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# The Mexican and U.S. Economies after Twenty Years of NAFTA

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## Abstract

Contrary to the promises of the leaders who promoted it, NAFTA did not make Mexico converge to the United States in per capita income, nor did it solve Mexico's employment problems or stem the flow of migration. NAFTA did foster greater U.S.-Mexican integration and helped transform Mexico into a major exporter of manufactured goods. The benefits for the Mexican economy were attenuated, however, by heavy dependence on imported intermediate inputs in export production, as well as by Chinese competition in the U.S. market and domestically. The long-run increase in manufacturing employment in Mexico (about 400,000 jobs) was small and disappointing, while U.S. manufacturing plummeted by 5 million—but more because of Chinese imports than imports from Mexico. In both Mexico and the United States, real wages have stagnated while productivity has continued to increase, leading to higher profit shares and a tendency toward greater inequality.

**Keywords:** North American Free Trade Agreement (NAFTA), Mexican economy, U.S. economy, regional economic integration, manufacturing employment

**JEL Classifications:** F15, F16, O24, N10

The twentieth anniversary of the North American Free Trade Agreement (NAFTA) in 2014 provides a convenient opportunity to assess the accomplishments, failures, and challenges of this historic effort at regional economic integration between two advanced industrialized countries (Canada and the United States) and one middle-income, emerging nation (Mexico). Any such assessment is complicated by the fact that numerous intervening events and other policies have

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had profound effects on the economies of the three member nations, making it difficult to disentangle the impact of NAFTA compared with other causes. Furthermore, NAFTA was a complicated agreement, about 2,000 pages in length, which did reduce many trade barriers, but also included many exceptions to free trade as well as provisions (especially in regard to protection of property rights of foreign investors) that went well beyond the normal scope of a trade agreement. NAFTA was famously intended to “lock-in” the liberalizing reforms that Mexico had undertaken in the preceding years, making it in some respects a symbol of the entire “neo-liberal” approach to economic policy that Mexico adopted in the aftermath of the debt crisis of the 1980s. In spite of these difficulties, after twenty years it is now possible to evaluate how participation in this trade agreement has reshaped the economies of the nations involved and their interactions with each other, and what it did or did not accomplish. This article will attempt such an assessment with a primary focus on Mexico—where NAFTA was expected to have the most impact—and a secondary focus on the United States.<sup>1</sup>

### **The Promises and the Reality**

NAFTA was sold to the Mexican public by then-president Carlos Salinas de Gortari as a virtual panacea for the Mexican economy.<sup>2</sup> Salinas famously declared that NAFTA would transform his country into a first-world nation and that it would enable Mexico to “export goods not people.” These twin promises essentially implied that NAFTA would lead to convergence between Mexico and the United States in relative per capita income and wages. In the United States, then-president Bill Clinton made a parallel promise that NAFTA would eliminate the problem of undocumented Mexican immigration by creating more jobs at higher wages in Mexico, while

simultaneously increasing employment in U.S. industries that would take advantage of a prosperous Mexican market.

These optimistic forecasts were never realized. Especially, there has been no convergence between Mexico and the United States since NAFTA went into effect in 1994. Figure 1 shows three measures of Mexico's labor productivity and per capita income,<sup>3</sup> measured as percentages of their respective U.S. levels at purchasing power parity (PPP). All of these measures generally improved during the era of import substitution policies between the 1950s and the 1970s, indicating that Mexico was converging with the United States during those decades, although the productivity measures stagnated in the 1970s and the final increases in these measures (especially per capita income) around 1980 were associated with the unsustainable oil boom and borrowing binge under then-president José López Portillo. All three measures collapsed during the debt crisis of 1982-86, and fell again during the peso crisis of 1994-95.

[Figure 1 about here]

Although one cannot blame NAFTA for divergences that resulted mainly from two major macroeconomic crises, one of which occurred much earlier, one also cannot see any sign that this trade agreement put Mexico back on a path toward convergence even after the recovery from the peso crisis. There is no evidence of a long-term increase in Mexico's relative productivity or per capita income after either the country's initial trade liberalization (Mexico joined the General Agreement on Tariffs and Trade [GATT] in 1986) or the formation of NAFTA in 1994. On the contrary, as of the last year for which data are available (2011), Mexico's relative per capita income was no higher than it was in the early 1990s prior to NAFTA, and its relative labor productivity (by either measure shown) was lower than in the pre-NAFTA years. Even more distressingly, by 2011 all the convergence that Mexico had achieved between 1950 and 1980 had

been completely reversed; its labor productivity was a smaller percentage of the U.S. level (by either measure) than in 1950, and its per capita income was about the same percentage as in 1950 (around 30 percent in PPP terms).<sup>4</sup>

A similar lack of convergence is observed in the data on relative wages. In 1993, the average Mexican production worker in manufacturing earned 18 percent of the hourly compensation of a typical U.S. production worker; by 2012, this percentage had fallen to 16 percent.<sup>5</sup> Such persistent wage gaps (measured at market exchange rates) create a continued incentive for multinational corporations to locate manufacturing activities aimed at the North American market in Mexico, provided that productivity and quality are similar to what they would be in the United States, and that other costs (such as transportation or security) do not outweigh the savings in labor costs—and provided that other nations outside North America do not offer more advantageous cost conditions (more on this in the next section).

In regard to migration, the incentives are based on the wages that all workers (not only those in manufacturing) with comparable characteristics, such as similar age and education, can earn by migrating to the United States compared with staying in Mexico, and it is appropriate to use PPP adjustments to correct for differences in the cost of living. According to Hanson (2006), such adjusted wage differentials for similar types of workers are substantial, and these gaps are generally wider for workers with less education. For example, as of 2000, a 35-year old male Mexican worker could make 4.4 times more (adjusted for PPP) by migrating to the United States compared with staying in Mexico if he had 8 years of education, 2.9 times more if he had finished high school, and 2.4 times more if he had completed college.<sup>6</sup>

With persistent wage gaps of this order of magnitude, the incentives for Mexican workers to migrate to the United States continued unabated during the post-NAFTA period. Of course,

NAFTA did not create these large wage gaps between Mexico and the United States, and NAFTA is not responsible for the business cycle conditions (for example, the Mexican peso crisis of 1994–95 or U.S. Great Recession of 2008–9) that have made migration flows wax or wane. Nevertheless, NAFTA did not appreciably narrow the wage gaps that provide the chief economic incentive for Mexican-U.S. migration. Although exact numbers are understandably difficult to come by, it seems likely that several million “undocumented” Mexicans migrated to the United States in the two decades after NAFTA went into effect, while millions more tried to migrate but were apprehended at the border.<sup>7</sup>

### **Regional integration and bilateral trade**

Of course, the exaggerated claims of political leaders about fostering convergence and preventing migration were made to win over public opinion, even if those claims had little basis in serious economic analyses or forecasts.<sup>8</sup> In contrast to the inflated promises of the two presidents, many more sober analyses of NAFTA nevertheless argued that the agreement could forge a more competitive trading bloc in North America. By combining the relatively abundant labor of Mexico, capital and advanced technology of the United States, and natural resources of Canada, it was argued, the NAFTA members could better compete with the newly formed European Union (EU, launched in 1992) and the East Asian nations—led at the time by Japan and the so-called Four Tigers (South Korea, Taiwan, Singapore, and Hong Kong). The smaller economies of Canada and Mexico would reap economies of scale from enhanced access to the larger U.S. market, while Mexico was expected to attract large amounts of foreign direct investment (FDI) that would be lured by the potential for serving the entire North American

market from a lower-wage location. Meanwhile, U.S. and Canadian multinational corporations would benefit from the ability to rationalize their operations either vertically or horizontally across the three member countries, thereby lowering costs and making them more globally competitive.

This more pragmatic argument had greater prospects for success than the grandiose claims about fostering convergence and eliminating migration. However, in order for the new trading bloc to be successful, the three countries would have needed to implement a wide range of complementary policies, including maintaining competitive exchange rates, investing in the necessary public infrastructure and education, and addressing the development gap between Mexico and the other two NAFTA nations. After the poorer countries of the western European periphery (Ireland, Portugal, Spain, and Greece) joined the European Economic Community, which later evolved into the EU, they benefited from regional development (structural and social cohesion) funds financed by European community as a whole; no such development assistance was forthcoming in NAFTA (see Pastor 2001). Although the gap in per capita income between Mexico and its northern neighbors was even greater than the gaps between the western European nations, the Mexican government rejected the need for any development assistance with Salinas' famous slogan that Mexico wanted "trade not aid." However, Mexico soon learned the hard way that trade alone could not give the kind of economic boost that the country required, as we shall see in the following sections.

One thing that appears to have been a definite consequence of NAFTA is the increased degree of integration of industrial production in Mexico and the United States. The correlation coefficient for the growth rates of the two countries' monthly indexes of industrial production (shown in Figure 2) was only 0.23 for the period 1981–93, prior to NAFTA, but rose to 0.59

percent in 1994–2013 after NAFTA went into effect, even including the years of the peso crisis and recovery.<sup>9</sup> If we focus on the years after NAFTA *and* the recovery from the peso crisis, this correlation increased further to 0.83 in 1997–2013. Given the much larger size of the U.S. economy, we can infer that the Mexican industrial sector derives its dynamism mainly from the U.S. industrial sector and not vice-versa.

[Figure 2 about here]

Deeper industrial integration with the United States turned out to be a boon for Mexico in the late 1990s, but became a hindrance after U.S. industrial growth slowed down in the 2000s. In 1994–2000, U.S. industrial production grew at an average annual rate of 5.1 percent, while Mexico's grew somewhat more slowly at 3.9 percent due to the inclusion of data for the peso crisis of 1994–95. If we look at the period 1997–2000 after the recovery from the peso crisis, the two countries' average growth rates of industrial production were almost identical, at 5.3 percent for the United States and 5.4 percent for Mexico. However, during the 2001–13 period, average industrial growth dropped to 0.7 percent per year in the United States and 1.2 percent in Mexico. Moreover, as Figure 2 shows, this slowdown in industrial growth began even before the Great Recession of 2008–9. Thus, the integration of Mexican industries into North American supply chains has continued to date, but has proved to be much less beneficial for Mexico since U.S. industrial growth collapsed in the early 21<sup>st</sup> century.

The diminished dynamism of North American industrial production after 2001 is also apparent in the trade statistics. The implementation of NAFTA in 1994 had ushered in a period of intensified U.S.-Mexican trade during the remainder of the 1990s. U.S. nonpetroleum imports<sup>10</sup> from Mexico grew at a remarkable 25.2 percent annual rate (in real terms) between 1993 and 2000, more than double their growth rate in the early years of Mexico's trade

liberalization (1987–93), as shown in Table 1. At the same time, the share of Mexico in total U.S. nonpetroleum imports increased from 6.7 percent in 1993 to 11.4 percent in 2000 (Table 1). During those same years, the share of the United States in total Mexican exports rose from 82.7 to 88.7 percent, while the U.S. share of total Mexican imports increased from 69.3 to 73.1 percent (Table 2).

[Tables 1 and 2 about here]

However, when the region's industrial growth began to slow down after 2001, these increases in the intensity of U.S.-Mexican trade either ceased or were reversed, primarily as a result of sharply increased Chinese penetration of North American markets. Between 2000 and 2007, the average annual growth rate of U.S. nonpetroleum imports from Mexico slowed to only 5.6 percent, while the growth rate of imports from China was almost four times higher at 20.4 percent. As a result, the Mexican share of U.S. nonpetroleum imports remained roughly constant (11.3 percent in 2007 versus 11.4 percent in 2000), while the Chinese share more than doubled from 9.1 to 19.7 percent between 2000 and 2007. In an accounting sense, the jump in China's share came more at the expense of other U.S. trading partners rather than Mexico, but numerous studies have shown that potential Mexican exports were displaced by similar Chinese products and that the Mexican share would likely have grown much larger in the absence of the extraordinary growth of Chinese exports to the U.S. market during that period.<sup>11</sup>

Perhaps the most dramatic sign of a decline in regional integration in the 2000–7 period was the drop in the U.S. share of Mexican imports from 73.1 percent in 2000 to 49.5 percent in 2007 (Table 2). During the same period, the Chinese share of Mexican imports rose from 1.7 to 10.6 percent and the other Asian share increased from 10.0 to 17.6 percent. In contrast, the U.S. share of Mexican exports dipped more modestly from 88.7 to 82.1 percent between 2000 and



2007, so Mexico continued to be highly dependent on the U.S. market for its exports.

Finally, in a third post-NAFTA phase (2007–13), while overall U.S. nonpetroleum imports grew very slowly (only 1.5 percent per year) due to the Great Recession and the slow recovery thereafter, imports of such goods from Mexico grew faster than this average rate and slightly faster than imports from China (4.4 percent for Mexico versus 4.3 percent for China). As a result, the Mexican share of U.S. nonpetroleum imports began to rise again, even though the Chinese share also continued to increase (see Table 1). Also in this last phase, the U.S. share of total Mexican imports remained just below 50 percent while the Chinese share rose further from 10.6 to 16.1 percent, and the U.S. share of Mexican exports continued to decline gradually (to 78.8 percent, the lowest level since the adoption of NAFTA). On the export side, Mexico's effort to diversify its destination markets via other trade agreements (outside of NAFTA) have thus been only modestly successful.

One important factor in driving these changes in industrial growth and trade flows is the large swings in the two countries' real effective exchange rates (REERs), shown in Figure 3. Although the peso was at a relatively high value when NAFTA went into effect on January 1, 1994, it depreciated sharply in the currency crisis that erupted at the end of that year and continued into 1995. With the U.S. dollar also at a relatively low value in the mid-1990s, both Mexico and the United States had relatively competitive exchange rates during the next several years. This contributed to industries staying or locating in North America in the late 1990s, even if some of them relocated part of their production processes and employment from the United States to Mexico (as discussed further below). However, around 1999–2002, both the Mexican and U.S. REERs appreciated to very high levels, making both countries much less attractive locations for manufacturing industries, and it was after that appreciation that their industrial

growth and bilateral trade slowed down as we saw previously.

[Figures 3 and 4 about here]

Another major factor is what Dussel Peters and Gallagher (2013) call “NAFTA’s uninvited guest”: China. The rapid increase in Chinese penetration of global markets during the early 2000s was caused by many factors, including the entry of China into the WTO in 2001, its large labor force with low domestic wages, and its domestic reforms and industrial policies. Low transportation costs and the information technology revolution also facilitated the globalization of production in the late 1990s and early 2000s, and China was poised to take advantage of these trends at that time. However, another reason why Chinese exports expanded so rapidly in the late 1990s and early 2000s was the undervaluation of the Chinese currency in the late 1990s and early 2000s. As shown in Figure 4, the Chinese yuan started out the NAFTA period at a high real value relative to both the U.S. dollar and Mexican peso, following a 1994 currency reform in China and the Mexican devaluation of 1994–95, but then depreciated sharply in real terms through the early 2000s. The depreciation of the yuan gave China a significant competitive edge both in the U.S. market in general and relative to Mexico in particular, since China and Mexico export similar mixes of products. After the yuan appreciated significantly in the 2007–13 period<sup>12</sup>—and ocean shipping costs also rose during that period as a result of increased energy prices—Mexico’s share of U.S. nonpetroleum imports began to grow again, although China’s share continued to increase (albeit at a slower pace) in both the U.S. and Mexican markets.

## **Employment and Wages**

If either Mexico or the United States was going to get a big boost in employment from

the trade provisions of NAFTA, it would have had to come mainly from increased exports of manufactures, which account for the vast majority of the trade between the two countries. Figure 5 pieces together the best available data for employment in the manufacturing sector of Mexico during the years shown (1988–2013). Total employment in Mexican manufacturing grew by about 900,000 jobs in the first five years of NAFTA (comparing the Census figures for 1993 and 1998), and probably about 1 million in the first seven years (complete data for 2000 are not available as only quinquennial Census data are available prior to 2007, but the data for the maquiladoras indicate continued growth up to 2000—and most of the job growth occurred in the maquiladoras). Although that was impressive growth in employment at the time, the number of manufacturing jobs in Mexico then shrank by about 500,000 in the 2000s, leaving a net increase from 1993 to 2013 of only about 400,000. Given that the Mexican labor force has increased by about 950,000 per year throughout the NAFTA period,<sup>13</sup> we can see that the long-term net increase in manufacturing employment over the last two decades amounted to less than half of one year’s increase in the size of the Mexican labor force, and hence has made only a small dent in the country’s long-term employment needs.

[Figure 5 about here]

There are several reasons why the long-term increase in Mexican manufacturing employment was smaller than expected. First, although the gross value of Mexico’s exports increased dramatically post-NAFTA, a large portion of the increased exports consisted in products assembled from imported intermediate goods (parts and components), leading to relatively little value added and hence relatively small job creation in the export industries. The maquiladora plants were the most extreme case, as imported intermediate inputs accounted for about three-quarters of the value of their exports (and hence value added was only about one-

quarter) in 2006, the last year for which separate data for the maquiladoras were released. But the maquiladoras accounted for roughly half of Mexico's manufactured exports from the inception of NAFTA through 2006, and many of the non-maquiladora export industries also had a high degree of reliance on imported intermediate goods.

Second, although Mexico has achieved large bilateral surpluses in goods trade with the United States, reaching \$112 billion in 2013, these bilateral surpluses are entirely offset by similarly large deficits with other countries (led by a \$101 billion deficit with Asia, of which \$55 billion was with China alone, plus a \$25 billion deficit with Europe),<sup>14</sup> so that Mexico gets no net employment boost from its trade overall. Indeed, on a multilateral basis Mexico actually has a significant trade deficit in manufactures, offset mainly by its surplus in petroleum (Moreno-Brid 2013). Third, contrary to many expectations, the industries that grew the most in the long term were ones that emphasized highly skilled rather than unskilled labor. Mexico's export industries experienced a significant quality upgrading after NAFTA and the peso crisis, leading to rising demand for more educated workers (see Esquivel and Rodríguez-López 2003; Verhoogen 2008). The export industries that are most intensive in less-skilled labor, such as apparel, have largely left Mexico for lower-wage locales in Asia or Central America, while the most successful export industries, such as electronics and transportation equipment (mostly automobiles, plus the still small but rapidly growing aerospace sector), require more education and training for their workers. This industrial upgrading and the increased skill requirements are in many respects good for the long-term development of the Mexican economy, but they have meant that the net increases in total manufacturing employment associated with exports have been much more limited than expected. Finally, the slower rate of industrial growth and loss of U.S. market share to China since 2001, discussed earlier, have also reduced employment growth in Mexico's

manufacturing sector.

On the U.S. side, manufacturing employment has shrunk by about 5 million jobs since China joined the WTO in 2001 and the financial crisis and Great Recession of 2008–9, representing a decline of nearly one-third since the cyclical peak of 17.6 million in 1998 (see Figure 6). In contrast, there is no obvious downturn in U.S. manufacturing employment when NAFTA was formed in 1994, at which time the U.S. economy was experiencing a cyclical recovery from the recession of 1990–91. This does not necessarily mean, however, that post-NAFTA trade with Mexico had no causal impact on U.S. manufacturing employment—the question is what was the direction and magnitude of that impact. Scott (2011) has estimated that the increase in the U.S. trade deficit with Mexico from 1993 to 2010 caused a total net loss of 682,000 U.S. jobs, of which 415,000 were lost in the manufacturing sector. Scott’s estimates carefully control for the net effects of jobs created by exports as well as jobs lost due to imports, and use input-output methods to calculate the impact on other sectors beyond those directly impacted by the trade. Interestingly, although this could be a coincidence, his number of net manufacturing jobs lost in the United States as of 2010 is roughly the same magnitude (around 400,000) as the net increase in Mexican manufacturing jobs that we observed earlier for the entire period since 1993, which lends plausibility to his estimate.

Although a loss of 415,000 manufacturing jobs is not inconsiderable, it represents less than 10 percent of the total decline of about 5 million in U.S. manufacturing employment over the past two decades. Estimates of job losses caused by U.S. trade with China show that these are an order of magnitude larger than those attributed to trade with Mexico: 2.7 million according to Scott (2012), based on an input-output analysis of the impact of the U.S.-China trade deficit; 1.5 million according to Autor et al. (2013), based on econometric estimates of the employment

impact of supply-shock driven increases in U.S. imports from China.<sup>15</sup> Moreover, Scott's estimates for the employment effects of U.S. trade deficits with Mexico don't necessarily measure the impact of NAFTA *per se*, because the U.S. trade deficit with Mexico would probably have increased to some extent after 1994 even in the absence of a trade agreement (especially given that the overall U.S. trade deficit has increased so much since then).

Furthermore, Scott's estimates do not take into account the fact that a significant portion of the gross value of Mexican exports to the United States consists in the value of intermediate goods imported from other countries, especially in Asia and Europe, and assembled in Mexico, so not all of the jobs apparently "lost" to Mexico are actually found in Mexico—some of them may be found in countries such as Korea, China, Japan, or Germany.

[Figure 6 about here]

Moreover, one could argue that the issue of how many jobs have "moved" from the United States to Mexico is essentially moot, because major losses of U.S. manufacturing jobs were inevitable in the era of the globalization of production, the revolution in information technology, dramatic reductions in transportation costs (especially due to containerized cargo—see Bernhofen et al. 2014), and the rise of the emerging market nations. Trade agreements like NAFTA and the WTO certainly helped to facilitate the globalization of production by reducing trade barriers, but they were not the only cause. If some U.S. jobs had not moved to Mexico, they probably would have moved somewhere else instead, and most likely to a country or region (such as China/Asia) where the trade would be less advantageous for the United States. Mexican export production is much more likely to be part of supply chains that run through the United States, and which include either U.S. intermediate goods or U.S. final assembly, compared to the export production of China and other East Asian nations (where the supply chains are more

concentrated in the Asian region).

In spite of the large U.S. trade deficits with both Mexico and China, in comparative terms Mexico is a much better market for U.S. exports than China: in 2013, Mexico purchased \$182 billion of U.S. exports, while China purchased only \$114 billion; the corresponding numbers for U.S. imports were \$442 billion from China versus \$287 billion from Mexico.<sup>16</sup> Thus, U.S. trade with China is far more lopsided than U.S. trade with Mexico, and one could argue that in the absence of NAFTA and increased trade with Mexico, net U.S. employment losses in manufacturing and related activities might have been even larger than they actually were.

Nevertheless, it is abundantly clear that the optimistic forecasts of U.S. job gains from NAFTA (and other trade agreements) made in the early 1990s have not come true. The forecasts of increased jobs due to rising exports to Mexico as a result of NAFTA rested mainly on the expectation that U.S. industries would ship capital and intermediate goods to Mexico for use in assembly and processing operations, with the finished products returned to the United States—essentially, the original maquiladora model writ large. It is true, as noted earlier, that U.S. imports from Mexico are more likely to contain significant U.S. content than U.S. imports from other parts of the world. Nevertheless, as reflected in the trade statistics examined earlier,<sup>17</sup> there has been a notable shift in Mexico's sourcing of imported inputs in the new millennium. This has resulted in a triangular pattern of trade, in which Mexico increasingly obtains its imports of capital and intermediate goods from outside North America (primarily Asia, and secondarily Europe), but continues to focus its exports principally on the U.S. market (hence, Mexico's large trade deficits with Asia and Europe and its correspondingly large surplus with the United States). Or, to put it another way, the entire North American industrial structure with which Mexico was trying to integrate in the 1990s began to disintegrate after 2001, with the result that

manufacturing production became more globally (rather than regionally) integrated, after which manufacturing employment diminished in both Mexico and the United States (but much more so in the latter). This pattern does vary by industries—for example, the automobile complex has remained much stronger in Mexico and the United States together compared with, say, textiles and apparel (Dussel Peters and Gallagher 2013). But any expectations that manufactured exports would be boosted by NAFTA enough to lead to massive job creation in Mexico and at least modest job creation in the United States (as predicted, for example, by Hufbauer and Schott 1992) certainly have not been realized.

In regard to real wages for manufacturing workers, these have stagnated completely in Mexico (where employment grew modestly) and risen to a limited extent in the United States (where employment shrank significantly) since NAFTA, as shown in Figure 7. In Mexico, real compensation per hour recovered in the late 1980s, essentially recuperating the losses suffered during the debt crisis earlier in that decade, then fell again after the peso crisis of 1994–95, and eventually (by around 2003) recovered from the latter, but as of 2013 still had not recovered to its peak level of 1994 (when NAFTA went into effect, and before the effects of the peso crisis reached the labor market). Clearly, many other factors have affected Mexican wages, including the need to compete with China and other emerging market nations for investment and jobs as well as a persistent excess supply of labor (much of it employed with very low productivity in the informal sector), but there is no evidence of any long-term increase in real earnings in the sector that produces most of the country’s exports since NAFTA went into effect.

[Figure 7 about here]

For the United States, real compensation per hour increased in the late 1990s, when the country achieved full employment during the “new economy” boom, and then flattened out after



2003 (except for an anomalous upward blip in the recession year of 2009, which could be due to a larger proportion of lower-wage production workers losing their jobs in that year). In sum, Mexico has done relatively better than the United States on the employment side in manufacturing, but with no long-term increase in real earnings, while the United States has done somewhat better than Mexico on the earnings side, but with massive reductions in employment.

In both countries, these increases in real compensation for manufacturing workers have chronically lagged behind the growth of labor productivity in the manufacturing sector throughout the NAFTA period. In order to ensure comparability of the sectoral productivity data, we use a common source—the Groningen Growth and Development Centre 10-Sector Database—which, unfortunately, provides data only through 2005.<sup>18</sup> Similarly comparable wage data are not available, however, so for wages we use the total compensation data provided by each country’s own statistical agency (the same sources used in Figure 7). During the 1994–2005 period, real manufacturing output per employee in Mexico grew at an average annual rate of 2.2 percent, while real compensation per employee in manufacturing grew at only 0.1 percent per year. In the United States, over the same period, output per employee grew at an average annual rate of 4.7 percent, while real compensation per employee grew at 1.2 percent per year. Although these data cover only a little more than the first decade of NAFTA, the data shown in Figure 7 indicate that if anything the growth of real compensation slowed down even more in the years after 2005 in both countries, and in Mexico there has been virtually zero growth in real compensation per hour (or per employee) since that time. And, although the comparable productivity data only go up to 2005, data from national sources show that labor productivity has continued to increase in the manufacturing sectors of both nations in spite of the virtually flat trends of real compensation in both countries since 2005.

The fact that real wages grew so much more slowly than labor productivity in both economies (and real wages didn't grow at all in Mexico) signals that firms were able to increase their gross profit margins (at least relative to unit labor costs) from their manufacturing operations in both countries during the NAFTA period. Of course, this growing gap between productivity and wages in the production of tradable goods was influenced by many other factors besides NAFTA, including (but not limited to) other trade agreements, Chinese competition, macroeconomic policies, technological transformations, broader labor market conditions, and globalization generally. Nevertheless, the outcome—workers capturing a lower share of value added in the internationally competitive manufacturing sector—is consistent with what many critics of NAFTA, including the present author (Blecker 1996), predicted *ex ante*. That is, NAFTA along with other liberalization measures and the globalization process generally facilitated greater mobility of capital between countries, thus enhancing the bargaining power of employers relative to their employees, thereby contributing—to some degree—to greater inequality in society (see also Rodrik 1997; Bivens 2006).

How much overall inequality in the household distribution of income increased or decreased in each country after NAFTA depends on many other factors besides this direct impact of trade on wages and the labor share in tradable goods industries. These other factors include changes in the degree of progressivity of fiscal policies, trends in the relative supply and demand for different skill-grades of labor, and whatever forces are driving the incomes of the super-rich—for example, the top one percent of Piketty and Saez (2003) in the United States and the Mexican billionaires analyzed by Guerrero et al. (2009). The evidence generally suggests that income inequality has increased overall in the United States in the past two decades, while the evidence is more mixed for Mexico.<sup>19</sup> What seems clear, however, is that in the sector of the

economy most directly affected by trade liberalization (manufacturing), the impact of NAFTA and other trade liberalization measures, along with increased trade and globalization generally, has been mostly in a disequalizing direction at least between capital and labor—and also, according to many studies, between more and less skilled workers as well.<sup>20</sup>

## **Conclusions**

NAFTA did not live up to its promises of increasing employment, raising wages, and promoting convergence between the Mexican and U.S. economies. It is easy to dismiss these failures as the result of the intervention of other, unforeseen circumstances, from the rise of China to various financial crises, and to say that NAFTA was simply “oversold.” Of course, NAFTA cannot be given the blame (or credit) for everything that has happened to these two neighboring economies in the last two decades. Nevertheless, as suggested by Esquivel (2014), the failure of NAFTA to live up to the promises of the political leaders who promoted it should at least give caution to citizens and voters today when government leaders make similarly strong claims about the alleged benefits of new trade agreements (such as the U.S.-sponsored Trans-Pacific Partnership, currently being promoted by the Obama administration) or domestic reforms (such as the energy, labor, and telecommunications policies of president Enrique Peña Nieto in Mexico). More broadly, the experiences of the Mexican and U.S. economies since NAFTA provide important lessons about the limitations and drawbacks of U.S.-promoted trade agreements as vehicles for fostering economic growth and equitable development.

One of the few things that can clearly be attributed to NAFTA is the greater integration of the two countries’ industrial sectors, as demonstrated by the increased correlation of their growth

rates after NAFTA and the recovery from the peso crisis. But, as we also saw, the increased integration of Mexican industries into U.S. supply chains proved to be a mixed blessing to Mexico, resulting in a short-lived boom at the end of the 1990s followed by near stagnation since 2001 and the financial crisis and recession of 2008–9. Moreover, there are signs of regional disintegration and greater global integration since 2001, with Mexico shifting its imports (including its sourcing of intermediate inputs) more toward Asia and away from the United States. In effect, Mexico is now participating relatively more in global supply chains and relatively less in purely North American ones, with the partial exception of certain sectors such as automobiles where regional integration remains strong. At best, Mexico seems to be having a more robust cyclical recovery of manufacturing employment in the last few years, while U.S. manufacturing employment has remained about 5 million below its peak level in the late 1990s, and real wages have not increased significantly in the past decade in the United States or the past two decades in Mexico. Overall, the liberalization of trade and investment flows—due not only to NAFTA, but also to many other policies and agreements—appears to have contributed to increased inequality between capital and labor as well as between different categories of workers, although the final impact on the household distribution of income is of course the outcome of many other forces that are beyond the scope of this article. On the whole, the potential for a creating a more competitive and dynamic trading bloc in North America, with widely shared benefits for workers in all the member countries, has not been realized to date; only time will tell if this potential will be more fully exploited in the coming years than it has been in the first two decades of NAFTA.

## Notes

<sup>1</sup> For analyses of the impact of NAFTA and the earlier Canada-U.S. Free Trade Agreement of 1989 on the Canadian economy see Jackson (2003) and Trefler (2004).

<sup>2</sup> See the quotes from Salinas in Esquivel (2014).

<sup>3</sup> A fourth measure, relative per capita income measured by expenditure-side real GDP per person at chained PPPs, is almost identical to the similar measure shown at current PPPs, and hence is omitted to avoid cluttering the graph.

<sup>4</sup> The dismal performance of average productivity in the entire Mexican economy over the last few decades is largely explained by the shift of labor into informal activities in the service sector (see Ros Bosch 2013). As discussed below, Mexico's productivity in manufacturing has continued to grow, albeit at a modest rate, since NAFTA.

<sup>5</sup> Source: U.S. Bureau of Labor Statistics (BLS), "International Comparisons of Hourly Compensation Costs in Manufacturing, 2012" (released August 9, 2013), and author's calculations.

<sup>6</sup> Author's calculations based on data in Hanson (2006, Table 3, p. 893).

<sup>7</sup> According to studies cited in Hanson (2006), the total population of illegal Mexican immigrants in the United States increased from about 1 to 2 million in 1990 to around 6 million in 2004–5. Caution must be taken in deducing the amount of the increase because these numbers come from different studies that used different methodologies, but it seems likely that around 3 to 4 million Mexican immigrants entered the United States in an undocumented status during the 1990s and early 2000s. Migration then fell off in the period after about 2006 due to increased U.S. border enforcement efforts and the U.S. recession of 2008–9. Apprehensions reached over 1,000,000 per year in the late 1990s (Hanson 2006), although these numbers likely include repeated efforts at border crossing by some individuals.

<sup>8</sup> Most *ex ante* forecasts of the economic impact of NAFTA predicted much more modest gains (or losses) than what the two presidents implied in their exaggerated claims, although there were some

exceptional studies that predicted larger impacts. See Blecker (1996) and Cohen et al. (2003, chap. 12).

<sup>9</sup> Correlation coefficients and growth rates for industrial production are author's calculations from the same data sources given for Figure 2. I am indebted to Gerardo Esquivel for suggesting this way of analyzing Mexican-U.S. economic integration and for supplying historical data for Mexico.

<sup>10</sup> We focus on nonpetroleum imports here to make the Mexican share more comparable to the Chinese share, because China does not export petroleum to the United States. Also, NAFTA did not liberalize the petroleum sector in Mexico. Growth rates are computed using real imports at chained 2009 prices, as explained in the note to Table 1.

<sup>11</sup> See, among others, Gallagher et al. (2008), Feenstra and Kee (2009), Hanson and Robertson (2009), and Dussel Peters and Gallagher (2013).

<sup>12</sup> The rise in the real value of the yuan compared with the dollar and peso in the later years shown in Figure 4 is mainly the result of a nominal revaluation managed by the Chinese monetary authorities; during the 2005–13 period, Chinese inflation exceeded that of the United States but was less than that of Mexico. At the micro level, Chinese real wages were increasing rapidly during this period, while as shown below U.S. and Mexican real wages were largely stagnant.

<sup>13</sup> Author's calculations based on data for 1993–2012 (2013 was not available) from World Bank, *World Development Indicators*, online database, <http://databank.worldbank.org/data/home.aspx>, downloaded April 6, 2014.

<sup>14</sup> Data from INEGI. Due to small surpluses with other nations, mainly in Latin America, Mexico's overall deficit in goods trade for 2013 was only \$1 billion.

<sup>15</sup> The 1.5 million figure is the sum of the estimated reductions of 548,000 for 1990–2000 and 982,000 for 2000–2007, from Autor et al. (2013, p. 2140). The same study finds that supply-shock driven increases in U.S. imports from China caused significant reductions in U.S. wages for many categories of workers.

<sup>16</sup> As reported in the U.S. International Trade Commission's Interactive DataWeb,

<http://dataweb.usitc.gov/>. The numbers given here are for U.S. imports for consumption (c.i.f.) and U.S. domestic exports (f.a.s.), where the latter are defined as exports produced in the United States. In contrast, the more commonly reported U.S. export data from BEA and Census are for total exports, which also include “foreign exports” or goods imported into the United States and re-exported to Mexico or other countries. Clearly, the domestic exports figure is the more meaningful one, and it corresponds closely to what Mexico reports for its imports from the United States. Since U.S. re-exports to Mexico amounted to \$44 billion in 2013, the difference is not trivial in the Mexican case.

<sup>17</sup> The data in Table 2 show Mexican imports of all goods, but for the entire period 2001–12, the share of intermediate goods in total Mexican imports averaged 74 percent (data from INEGI, presented in Ibarra and Blecker, 2014, Table 1). Most likely, the share of final consumption goods is higher than average in Mexican imports from China, while the share of intermediate and capital goods is higher than average from other Asian countries such as Korea and Japan.

<sup>18</sup> The methodology is described in Timmer and de Vries (2007) for the Latin American countries and van Ark (1996) for the industrialized countries; the data (including a 2008 update of van Ark’s) are available for download at <http://www.rug.nl/research/ggdc/data/10-sector-database>. We use output per employee for this comparison because output per hour is not available in this data set for Mexico, and for consistency, we measure workers’ remuneration here as real compensation per employee.

<sup>19</sup> See Mishel et al. (2012) and updates of the Piketty and Saez (2003) data available on Emmanuel Saez’s website, <http://elsa.berkeley.edu/users/saez/>, on rising inequality in the United States. For Mexico, Gini coefficients and other standard indicators of inequality in the household distribution of income generally show rising inequality from the 1980s through the mid-1990s, and then decreasing inequality in the late 1990s and early 2000s (Esquivel et al. 2010). The period of rising inequality in Mexico coincided with the country’s opening to trade, via both GATT and NAFTA. However, other forces besides trade (mainly, increased progressivity of fiscal policies and an increase in the relative supply of more skilled labor) seem to have been the main causal factors during the period of declining Mexican inequality

(Esquivel et al. 2010). Also, the evidence of declining Mexican inequality in the late 1990s and early 2000s is based on data sources that do not allow the separate computation of the income of the super-wealthy (top one percent or higher), so the appearance of diminished inequality could be misleading. Guerrero et al. (2009) show that Mexico has a comparatively high ratio of billionaire's net worth to GDP and that this ratio generally increased during the same period when conventionally measured Gini coefficients were falling. See also Nicita (2009) on the net impact of trade on Mexico's income distribution and the article by Galbraith in this issue on overall trends in wage inequality in all three NAFTA countries.

<sup>20</sup> On the impact of trade liberalization on the wage premium for more skilled (more highly educated) workers, see, among many others, Revenga and Montenegro (1998), Esquivel and Rodríguez-López (2003), and Hanson (2004) on Mexico, and Bivens (2008) and Krugman (2008) on the United States.



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Table 1

**Growth Rates and Shares of U.S. Nonpetroleum Imports from Mexico, China, and Other Countries**

	Percentage share in total U.S. nonpetroleum imports				
	1987	1993	2000	2007	2013
Mexico	4.5	6.7	11.4	11.3	13.4
China	1.7	5.9	9.1	19.7	23.2
Other countries	93.8	87.4	79.5	69.0	63.5
	Average annual growth rate of real nonpetroleum imports (in percent per year)				
	1987–1993	1993–2000	2000–2007	2007–2013	
All countries		5.2	14.6	5.8	1.5
Mexico		12.4	25.2	5.6	4.4
China		29.1	23.2	20.4	4.3
Other countries		4.0	12.8	3.3	0.1

*Sources:* U.S. Bureau of Economic Analysis (BEA), International Transactions Accounts, Release of March 19, 2014 (Tables 2a and 2b), and National Income and Product Accounts, release of March 27, 2014 (Table 4.2.4), [www.bea.gov](http://www.bea.gov); Petróleos Mexicanos (Pemex), *Anuario Estadístico* (various years), [www.pemex.com](http://www.pemex.com); U.S. Census Bureau, FT900: U.S. International Trade in Goods and Services, December 2013, [www.census.gov](http://www.census.gov); and author's calculations.

*Notes:* Percentages may not add to exactly 100.0 due to rounding. U.S. petroleum imports from Mexico were taken from Pemex up to 2007 and Census for 2013, and were subtracted from total imports from Mexico to get nonpetroleum imports from Mexico (all U.S. imports from China are nonpetroleum). Shares were calculated using nominal values; growth rates were calculated based on real imports where nominal imports in current dollars were deflated by the chain-type price index for nonpetroleum imports. Data for 2013 are preliminary.

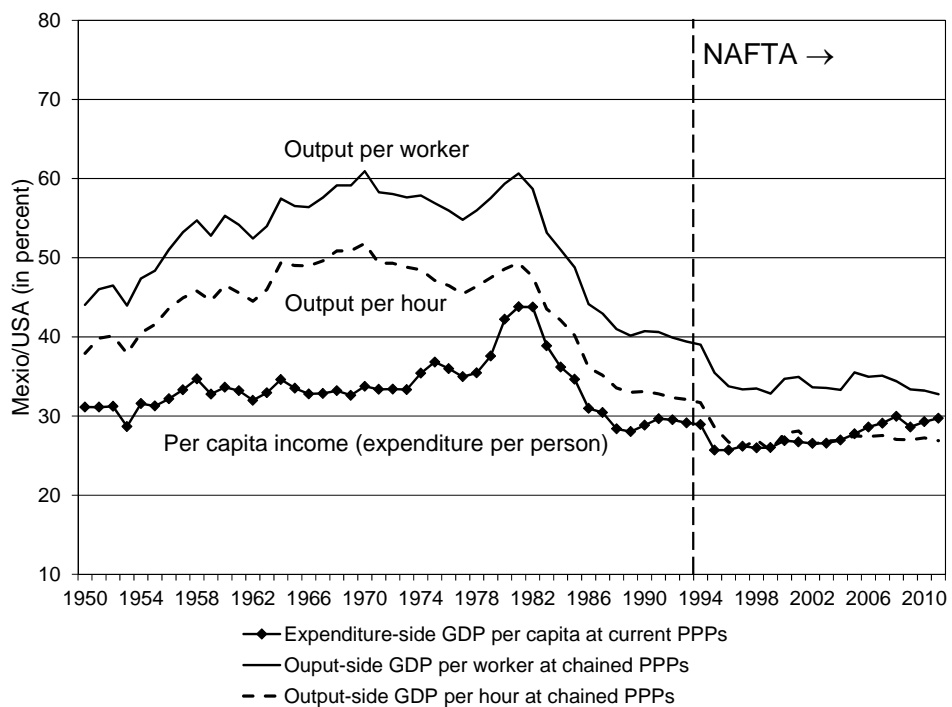
Table 2

**Country Composition of Mexico's External Trade (percentages of total trade)**

	1987	1993	2000	2007	2013
<u>Exports: Destination country</u>					
United States	69.2	82.7	88.7	82.1	78.8
China	n.a.	0.1	0.1	0.7	1.7
Rest of world	29.7	14.2	9.1	17.2	19.5
<u>Imports: Country of origin</u>					
United States	74.0	69.3	73.1	49.5	49.1
China	0.2	0.6	1.7	10.6	16.1
Other Asia	4.5	10.7	10.0	17.6	15.2
Rest of world	19.6	17.6	13.0	22.4	19.5

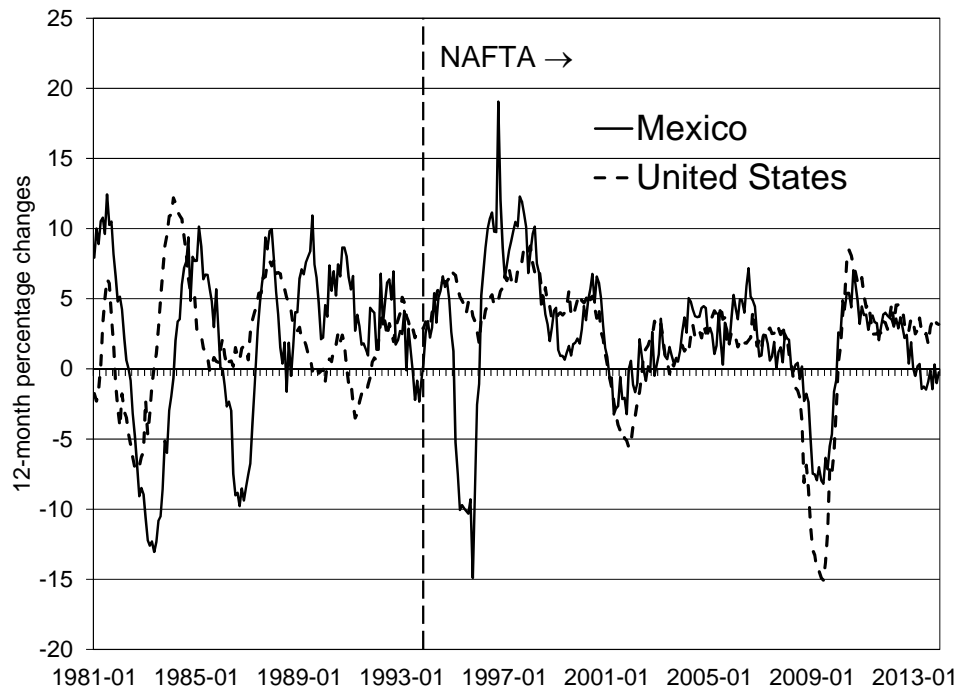
*Sources:* Instituto Nacional de Estadística, Geografía e Informática (INEGI), [www.inegi.org.mx](http://www.inegi.org.mx), except for 1987, and authors' calculations. Total trade includes maquiladora industries and petroleum. Percentages are independently rounded.

*Notes:* The U.S. percentages for 1987 (including maquiladora trade) were taken from Hufbauer and Schott (1992, p. 48, Table 3.1), based on International Monetary Fund (IMF), *Direction of Trade Statistics*; data for other countries for 1987 were estimated using data from INEGI, *Anuario Estadístico de los Estados Unidos Mexicanos 95* (Aguascalientes: INEGI, 1996). Data for 2013 are preliminary.



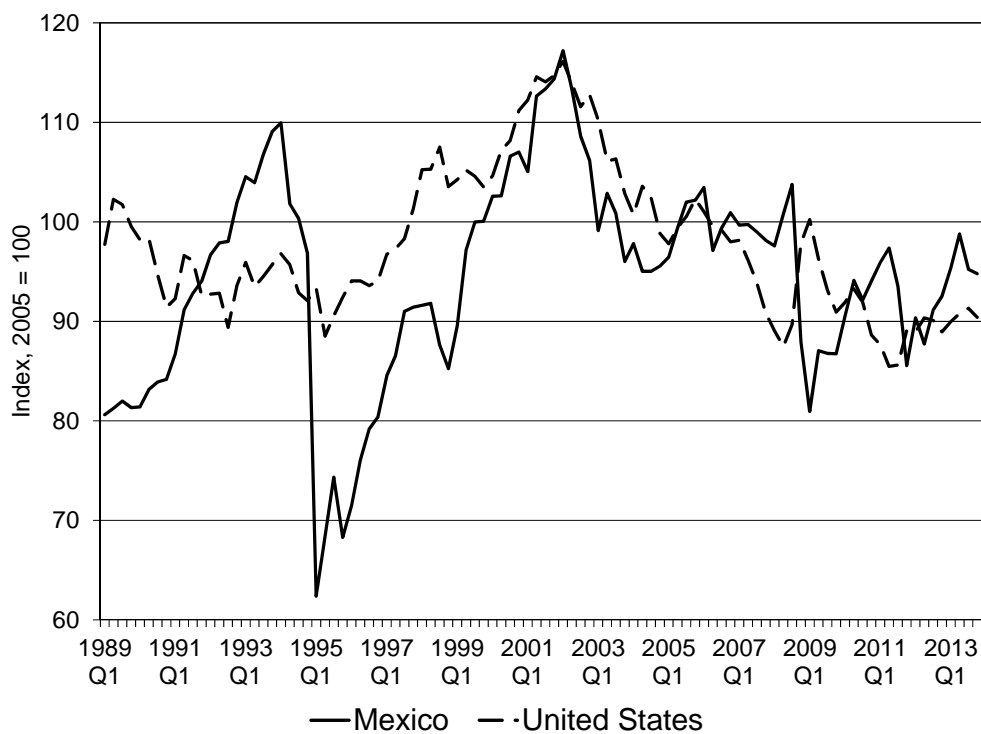
**Figure 1. Per Capita Income and Labor Productivity, in Purchasing Power Parity (PPP), Mexico as a Percentage of United States, 1950–2011**

*Sources:* Penn World Tables 8.0, in Feenstra et al. (2013), and author’s calculations.



**Figure 2. Indexes of Industrial Production, 12-Month Growth Rates, United States and Mexico, January 1981 to December 2013**

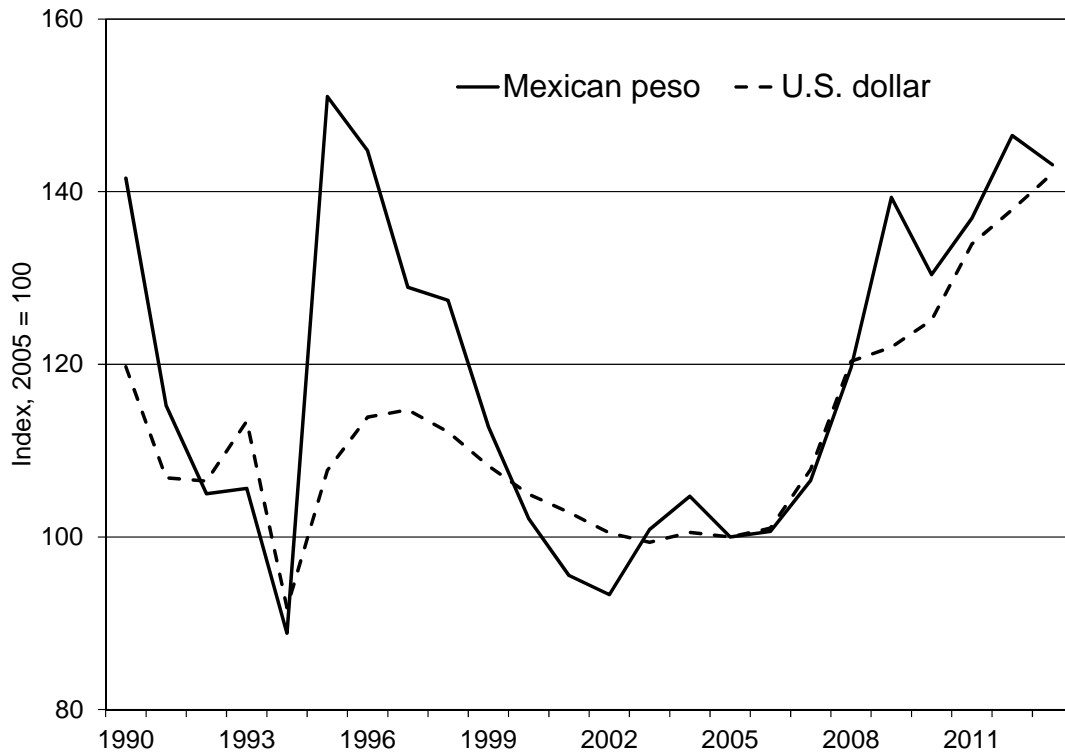
*Sources:* Federal Reserve Board of Governors, INEGI, and author's calculations.



**Figure 3. Mexican and U.S. Real Effective Exchange Rates (REERs), Quarterly, 1989Q1 to 2013Q4**

*Source:* International Monetary Fund, *International Financial Statistics*, downloaded March 19, 2014 from the IMF eLibrary - Data (online).

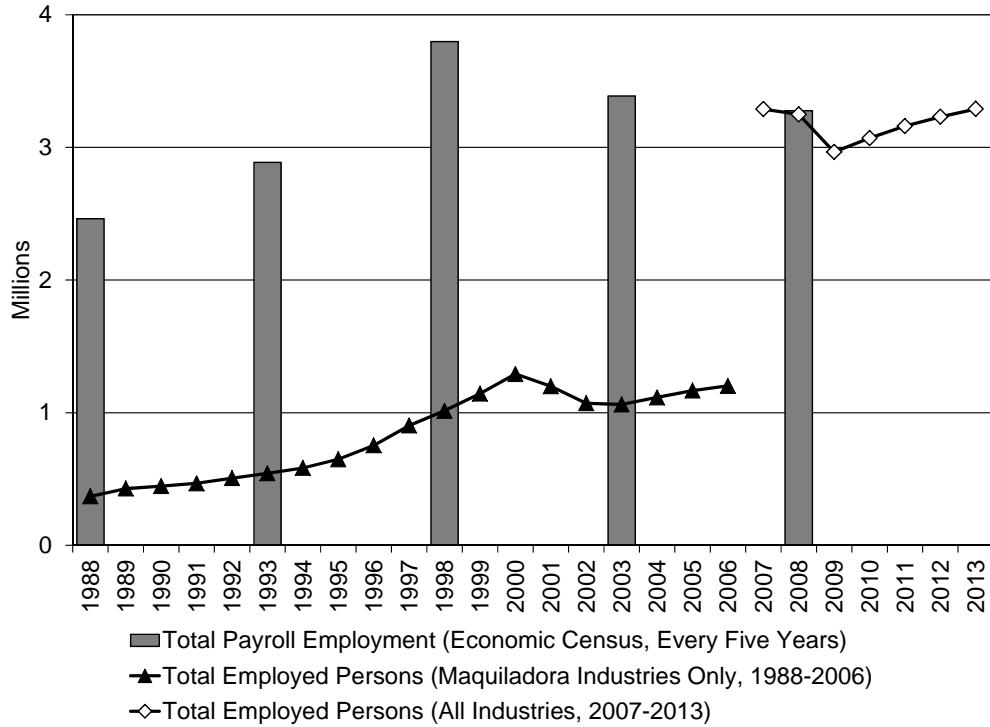




**Figure 4. Indexes of the Real Value of the Chinese Yuan Relative to the Mexican Peso and U.S. Dollar, 1990–2013**

*Source:* International Monetary Fund, *International Financial Statistics*, downloaded March 25, 2014, from the IMF eLibrary - Data (online), and author's calculations.

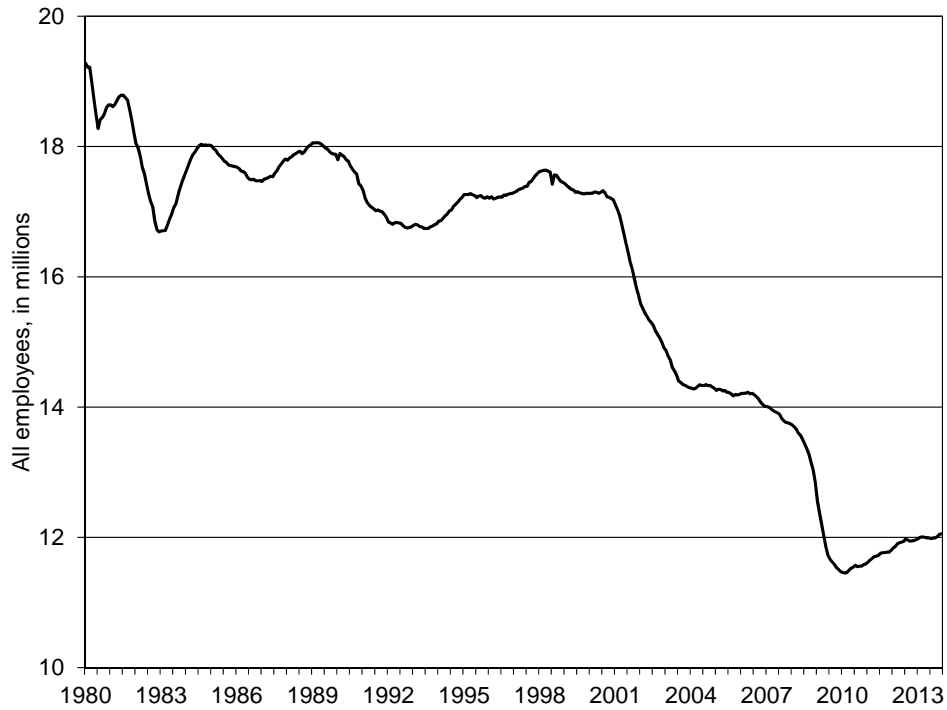
*Note:* Nominal exchange rates were adjusted by relative consumer price indexes; a higher number reflects a higher value of the Chinese yuan and a lower value of the other currency indicated.



**Figure 5. Total Employment in Mexican Manufacturing, Alternative Measures, 1988–2013**

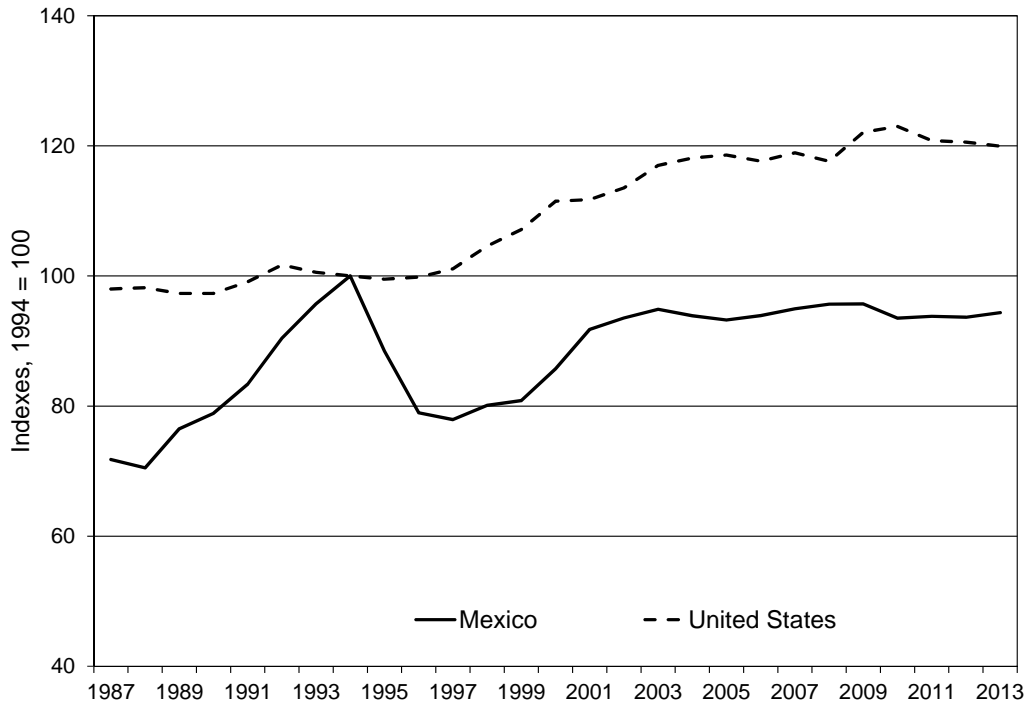
*Source:* INEGI, EMIM, Censos Económicos, and author’s calculations.

*Note:* Data are shown for all periods for which each series is available: the maquiladora data ended in 2006; the new, complete survey of all industries began in 2007; and the Economic Census is quinquennial (Census data for 2013 were not available at the time of this writing). Data for the maquiladoras (1988–2006) and for all industries (2007–13) are annual averages of monthly data.



**Figure 6. Total Employment U.S. Manufacturing, January 1980 to December 2013**

*Source:* U.S. Department of Labor, Bureau of Labor Statistics (BLS), [www.bea.gov](http://www.bea.gov). Data downloaded April 1, 2014.



**Figure 7. Mexican and U.S. Real Compensation per Worker Hour in Manufacturing, Annual Average Indexes (1994 = 100), 1987–2013**

*Sources:* INEGI, various manufacturing surveys, and U.S. Department of Labor, Bureau of Labor Statistics (BLS), [www.bea.gov](http://www.bea.gov), and author’s calculations. Data downloaded April 3, 2014, and rebased to a common base year by the author.

*Note:* Data series shown are for all employees. The Mexican data prior to 2007 are from partial surveys of major manufacturing firms that did not include maquiladoras.