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Articles

Does Mexico need free trade with the United States?

¿Necesita México libre comercio con Estados Unidos?

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Abstract

Free trade between the United States and Mexico is credited with having developed one of the largest bilateral trading relationships in the world. Yet Mexico-United States trade has been significant for more than a century. Our objective is to show how bilateral trade increased independently of the trade agreement that took effect in 1994, and to specify the other reasons why trade grew. We measure trade flows from the 1880s to the present and estimate a gravity model for the period 1948-2006. The gravity model shows that the fundamental characteristics of Mexico and the United States explain the volume of trade independently of the trade agreement. The trade agreement reduced uncertainty which likely had a positive effect on trade flows. Our analysis does not estimate the quantitative impact of reduced uncertainty but shows that proximity and size of the market were more significant that the trade agreement.

Keywords: free trade, gravity model, bilateral trade, trade reform, panel data.

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Resumen

Al libre comercio entre Estados Unidos y México se le atribuye haber desarrollado una de las relaciones bilaterales más grandes del mundo. Sin embargo, el comercio entre México y Estados Unidos ha sido significativo durante más de un siglo. Mostramos cómo aumentó el comercio bilateral independientemente del acuerdo que entró en vigor en 1994, y especificamos las otras razones por las que creció el comercio. Medimos los flujos comerciales desde la década de 1880 hasta el presente y estimamos un modelo de gravedad para el periodo 1948-2006. El modelo de gravedad muestra que las características fundamentales de México y Estados Unidos explican el volumen de comercio independientemente del acuerdo. El acuerdo redujo la incertidumbre, lo que probablemente tuvo un efecto positivo en los flujos comerciales. En el análisis realizado no se estimó el

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impacto cuantitativo de la reducción de la incertidumbre, pero muestra que la proximidad y el tamaño del mercado fueron más significativos que el acuerdo comercial.

Palabras clave: libre comercio, modelo de gravedad, comercio bilateral, reforma comercial, datos de panel.

Introduction

There are no guarantees

A popular view in both the United States and Mexico is that free trade between the two countries has not been beneficial for either.[1] There is a spectrum of opinion but speaking casually, the more vocal and widely held perspective is that trade agreements kill jobs, hurt industries and destroy communities. Political rhetoric in the United States often reflects this opinion. Consider for example the remarks given on the new United States-Mexico-Canada Agreement (USMCA) by the US ex-President whose administration negotiated the agreement's revision:

I have long contended that North American Free Trade Agreement (NAFTA) was perhaps the worst trade deal ever made. Since NAFTA's adoption, the United States racked up trade deficits totaling more than $2 trillion—and it's a much higher number than that—with Canada and Mexico. It lost vast amounts of money, and lost 4.1 million manufacturing jobs, and 1 in 4 auto jobs. Lost about 25% of our auto jobs—even more than that (Garden, 2018).

Over the years, opponents of free trade have been comprised of organized labor, non-governmental organizations, environmental groups, a share of the voting public, and many elected officials. In the United States, since the beginning of negotiations in the early 1990s, the fear was that free trade with Mexico would destroy jobs and create a race to the bottom in wages and working conditions (Von Bertrab, 1997, pp. 7-12; Hufbauer & Schott, 2005, chapter 2). In Mexico, traditional fears of a loss of sovereignty and domination by US business and economic interests wear equally voiced (Lustig, 1998, pp. 132-137).

The popular history of the agreement is that Mexico proposed free trade with the United States as a means to institutionalize and continue the dramatic changes in economic policies that began as a response to the 1980's debt crisis. After the debt crisis began in 1982, trade barriers were gradually and unilaterally brought down and restrictions on foreign investment were when Mexican President Carlos Salinas de Gotari (1988-1994) visited the World Economic Forum in Davos, Switzerland, in 1990, he realized that Western Europe was too preoccupied with the fall of communism to invest heavily in Mexico, and that a trade agreement with the United States was an alternative way to attract capital investment by signaling to the world that Mexican policies had fundamentally and irrevocably changed (Mayer, 1998, pp. 37-41).

[1] Obviously, Canada is part of the agreement as well. Canadian attitudes reflect the full spectrum of opinions, but they seem a bit more nuanced than the frequent expressions of economic populism that are common in Mexico and the United States. In what follows, we make no claims about the potential impact on Canada of terminating the free trade agreement.

The assumption that an international agreement solidifies and makes permanent a country's international economic policies is questionable. Nevertheless, it was another of the reasons given by Salinas for the NAFTA negotiations (Lustig et al., 1992; Hufbauer & Schott, 2005, p. 3). With the 2016 election of a nationalist president, that assumption has become more questionable as the United States pulled out of the Trans-Pacific Partnership agreement, cancelled commitments made in the Paris Agreement, refused to fulfill its responsibility to nominate appellate judges to the World Trade Organization (WTO), began a series of unilateral tariff increases under a dubious national security argument, started a trade war with China, imposed additional tariffs on European goods, and forced a renegotiation of the NAFTA. Suddenly, the solidity, permanency, and certainty of an international treaty agreement seems to have an arbitrary and contingent existence.

In the events leading up to the renegotiation of the NAFTA, the US ex-President spoke frequently of his willingness to tear up the agreement and to terminate negotiations if US interests, as defined by him and his team, were not advanced. Given the integration of the three North American economies, the threat seemed extremely dangerous. Both in the United States and Mexico there were fears that if the agreement was terminated without a replacement, it would severely disrupt all three economies. The assumption by both pro- and anti-NAFTA observers in Mexico and the United States is that the trade agreement had a very dramatic impact in shaping the three economies and that there would be very large changes if it were terminated. Anti- NAFTA observers in the United States believed there would be a sizable repatriation of jobs and industries while pro-NAFTA observers believed the treaty's abrogation would cause harm to US industries that had become more competitive through their trade and investment in Mexico.

In what follows, we focus on Mexico-US trade and will argue that both views are wrong: a termination of free trade between Mexico and the United States would most likely cause far fewer changes than most observers imagine. To be sure, there would be costs and uncertainties requiring adjustments to supply chains and investment decisions. It would not be without damage to the existing arrangements, but something much like the present pattern, volume, and growth of trade would continue. This implies that forces other than the trade agreement have propelled Mexico and the United States into a closer economic relationship and that continued emphasis on the agreement itself as either a source of problems for Mexican and American workers and families, or as a source of income for businesses and their employees, is misplaced. The factors that tie the two countries together are more fundamental and more diversified that an agreement between the two federal governments.

The key factors in Mexico-US trade are and always have been proximity and size of the markets. In other words, the gravity model explains the trade pattern both before and after the signing of the trade agreement. In addition, several factors are important. State and local governments along the border have sought to develop cross-border ties because of the advantages they offered for local economic development. Mexico's economic reforms of the late 1980s and 1990s removed many of barriers to trade, while U.S. legislation in the 1980s increased the awareness, training and support for U.S. businesses that wanted to export. The telecommunications and transportation revolutions that began in the 1990s deepened the linkages between production units located on different sides of the border and led to the development of global value chains in key industries such as automotive, electronics, and aerospace.

The free trade agreement between Canada, Mexico, and the United States is important in several respects, not the least of which was its value in building trust and overcoming some of the hesitations that had prevented the three economies from developing deeper economic relations. It was the first agreement in history between countries at dramatically different levels of economic development and has been the template for all subsequent US trade agreements. In other words, it served a useful purpose and continues to be an important agreement. It is a mistake, however, to think we would not have gotten to where we are today without it.

The next section looks back at the long run history of Mexico-US trade. That is followed by an analysis of the growth and product changes in Mexican exports to the United States in the two and one-half decades before the trade agreement. That discussion leads into an analysis of the importance of the free trade agreement for the Mexican economy with the estimation of several gravity models. A final section provides some conclusions.

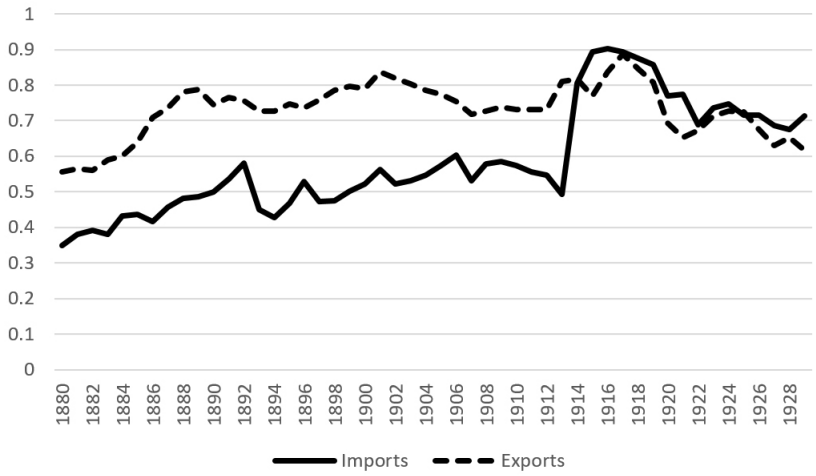
Mexico-US trade in the long run

Mexico began sending more than half of its exports to the United States in the 1870s (Kuntz Ficker, 2007). After the rail connection between Mexico City and Ciudad Juarez was completed in 1884, the US share of Mexican exports jumped to between 70% and 80%. Mexican imports from the United States took a few years longer to reach the 50% level given that European suppliers, particularly of fine fabrics and other luxury goods, maintained their hold on Mexican consumers. Nevertheless, by the turn of the twentieth century the United States was supplying more than 50% of Mexico's imports. That pattern continued throughout the 20th century and up until China's accession to the WTO in 2001. When that occurred, the US share of Mexican imports dropped to around 40% while the shore of Mexican exports continued above 50%. Figure 1 shows the US share of Mexico's exports and imports, 1880 to 1929, using the best available data (Kuntz Ficker, 2007).

In her reconstruction and verification of Mexico's trade figures, 1870 to 1929, Kuntz used both official Mexican sources and trade statistics recorded by Mexico's counterparts. Data were converted to Free on Board (FOB), corrected for variations in the value of the peso, and standardized across the years for coverage and classifications.

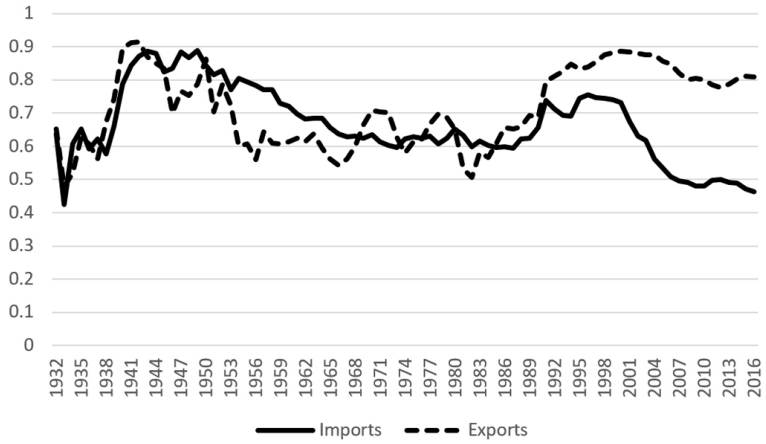
Figure 2 continues the story in Figure 1 from 1932 to 2016. Figure 2 is from official Mexican data and together with Figure 1 presents a long-run historical record showing that the United States has been the dominant market for Mexican exports for more than 135 years and nearly as long as the dominant source of its imports. Figure 2 has three visible regimes or periods. The first is from the late 1930s to the early 1950s when 80% to 90% of Mexico's imports were supplied by the United States and 70% to 90% of its exports were sold there. The second period shows a decline in the US share to around 50% to 60% and lasts until the late 1980s. And the third shows a rise in exports to the United States to between 70% and 90% and a rise in imports from the United States to around 70% until 2001.

Figure 1. Share of Mexico's trade with the United States, 1980-1929



Source: Kuntz Ficker, 2007; author's calculations

Figure 2. Share of Mexico's trade with the United States, 1932-2016



Source: Inegi, 2009, tables 16.2, 16.3, 16.4, 16.5; author's calculations

The pattern of rising US import and export shares in the early years of Figure 2 can be attributed to the direct and indirect effects of World War II. Directly, the loss of trans-Atlantic trade and the war time rise in the US' demand for primary commodities were important factors behind the rise in the US' trade share. Indirectly, the reciprocal trade agreement signed by Mexico and the United States also played a role (Avella Alaminos, 2008). The trade agreement was prompted by the war and was implemented in 1942, the same year that a guest worker labor agreement began. The reciprocal trade agreement was terminated in 1950, after which both US import and export trade shares declined, although they remained above 50% and the absolute value of Mexico's exports to the United States continued to increase. Mexico's imports from the United States rose in 1951, declined slightly in 1952 (4%) and began growing again

in 1953 (Inegi, 2009, tables 16.2, 16.4). The termination of the wartime reciprocal trade agreement undoubtedly required some adjustment but was not an obstacle to the growth of trade.

Mexican trade in the middle of the twentieth century is largely identified with import substitution industrialization (ISI) policies that were designed to encourage economic development and, in particular, the growth of manufacturing. After the Mexican Revolution (1910-1917) and the return of institutional stability in the 1920s, Mexican presidents and policymakers focused on industrial development and a reduction in the nation's dependence on the United States. The goal of greater economic autonomy was a central part of post-revolutionary planning and included a wide range of measures that would be expanded and justified by ISI theory in the 1940s, 1950s, and 1960s. Policy measures included a series of laws and changes to the tariff codes, including the geographical and quantitative limits on foreign ownership of land and businesses, a series of industrial policies targeting specific industries, and trade restrictions. These included significant tariff increases in 1930, the 1935 Customs Law, the Transformation Industry Law (1941), the Law of Promotion of Transformation Industries (1946), and the Law of Promotion of New and Necessary Industries (1955). It also included the application of import licenses (1944) and their increased enforcement in the 1960s (Wallace, 1980). All of these policies focused on domestic industrial development and were supplemented by the creation of development banks and institutions such as Nacional Financiera (National Finance). Nacional Financiera was created in 1933 and greatly expanded in 1940 to provide financing for infrastructure development and industry after World War II.[2] Tariffs, import licenses, export taxes, development banks, and other policies designed to promote import substitutes were not always solely for the purpose of industrial development, however, nor were they necessarily meant to reduce ties to the United States. Two other primary goals, particularly for commercial policies, were to protect the balance of payments through controls on imports and promotion of exports, and to generate revenues via tariffs, import licenses, and export taxes.

The post-World War II implementation of ISI policies in Mexico are rightly considered part of an inward oriented trade and development strategy that significantly closed the economy. Esquivel and Márquez (2007) date the closing to the beginning of 1947, when a significant increase in tariffs was passed and authorities began to enforce an earlier 1944 law implementing import license requirements. It is probably more correct to call the ISI period one of managed trade rather than a closed economy since the former includes cases where the state decides which goods to import and export while the latter severely limits trade. Trade in the Mexican case continued to grow, including trade with the United States, although policy makers attempted to regulate it in favor of needed capital goods and intermediate inputs and, occasionally, to keep food supplies at home (Kate et al., 1980; De los Reyes, 2018). Tariff duties as a share of the value of imports remained flat until the late 1950s (Esquivel & Marquez, 2007, p. 336) while total trade taxes as a share of government revenue continued to fluctuate but declined significantly over the long run (Inegi, 2009, table 15.7). In addition, the trade-to-gross domestic product (GDP) ratio continued a long run increase after 1947 that lasted up to its local peak in 1956 (Inegi, 2009, tables 7.1, 16.2, 16.4; and author's calculation of the trade to GDP ratio). Consequently, the period of import substitution

[2] López (2012) shows that Nacional Financiera's financing of industry rose from just below two percent of GDP after the war to as much as 9% at its highest point in 1962. In some years, as much as 42% of its financing was from foreign sources.

does not appear to have reduced Mexican trade overall until at least the second half of the 1950s although it almost certainly reduced its growth compared to a counterfactual of free trade or fewer trade restrictions. Given that trade taxes continued a long run decline, import substitutions policies must be understood as having worked primarily through import licensing and other quantitative controls.

Table 1 shows the estimated compound annual growth rates by quinquennium for exports from Mexico, the United States and the world. The values are calculated with data from the IMF's Direction of Trade Statistics (2020). Regardless of the policies in place, exports continued to grow and in most quinquennium and over the long run, they kept pace with both the increasingly more open US economy and the rates of growth of world exports. The height of Mexico's ISI strategy was the 1960s and 1970s, but throughout the postwar period, trade and development policies could not focus solely on industrialization and import substitution because they were also needed in the management of trade deficits and price stability. Balance of payments problems and real appreciation of the peso due to price increases created repeated problems in the late 1940s and were a constant concern from the mid-1960s forward (Kate et al., 1980). The major crisis that began in 1982 is rightly viewed as a debt crisis, but from the perspective of trade it can also be viewed as a sudden stop crisis. Even prior to the announcement of default in August 1982, foreigners had decided that the prospects of the Mexican economy did not look as good as previously thought and stopped investing in the Mexican economy. Over-borrowing by the Mexican government was a key part of the problem and the emphasis in the debt crisis literature on government debt rather than on trade imbalances is appropriate, but the trade imbalances and real appreciation of the currency played important roles and were factors in the length of the crisis.[3]

Table 1. Average annual growth rate of exports, in percent

	Mexico	US	World
1960-1965	6.8	8.0	8.6
1965-1970	10.3	13.7	12.0
1970-1975	24.0	18.0	22.3
1975-1980	23.0	20.8	18.9
1980-1985	-3.5	7.6	0.4
1985-1990	16.8	8.4	12.5
1990-1995	8.8	8.8	8.5
1995-2000	18.5	9.6	5.0
2000-2005	4.4	6.2	10.1
2005-2010	7.6	2.7	7.6
2010-2015	7.4	3.1	1.5

Source: IMF, 2020; author's calculations

[3] At the time of the Latin American Debt Crisis, debt levels in a number of other non-crisis countries exceeded the level in Mexico and other Latin American defaulters. For example, in 1980, the ratio of debt-to-GDP was 32% in Mexico, and 49% in South Korea. But the ratio of debt-to-exports was 131% in Korea and 233% in Mexico (World Bank, 1987).

The financial crisis that began in 1982 ushered in the third period of Mexico-US trade relations shown in Figure 2. After 1982, Mexico began to dismantle its ISI policies and to completely remake itself along as a more open and less regulated economy. Openness also meant that it became much more integrated with the rest of the world (Lustig, 1998). It privatized hundreds of state owned enterprises, joined the General Agreement on Tariffs and Trade (GATT), removed restrictions on many types of foreign investment, reduced tariffs, began to eliminate quotas, and ultimately, signed the free trade agreement with the United States and Canada. Additional trade agreements with many more nations followed after NAFTA.

Looking back to Figures 1 and 2, we see a record of more than a century of Mexico-US trade under a wide range of exogenous historical conditions and endogenous policy decisions. Figure 1 begins during the dictatorship of Porfirio Diaz and the first great wave of globalization. Diaz's policies favored free trade and encouraged foreign investment, particularly from the United States. This period of classical liberalism was followed by the turmoil of the Mexican Revolution which began in 1910 and lasted until 1917, although institutional instability continued to roil the economy for some years thereafter. In the 1930s, partly due to the exigencies of the Great Depression, the international decline in trade volumes, and then the outbreak of World War II, Mexico moved towards a more nationalistic, less open set of policies. These were institutionalized after World War II and continued until the 1982 debt crisis triggered a set of structural reforms that opened the economy to trade and foreign investment. In all of these historical conditions and policy choices, the United States remained the dominant supplier of imports and purchaser of exports while the absolute value of trade between the two countries continued to grow.

The border industrialization program and the remaking of Mexico's economy

A perennial concern for policymakers in Mexico City was the US' desire for more land in northern Mexico. Separated from the capital by long distances and rough terrain, Mexico's northern border was in many ways more tied to the US economy than to the Mexican. Several policies were implemented to limit the influence of the US and to encourage the northern border to look south for its consumer goods and, where possible, its intermediate inputs. For example, the free trade zones (*perímetros libres*) that were established in the 1930s and the National Border Program (*Programa Nacional Fronterizo)* that was started in 1961 were viewed as means to increase the level of economic and cultural activities in the main border cities and to dilute the influence of the United States.

Mexico's attempts to lessen its dependence on the US economy were undermined in 1965 when it created the Border Industrialization Program (BIP).[4] The BIP was the

[4] The official name of the program was the Program for the Use of Excess Labor in the Border Region adjacent to the United States (*Programa de Aprovechamiento de la Mano de Obra sobrante a lo largo de la Frontera con Estados Unidos*).

formal arrangement that led to the development of Mexico's export processing zone, called the *maquila* industry. Its origins were in the Mexican government's response to the termination of the guest worker program with the United States. The 1942 guest worker program allowed large numbers of seasonal migrants to work in the United States, primarily in agriculture. When the program ended, many seasonal migrants were stuck in Mexican cities on the northern border and without jobs or the ability to work in the United States. In 1965, the same year as the cancellation of the guest worker program, Mexico's Secretary of Industry and Commerce, Octaviano Campos Salas, was invited to tour US owned manufacturing plants in the export processing zones of several Asian countries, including Hong Kong, Singapore, Malaysia and others (Taylor Hansen, 2003). On his return, he pushed for the creation of a Mexican export processing zone on its northern border as a means to employ the seasonal migrants who could no longer cross into the United States. While the short-run goal of the Border Industrialization Program was to create manufacturing jobs in the north, the long-run goal was economic development. The operation of what became known as the *maquila* industry shifted Mexican policy towards closer integration with the United States. In the years after 1965, US investment in Mexico moved away from extractive industries and towards manufacturing while Mexican policy became less focused on limiting US influence in the border region. Although it may not have been perceived as such, this was an about-face from the goal to reduce the northern border's economic ties to the United States. Mexican trade with the United States began a profound long-run shift.

Table 2 shows selected US imports from Mexico, 1970-1995, in five year increments and measured in current US dollars. The goods shown were the leading 3-digit categories for non-resource based manufactured goods. They were (1) Power generating machinery, other than electric (Standard International Trade Classification [SITC] 711); (2) office machines (SITC 714); (3) electric power machinery and switchgear (SITC 722); (4) equipment for distributing electricity (SITC 723); (5) telecommunications apparatus (SITC 724); and (6) road motor vehicles (SITC 732). In 1965, only one category was greater than $100 000 (telecommunications apparatus) and it barely exceeded that amount. By 1970, values ranged from $2 million to $42.8 million, and by 1985 they were $300 million to $1 277 000 000. What would become very strong growth in cars and car parts and telecommunications equipment (which includes televisions and other consumer electronics appliances) was clearly visible by 1985, more than five years before the beginning of negotiation for a trade agreement.

The growth of manufactured exports shown in Table 2 were also visible in the list of Mexico's top 10 exports to the United States in 1970 and 1985. Table 3 shows the 10 largest 3-digit merchandise exports ranked by their dollar values for 1970 and 1985. In 1970, merchandise exports were dominated by natural resource based products in general and agricultural products specifically. One-half of the top-10 were grown or raised, while two others (fish and petroleum) were not agricultural products but still reflected Mexico's traditional comparative advantages in resource-based exports. Two products were non-traditional manufactured goods (other electrical machinery and apparatus and telecommunications apparatus) and one was special transactions. Many

of the top agricultural and resource based products exported in 1970 were processed goods and in that sense, they were manufactured. The implication is that Mexico's manufacturing sector had a strong dependence on inputs from agriculture and its resource-based economy. Taken together, the top-10 exports accounted for 58% of total exports to the United States.

Table 2. Mexico's exports to the United States, 3-digit SITC manufactured goods categories, millions of US dollars

	1965	1970	1975	1980	1985	1990	1995
Power generating machinery, other than electric (SITC 711)	0.1	9.8	45.1	65.3	909.6	774.6	1 965.5
Office machines (SITC 714)	0.0	20.2	80.9	91.9	299.9	691.6	2 012.6
Electric power machinery and switchgear (SITC 722)	0.0	15.8	101.4	338.5	737.6	1 708.1	3 592.3
Equipment for distributing electricity (SITC 723)	0.0	2.1	28.7	159.5	618.7	1 621.9	3 339.2
Telecommunications apparatus (SITC 724)	0.1	42.8	244.1	708.7	1 277.0	2 605.4	6 136.5
Road motor vehicles (SITC 732)	0.1	9.3	74.8	184.6	805.8	3 655.6	10 188.0

Source: United Nations, 2020; author's elaboration

Several important changes can be seen by 1985. The first notable change was the development of Mexico's oil sector and the dramatic increase in exports of petroleum and related products. Second, other than the petroleum category which was more than five and one-half times greater than the second product category, the remainder of the top-10 exports were dominated by non-traditional, non-resource based manufactured goods. That is, seven of the ten were not resource dependent. The three exceptions were petroleum, petroleum products and vegetables. As manufacturing expanded between 1970 and 1985, so did manufactured exports. Tables 2 and 3 show clearly that the shift away from traditional resource based exports and towards manufactured goods began before the free trade agreement with the United States was conceived.[5] A third change was that the top ten were a larger share of the total exports, mostly due to the outsized importance of the petroleum category.

[5] Mexico's export growth has continued, as shown in Table 1. By 2018, it was the world's 12th largest exporter of merchandise goods and 7th largest if intra-European Union trade was excluded (World Trade Organization, 2019a).

Table 3. Top-10 Mexican exports to the United States, 1970 and 1985

SITC	1970 Top-10 products	Millions of $US	SITC	1985 Top-10 products	Millions of $US
054	Vegetables, roots & tubers, fresh or dried	137.2	331	Petroleum, crude and partly refined	7 152.6
061	Sugar and honey	100.0	724	Telecommunications apparatus	1 277.0
001	Live animals	78.4	711	Power generating machinery, other than electric	909.6
031	Fish, fresh & simply preserved	77.2	332	Petroleum products	811.7
931	Special transactions not classd.accord.to kind	69.7	732	Road motor vehicles	805.8
071	Coffee	67.7	722	Electric power machinery and switchgear	737.6
729	Other electrical machinery and apparatus	46.1	723	Equipment for distributing electricity	618.7
011	Meat, fresh, chilled or frozen	42.9	729	Other electrical machinery and apparatus	586.9
724	Telecommunications apparatus	42.8	931	Special transactions not classd. accord.to kind	547.4
331	Petroleum, crude and partly refined	41.8	54	Vegetables, roots & tubers, fresh or dried	487.6
	TOTAL of above	**703.7**		**TOTAL of above**	**13 934.8**
	Percent of total merchandise exports	57.7		Percent of total merchandise exports	72.0

Source: United Nations, 2020; author's elaboration

Gravity equations estimation

Historical data is suggestive but not conclusive. It suggests that Mexico's trajectory towards becoming a leading export economy and consistently one of the top 3 trade partners for the United States began before the free trade agreement, but it does not offer direct evidence. Nevertheless, as Irwin and Eichengreen (1998) show, current trade patterns reflect historical tendencies and often do so with a significant lag. What may superficially appear to be the result of a new agreement might actually be caused by other factors, such as dramatic changes in the exchange rate that Mexico experienced at the end of NAFTA's first year (Málaga et al., 2001), or the lagged effect of previous policy changes. In the 1960s, economic policy in Mexico began a dramatic shift towards encouraging U.S. investment in border manufacturing. The following decade, trade growth was faster than at any time since the end of World War II (see Table 1). In the 1980s, the country's entire development strategy and trade policy were overhauled, and reforms in U.S. trade policies were enacted to encourage international competitiveness in declining U.S. industries. All of these changes were in process at the time the free trade agreement was signed. And in addition to those changes in

the trading environment, the growth of global value chains in the 1990s (World Bank, 2017) and the rapid advances in new information technologies occurred at more or less the same moment. Taken together, it is impossible to determine the factors driving trade with a simple description of trade flows. Trade grew for most countries in the 1990s, but it began its dramatic increase in the 1970s (see Table 1).

In order to disentangle the impact of the trade agreement we estimate a gravity model, first for all countries and then separately for Mexico's bilateral trade. The gravity model of trade had been recognized at least since Tinbergen's (1962) work as a useful tool for describing bilateral trade flows, but until Anderson (1979) it was considered unreliable and possibly biased due to its lack of theoretical grounding. Anderson was part of the first generation of scholars to provide a theoretical framework connecting the gravity model to a widely accepted model of intra-industry trade with economies of scale. Bergstrand (1985, 1989) expanded Anderson's work but not until the work of Deardorff (1998) did economists have a strong theoretical base for using the gravity model for both Heckscher-Ohlin trade based on factor endowments and intra-industry trade with economies of scale. Head and Mayer (2014) review the development of the gravity model and its gradual acceptance by economists as theoretically grounded.

We deploy a gravity model to test whether the signing of the trade agreement was the significant determinant of increased US-Mexico trade, or whether bilateral trade flows were dependent on the individual characteristics of the trading partners, as noted earlier by Irwin and Eichengreen (1998). This work complements the paper by Trefler (1995) showing that traditional models based on factor endowments could not explain why so much predicted trade did not happen. Treffler's concept of missing trade was complemented by McCallum (1995) who showed that national borders mattered. McCallum hypothesized that his results were due to what he called home-bias, but the idea of home-bias is ultimately indistinguishable from the characteristics of destination and origin countries. Anderson and Van Wincoop (2003) show how to control for this to obtain unbiased results.

We implement this exercise using the bilateral trade database, 1948 to 2006, from the CEPII research center (Head et al., 2010). Feenstra (2004) and Redding and Venables (2004) both show that a fixed effects model can adjust for importer and exporter characteristics. We include a vector of variables, $Z'\ \Gamma_{ij}$ that describe each country. The estimating equation is:

$$\ln(Exports)_{ijt} = \alpha + \beta_1 \ln(GDP)_{jt} + \beta_2 \ln(GDP)_{jt} + \delta RTA_{ijt} + Z'\ \Gamma_{ij} + \mu_t + \epsilon_{ijt},$$

where $\ln(Exports)_{ijt}$ represents the log of exports from the origin country i to destination country j in year t; $\ln(GDP)_{it}$ and $\ln(GDP)_{jt}$ denote the size of the economy i and j measured in their GDP in the log form; RTA_{ijt}, our variable of interest, indicates whether there is bilateral trade agreement between countries i and j in the year t; Γ_{ij} includes a standard set of time-invariant controls such as ln(distance), contiguity, common language, and WTO membership. In addition, we include year fixed effects to control for macroeconomic shocks that affect all countries in the same year.

To fully exploit our panel data framework, we also control for origin and destination fixed effects to absorb any country-specific unobservables. Finally, we add the origin-by-destination fixed effects to purge any pairwise specific unobservable. Adding the pairwise fixed effects eliminates the time-invariant controls.

The baseline results using all trading partners from years 1948-2006 are shown in Table 4. Not surprising since it is one of the most robust empirical finding in international

economics, bilateral trade between two countries is proportional to size, measured by GDP, and inversely proportional to frictions such as the geographic distance. As theory predicts, the coefficient on the bilateral trade agreement variable, RTA (regional trade agreement), is positive and statistically significant at the one percent level. The results show that, on average, the bilateral trade agreements were effective in promoting trade for all trading partners. We note that the magnitude of the coefficient drops from 1.127 to 0.511 when we include origin-by-destination fixed effects.

Table 4. All countries pairwise trade

	All years		
	(1)	(2)	(3)
ln origin GDP	1.050***	0.727***	0.722***
	(0.001)	(0.007)	(0.005)
ln destination GDP	0.838***	0.564***	0.638***
	(0.001	(0.007)	(0.005)
RTA	**1.127*** **	**0.767*** **	**0.511*** **
	(0.014	(0.014)	(0.013)
ln distance	-1.032***	-1.270***	
	(0.004	(0.004)	
GATT/WTO member	-0.024***	0.175***	
	(0.007)	(0.010)	
1 for contiguity	0.528***	0.635***	
	(0.017)	(0.016)	
Common language	0.775***	0.732***	
	(0.008)	(0.008)	
GSP Dummy	0.647***	0.697***	
	(0.010)	(0.011)	
Full controls	Yes	Yes	
Origin and Destination Fixed Effect		Yes	
Origin by Destination Fixed Effect			Yes
Observations	624 145	624 145	622 364
R^2	0.610	0.679	0.832

Next, we repeat the above exercise by further restricting our sample to Mexico and its trade partners. The micro-foundations for this approach are explained in Yotov et al. (2016). Following their suggestions for a structural gravity model, we are able to examine the effect of bilateral trade agreements and in particular NAFTA, on Mexican trade flows. As Table 5 shows, the coefficient on RTA drops substantially and even becomes negative with no statistical significance when the fixed effects of the destination and origin countries are included (equations 2 and 3). In general, the

insignificant (and small) coefficient on RTA in the Mexico sample suggests that the RTA played a limited role in encouraging Mexican trade with other trading partners, including the United States.

Table 5. Mexico, bilateral trade

	All years		
	(1)	(2)	(3)
ln origin GDP	1.198***	0.386***	0.374***
	(0.013)	(0.049)	(0.049)
ln destination GDP	1.108***	0.588***	0.606***
	(0.012)	(0.046)	(0.046)
RTA	**0.345*** **	**-0.023**	**-0.019**
	(0.107)	**(0.077)**	**(0.077)**
ln distance	-1.546***		
	(0.047)		
GATT/WTO member	0.003	0.173***	
	(0.049)	(0.052)	
1 for contiguity	0.231*		
	(0.123)		
1 for common language	0.794***		
	(0.064)		
GSP dummy	0.083		
	(0.080)		
Full controls	Yes	Yes	
Origin and Destination Fixed Effect		Yes	
Origin by Destination Fixed Effect			Yes
Observations	9 714	9 702	9 702
R^2	0.651	0.842	0.842

As a final robustness check, we look at the lead-up to the implementation of NAFTA and the first years of its operation. This exercise serves two purposes. First, we ask whether there were anticipation effects that caused trade to expand before the agreement and immediately after. Since there is no clear evidence for how long businesses might have been in preparation to take advantage of the agreement, we use a 10-year and 5-year before and after control. Second, we take into account the possibility that the insignificant coefficient on RTA might be driven by the long span of our sample which may introduce noises into our sample. To parse out this potential source of bias, we restrict the sample to shorter 5 and 10 year periods before and after the enactment of the agreement. This allows us to focus on the adjacent years around the enactment of NAFTA. Table 6 shows that the results using samples 10-year or 5-year before and after 1994. Our results stay robust to both alternative samples, and we still find insignificant estimated coefficients on the RTA variable.

Table 6. Mexico, bilateral trade with before/after controls

	10 years before/after 1994			5 years before/after 1994		
	(4)	(5)	(6)	(7)	(8)	(9)
ln origin GDP	1.333***	0.287***	0.302***	1.353***	0.064	0.069
	(0.018)	(0.088)	(0.088)	(0.023)	(0.151)	(0.151)
ln destination GDP	1.191***	1.024***	1.030***	1.198***	1.113***	1.123***
	(0.017)	(0.085)	(0.085)	(0.022)	(0.144)	(0.144)
RTA	**0.008**	**-0.014**	**-0.017**	**-0.180**	**0.060**	**0.056**
	(0.130)	**(0.098)**	**(0.098)**	**(0.245)**	**(0.198)**	**(0.198)**
ln distance	-1.789***			-1.824***		
	(0.069)			(0.089)		
GATT/WTO member	0.245***	0.254***		0.191	0.189	
	(0.086)	(0.098)		(0.118)	(0.179)	
1 for contiguity	0.072			0.070		
	(0.198)			(0.257)		
1 for common language	1.074***			1.141***		
	(0.101)			(0.131)		
GSP Dummy	-0.120			-0.292**		
	(0.105)			(0.135)		
Full controls	Yes	Yes		Yes	Yes	
Origin and Destination Fixed Effect		Yes			Yes	
Origin by Destination Fixed Effect			Yes			Yes
Observations	4 776	4 764	4 764	2 534	2 513	2 513
R^2	0.697	0.876	0.876	0.720	0.905	0.905

Discussion

Several factors other than a formal agreement cause the US-Mexico trade relationship to be robust. The most significant factors are geography and income, as shown in the econometric estimates. The history of bilateral trade recounted earlier in the paper shows that a robust relationship has persisted through a wide variety of external and internal changes in both countries. Proximity to each other and the large market size of both countries ensures that trade flows are large and continuous. Other factors are important as well and were hinted at in the paper. Mexico's unilateral policy reforms in response to the crisis of the 1980s increased the volume of trade independently of and prior to the free trade agreement. Furthermore, there were less dramatic yet important changes at approximately the same time in the United States, as reflected in

federal passage of the Omnibus Trade and Competitiveness Act of 1988. The act was in response to the erosion of US competitiveness in several key sectors and attempted to rebuild manufacturing strength while increasing awareness of foreign markets. While it is unclear if the legislation succeeded in helping firms regain market share they lost to the Japanese, Koreans, Taiwanese, and others, it clearly represented a growing awareness that the long postwar dominance of global markets by US industry was over and that American firms could no longer assume technological leadership.

Another often overlooked factor supporting US-Mexico trade is the role of state and local governments on the border. Communities on the border benefit from jobs in transportation, logistics, wholesale and retail commerce, and the supply chains that have relatively recently become a major component of cross border commerce. State and local officials, together with a variety of private business interests favor a common perspective on cross border economic relations. That perspective seeks to develop new trade and business ties with the goal of increasing jobs and promoting prosperity, both of which help elected officials win elections.

What these ties and the recent economic history of the border show are extensive networks of cross border engagements that are independent of national capitals and the formal agreements they sign. This is not to argue that NAFTA or its replacement, the USMCA, do not matter. Signing a formal agreement reduced some uncertainty and acted as an official approval of trade relations. That was important, particularly when there was insufficient information about the trading partner. And while it is true that there is still a lot that US and Mexican citizens and businesses do not know about each other, it is also the true that several centuries of interactions between the two countries has led to a great range of commercial, professional, and personal ties that do not depend on a formal agreement signed by both nations.

Conclusion

This paper is not intended as an argument that the US-Mexico agreement accomplishes nothing. Rather, we want to put its accomplishments in historical perspective and to note that the agreement came along just as global trade began to increase rapidly and after both countries but especially Mexico had implemented a number of fundamental changes in economic policies. Mexico's increased openness and the U.S.' need to partner with Mexico in order to increase the global competitiveness of its firms happened independently of the trade agreement. On their own, those factors ensure that trade between the two countries would have increased with or without the agreement. These changes in policies had a profound effect on the volume of trade but are often unacknowledged factors hidden behind the rhetoric, both pro and con, about NAFTA. Furthermore, the long history of trade between the two countries, the existence of shared infrastructure on the border, the size of the two economies, and their physical proximity all worked to encourage stronger trade relations independently of the trade agreement.

Most casual observers of Mexico-US trade probably assume that the North American Free Trade Agreement created a massive amount of new trade. Depending on how one thinks about international trade and Mexico-US relations, this is either a positive or a negative result. A corollary of the assumption that the agreement is responsible

for massive amounts of new trade flows is that the termination of the agreement would have had strong effects on both economies. Both opponents and proponents of the agreement hold this view and is one reason why lobbyists engaged with the negotiations over the revised NAFTA and why news accounts portrayed the negotiations as high stakes. Today, after the successful renegotiation and implementation of the new agreement, the stakes may seem like a particular historical moment with no lasting impact, but it should be remembered that the new agreement has a six-year life span, after which it must be renewed. Given the rise of populism in the United States, renewal is not a certain outcome.

What the agreement did accomplish was a reduction in uncertainty, and we know that uncertainty about the future direction of trade policy can have a significant effect on trade flows (Handley & Limão, 2015). The reduction in uncertainty must certainly be credited with some share of the growth in trade, post 1993, but we have no way of measuring this with our current model, nor of knowing if the erratic behavior while in office of ex-President Trump may have reintroduced a higher level of uncertainty. It seems reasonable to think that confidence in the long-term commitment to open markets by the U.S. government must be diminished to some unknown degree.

Given that populism and economic nationalism are on the rise in the United States and Mexico, we should probably expect some level of increased volatility and uncertainty in US trade policies. If that is accurate, then it is important to consider what might happen if the free trade agreement were to be rescinded. If a future renewal of the agreement fails, Canada, Mexico and the United States would presumably return to an arrangement in which their WTO tariffs applied. In 2018, 49% of all non-agricultural imports entered the United States duty free. For those not duty-free, the trade weighted average tariff was 2.3 percent (2017). Mexico's non-agricultural imports had a zero tariff on 54% of merchandise imports while its trade weighted average tariff was 4.4% (World Trade Organization, 2019b, pp. 184 and 128). All costs are important and a return to WTO tariff rates would force some adjustments to supply chains and product sourcing, but it would hardly count as a catastrophe.

While the economic shock would be significant, the last 140 years of trade history, supplemented by a gravity model, show a high degree of continuity and growth in Mexico-US trade, though a wide range of policies and exogenous conditions. The two countries are more linked to each other than many observers assume. That fact is not a result of a trade agreement signed by two national governments, but is rooted in history, proximity, market size, and the complementarities of two distinct economies and cultures.

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