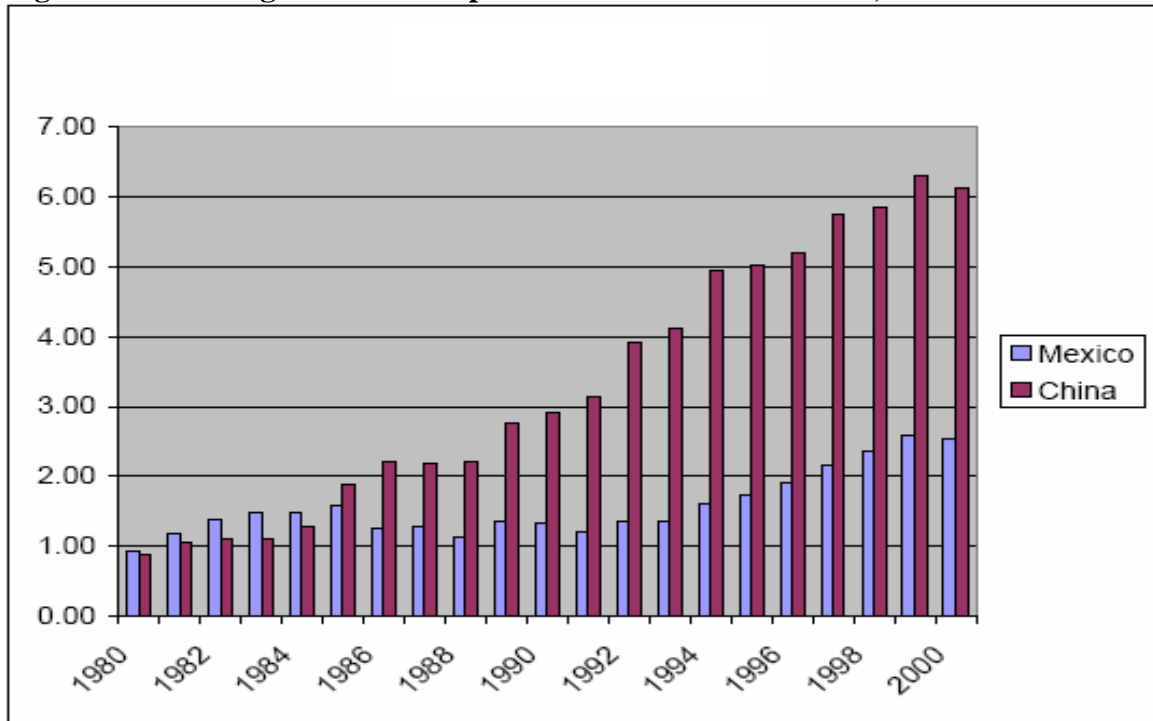


Figure 3: RCA and U.S. Imports Share from Mexico and China in Textiles, 1980-2000

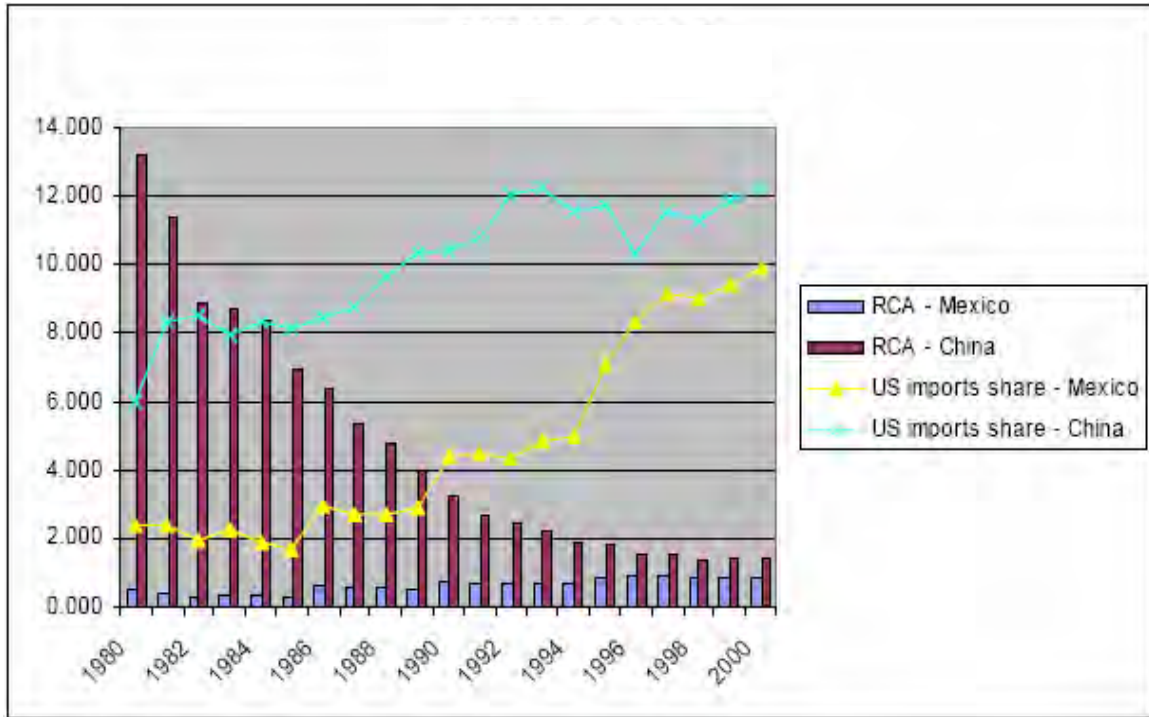


Figure 4: RCA and U.S. Imports Share from Mexico and China in Clothing and Apparel, 1980-2000

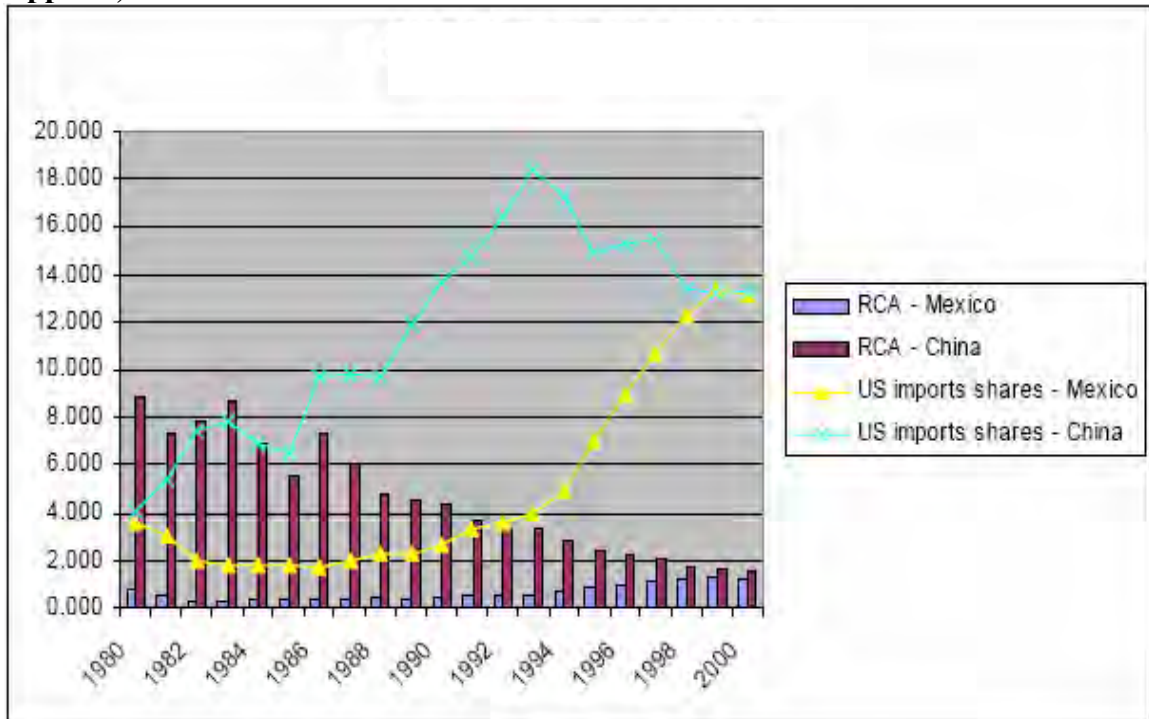


Figure 5: Mexico and China RCA in Metal, 1980-2000

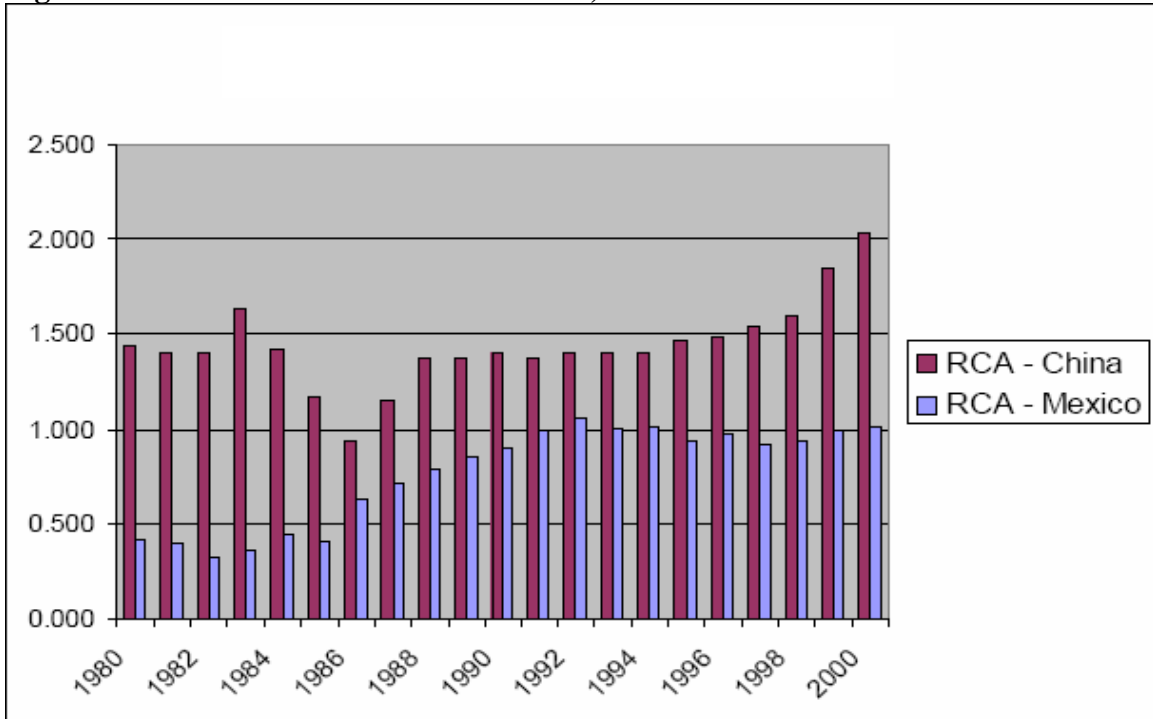


Figure 6: U.S. Imports Share from Mexico and China in Metal, 1980-2000

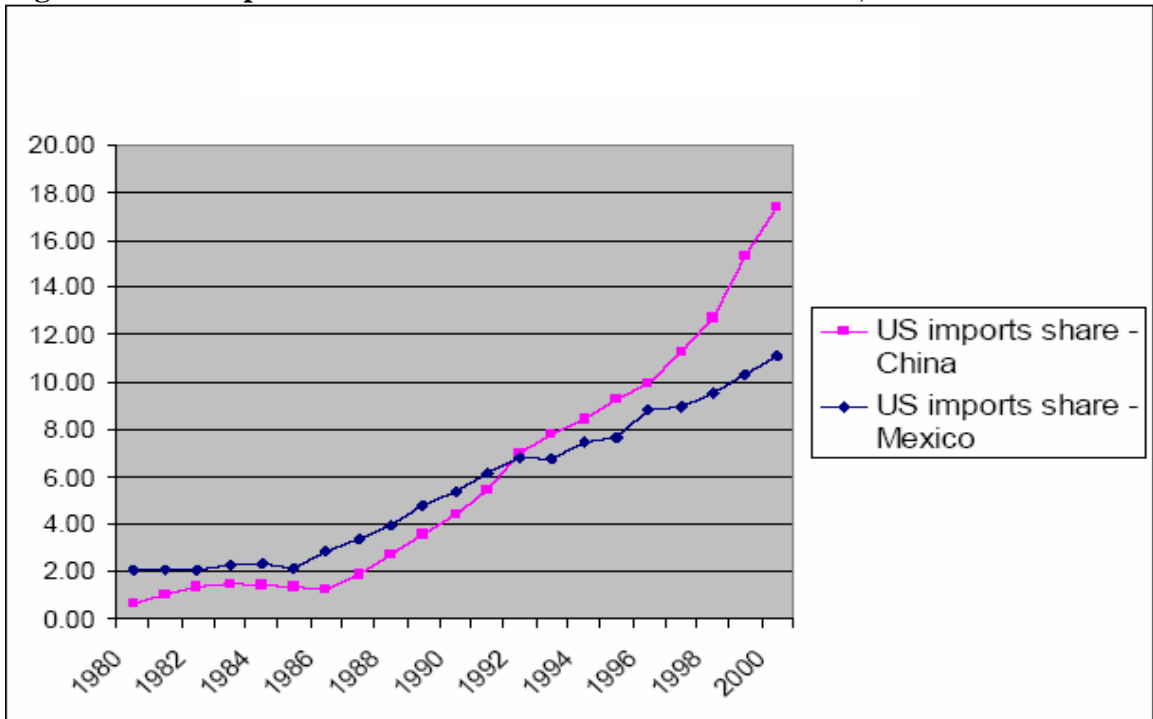


Figure 7: Mexico and China RCA in Telecommunication Equipment, 1980-2000

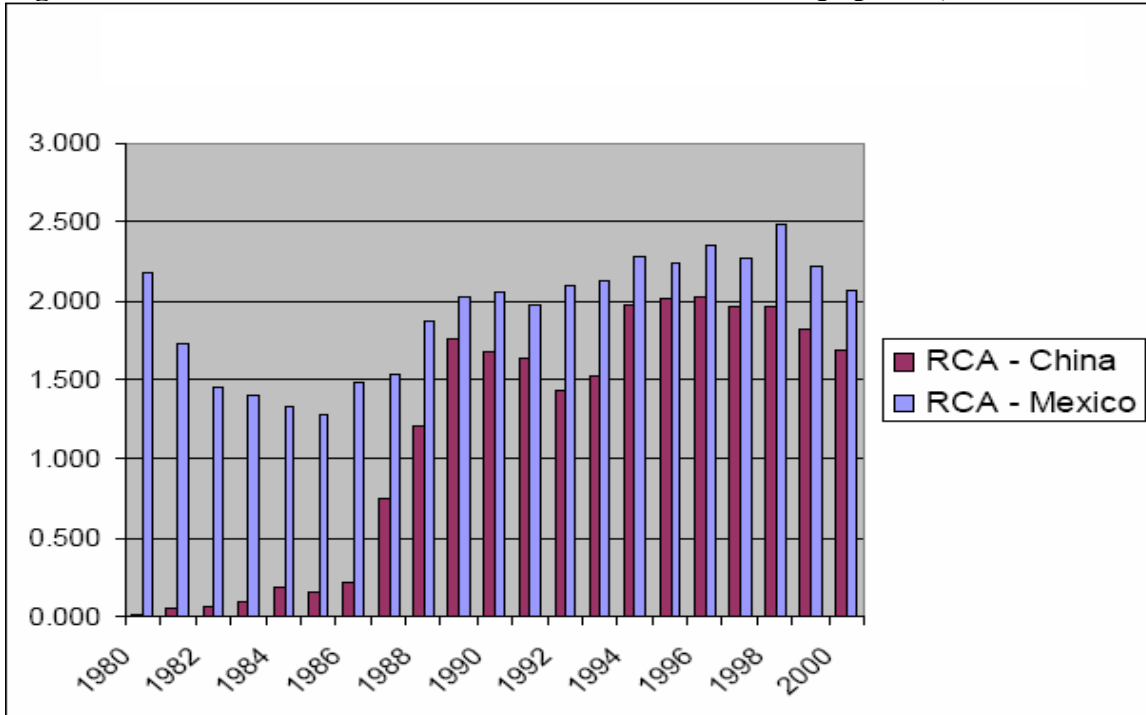


Figure 8: U.S. Imports Share from Mexico and China in Telecommunication Equipment, 1980-2000

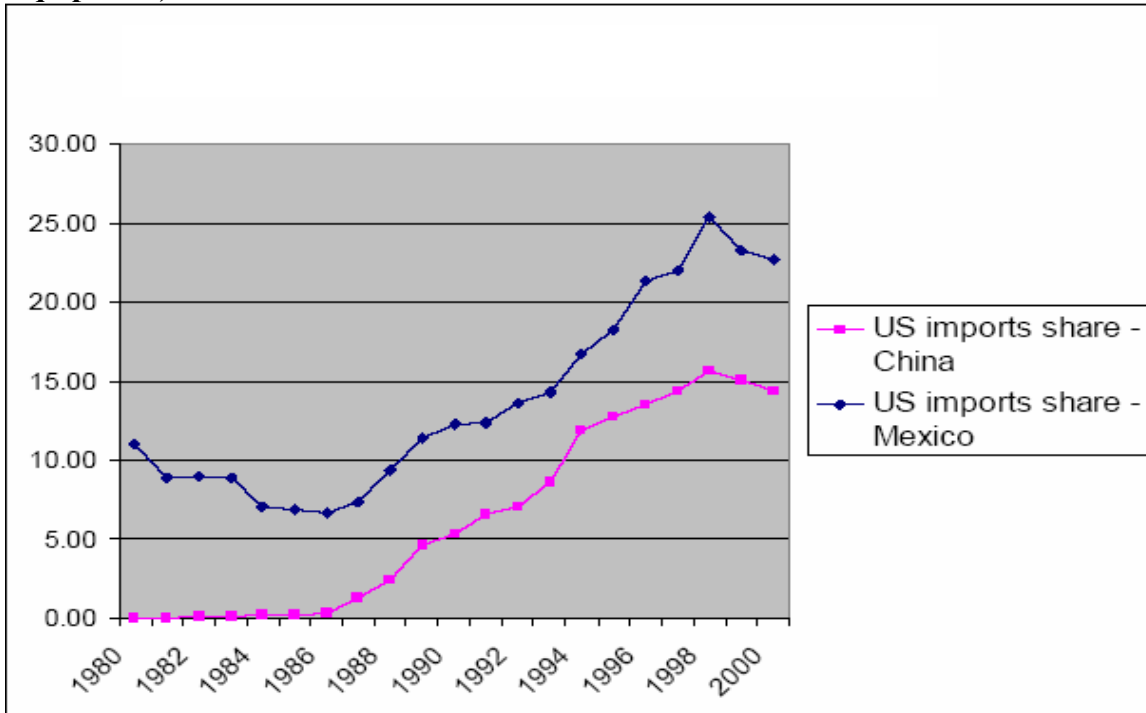


Table 1: Correlation Analysis of Revealed Comparative Advantage Indices for Mexico and China

	RCA correlation (computed wrt world imports)		RCA correlation (computed wrt U.S. imports)		RCA correlation (computed wrt U.S. imports and including sectors with zero exports)		Correlation of changes in RCA (wrt U.S. imports) over 3-year periods*
	(I) SITC-2	(II) SITC-4	(III) SITC-2	(IV) SITC-4	(V) SITC-2	(VI) SITC-4	(VII) SITC-4
Period 1980- 2000:	0.036 (0.174)	0.043 (0.0001)	-0.014 (0.628)	-0.010 (0.370)	-0.009 (0.727)	-0.025 (0.006)	0.006 (0.802)
No observations	1414	12410	1221	8054	1414	1,410	2018
Pre-NAFTA (1980-1993):	0.022 (0.494)	0.048 (0.0001)	-0.031 (0.389)	-0.008 (0.595)	-0.019 (0.556)	-0.024 (0.032)	0.016 (0.585)
No observations	476	4601	439	3568	476	4601	907
Post-NAFTA (1994-2000):	0.076 (0.097)	0.017 (0.261)	0.061 (0.201)	-0.070 (0.0001)	0.044 (0.334)	-0.061 (0.0001)	-0.061 (0.067)
No observations	476	4601	439	3568	476	4601	907

Notes: Significance levels in parenthesis. (*) The first correlation is computed over the period 1981-1999, the pre-NAFTA correlations is based on the changes in RCA during 1981-1984, 1984-1987, 1987-1990 and 1990-1993 and the post-NAFTA correlation is based on the changes in RCA for 1993-1996 and 1996-1999.

Table 2: Elasticity of Mexican Exports wrt U.S. Imports

Dependent Variable: Log(Mexican exports to the U.S.)				
	(I)	(II)	(III)	(IV)
Log(U.S. Imports)	1.141*** (0.007)	0.596*** (0.014)	0.489*** (0.018)	1.253*** (0.006)
NAFTA1*Log(U.S. Total Imports)	0.025*** (0.006)	0.035*** (0.005)	0.083*** (0.005)	0.038*** (0.007)
NAFTA2*Log(U.S. Total Imports)	0.032*** (0.002)	0.022*** (0.002)	0.098*** (0.002)	0.054*** (0.003)
NAFTA3*Log(U.S. Total Imports)	0.044*** (0.002)	0.029*** (0.002)	0.102*** (0.002)	0.064*** (0.003)
NAFTA4*Log(U.S. Total Imports)	0.109*** (0.003)	0.065*** (0.003)	0.114*** (0.003)	0.146*** (0.004)
Exchange Rate (Peso/USD)	0.095*** (0.005)	0.152*** (0.004)	0.150*** (0.004)	-0.049 (0.208)
US Industrial Production Index	-0.0001*** (0.00001)	-0.0001*** (0.00001)	-0.0001 (0.00001)	-0.0001*** (0.00001)
Constant	-10.980*** (0.178)	-10.98*** (0.178)	-4.14*** (0.178)	-10.76*** (2.284)
Sector Dummies	HS-6	HS-8	HS-8	
Sector (HS-2)* Year Dummies	NO	NO	NO	YES
Adjusted R-Squared	0.643	0.757	0.696	0.412
No Observations	133684	133684	158478	133684

Notes: White-Huber robust standard errors in parenthesis. (***), (**), (*) denote 1%, 5%, and 10% significance level respectively. Specifications (I), (II), and (IV) use U.S. imports at the HS-8 level while specification (III) uses U.S. imports at the HS-6 level.

Table 3: Effect of Chinese Exports on Mexican Exports to the U.S. – Fixed Effects

Dependent Variable: Log(Mexican exports to the U.S.)						
	(I)	(II)	(III)	(IV)	(V)	(VI)
Log(U.S. Imports)	0.792 ^{***} (0.010)	0.519 ^{***} (0.014)	0.500 ^{***} (0.021)	0.761 ^{***} (0.009)	0.522 ^{***} (0.014)	0.519 ^{***} (0.014)
NAFTA1*Log(U.S. Total Imports)	0.035 ^{***} (0.006)	0.036 ^{***} (0.005)	0.033 ^{***} (0.005)	0.050 ^{***} (0.007)	0.047 ^{***} (0.008)	0.034 ^{***} (0.005)
NAFTA2*Log(U.S. Total Imports)	0.036 ^{***} (0.002)	0.024 ^{***} (0.002)	0.022 ^{***} (0.002)	0.051 ^{***} (0.003)	0.018 ^{***} (0.004)	0.020 ^{***} (0.002)
NAFTA3*Log(U.S. Total Imports)	0.048 ^{***} (0.002)	0.032 ^{***} (0.002)	0.029 ^{***} (0.002)	0.060 ^{**} (0.003)	0.024 ^{***} (0.005)	0.026 ^{**} (0.002)
NAFTA4*Log(U.S. Total Imports)	0.111 ^{***} (0.004)	0.067 ^{***} (0.003)	0.056 ^{***} (0.003)	0.138 ^{***} (0.004)	0.044 ^{***} (0.006)	0.064 ^{***} (0.003)
Log(China Exports to U.S.)	-0.515 ^{***} (0.013)	-0.214 ^{***} (0.017)	-0.296 ^{***} (0.017)	-0.678 ^{***} (0.012)	-0.227 ^{***} (0.017)	-0.217 ^{***} (0.017)
PostNAFTA* Log(China Exports)						-0.020 ^{***} (0.003)
PostWTO* Log(China Exports)						-0.026 ^{***} (0.002)
Log(China Exports to U.S.*U.S. Imports)	0.040 ^{***} (0.001)	0.015 ^{***} (0.001)	0.021 ^{***} (0.001)	0.052 ^{***} (0.001)	0.016 ^{***} (0.001)	0.017 ^{***} (0.001)
NAFTA1*Log(China Exports)					-0.029 ^{**} (0.013)	
NAFTA2*Log(China Exports)					0.010 ^{**} (0.005)	
NAFTA3*Log(China Exports)					0.013 ^{**} (0.006)	
NAFTA4*Log(China Exports)					0.041 ^{***} (0.008)	
Exchange Rate (Peso/USD)	0.061 ^{***} (0.005)	0.139 ^{***} (0.005)	0.132 ^{***} (0.005)	-0.229 (0.201)	0.138 ^{***} (0.005)	0.174 ^{***} (0.006)
US Industrial Production Index	-0.0001 ^{***} (0.00001)	-0.0001 ^{***} (0.00001)	0.0001 (0.00001)	-0.0001 ^{***} (0.00001)	0.0001 (0.00001)	-0.0001 (0.00001)
Sector Dummies	HS-6	HS-8	HS-8		HS-8	HS-8
Sector (HS-2)* Year Dummies	NO	NO	NO	YES	NO	NO
Adjusted R-Squared	0.653	0.757	0.755	0.439	0.757	0.758
No Observations	133684	133684	133684	133684	133684	133684

Notes: Estimation method is OLS with fixed effects. White-Huber robust standard errors in parenthesis. (***) , (**), (*) denote 1%, 5%, and 10% significance level respectively. All specifications except for (III) use U.S. imports at the HS-8 level while, specification (III) uses U.S. imports at the HS-6 level.

Table 4: Effect of Chinese Exports on Mexican Exports to the U.S. – IV Estimates

Dependent Variable: Log(Mexican exports to the U.S.)		
	(I)	(II)
Log(U.S. Imports)	0.723 ^{***} (0.010)	1.087 ^{***} (0.069)
NAFTA1*Log(U.S. Total Imports)	0.056 ^{***} (0.007)	0.031 ^{***} (0.007)
NAFTA2*Log(U.S. Total Imports)	0.055 ^{***} (0.002)	0.042 ^{***} (0.002)
NAFTA3*Log(U.S. Total Imports)	0.065 ^{***} (0.003)	0.054 ^{***} (0.003)
NAFTA4*Log(U.S. Total Imports)	0.142 ^{***} (0.004)	0.134 ^{***} (0.004)
Log(China Exports to U.S.)	-0.703 ^{***} (0.016)	-0.211 (0.138)
Log(China Exports to U.S.*U.S. Imports)	0.056 ^{***} (0.001)	0.017 ^{**} (0.008)
Exchange Rate (Peso/USD)	0.077 ^{***} (0.006)	0.040 ^{***} (0.013)
U.S. Industrial Production Index	-0.0001 (0.00001)	-0.0001 ^{***} (0.00001)
Constant	3.082 ^{***} (0.365)	-8.629 ^{***} (0.805)
Sector Dummies	HS-2	HS-2
Adjusted R-Squared	0.420	0.420
No Observations	123212	133684

Notes: Estimation method uses instrumental variables. Specification (I) uses lagged values as instrumental variables for Chinese exports and the interaction term of Chinese exports and U.S. imports; specification (II) uses the Chinese GDP, the exchange rate versus the U.S. dollar and a country risk index as instrumental variables. White-Huber robust standard errors in parenthesis. (***) (**), (*) denote 1%, 5%, and 10% significance level respectively.

Table 5: Effect of China's Exports on Mexico's Exports Intensive and Extensive Margins

	Mexico's Exports Intensive Margin		Mexico's Export's Extensive Margin	
	(I)	(II)	(III)	(IV)
China's Exports Intensive Margin	-0.159*** (0.001)	-0.160*** (0.001)		
China's Exports Intensive Margin			0.064*** (0.001)	0.064*** (0.001)
Exchange Rate (Peso/USD)	0.774*** (0.001)	0.774*** (0.001)	0.342*** (0.002)	0.334 (0.002)
U.S. Industrial Production Index	-0.0001*** (0.00001)	-0.0001*** (0.00001)	0.0001*** (0.00001)	0.0001*** (0.00001)
Constant	6.353*** (0.019)	6.427*** (0.020)	78.189*** (0.057)	78.129*** (0.059)
Sector Dummies	HS-6	HS-8	HS-6	HS-8
Adjusted R-Squared	0.887	0.883	0.720	0.712
No Observations	161543	161543	161543	161543

Notes: Estimation method is OLS with fixed effects. White-Huber robust standard errors in parenthesis. (***) , (**), (*) denote 1%, 5%, and 10% significance level respectively.