

THE “MAQUILADORIZATION” OF THE MEXICAN MANUFACTURING INDUSTRY UNDER NAFTA

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Introduction¹

The North American Free Trade Agreement (NAFTA) was expected to raise industrial wages in Mexico, perhaps not to the U.S. level but at least higher than before; and the Mexican *maquiladora* industry was the prime candidate for this type of improvement because it is the most closely integrated with the United States and because its wages used to be just half of those paid in the manufacturing sector. The objective of this chapter is to test this hypothesis of an upwards convergence between *maquiladora* and manufacturing wages, which, together, comprise all of Mexico's industry.

The principal finding is that convergence has been downwards instead of upwards; that is, with manufacturing wages coming down toward the *maquiladora* level and with *maquiladora* wages remaining constant. This is what is meant by the term “maquiladorization” of the manufacturing industry: a historical shift in the level of industrial wages in which the lower-paying industry has become the standard for what had traditionally been the higher-paying one. The downward turn in the structure of industrial remunerations is explained in this chapter within the context of NAFTA and free trade in general.

To put this change into perspective and demonstrate the degree to which it is related to free trade, data series spanning several decades are used, making it possible to draw links between the most dramatic movements in wage levels and significant changes in trade liberalization (the different measures taken to open Mexico's market to international commerce). These data series start back in the mid-1970s, when commercial policy was still protectionist, and move through the liberalization process that began in the mid-1980s, culminating in the NAFTA agreement in 1994, which, by 2008, had completed the process of tariff elimination in North America.

Data on average industrial wages are used to make nationwide generalizations about how well workers of the *maquiladora* and manufacturing industries have fared under this liberalization process.² This aggregate data is then disaggregated into different branches of industry, matching those of the *maquiladora* with corresponding sectors of manufacturing to provide a more detailed analysis that reveals

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¹ The author thanks Marcela Osnaya Ortega for her help with the graphs and tables in this article.

² Wages include fringe benefits and are measured for all direct workers, that is, production workers, supervisors and technicians, but not clerical employees or management.

important differences hidden within the average industrial data. A few branches of manufacturing were able to avoid sacrificing their wage levels when faced with the international competition brought by liberalization; but others responded by lowering their wages to the same level as those paid in the *maquiladoras*; and a third group of manufacturing branches fell still further below this mark.

The correlation between the relative wage levels of these three types of manufacturing branches and their structural characteristics, along with the specific liberalization schedules to which they were subjected and the steps they took to make their production competitive, are all factors that will help understand the relationship between wages and free trade. The structural characteristics of the different manufacturing branches include variables such as whether the establishments are large or small, capital- or labor-intensive, have received foreign investment or not, as well as whether their production is internationalized or concentrated in the country of origin. Also of importance are the differences in the way liberalization measures were applied to specific manufacturing branches and the way the latter responded, ranging from those that had already modernized their productive methods to those that converted to *maquiladora*-style production, to those that did nothing to prevent the impending onslaught except reduce wages.

It would be too detailed to analyze each branch of manufacturing since the objective of this chapter is to give a general overview of the different types of strategies used for managing the liberalization process and their impact on wage levels. Therefore, just one example of each of the three different types of manufacturing strategies will be analyzed in detail here, making only summary references to the rest. The full study, including all branches of industry, is available for consultation.³ The comparison with the *maquiladora* industry is used as a control, since there was no reason to expect them to be negatively affected by free trade, having always operated in a competitive international environment; on the contrary, they were expected to raise their wages.

The first section of the chapter analyzes average wages in both industries and nationwide liberalization measures; the second section does the same but on the branch level, with the three different examples of manufacturing strategies dealing with liberalization; and the conclusions discuss some of the larger issues related to free trade and its impact on wages.

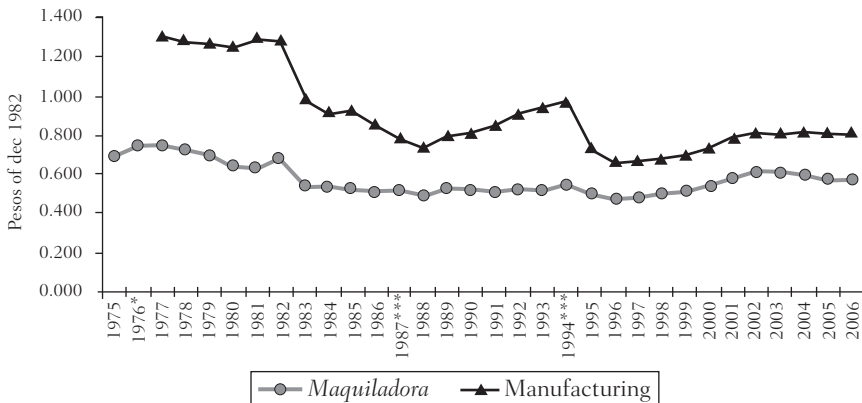
Average Manufacturing versus *Maquiladora* Wages and General Liberalization Measures

In graph 1: “Wages in the Maquiladora and Manufacturing Industries (1975-2006)” we see changes in real wages in both industries over the course of three deca-

³ Monica Gambrill, “El impacto del TLCAN en las remuneraciones de la industria de la transformación en México”, in Monica Gambrill, ed., *Diez años del TLCAN en México* (Mexico City: Universidad Nacional Autónoma de México-CISAN/IE/FE), 57-100.

des.⁴ It is clear at first glance that the most pronounced drops in the wages of both industries occurred in 1983 and 1995, corresponding, on the one hand, to the debt crisis that began at the end of 1982 and, on the other, to the financial crisis that began in late 1994. What is not clear is how to distinguish the effect of these two crises from that of the liberalization measures that also began in the mid-1980s and then culminated in January 1994 with NAFTA. This is the crux of most disputes about the relationship between free trade and wages in Mexico, and it is necessary to take a position on it from the beginning.

GRAPH 1
WAGES IN THE MAQUILADORA AND MANUFACTURING
INDUSTRIES (1975-2006)



Source: Table 1, “Wages of Direct Workers in the Maquiladora and Manufacturing Industries, 1975-2006” (see the Statistical Appendix of this chapter).

If all drops in manufacturing wages, from their high point in 1982 onward, were attributed to free trade, then it would be a closed case: free trade would have to be considered extremely harmful to Mexican workers. However, if the 1993 crisis is attributed to debt accumulated during the previous protectionist period—incurring to cover the deficit in the balance of payments but leading to catastrophic inflation, devaluation and national insolvency—then the question is how much of the subsequent decline in real wages should be attributed to the failure of protectionism instead of blaming it on free trade? The stance taken here is that the 1993 crisis was the product of the old system, not the new. This is not to say that free trade is benevolent for industries and workers; rather that, in order to measure it correctly, those junctures in which liberalization accelerated have to be focused on, separating them carefully from the effects of the debt crisis.

⁴ Real wages are adjusted to take inflation into account, in order to measure their buying power instead of their nominal monetary value, which can be deceptive or even meaningless.

The cumulative loss in manufacturing wages during the crises of 1983 and 1984 was 28.2 percent, but by 1985 this tendency had ended.⁵ This drop in wages cannot be attributed to trade liberalization because it was not until 1985 that quantitative restrictions on imports (quotas) began to be eliminated. However, the second sharp reduction in wages does seem to be related to trade, since it coincided with Mexico's entry into the General Agreement on Tariffs and Trade (GATT) in 1986, causing a cumulative loss of 19.5 percent during the ensuing three-year period, from 1986 to 1988. During the following six years, from 1989 through 1994, the downward trend came to an end and wages recovered 28.3 percent, ending even higher than they had been before the beginning of the GATT sub-period. So, this positive reaction could be interpreted as the result of the industrial restructuring that was put into effect to counter the impact of GATT liberalization, as well as an initial positive response to NAFTA during its first year in force, 1994.

With respect to the 1995 financial crisis, the greatest impact on wage levels, which brought them down 30.5 percent, was concentrated in the first two years of the crisis. Even though this period overlapped with NAFTA, during its second and third years in effect, the case for attributing the financial crisis to free trade is circumstantial: same time, same place, same leaders, but not directly related to the free trade agreement itself. Therefore, the extent to which losses in real wages incurred during this crisis should be attributed to free trade is, at best, questionable. That said, what can clearly be demonstrated is the unsatisfactory growth rate after the financial crisis, from 1997 to 2006, which is the best measure of NAFTA's performance.

From 1997 through 2006, growth in wages has been very slow, albeit constant, yielding a cumulative increase of 22.7 percent in 10 years. This might seem like a good record but manufacturing wages did not recoup nearly as rapidly in this period as they did in the previous six-year GATT sub-period. The end result was that in 2006, real wages were still 15 percent below their 1994 level when NAFTA came into effect and 37 percent below their starting point in 1977. This is far from what was expected to result from the NAFTA agreement, and, therefore, it cannot be considered to have been successful in raising manufacturing wages.

Maquiladora wages serve as a point of comparison for measuring what has happened in the manufacturing industry because they are not negatively impacted by free trade. Having always had to adjust their costs to world market prices, their labor policy was designed to be extremely competitive, which is why they were able to pay only a bit more than half the manufacturing wage. This can be seen in graph 1: they were 42 percent lower in 1977 and still 43 percent below in 1985. From 1985 on, the gap between the two industries lessened, not because *maquiladora* wages went up but rather because manufacturing wages went down. Twenty-one years later, in 2006, real *maquiladora* wages were only 8.5 percent higher than in 1985.

This is not to say that *maquiladora* wages did not react to the crisis in Mexico. On the contrary, they had negative growth rates of -22.8 percent in 1983-1984

⁵ See table 1 in the Statistical Appendix from which these numbers can be derived, as well as for all the information used to create graph 1.

and of -12.6 in 1995-1996. They also responded to free trade in the same direction as manufacturing but on a very different scale. In the GATT sub-period, they lost 6.4 percent of their buying power during the first three years (1986-1988), but then regained 11.5 percent of it (1989-1994). In the NAFTA sub-period, their buying power increased 18.6 percent overall (1997-2006), however with two distinct trends, having gone up through 2002 but consistently down thereafter. This change from 2003 onward is related to the transfer of assembly production to China, sending *maquiladora* wages on a slightly different path from manufacturing, where wages were slowly but continually rising.

As we have seen, the overall trend from 1974 through 2006 has been for manufacturing wages to fall closer and closer to the *maquiladora* level, which is what is meant by the term "maquiladorization". More specifically, in the NAFTA sub-period, wage levels in these two industries began to move in perfect synchrony with each other. From 1996 to 2002, manufacturing wages had completed their downward adjustment to the competitive level paid in the *maquiladora* industry. However, after China came on board in 2003, this synchronization ended and, although the wage levels of the two industries have remained much closer together than in any previous sub-period, they did begin to separate slightly.

Where this competition with China will lead industrial wages after 2006 is, of course, unknown; but hints of what is to come after the NAFTA sub-period will become clearer after disaggregating the industrial data onto the branch level to see which specific manufacturing branches synchronized their wages with the *maquiladoras*, which remained above this level and which fell below. This is what will be done in the following section.

Manufacturing and *Maquiladora* Wages in Select Industrial Branches And Branch-specific Liberalization Measures

To examine more closely the double impact liberalization and restructuring have had on wages, data from both the manufacturing and the *maquiladora* industries will be disaggregated into industrial branches. Of the nine branches that comprise the *maquiladora* industry, only three will be compared to their equivalents in the manufacturing industry, due to space limitations in this chapter. However, these three are representative of the rest in that they are examples of the three different patterns of interaction that have been detected between *maquiladoras* and manufacturing in a larger study. Similarities and differences are based on the degree to which specific manufacturing branches have converted to the fragmented productive process used in the *maquiladoras*, as well as on the degree to which they have reduced their wages to the *maquiladora* level.

The first comparison is between the "electric and electronic" branches of the two industries studied. Liberalization was embraced early in this branch of manufacturing and was reinforced by sector-wide agreements that further speeded its commercial opening. Above and beyond the nationwide elimination of import per-

mits in 1985 and Mexico's entry into the GATT in 1986, the rest of the sectoral protectionist policy that had previously prevailed in this industrial branch was also dismantled. In 1987, two Trade Ministry (SECOFI) decrees changed this sector's specific protectionist program; and a 1990 presidential decree eliminated practically all tariff and non-tariff barriers in the area of computers.⁶ This radical liberalization continued deepening not only under NAFTA but also later, in 1998, under the first Sectoral Program (Prosec),⁷ with any country at all, even those without a reciprocal trade agreement with Mexico. Hence, commercial policies applicable to this manufacturing branch were harmonized with those that used to be restricted to the *maquiladoras* and other export industries.

Liberalization in this manufacturing branch led to the adoption of the same production style used in the *maquiladoras*: i.e. fragmentation of production chains and outsourcing of foreign intermediary goods. As a result, industrial activity in the manufacturing branch has centered on the assembly of these imported parts and pieces.⁸ Up until the 1990s, both the manufacturing and *maquiladora* branches were still far removed from the production of competitive intermediary goods and challenged to deepen their productive processes. However, in the 1990s, a new image of the "electric-electronic" branches began to emerge. They were adding more national content to their products by incorporating complex manufacturing and design operations into their operations.⁹ All of these commercial and structural adjustments impacted the industrial branches' remunerations in one way or the other.

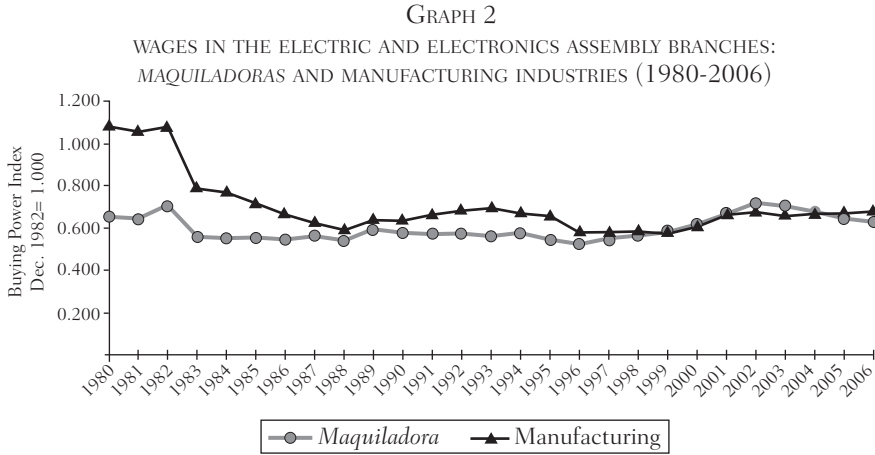
As can be seen in graph 2: "Wages in the Electric and Electronics Assembly Branches: *Maquiladoras* and Manufacturing Industries (1980-2006)," manufacturing wages fell not only in the 1983-1984 crisis but also continually through 1988, almost to the point of convergence with *maquiladoras*. This happened from as far back as the GATT sub-period and is due not only to the nationwide liberalization that this multilateral trade agreement implied but also to the sector-specific measures described above. Even though manufacturing wages improved a bit between 1991 and 1995, resisting the financial crisis of that year with no significant impact, from 1996 on they converged with the *maquiladoras*. This is not to deny that there was an improvement in *maquiladora* wages in the NAFTA sub-period and that manufacturing kept up with them, probably due to the upgrading of production that took place in this branch in the 1990s; however, this trend reversed in *maquiladoras* starting in 2003 due to competition with China, and it is yet to be seen whether manufacturing will follow or not.

⁶ Arturo Borja, *El Estado y el desarrollo industrial. La política mexicana de cómputo en una perspectiva comparada* (Mexico City: CIDE/Miguel Ángel Porrúa, 1995), 175-177.

⁷ These programs eliminated tariffs on imported parts, machinery and equipment from any country for use in the electric and electronics industry.

⁸ As can be seen in the statistical index for graph 2, the industrial classes that comprise the "electric and electronic" manufacturing branch all refer to their "assembly" function in the production of different products.

⁹ Sergio Ordóñez, "La nueva industria electrónica en México en el contexto del Tratado de Libre Comercio de Norteamérica" (paper, International Colloquium on "El Impacto del TLCAN en México a los 10 Años," National Autonomous University of Mexico, Mexico City, June 29-30, 2004).

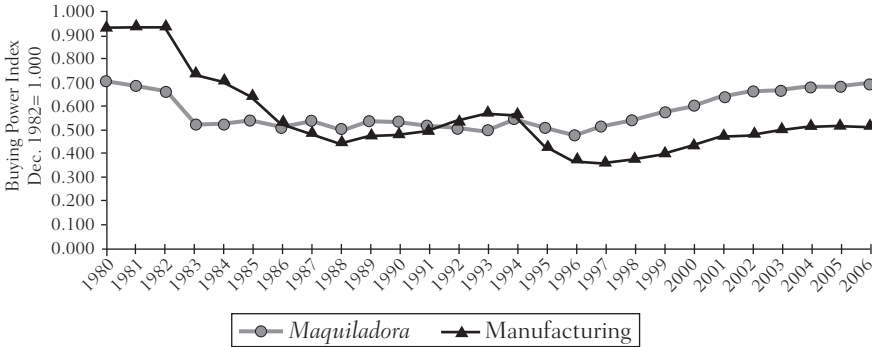


Source: Table 2, “Wages of Direct Workers in the Machinery, Equipment and Electronics Apparatuses and Articles Assembly Branch, and in the Electric and Electronic Accessories Branch: *Maquiladoras* and Manufacturing Industries, 1980-2006” (see the Statistical Appendix of this chapter).

On the basis of this branch-specific information, it can be concluded that its wages behaved in a very different way from the national average seen in the first graph. This manufacturing branch is characterized by its early and deep liberalization, especially in the area of electronics, which determined not only its conversion to fragmented production but also its early convergence with wage levels in the corresponding *maquiladora* branch. This example of convergence is not restricted to the “electric-electronic” branch; it happened in other branches as well, such as “tools” and “clothing”. Hence, “convergence” with *maquiladora* wages characterizes a specific type of manufacturing branches, as they restructure in order to deal with liberalization. It is not, however, the only typology hidden within the national average; two more are yet to be seen.

The second comparison can be seen in graph 3: “Wages in the Furniture Branch: *Maquiladora* and Manufacturing Industries (1980-2006).” The manufacturing branch reduced its wages from quite a high level before the 1983 debt crisis to below the level of the *maquiladora* branch, as far back as 1987 in the middle of the GATT sub-period. Even though it rallied a bit before NAFTA went into effect, it fell again with the 1995 financial crisis. Although it contained its fall in 1998 and then began to rise again afterwards, it has never caught up with *maquiladora* wages. This is because *maquiladora* wages have been growing steadily from 1996 on, despite competition with China, due in part to Mexico’s proximity to the United States which gives heavy, bulky products like furniture a competitive advantage. However this advantage would work in favor of the manufacturing branch as well; so, the decisive variables have more to do with the efficiency of their production: the economies of scale that their larger size affords, as well as the efficiency that their peculiar style of fragmented production brings to their ability to compete in the world market.

GRAPH 3
WAGES IN THE FURNITURE BRANCH: *MAQUILADORAS*
AND MANUFACTURING INDUSTRIES (1980-2006)



Source: Table 3, “Wages of Direct Workers in the Construction, Reconstruction and Assembly of Transport Equipment and Accessories Branch: *Maquiladoras* and Manufacturing Industries, 1980-2006”) (see the Statistical Appendix of this chapter).

Manufacturing’s inability to pay wages comparable to the *maquiladora*’s has to do both with its structural characteristics and the way liberalization was carried out in this branch. It was not until late 1986 that government permits to import wooden products and metallic furniture were no longer required; even afterwards, average tariffs fell slowly, and were still 18 percent to 19 percent in 1988.¹⁰ Despite having resisted the trade opening, this manufacturing branch still had to face competition later with imported final goods, more in the NAFTA than in the GATT sub-period. What is more, no sector-specific agreements were adopted allowing free access to imported intermediate goods required to modernize production until a very recent Prosec. Neither private enterprise nor government led a concerted effort to prepare this manufacturing branch for the trade opening by implementing a restructuring plan. This is due to the fact that it is composed predominantly of small businesses, working with traditional designs and low productivity levels.

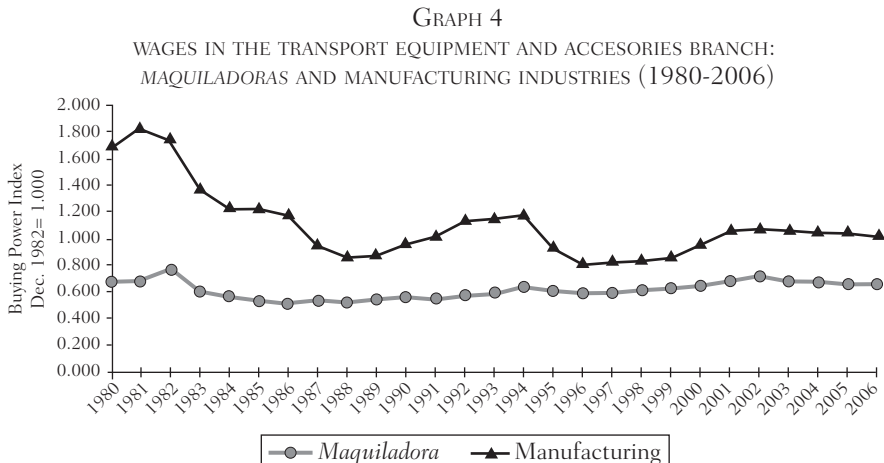
“Furniture” is representative of other branches such as “shoes,” “toys and sport-ing goods,” where the traditional relationship between manufacturing and *maqui-ladora* wages is also inverted. The fact that some manufacturing branches fall below the *maquiladora* parameter represents a historical change in Mexico, demon-strating just how grave the situation of these traditional manufacturing branches is. The only strategy they had was delaying liberalization as long as possible, open-ing up to international commerce late and half-way, without discriminating clearly between the benefits of protection for final goods and the disadvantages of pro-protecting the intermediate goods they use. By charging the same tariffs on both kinds

¹⁰ Adrian Ten Kate and Fernando de Mateo Venturini, “Apertura comercial y estructura de la protec-ción en México. Estimaciones cuantitativas de los ochenta,” *Comercio Exterior*, vol. 39, no. 4 (April 1989): 323, 326.

of goods, the companies deprived themselves of free access to intermediate goods that would have been indispensable for industrial restructuring and successful competition with imported final goods later on. It is important to recognize that this alternative is worse than “maquiladorization.”

The third comparison can be seen in graph 4: “Wages in the Transport Equipment and Accessories Branch: *Maquiladora* and Manufacturing Industries (1980-2006).” The wage curve for manufacturing is higher than the national average and very different from the other two cases above that either converged with the *maquiladoras* or fell significantly below them. In “transport,” manufacturing wages started off more than double *maquiladora* wages and ended up about a third above it, far from recovering their initial level but also with a significant distance from convergence with *maquiladoras*. They also suffered during the periods of liberalization: in the GATT sub-period, from 1986 to 1988 when import permits protecting the automobile industry were done away with and tariffs were reduced to 17 percent;¹¹ and again at the beginning of the NAFTA sub-period, from 1997 to 1999, when they remained flat. However, after each of these downturns, the wage level went back up again to the same purchasing capacity as before the corresponding period of commercial opening. Thus, this branch of manufacturing avoided the permanent traumas that the other two branches experienced during the course of their liberalization, outperforming the national average. The question is, why was it relatively sheltered from the onslaught of foreign competition?

This independence from the *maquiladora* norm is due to a unique combination of two factors: the initial protection that the sector-specific auto agreement pro-



Source: Table 4, “Wages of Direct Workers in the Construction, Reconstruction and Assembly of Transport Equipment and Accesories Branch: *Maquiladoras* and Manufacturing Industries, 1980-2006)” (see the Statistical Appendix of this chapter).

¹¹ Ibid.

vided it from imports of assembled vehicles for 22 years, encouraging them to manufacture auto parts that the government obliged foreign companies to incorporate into their final products; and, simultaneously, the fact that this same agreement began opening this manufacturing branch up to the importation of auto parts from 1982 onward. Another decree in the GATT sub-period, in 1989, completely freed up importation of intermediary goods, at the same time as maintaining tariff and non-tariff barriers on the importation of finished vehicles, thus reinforcing this early strategic decision to specialize in intermediary goods. And with NAFTA, motor vehicles were one of the last sectors to open to foreign competition.¹² Despite this protection, it had to conform to international standards because it sold its parts to *maquiladoras* and other foreign assembly plants.¹³ However, at the same time, this influence was attenuated by the greater profit margin that protection from imports of final goods afforded the assembly companies, all of which helped keep wages higher.

Thus, this manufacturing branch was shaped by a virtuous combination of protection and liberalization. It is an example of what can be accomplished within the logic of fragmented production, having enjoyed a longstanding, consistent industrial policy that encouraged local production of intermediate goods. To a large extent, this is due to the fact that the companies in this branch are large enough to influence the government in designing an industrial policy appropriate to them. "Transport" forms part of a third category of industrial branches that consistently maintained their wages higher than those of the *maquiladoras*, primarily oriented toward assembly. Other examples of manufacturing branches with wage levels significantly above *maquiladoras* are "food" and "chemicals," where the gap between the two industries has even increased over time. This is due to the fact that they use production technology that is completely different from the fragmented *maquiladora* model, employing highly specialized labor with wages that compare very favorably with those of less skilled assembly workers. Even though they were not sheltered from foreign competition, they are competitive enough to hold their own.

Conclusions

The general conclusion is that free trade eliminates the differences between the manufacturing and *maquiladora* industries, not only by bringing the former's wages down to the latter's but also by creating conditions that make it advantageous to adopt the fragmented production style that characterizes globalization. This is perceived in Mexico as a historic loss, both for the workers of the manufacturing industry who see the possibility of earning a decent living slip away from them

¹² Humberto Juárez Núñez, "La industria automotriz en México. Diagnóstico y desarrollo en una política económica alternativa," in José Luis Calva, Mario Capdevielle Allevato and Cuauhtémoc Pérez Llanas, comps., *Industria manufacturera: Situación actual y desarrollo bajo un modelo alternativo* (Mexico City: UAM-Xochimilco, 1996), 392-393.

¹³ Jordy Micheli, "Industria, calidad y poder (A propósito de la industria de autopartes en México)" in Calva, Allevato and Pérez, *Industria Manufacturera*, 407.

and for the owners of these industries who often end up in bankruptcy or having to sell their businesses. An overly simplified response to this is the desire to return to old-style protectionism, as it existed before the 1982 crisis, without recognizing that that system's inefficiencies were what caused the debt crisis to begin with. A more realistic response is attempted here, identifying those elements within the new system of fragmented production that allow the standard of living to improve.

Fragmented production is not limited to assembly operations only; it also requires the production of intermediate goods, not to mention the participation of the multinational corporations that subcontract these different processes and commercialize the final products worldwide. What we have seen in this chapter, once the national average of manufacturing wages was broken down into a variety of industrial branches, is that these branches have reacted in three different ways to liberalization, only one of which can be considered successful. The formula for this successful adaptation seems to have been getting the right combination of early protection from imported intermediate goods, at the same time as gradually opening to imported final goods, before the liberalization process came into full swing. This was achieved with the help of government intervention that fine-tuned the trade opening to protect high-value local manufacturing while at the same time allowing sufficient foreign competition to force conversion to international best-practice standards. In lieu of an industrial policy of this type, what the international market propitiates is specialization in the assembly of imported intermediate goods.

Branches like transport are the basis for this formula because they incorporate both the manufacture and the final assembly of intermediate parts, with the end result of keeping wage levels significantly higher than those in the other two categories of industrial branches. It seems that the most important variable for branches like transport is having had the proper combination of early exposure to international competition, plus elements of prolonged protection from imported goods, determined by their branch-specific industrial policy. Despite suffering temporarily from the negative impact of liberalization, both in the GATT and in the NAFTA sub-periods, they were able on each occasion to return to the same wage level they had had before. This indicates successful restructuring in tune with the new conditions of the globalized economy, adapting successfully to competition from abroad, even though wages in these branches were never able to return to their 1980 highs.

Manufacturing branches like electric-electronics have been shaped more by international market forces than by national industrial policy; hence, their orientation has been toward adopting the assembly model, although recently they began to manufacture some of their own intermediate goods in Mexico. It is important to recognize this possibility for the production of intermediate goods to evolve out of assembly operations, even though it had not existed previously to liberalization, as well as the possibility of reinforcing this evolution through industrial policy. Remunerations in these manufacturing branches were negatively impacted at first when obliged to adopt the assembly model, with downward convergence to the level of

the *maquiladoras*; but, with the beginning of production of intermediate goods, both *maquiladora* and manufacturing wages began to increase. However, the multinational corporations that subcontract both assembly and production of intermediate goods in the *maquiladoras* put a cap on these wage increases by sending some of their operations to China. Whether manufacturing will follow *maquiladoras* downward or not might depend on whether an industrial policy is put in place to raise productivity in Mexico.

Manufacturing branches like furniture, in the absence of an industrial policy to prod them toward a restructuring plan, have resisted liberalization through political pressure for continued protection. However, this does not constitute an acceptable alternative for the small and medium-sized producers of traditional goods in these manufacturing branches; rather, it drags their agony out until they finally close down or sell out to larger ones able to convert to the assembly model and keeps their wages stagnating below the *maquiladora* level. Protectionism in an open market is unlike protectionism decades ago, when it allowed excess profits to be accumulated at the expense of the consumer. Now, its consequences are worse than those of the assembly model because it has no possibility of competing with imports and, hence, cannot guarantee a decent living wage to workers. There should have been a plan to help these industries restructure their production before the liberalization process began but it is still possible for them to find a place in the new system of fragmented production, either as assemblers or as producers of intermediate goods.

Despite the rigors of fragmented production, it is possible to work within its logic to find ways to upgrade production from assembly to manufacture of intermediate goods, and then possibly to brand-name products whose production is scattered among different subcontracting companies around the world. Moving up this ladder requires support from the state in the form of a congruent industrial policy, which would benefit not only the companies involved but also their workers and the population in general since more sophisticated manufacturing affords higher wages and adds more value locally, thus expanding the tax base and allowing the government to provide better services. Creating a virtuous circle of this kind is one way to move forward toward industrial development, although it is not the only one because, as we have seen, there are other manufacturing branches with different production models, capable of adding more value and paying higher wages than in the branches characterized by fragmented production. Therefore, we recognize that there are limits to what industrial policy can or should do to promote upgrading in fragmented production—since it has to take into account the needs of other manufacturing branches, as well as other sectors, such as agriculture and services—but in it lies the key to avoiding the “maquiladorization” that an unabridged free market economy tends to extend throughout manufacturing branches.

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Statistical Appendix

TABLE 1. WAGE OF DIRECT WORKERS IN THE MAQUILADORA AND MANUFACTURING INDUSTRIES (1975-2006)

Year	Average Daily Wage Workers and Technicians Maquiladora Industry ¹	Inflation Index December 1982=100	Real Wage Maquiladora Industry (Dec. 1982 pesos)	Growth Rate Maquiladora	Average Daily Wage Workers Manufacturing	Real Wage Manufacturing (Dec. 1982 pesos)	Growth Rate Manufacturing
1975	0.094	13.4	0.697				
1976 ¹	0.117	15.6	0.754	8.2			
1977	0.151	20.1	0.753	-0.1	0.261	1.298	
1978	0.173	23.6	0.732	-2.9	0.302	1.278	-1.5
1979	0.197	27.9	0.705	-3.7	0.353	1.264	-1.1
1980	0.227	35.2	0.645	-8.5	0.439	1.245	-1.5
1981	0.290	45.1	0.643	-0.3	0.584	1.296	4.0
1982	0.495	71.6	0.691	7.5	0.926	1.293	-0.2
1983	0.794	144.6	0.549	-20.6	1.435	0.992	-23.3
1984	1.285	239.3	0.537	-2.2	2.219	0.927	-6.5
1985	1.998	377.5	0.529	-1.5	3.497	0.927	-0.1
1986	3.603	703.0	0.513	-3.2	5.989	0.852	-8.1
1987 ²	8.459	1,629.6	0.519	1.3	12.746	0.782	-8.2
1988	17.262	3,490.1	0.495	-4.7	26.041	0.746	-4.6
1989	22.104	4,188.4	0.528	6.7	33.365	0.797	6.8
1990	28.024	5,304.7	0.528	0.1	42.965	0.810	1.7
1991	33.677	6,506.8	0.518	-2.0	55.122	0.847	4.6
1992	39.627	7,515.9	0.527	1.9	67.712	0.901	6.3
1993	43.211	8,248.8	0.524	-0.6	76.260	0.924	2.6
1994 ³	48.692	8,823.4	0.552	5.3	84.416	0.957	3.5
1995	60.844	11,911.5	0.511	-7.4	88.051	0.739	-22.7
1996	77.482	16,006.5	0.484	-5.2	106.500	0.665	-10.0
1997	95.407	19,308.0	0.494	2.1	128.585	0.666	0.1
1998	113.925	22,383.4	0.509	3.0	152.888	0.683	2.6
1999	135.586	26,095.8	0.520	2.1	180.885	0.693	1.5
2000	156.772	28,572.7	0.549	5.6	210.566	0.737	6.3
2001	177.172	30,392.2	0.583	6.2	238.822	0.786	6.6
2002	198.340	31,921.1	0.621	6.6	254.406	0.797	1.4
2003	204.721	33,372.5	0.613	-1.3	268.985	0.806	1.1
2004	209.471	34,937.2	0.600	-2.3	283.324	0.811	0.6
2005	211.169	36,330.5	0.581	-3.1	295.136	0.812	0.2
2006	216.034	37,649.1	0.574	-1.3	307.226	0.816	0.5

¹ 57 categories of activity, 1,157 establishments. ² 129 categories of activity, 3,172 establishments.

³ 205 categories of activity, 6,726 establishments.

Source: INEGI. *Estadística de la industria maquiladora de exportación* 1974-1982, 1979-1989, 1989-1993, 1991-1996, 1992-1997, 1994-1999, 1995-2000; 2000, 2001, 2002, 2003, 2004, 2005 and 2006 at <http://www.inegi.gob.mx>; *ibid.*, *Estadística industrial anual* 1975-1982; *ibid.*, *Encuesta industrial anual* 1983-1986; *ibid.*, *Encuesta industrial mensual* 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002; *índice de precios de la Comisión Nacional de Salarios Mínimos* until 1982 and *Índice de precios al consumidor* by the Banco de México from 1983 on.

Statistical Appendix

TABLE 2. WAGE OF DIRECT WORKERS IN THE MACHINERY, EQUIPMENT, ELECTRICAL AND ELECTRONIC APPARATUSES AND ARTICLES ASSEMBLY BRANCH, AND IN THE ELECTRIC AND ELECTRONIC ACCESSORIES BRANCH: MAQUILADORA AND MANUFACTURING INDUSTRIES (1980-2006)

Year	Wage Maquiladoras	Wage Manufacturing ¹	Inflation Index December 1982=100	Real Wage Maquiladora Industry	Real Wage Manufacturing ¹	Real Maquiladora Wage / Real Manufacturing Wage
1980	0.231	0.384	35.2	0.654	1.089	0.60
1981	0.292	0.480	45.1	0.649	1.064	0.61
1982	0.504	0.777	71.6	0.704	1.084	0.65
1983	0.811	1.149	144.6	0.561	0.795	0.71
1984	1.319	1.854	239.3	0.551	0.775	0.71
1985	2.107	2.717	377.5	0.558	0.720	0.78
1986	3.898	4.716	703.0	0.555	0.671	0.83
1987	9.216	10.271	1,629.6	0.566	0.630	0.90
1988	19.005	20.929	3,490.1	0.545	0.600	0.91
1989	24.868	26.988	4,188.4	0.594	0.644	0.92
1990	30.576	33.956	5,304.7	0.576	0.640	0.90
1991	37.236	43.417	6,506.8	0.572	0.667	0.86
1992	43.509	51.892	7,515.9	0.579	0.690	0.84
1993	46.434	57.678	8,248.8	0.563	0.699	0.81
1994	51.077	59.495	8,823.4	0.579	0.674	0.86
1995	65.023	79.004	11,911.5	0.546	0.663	0.82
1996	84.226	93.956	16,006.5	0.526	0.587	0.90
1997	105.594	113.413	19,308.0	0.547	0.587	0.93
1998	127.152	131.640	22,383.4	0.568	0.588	0.97
1999	151.200	153.275	26,095.8	0.579	0.587	0.99
2000	176.458	175.036	28,572.7	0.618	0.613	1.01
2001	203.105	202.481	30,392.2	0.668	0.666	1.00
2002	228.717	217.535	31,921.1	0.717	0.681	1.05
2003	235.805	221.510	33,372.5	0.707	0.664	1.06
2004	236.608	234.613	34,937.2	0.677	0.672	1.01
2005	235.835	247.176	36,330.5	0.649	0.680	0.95
2006	237.979	257.162	37,649.1	0.632	0.683	0.93

¹ From 1995 to 2006, classes 3831, manufacture and/or assembly of machinery, equipment and electrical accessories (including the generation of electricity); 3832, manufacture and/or assembly of electronic equipment for radio, television, communications and medical use; and 3833, manufacture and/or assembly of apparatuses and accessories for domestic use, excluding electronics. From 1987-1994, class 3700 manufacture and assembly of machinery, equipment, apparatuses, accessories, electrical and electronic articles and their parts. From 1980-1986, classes 3721, 3723, 3731 and 3741.

Source: INEGI. *Estadística de la industria maquiladora de exportación* 1974-1982, 1979-1989, 1989-1993, 1991-1996, 1992-1997, 1994-1999, 1995-2000; 2001, 2002, 2003, 2004, 2005 and 2006 at <http://www.inegi.gob.mx>; *ibid.*, *Estadística industrial anual* 1975-1982; *ibid.*, *Encuesta industrial anual* 1983-1986; *ibid.*, *Encuesta industrial mensual* 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005 and 2006; *Índice de precios de la Comisión Nacional de Salarios Mínimos* until 1982 and *Índice de precios al consumidor* by the Banco de México from 1983 on.

Statistical Appendix

TABLE 3. WAGE OF DIRECT WORKERS IN THE FURNITURE, FURNITURE ACCESORIES AND OTHER WOOD AND METAL PRODUCTS BRANCH: MAQUILADORAS AND MANUFACTURING INDUSTRIES (1980-2006)

Year	Wage Maquiladoras	Wage Manufacturing ¹	Inflation Index December 1982=100	Real Wage Maquiladoras	Real Wage Manufacturing ¹	Real Maquiladora Wage / Real Manufacturing Wage
1980	0.250	0.330	35.2	0.708	0.938	0.755
1981	0.309	0.425	45.1	0.686	0.942	0.728
1982	0.471	0.674	71.6	0.658	0.941	0.699
1983	0.754	1.070	144.6	0.521	0.740	0.705
1984	1.249	1.714	239.3	0.522	0.716	0.728
1985	2.032	2.440	377.5	0.538	0.646	0.832
1986	3.626	3.764	703.0	0.516	0.535	0.963
1987	8.654	8.026	1,629.6	0.531	0.493	1.078
1988	17.334	15.829	3,490.1	0.497	0.454	1.095
1989	22.433	20.173	4,188.4	0.536	0.482	1.112
1990	27.884	25.767	5,304.7	0.526	0.486	1.082
1991	33.135	32.612	6,506.8	0.509	0.501	1.016
1992	38.293	40.465	7,515.9	0.509	0.538	0.946
1993	41.085	47.312	8,248.8	0.498	0.574	0.868
1994	48.935	50.306	8,823.4	0.555	0.570	0.973
1995	60.159	51.615	11,911.5	0.505	0.433	1.166
1996	76.254	60.392	16,006.5	0.476	0.377	1.263
1997	99.499	70.624	19,308.0	0.515	0.366	1.409
1998	121.308	85.749	22,383.4	0.542	0.383	1.415
1999	150.407	105.741	26,095.8	0.576	0.405	1.422
2000	171.688	125.819	28,572.7	0.601	0.440	1.365
2001	193.541	144.988	30,392.2	0.637	0.477	1.335
2002	210.896	154.944	31,921.1	0.661	0.485	1.361
2003	221.410	169.378	33,372.5	0.663	0.508	1.307
2004	237.742	180.655	34,937.2	0.680	0.517	1.316
2005	247.019	190.318	36,330.5	0.680	0.524	1.298
2006	260.480	197.725	37,649.1	0.692	0.525	1.317

¹ From 1995 to 2006, branches 332001, manufacture and repair of furniture, principally wooden, and branch 381300, manufacture and repair of metallic furniture and furniture accessories. From 1987 to 1994, class 2711, manufacture of wooden furniture, and class 3520, manufacture of principally metallic furniture and furniture accessories. From 1987 to 1994, class 2711, manufacture of wooden furniture, and class 3520, manufacture of principally metallic furniture and furniture accessories. From 1980-1986, class 3521, manufacture of furniture and furniture accessories, principally metallic.

Source: INEGI. *Estadística de la industria maquiladora de exportación 1974-1982, 1979-1989, 1989-1993, 1991-1996, 1992-1997, 1994-1999, 1995-2000*; *ibid.*, *Encuesta industrial mensual 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002*; *Índice de precios de la Comisión Nacional de Salarios Mínimos* until 1982 and *Índice de precios al consumidor* by the Banco de México from 1983 on.

Statistical Appendix

TABLE 4. WAGES OF DIRECT WORKERS IN THE CONSTRUCTION, RECONSTRUCTION AND ASSEMBLY OF TRANSPORT EQUIPMENT AND ACCESORIES BRANCH: MAQUILADORA AND MANUFACTURING INDUSTRIES (1980-2006)

Year	Wage Maquiladoras	Wage Manufacturing ¹	Inflation Index December 1982=100	Real Wage Maquiladoras	Real Wage Manufacturing ¹	Real Maquiladora Wage / Real Manufacturing Wage
1980	0.237	0.600	35.2	0.673	1.702	0.396
1981	0.308	0.829	45.1	0.684	1.839	0.372
1982	0.551	1.260	71.6	0.769	1.759	0.437
1983	0.870	1.989	144.6	0.602	1.375	0.438
1984	1.358	2.964	239.3	0.568	1.239	0.458
1985	2.024	4.645	377.5	0.536	1.231	0.436
1986	3.631	8.359	703.0	0.517	1.189	0.434
1987	8.696	15.720	1,629.6	0.534	0.965	0.553
1988	18.259	30.513	3,490.1	0.523	0.874	0.598
1989	22.857	37.524	4,188.4	0.546	0.896	0.609
1990	29.483	51.692	5,304.7	0.556	0.974	0.570
1991	35.628	67.253	6,506.8	0.548	1.034	0.530
1992	42.944	86.214	7,515.9	0.571	1.147	0.498
1993	49.227	94.915	8,248.8	0.597	1.151	0.519
1994	56.425	104.373	8,823.4	0.639	1.183	0.541
1995	72.154	111.962	11,911.5	0.606	0.940	0.644
1996	94.866	129.992	16,006.5	0.593	0.812	0.730
1997	115.666	161.502	19,308.0	0.599	0.836	0.716
1998	138.228	189.310	22,383.4	0.618	0.846	0.730
1999	164.066	227.387	26,095.8	0.629	0.871	0.722
2000	184.855	275.608	28,572.7	0.647	0.965	0.671
2001	205.312	327.711	30,392.2	0.676	1.078	0.627
2002	227.779	343.050	31,921.1	0.714	1.075	0.664
2003	225.195	356.418	33,372.5	0.675	1.068	0.632
2004	231.811	372.763	34,937.2	0.664	1.067	0.622
2005	240.589	382.870	36,330.5	0.662	1.054	0.628
2006	247.199	389.225	37,649.1	0.657	1.034	0.635

¹ From 1995 to 2006, branches 3841, automobile industry, and 3842, manufacture, repair and/or assembly of transport equipment (excluding automobiles and trucks). From 1987 to 1994, class 3800, construction, reconstruction and assembly of transport equipment and its parts. From 1980 to 1987, classes 3821, 3831 and 3832.

Source: INEGI. *Estadística de la industria maquiladora de exportación 1974-1982, 1979-1989, 1989-1993, 1991-1996, 1992-1997, 1994-1999, 1995-2000; 2001, 2002, 2003, 2004, 2005 and 2006* at <http://www.inegi.gob.mx>; *ibid.*, *Estadística industrial anual 1975-1982; ibid.*, *Encuesta industrial anual 1983-1986; ibid.*, *Encuesta industrial mensual 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005 and 2006; Índice de precios de la Comisión Nacional de Salarios Mínimos until 1982 and Índice de precios al consumidor* by the Banco de México from 1983 on.