13

The Boom of the Mexican Automotive Industry: From NAFTA to USMCA

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Introduction

In the last few years, the Mexican automotive industry (MAI) has emerged as one of the sector's hottest spots worldwide, becoming the largest producer in Latin America, the seventh producer and fourth exporter globally, as well as the second largest exporter to the American market. The Mexican position became more salient as the Trump administration called to renegotiate the North American Free Trade Agreement (NAFTA), blaming it for the mass emigration of jobs and investment in low-wage industries like the MAI. This chapter aims to identify the nature of the MAI boom and the factors that explain it, showing how these combine in a unique formula comprised of its nearshoring status, free trade frameworks and cheap labor that have been instrumental in defending, pursuing, and reshaping the North American automotive industry. The country is now attracting most of the factory assembly openings in

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the region and auto jobs have more than doubled over the last decade to account for more than 40% of the North American total.

Mexico is the only emerging economy that has gained a place in the industry by becoming an open, cost-competitive platform for exports, able to attract growing flows of foreign direct investment and with no intention of building an industry of its own. This chapter shows the role of American decision-makers in developing this model and how they designed NAFTA[1] to ensure that Mexico would remain the Detroit 3's backyard while also keeping out Asian and European automakers. It is hypothesized that having failed to accomplish that goal, the US-Mexico-Canada Agreement (USMCA), crafted by Trump to replace NAFTA, will eventually also fall short of correcting the US deficit and regaining the initiative over MAI for US producers and markets. The USMCA will fail despite the fact it raises the rule of origin to a 75% threshold and includes a labor value content ruling that up to 45% of a car must be made by workers earning at least $16 an hour.

The chapter is organized in six sections, with a final discussion and concluding remarks. The first section details the boom of the MAI, showing its depth and breadth since the last global crisis. Section 'The Boom of the MAI' describes how Asian and European manufacturers are leading the MAI's boom in a fierce competition to capture and reshape the North American market. Section 'Pursuing and Changing the North America Market' identifies how the types of vehicles manufactured and sold by the MAI, namely compact/small cars and light trucks propelled by traditional internal combustion engines (ICEs), are demanded by the US market. Sections 'Types of Car Output and Consumption: Mexico Trapped in the ICE Era' and 'Factors Explaining the MAI Boom' reflect on the factors explaining the MAI's boom and the key role played by the Mexican industrial relations system, a one-sided system that aims to please management and attract foreign investment. Section 'An Industrial Relations System to Please Management' looks at the motives and conditions that lead from NAFTA to the USMCA and describes the unprecedented labor chapter that the Trump administration included as a condition to ratify the new agreement. The final section wraps up the main findings and likely implications for the future of the MAI.

The Boom of the MAI

In the last few years, Mexico has become one of the auto industry's hottest spots worldwide, with the MAI developing as one of the leading regions for attracting foreign direct investment flows. In fact, by 2013 the MAI captured the largest flow of FDI worldwide (Kynge 2015). Since the 2008–2009 financial crisis, the MAI's output increased overall by 90%, a more than 8% annual rate from 2007 to 2017. In the past year, auto output was 4 million units, representing 23% of the North American total, and up from 3.6 million units and 20% in 2016, respectively. By 2023, NAFTA light vehicle capacity is expected to reach 22.5 million units, of which Mexico will account for 26%.[2] Only China and India have surpassed Mexico in the manufacturing of cars and commercial vehicles.[3] The country is already the seventh producer and fourth exporter worldwide, as well as the second exporter to the American market.

By the end of 2014, Mexico passed Brazil as the leading manufacturer in Latin America, when Brazilian production plunged 15% due to a stagnant internal economy as well as difficulties related to the Chinese and Argentinean economies, its two major international markets. By then Mexico had already overtaken Japan as the number one exporter to the US market. The country also already ranks fifth in both output and exports of auto parts and components and, simultaneously, has taken the lead in the supply of parts and components to the US market.

The MAI is of utmost importance to the country. It is a key factor in maintaining Mexico's trade balance with a 2017 net surplus of $70 billion, representing more than a quarter of the foreign currency received by the country. Its $120 billion exports account for more foreign currency than oil, tourism, and expatriate remittances put together. The MAI is now the largest manufacturing employer in Mexico with almost 800,000 direct jobs (one-fifth of the country's manufacturing positions). The terminal sector accounts for 13% of these.[4]

The American market is the MAI's primary engine. In 2017, of the 82% total output that went to international markets, the US market accounted for 84.5%. In contrast, the domestic market has grown at a slower rate. After increasing between 2009 and 2016, from 0.8 to 1.6 million unit sales, it fell 5% in 2017 with the latter figure only 25% more

than the vehicles sold in 2005. As a result, Mexico is not a top-selling market as much as it is a top manufacturer.

The limited domestic market for new cars reflects the median Mexican consumer's limited purchasing power, which in turn points to the embedded low-wage nature of the Mexican economy. It also relates to the fact that in the 1980s, the MAI was reoriented to the external market and, with NAFTA, to a process of total integration with the North American auto industry.[5] Thus, from the signing of NAFTA in 1995 until 2017, the MAI's export share increased from 53% to 82% (Klier and Rubenstein 2017).

The past ten years have seen an unprecedented number of factory openings, retooling, and projects for new plants (Fig. 13.1). These include assembly plants that opened in 2013–2014—such as Honda, Celaya; Mazda, Salamanca; Chrysler Van, Saltillo; and Nissan 2, Aguascalientes—; and companies increasing their operations over the past three years such as Audi, San José Puebla; BMW, San Luis Potosí; Daimler AG, located next to Nissan 2 in Aguascalientes[6]; Kia, in partnership with Hyundai, in Pesqueria Monterrey; and Toyota, in Apaseo El Grande, Guanajuato. Following US president Trump's pressure to go back home or pay a 35%

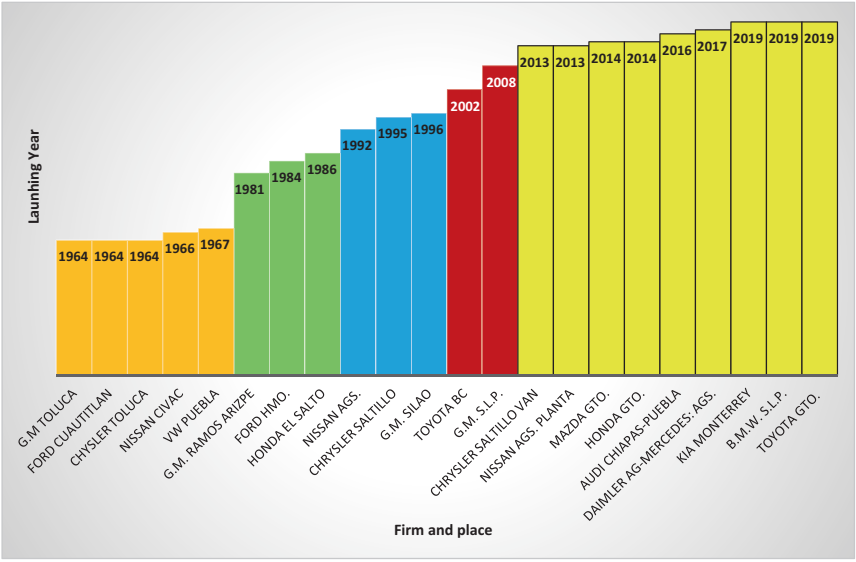

Fig. 13.1 Waves of the MAI 1964–2019. Source: Author's elaboration

tariff on imports from Mexico and threats to withdraw from NAFTA, Ford canceled a project to build a new assembly plant in San Luis Potosí. Nevertheless, it invested $2.5 billion to expand its motor capacity in Chihuahua and set up a new generation transmission factory in Guanajuato. Likewise, Volkswagen (VW) invested $1 billion to produce the Tiguan model in Puebla, and other key players, such as Land Rover, Renault, Hyundai, Seat, and MINI, disclosed plans to invest shortly in Mexico. Despite this, until the uncertainty prompted by Trump regarding NAFTA has settled, they and other global corporations like General Motors (GM), Toyota, Honda, and Fiat Chrysler Automobiles (FCA) have put their projects in Mexico on hold.

As noted, Mexico is the fifth largest auto parts manufacturer worldwide, generating $122 billion in revenue in 2017 and with facilities in 21 states. According to ProMexico (2016), the country has 1236 auto supply companies in the two first tiers, with another 1320 corresponding to tiers 3 and 4. Mexican workers manufacture parts and components for practically all systems in a vehicle (Carrillo V. 2016). Of the 100 leading auto parts and components corporations, 90 are in Mexico. Since 2015, Mexico has also been a world leader in tractor-trailer exports for the trucking industry with 92,630 units (Export.gov 2018), reflecting a well-established heavy vehicle sector. Tractor-trailers, commercial vehicles, and passenger cars are built by most of the large heavy vehicle brands, such as Volvo, Detroit Diesel Allison, Freightliner, Dina, Mercedes-Benz, and Scania. Chinese firms have also made inroads in this sector. For example, FAW Group, one of the 'Big Four' Chinese automakers, offers low-priced commercial and utility trucks in Mexico, for which, it partnered with Giant Motors Latinoamerica, a subsidiary of the financial Inbursa Group of Carlos Slim (the richest man in Mexico and one of the top ten billionaires in the world).[7]

Pursuing and Changing the North America Market

About 90% of new investments for assembly plants that have poured into the MAI since 2009 have come from Asian and European automakers (CAR 2016). The 2008 crisis of the Detroit 3 which led to a record $80.7

billion government bailout, combined with the uncertainty surrounding their future was a powerful incentive for Asian and European companies to expand their presence in North America. They were also encouraged by the ending of the NAFTA's ten-year phasing out period for trade barriers together with Mexico's broad network of free trade agreements that allow the MAI to reach more than half of the world's new vehicle market, tariff-free. Currently, six leading Asian companies—that is, Toyota, Nissan, Honda, Mazda, Kia, and more recently FAOA—, four European companies—that is, VW, Audi, BMW, and Daimler AG—, and the former Big Three, are either establishing plants or expanding operations in Mexico. This will reshape not only the footprint of the industry in Mexico but also in North America. Although the impact of this will only be fully apparent once the new facilities are operating at full speed, what is clear is that Asian and European automakers will account for a much larger portion of the MAI output, further displacing GM, Ford, and FCA who already make up less than half of its output (45% in 2017) (Fig. 13.2).

Currently, automakers operate 22 assembly plants in Mexico, producing 42 brands of cars and 500 models; they are supplied by more than 2500 auto parts facilities and supported by 1800 dealers. Plants are clustered around Central Mexico (Estado de México, Morelos and Puebla), the Northern Border (Coahuila, Sonora and Baja California), and the

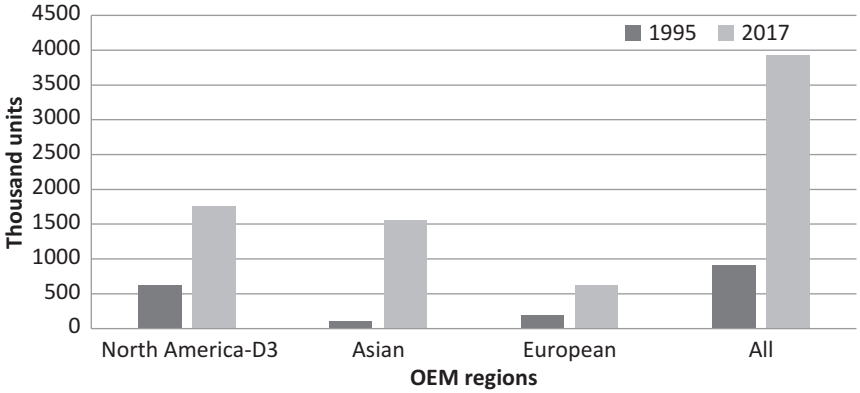

Fig. 13.2 Light vehicle production in Mexico by regional automakers. Source: Author's elaboration based on AMIA database

Bajio Region (Guanajuato, Querétaro, Jalisco, San Luis Potosí and Aguascalientes). This last region has become the largest automotive cluster in Mexico, host to eight leading automakers, and churning out 1.5 million vehicles per year.[8] Such output has placed it among the world's top 15 largest auto manufacturers worldwide.

Prior to the boom, NAFTA's impact on the industry was modest. The auto parts sector expanded and agglomerated primarily in northern Mexico, and between 1994 and 2007 only three new assembly plants were opened, namely a new Chrysler facility in Saltillo (1995), GM Silao (1996), and Toyota (2002). In contrast, since the last financial crisis almost as many assembly plants have opened as did in the industry's entire history dating back to the 1960s.[9] The implications of the MAI's boom for the North American industry are considerable, to the degree that there is some question as to whether the growth of the MAI has happened at the expense of the US industry. The fact is that over the past decade, 9 of 11 new assembly plants built in the northern hemisphere were built in Mexico, and only two of these belonged to the Detroit 3. Furthermore, while FCA, GM, and Ford plan to increase North American production between 2016 and 2020, all will be manufactured in Mexico, while their production in the US and Canada will decrease by 5% and 1%, respectively (CAR 2016: 11).

The MAI boom has also transformed the geography of auto employment in North America. During this time, jobs in the MAI have more than doubled, with its share of jobs in the NAFTA region soaring to 42%, while the US and Canada have seen a decrease to 51% and 7%, respectively (Rodriguez A. and Sanchez 2017). Similarly, the Detroit 3 have seen their share of light vehicle sales within Mexico steadily decline, falling from 65% to 32% between 1985 and 2016.

Mexico Trapped in the ICE Era

The MAI has specialized in the production and marketing of compact/small cars and light trucks propelled by traditional internal combustion engines (ICEs). Nissan, GM, and VW dominate most of the Mexican

market, followed by Chrysler and Ford. The top-selling models in Mexico are Nissan's Versa, Tsuru, March, Sentra, and Tiida; GM's Aveo and Spark; and VW's Vento, New Jetta y Jetta Classic. A 2016 technical study of these cars (Covarrubias V. and García 2017) showed that all but two models of the New Jetta (which use diesel—that is, the Gear Direct Shift and Manual Shift) were gas-ICEs propelled with an average energy efficiency of 12.5 km/l. Their CO_2 emissions—the gas that most contributes to the greenhouse effect according to *Green Facts* (2017) had an average of 196 g/km. The Mexican Official Norm 163 (DOF: 21-06-2013),[10] requires that the average fuel efficiency of these vehicles be 14 km/l with CO_2 levels of 169.9 g/km. These models were thus below the Norm 163.

With only one exception, all the top vehicles exported to the US market were traditional ICE units: Nissan Versa, Chevrolet Silverado 2500, Ram 2500, Ford Fusion, and Nissan Sentra. They were gas guzzlers: most of them had eight-cylinder engines—in fact, all the GM Silverados 2500 and Chrysler Ram 2500 fell in this category. They offered an 8.3 km/l adjusted efficiency, and their average CO_2 emissions were 316 g/km. The top ten imported cars were all ICEs. They included SUVs (Renault Duster and Mazda CX-5), pickups (Toyota Hilux and Ford Ranger), luxuries (VW Passat and Nissan Altima), and Minivans (Toyota Sienna and Honda Odyssey). They had a fuel adjusted efficiency of 9.9 km/l, with average CO_2 emissions of 249 g/km.

Mexico has only just begun to produce and consume vehicles other than ICEs. In 2017 electric and hybrid vehicle sales increased by 30% compared with 2016, although they remained a fraction of the total market: 10,011 units, 270 of which were EVs. (data from AMIA 2018). The EV market in the country thus accounted for 0.018% of total sales, far below the 3% sold worldwide in 2017.

Some leading automakers have expressed interest in manufacturing EVs in Mexico, but thus far, none have committed to any specific project. Nevertheless, what is emerging in Mexico, is a cadre of local innovators and new players looking to make inroads in the EVs market. Two cases stand out.

The first is the collaboration between Giant Motors (the FAW-Inbursa-Carlos Slim alliance) and Moldex (a metal-mechanic firm that forms part of Grupo Bimbo, a Mexican food multinational) to manufacture EVs.

Their alliance began in 2015 when they partnered to build light electrical trucks for logistics companies. Their initial progress has been rather modest, with the sale of 500 units. The second case corresponds to Mexican scientists and innovators who have identified the current transition in the industry as an opportunity to develop Mexican technology and solutions to the environmental problems resulting from the combination of ICEs/Fuel Oil. They created in 2017 ZACUA, the first Mexican firm to manufacture electrical cars and the first fully-EV made in Mexico. It features a two-seat compact car assembled in Puebla in a small shop run by 15 employees.

Factors Explaining the MAI Boom

Good geography and logistics, a global network of free trade agreements with NAFTA at the center, and cheap, skilled labor are the key factors explaining the prominence of the MAI. They result in a formula that has made the MAI a reliable, qualified, and cheap export platform.

The geography of the MAI comprises 3145 km (1954 miles) of the US-Mexico border. It is filled with a network of 117 ports and terminals, 67 border crossings, and 63 international airports, allowing the country to function as a gateway between the largest western automotive market—that is, the American one—Latin America and the European and Asian countries. In addition, there is a broad and experienced network of logistics firms straddling the North American border dealing with customs, planning, purchasing, transportation, and delivery strategies to ensure timely supplies across the multiple automotive supply chains. Geography and logistics favor the mobility of both goods and people, lowering communication costs and integrating supply strategies whether by air, sea, road, or rail. It is estimated that more than 2500 auto suppliers perform more than fifty billion intra-firm transactions annually to move parts and components back and forth for the production of vehicles across the North American border (SE 2017).

Mexico has created a dense network of international free trade agreements (FTAs) that support its competitive advantage as an export platform, including ten free trade agreements with forty-five countries,

thirty-two agreements for promoting and protecting investments, and nine trade agreements within the Latin American Association for Integration framework (Promexico 2017). These, together with Mexican membership in the WTO, OCE, and APEC, grant Mexican exports tariff-free access to countries that account for the majority of the world-wide Gross Domestic Product. The Center for Automotive Research (CAR) estimates that automakers can save $2500 per vehicle in tariffs when exporting from Mexico to the European Union, as opposed to from the US (CAR 2016). The latest step taken by Mexico in signing the Comprehensive and Progressive Agreement for Trans-Pacific Partnership will strengthen the position of the MAI in the Pacific region, opening access to the Australian and New Zealand markets, among others.

The core of these FTAs has been NAFTA, and corporations come to Mexico seeking access to the American market. This market, including Canada, accounts for 89% of automotive exports. South America and European markets receive 6% and 4%, respectively, of the MAI exports with the remaining 1% going to Asian markets. Still, it would be a mistake to think that the framework of FTAs has made all the difference for the MAI. Like Mexico, Canada has also been pursuing FTAs. According to CAR (2018), Canada could reach 53% of the global new vehicle market tariff-free, based on its broad FTA framework. That is, a larger global tariff-free market than Mexico's (51%), not to mention that of the US (28%). Nevertheless, the Canadian auto industry is in decline. This is where labor costs make a difference (Fig. 13.3).

Skilled cheap labor is the second key variable of the MAI's success in attracting FDI flows. In general, Mexican labor is not yet as qualified as their American and Canadian counterparts and training systems lack the consistency and quality of other emergent countries (see Sancak in this book). In regions where the MAI has seen the highest growth, such as the Bajio Region, there is a deficit of technicians, and firms are poaching skilled workers to combat this. Nevertheless, automakers value the efforts made by MAI leaders to increase the pool of skilled autoworkers. In particular, they appreciate the funding of one-year on-the-job-training provided by the Mexican government and its efforts to improve its higher education, with a growing pool of industry-specialized engineers. SE

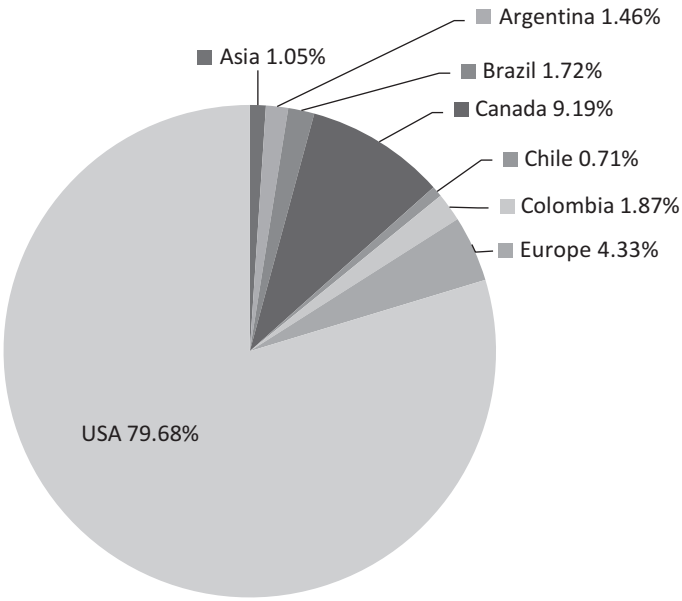

Fig. 13.3 Mexico 2016 Exports (percentage). Source: Own elaboration with International Organization of Motor Vehicle Manufacturers (OICA) data

(Secretaria de Economia) (2017) states that 90,000 engineers with such a profile graduate annually from the university system. Moreover, the productivity of Mexican workers offsets the shortcomings in their basic skills. This is especially the case for the terminal sector. Plant managers of the eight OEMs in Mexico stated publicly that 'Mexican workers rank among the most productive in the world' (Covarrubias V. 2017).

Despite this, Mexican autoworkers earn poor wages: on average, vehicle assemblers receive $2.30 per hour (Table 13.1); workers of part supplier's tiers 1 and 2 receive half of this, and workers of part suppliers 3 and 4, a third. Adding 30% for statutory and fringe benefits for total labor compensation, they earn $2.99 dollars per hour.[11]

Table 13.1 shows the daily wages of Mexican autoworkers, plant by plant, as established in collective bargaining agreements signed between management and labor unions. Several points are worth noting: the $2.30 mean wage shows that Mexican autoworkers earn less than a tenth of their US counterparts who received a mean hourly wage of $26.50 in

Table 13.1 Blue-collar workers assembly plants hourly wages

OEM/Plant (Contract year)	Mexican Pesos	USD
Nissan Civac (2016)	60	3.2
Chrysler Toluca (2015)	59	3.2
Chrysler Coahuila (2015)	59	3.2
VW Puebla (2016)	54	2.9
GM Toluca (2016)	51	2.8
Audi SJCh Puebla (2017)	50	2.7
Ford Cuautitlan (2016)	46	2.5
Toyota Baja California (2016)	46	2.5
Kia Pesqueria (2015)	46	2.5
Ford Hermosillo (2016)	42	2.3
Nissan Aguas Calientes (2016)	40	2.2
Nissan Aguas Calientes II (2016)	40	2.2
GM Ramos Arizpe (2016)	36	1.9
Honda El Salto (2016)	35	1.9
GM San Luis Potosí (2016)	33	1.8
Honda Guanajuato (2016)	31	1.7
BMW San Luis Potosí (2016)	28	1.5
Mazda (2016)	19	1
Mean hourly wage	43	2.3

Source: Collective Bargaining Agreements registered in the Labor Minister Office STPS as of February 2017. In parenthesis the year of registration. one dollar = 18.5 Mexican Pesos, March 2017

2016, according to Bureau of Labor Statistics (2017). Further, the $2.90 total compensation is far less when compared with the $47.00 made by American autoworkers (this data according to *The Conference Board International Labor Comparisons* 2017).

In short, Mexican workers make 94% less than American workers. How important is this? CAR estimates labor cost savings of $674 per car in Mexico at $8.24/h compensation rate, although based on labor costs reported in this chapter, it could be more than double that. A KPMG (2016) study demonstrated that labor represents the largest category of location-sensitive cost factors for manufacturing, ranging from 40% to 57%.[12] Given that Mexico is not competitive in terms of communication infrastructure, utilities or facilities costs, and ranks only moderately for taxes and the cost of capital according to the same study, Mexico's cheap labor has been of paramount importance in securing its place in the North American industry.

An Industrial Relations System to Please Management

The evolution of wages in the MAI during the NAFTA era challenges the basic precepts of the classic theory of wage determination, particularly regarding its equalizing function between the supply and demand of labor (Hicks 1963/1932). Even from an efficiency wage theory perspective (Leibestein 1957), it is hard to make sense of such an evolution, particularly when applying the assumption that higher wages lead to higher productivity and effort, and vice versa. As noted, employment in the MAI more than doubled during the NAFTA era. However, wages have remained practically the same. In 1994 MAI auto workers earned $1.90 on average. This means that after 23 years of NAFTA, Mexican labor has seen an increase in wages of less than a half dollar or 1.7 cents per year. In the auto parts sector, wages have remained the same, that is, at half the rate of auto assemblers. In comparison, US and Canadian auto industry wages decreased from $36 to $27 and from $34 to $26, respectively over the same period. This shows that dragging wages down became an entrenched feature of the industry in the NAFTA region (Fig. 13.4).

What happened to wages during the MAI boom? They have not only remained low, but have actually been decreasing. Covarrubias V. (2017)

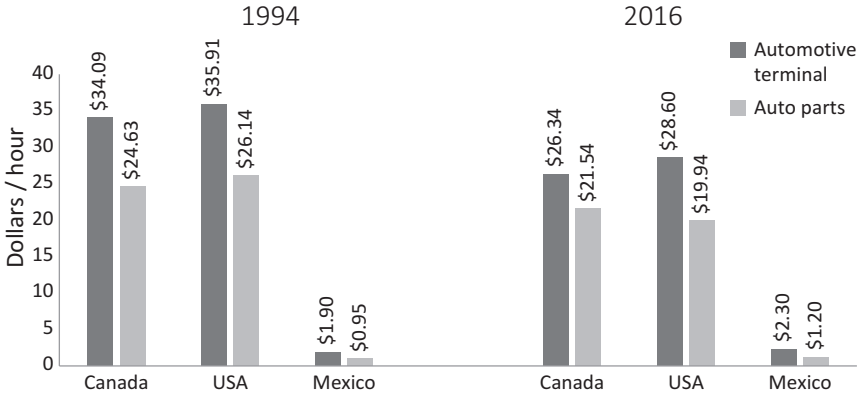

Fig. 13.4 The evolution of wages in NAFTA. Source: Based on Rodriguez A. and Sanchez (2017). Mexico's wages 1994 Pries (2000), 2016 author's

found that in 2013 autoworkers received $3.60 per hour, while Stanford (2010) noted that in 2007 they made $3.95 per hour ($1.65 more than the current $2.30). Thus, during the past 10 years of sizeable growth of the MAI, autoworkers' wages have decreased by 42%, a yearly average decrease of 4%. Paradoxically, labor productivity in the terminal sector has increased 5% yearly during the boom (Covarrubias V. 2017). If productivity is not the factor that drives wages, how can we explain wages in the MAI? The answer lies in Mexico's state-led system of industrial relations, where wages are determined politically and labor relations are geared toward pleasing management and attracting international flows of capital. Public officials, regardless of the state of the economy or the stage of a given industry, set wages low enough so as to maintain a competitive advantage in attracting firms seeking offshoring or nearshoring investment. A disheartening feature of such as system is the so-called 'protection contracts', collective bargaining agreements signed between management and state-allied unions (*official unionism*) long before a plant opens. In practice, they operate as company contracts, and thus when a plant opens and workers are hired, they are faced with a union and a contract they neither voted for nor were aware of. In addition, firms are allowed to define the rules of work and labor compensation at the plant level, so trade unions have no way to counter the 'race to the bottom', on wages, at either the company or the regional level.

A great deal of corruption is also involved in such practices. Official union leaders (commonly from the dominant *Central de Trabajadores de Mexico*, CTM) receive a lump sum and a monthly payment from management for signing a labor contract committed to keeping workers' demands for better wages and working conditions under control. As a result, the rights to freely organize and engage in collective bargaining are circumvented. Politicians have taken advantage of these mechanisms to ensure a labor movement that, rather than serving workers, serves a broad array of state-led objectives—controlling work settings, running political campaigns, backing economic policies, attracting investments, bribing labor leaders, and so on (Cook 2007; Caraway et al. 2015; Bensusán and Middlebrook 2013). It has been estimated that more than two-thirds of existing contracts in Mexico are of this nature (Bouzas Ortiz and

Cervantes 2008; De Buen Unna 2011). Most of the collective bargaining agreements in the MAI sector, both old and new, started as 'protection contracts'.

Workers are more likely to receive better wages with independent or non-state-controlled labor unions. The Nissan and VW unions are good examples of this. Traditionally, they have identified themselves as 'independent', drawing a line between themselves and the state-dependent unions, and have been at the forefront of securing better wages and benefits. However, this is not always the case, especially when independent unions face stiff opposition from management, supported by state officials.

The violation of basic labor rights in Mexico and the existence of protection contracts have been denounced in national and international forums. The International Labor Office (ILO) supervisory bodies, its Committee of Experts, and the Conference Committee on the Application of Standards, among others, have received many complaints about violations of freedom of association, as well as cases of violence and arrests of independent union leaders. International labor confederations like the ITUC and IndustriAll have also presented cases. Until recently, results from these complaints were limited and did not go beyond the standard ILO recommendations with Mexican public representatives responding with promises to take corrective action. The NAFTA labor side agreement provisions also did not help to change things in Mexico as it left each nation to enforce their own labor laws (Compa and Brooks 2015; Bensusán and Middlebrook 2013; Bensusán and Covarrubias V. 2016). During negotiations of the Trans-Pacific Partnership (TPP), Mexico committed to developing labor reforms to address the complaints raised by international organized labor and to protect collective bargaining, along with reforming the system for administering labor justice. However, it will be the USMCA approval process and the newly elected Mexican government that will finally be responsible for implementing the long-demanded transformation of industrial relations. More on this follows.

From NAFTA to USMCA in the Trump Era

During his US presidential campaign, Trump promised to correct the US trade deficit, to get rid of NAFTA, to leave the TPP (from which he indeed withdrew), and to bring back blue-collar jobs. This placed the automotive industry at the center of the political debate. A closer look at the sector's macro figures will allow us a better understanding of these issues.

In 1990, Mexico manufactured only a small portion of the North American auto output while the US and Canadian shares were 78% and 16%, respectively. Following NAFTA, the panorama changed and from then, and particularly over the last decade, the MAIs share in the region has grown. In 2017, the distribution was 20%, 67%, and 13%, respectively. Employment has followed this trajectory closely. In 1999, the US registered 1.1 million jobs in the sector, of which 380,000 involved the manufacture of vehicles. By 2009, this number had halved. Although the number bounced back in 2016, aided by the recovery of the sector and reached 945,000 (211,000 automakers and 734,000part suppliers), there has nevertheless been a net job loss of 17% over the past two decades. The Canadian industry has managed to keep jobs stable at around 125,000. In contrast, the number of autoworkers in Mexico has increased 7.1 times since NAFTA, rising from 113,000 to 800,000 jobs. As a result, after 23 years of NAFTA there is a new geography of auto employment in North America: the MAI's share of jobs in the region has soared to 42%, up from 8%, while the US and Canada have decreased theirs to 51% and 7%, down from 83% and 10%, respectively (with data from Rodriguez A. and Sanchez 2017) (Fig. 13.5).

NAFTA accelerated the flow of goods and services in the region, particularly between the US and Mexico. From 1993 to 2016, trade between the two nations multiplied more than five times and the US balance went from positive (at 1.6 billion) to a record negative (at 64.3 billion). As noted elsewhere, the automotive sector accounts entirely for this imbalance. From 1993 to 2017, the US deficit with Mexico in the sector has increased almost twenty times, with vehicles accounting for two-thirds of these figures and auto parts comprising the remaining third. Likewise,

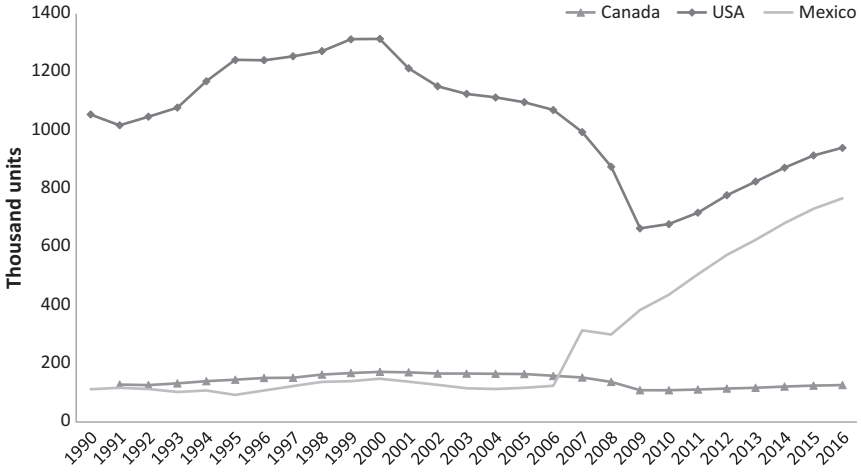

Fig. 13.5 Auto employment NAFTA region, 1990–2016. Source: Based on Rodriguez A. and Sanchez (2017)

the Canadian automotive deficit with Mexico has increased five-fold over these 23 years. All these figures show that the MAI benefited the most from NAFTA provisions and explain why the industry has become the most critical piece in NAFTA renegotiations.

The Trump administration stressed its goal to address these imbalances in its *Summary of Objectives for the NAFTA Renegotiation* (Office of the United States Trade Representative; July 17, 2017) and included labor provisions based on ILO conventions, including Convention 98. It proposed to increase the regional content for vehicles in NAFTA to 85%, up from the current 62.5%, and to set a minimum of 50% of US parts. It also included proposals on other critical issues that are beyond the scope of this paper to assess. During renegotiations, representatives of the Peña Nieto administration held to a plan of resisting and avoiding any substantial change to the original agreement, and, as had happened 25 years previously with the Salinas administration, they fiercely opposed including labor as a part of the new deal. The victory of Andres Manuel López O in the July 2018 Mexican presidential elections, representing a center-leftist opposition, changed this scenario. Although Peña Nieto officials will maintain the lead in negotiations until the end of their period in

office, December 2018, a representative of the new administration was included, allowing the Mexican position to shift to accept labor provisions and new rules of origin for the automotive sector.

At the end of August 2018, Trump announced that a preliminary agreement had been reached with Mexico (and later also with Canada), renaming NAFTA the 'US-Mexico-Canada Trade Agreement' (USMCA). It comprises 34 chapters and 12 side letters. The most consequential for the auto industry are chapters 4 (Rules of Origin, with Product Specific Rules), 5 (Origin Procedures), and 23 (Labor), which includes an annex (23-A) related to *worker representation in collective bargaining in Mexico*.

They agreed on two major changes to avoid tariffs when vehicles are moved across their common border, namely that at least 40%–45% of the car must be made by workers earning at least $16 an hour, and that 75% of auto parts—that is, 12% more than the current threshold—must originate in North America. While these provisions seek to favor manufacturing in the US, the Chapter on Labor sets up a web of rules that benefit workers on both sides of the border. It is a progressive document that calls for the fulfillment of all obligations as members of the International Labor Office (ILO), including its fundamental conventions, the ILO Declaration on Rights at Work and the ILO Declaration on Social Justice for a Fair Globalization (2008). It commits parties to recognize the 'important role of workers' and employers' organizations in protecting labor rights'; the goal of trading only in goods that meet such labor obligations; and to freedom of association, linked to the right to strike and the effective recognition of the right to collective bargaining.

Other notable commitments contained in the document are the elimination of all forms of forced or compulsory labor, including child labor; the elimination of discrimination in employment and occupation; and a *Non-Derogation* commitment to not encourage trade or investment by weakening or reducing labor rights. It also includes sections on enforcement, violence against workers, migrant workers, sex-based discrimination in the workplace, public awareness and procedural guarantees, public submissions, cooperation and cooperative labor dialogue, and public engagement and labor councils, among others.

Annex 23-A mandates the incoming Mexican government to pass legislation containing these provisions and to focus on effectively ensuring

workers' representation in collective bargaining.[13] It calls for laws to protect the right of workers to engage in collective bargaining and to organize, form, and join a union of their choice; to prohibit employer domination or interference in union activities; to establish and maintain independent and impartial bodies (Labor Courts) that will register union elections and collective bargaining agreements, carry out mediation and arbitration, and resolve internal disputes with the authority to sanction those who violate its rulings. It demands an effective system to ensure that the election of union leaders is carried out through a personal, free, and secret vote by union members and states that all existing collective bargaining agreements should be revised at least once every four years.

Discussion and Conclusions

During the NAFTA era, Mexico became one of the automotive industry's hottest spots worldwide. It was based on free trade, cheap and skilled export platform able to penetrate the US market primarily but also the global market. As a result, Mexico specializes in the production and marketing of cars—in this case, compact/small cars and light trucks propelled by ICEs—that the North American market demands.

Mexican decision-makers have exclusively aimed to become an open, cost-competitive export jurisdiction, able to attract growing flows of foreign direct investment and provide industrial jobs to its growing labor force. Consequently, after a century of automotive activities, 23 years of NAFTA and a decade of a boom in the MAI, the country has made no attempt to build any industry or automaker of its own, nor to take advantage of the current transition in the industry to make inroads in the emerging sector of new mobilities.

Mexico has taken advantage of its position as a nearshoring market complementing its more than 3000 km. of common border with the US with the combination of a broad framework of FTAs and cheap labor. No other emerging country forging a place in the global automotive industry has taken such a position. India, like Mexico, has cheap labor, but is following quite a different path. Like China, it is deploying an aggressive approach that combines technological upgrading, cultivating its own

auto manufacturers (for instance Tata), progressing in new mobilities (for instance Ola), and developing its domestic market. Brazil represents a different case in that it has developed its internal market along with improving autoworkers' wages. Even the East Central European countries that emerged as the 'new peripheries' of the automotive industry on the European continent have experienced wage hikes as the sector grows. Thus, it is no surprise that Mexico is not a top-selling market along with being one of the top manufacturers.

From the American perspective, NAFTA was meant to ensure that Mexico would continue being the backyard of the Detroit 3. The 62.5% vehicle content rule set up by the agreement was considered to be a high enough threshold to keep Asian and European automakers out of Mexico, at least in terms of preventing them from using Mexico's export platform to gain access to the US market (Klier and Rubenstein 2017; Hufbauer and Schott 2005). The result, however, was quite different and it is worth taking a closer look at this. At the beginning of NAFTA, the Detroit 3 were producing, back to back, more than two-thirds of the MAI's output. By 2016 their share had dropped 22%, driven by Ford and Chrysler's declining shares. In contrast, Asian producers increased their contribution to the MAI's output from 12% to 42% as Nissan was joined by Honda, Hyundai, Toyota, and Mazda. Although the Europeans, represented by VW alone, decreased their share by nine points, their presence is set to grow with the arrival of the German 3 premium, namely Audi, BMW and Daimler AG. This bodes badly for other players in this vehicle segment as these three already control 90% of the US premium market.

Regardless, the most notable fact is that during the NAFTA era, the Detroit 3 lost their lead in the Mexican market. This has run parallel to their displacement in US markets, first by the Japanese, and then by other international producers, and thus these changes are part of a deeper transformation in the global automotive sector. NAFTA only came to accelerate the process of chasing and changing the North American market that began in the seventies and eighties (for a more detailed account of this, see the book's concluding chapter).

Through NAFTA, the geography of production moved gradually toward Mexico, which now accounts for one-fifth of the region's automobile output. In contrast, the geography of employment has changed radi-

cally over these years. This paper argues that nearshoring geography and FTA frameworks were necessary conditions for the role adopted by the MAI in the region, but they were not enough. Canada, like Mexico, has these two conditions, but unlike Mexico, it does not have the third condition, cheap labor. As a result, the Canadian auto industry has been shrinking. As the deciding factor in the equation of the MAI, cheap labor has provoked the emigration of thousands of jobs from the US into Mexico and dramatically changed the footprint of auto jobs in North America.

The problem facing American auto producers multiplied when Asian producers were able to outperform them in their own territory through better high production systems. They then moved to Mexico in the hope that the benefits gained from nearshoring and cheap, qualified labor would provide them the necessary leverage to beat international companies in the race for market share. Not only were the results to the contrary, but the impact of the process on the downgrading of labor has been overwhelming. Throughout the NAFTA era, wages in the MAI were frozen and even decreased during the boom of the past ten years. Still, wages in the US auto sector decreased at a higher rate, dragging Canadian wages with them. The increasing US trade imbalance with Mexico is the inevitable outcome of this all.

The Trump campaign and his subsequent administration gained salience with the promise to halt both investments and jobs moving to Mexico, as well as to end US trade deals that were resulting in trade deficits. He withdrew from the TPP and was long threatening to do the same with NAFTA. In the end, the USMCA was crafted instead, a new deal that, for the most part, contains the provisions he was looking for: a 12% rule of origin, up from that of NAFTA, and supplemented by a labor value content ruling that up to 45% of a car must be made by workers earning at least $16 an hour.

Through these provisions, the American government expects to achieve what the NAFTA failed to do, that is, regain the initiative over the industry and the American market and keep Asian and European manufacturers out of Mexico. However, again the outcome could be to the contrary. The fact that international auto companies will need to use more North American-made car parts to comply with the new rule of origin could

attract more capital flows into Mexican plants. American manufacturers will also be favored but they will nevertheless eventually face greater competition from international companies. Should this be the case, not only part producers but new waves of automakers will relocate facilities to Mexico.

It is possible that the institutionalization of a new, effective industrial relations system in Mexico, that meets and complies with all ILO conventions to increase workers' rights and wages, could preclude the above from happening. Ironically, Trump's new free trade deal contains such a labor framework and mandates Mexico to begin 2019 with a law reform that puts this in place. Yet, even assuming that Mexico passes such a reform, the country's legislation remains a greater challenge. That is, who will enforce it?

Notes

1. The USMCA must still be ratified by the legislative branches of the three countries, which is expected to take place during 2019.
2. Unless otherwise indicated, Mexico's auto industry data cited here are from INEGI (Instituto Nacional de Estadistica Geografía e Informatica), ProMexico, AMIA (Asociación Mexicana de la Industria Automotriz), and OICA (International Organization of Motor Vehicle Manufacturers).
3. From 2007 to 2017 Mexico auto output grew 1.9 times (from 2.1 to 4 million units per year), China's 3.2 times (from 8.9 to 29 million units for a 225% total increase), and India's 2.2 times (from 2.2 to 4.8 million units annually for a 118% overall increase).
4. Data up to December 2017 according to INEGI-EMIM (2018). Considering indirect jobs associated to the MAI, the estimations amount to 2 million jobs.
5. In the eighties started a "new era" of the MAI (Carrillo V. 1990) featured by trade liberalization and export-oriented policies. The auto industry's decrees of 1983 and 1989 emphasized these features. Yet there were still restrictions on local content, native ownership and trade barriers that NAFTA would come to eliminate immediately (approximately 50% of them) or gradually, in a ten-year period.

6. It belongs to the Daimler-Nissan alliance to assemble Mercedes-Benz and Infiniti models.
7. Forbes 2018 ranking places him at sixth.
8. They are GM, Nissan, Honda, BMW, Mazda, Daimler AG, VW and Toyota.
9. The MAI goes back to the 1920s and 1930s when Ford, GM and Chrysler set up the first automotive facilities in Mexico. Yet they mostly assembled completely knocked down units. The decade of the 60s is identified as the full starting point of the MAI, when the D3, Nissan and VW built assembly plants in Central Mexico and Puebla following Mexican government' import substitutions policies to spur domestic production. A second phase or wave of the MAI started in the eighties, when the industry was reoriented to external markets. NAFTA brought about the third wave and the boom of the MAI came to represent a fourth stage.
10. NOM-163-SEMARNAT-ENER-SCFI-2013. CO_2 emissions cast by the exhaust and its equivalence in terms of fuel encompassing new vehicles up to 3857 Kg.
11. I estimate this 30% based on the specifics contained in the same collective bargaining agreements. The Conference Board estimates at 29.7% of total compensation the cost for benefits in the whole Mexican manufacturing sector.
12. Other location-sensitive cost factors range as follows: Cost of capital, 11–25%; taxes, 10–18%; transportation, 6–21%; utilities, 2–7%; and facilities, 2–5% (KPMG 2016).
13. It states that, for the agreement not to be delayed, Mexico shall adopt such legislation before January 1, 2019.

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