

**The Mexican Auto Industry 2008-2010:
From the Crisis to a Greater Regiocentric Sway**

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Abstract

The global crisis of 2008-2009 created a dramatic impact on the Mexican auto industry. In 2009 the auto output fell 28.3% as the total production plummeted to 1, 566, 842 units from 2,180, 294 in 2008. Though, the recovery of the sector was not only rapid but equally dramatic. At the end of 2010 the industry had practically the same output of 2008 and for the current year the specialized forecasters (among others, PwC & Automotive News) expect Mexican production will beat any previous record. Why and how is this happening? We postulate that Mexican auto production is getting more critical than ever within the North America Region as firms deploy a more regiocentric strategy to both struggle for survival and meet more demanding fuel-efficiency standards. In the midst of the crisis, from these years to the present, five out of the seven automakers operating in Mexico have been pouring more than 13 billion dollars in retooling old factories, opening new ones, and developing, testing and launching new projects. All of these aimed mostly at increasing the share of the North America market and putting in the marketplace more eco-friendly motorized systems.

Thus, as Ford did it with the CD3 Project from 2005 on and now it does it with the making of its successor –the CD4--, at the present Chrysler, GM, VW and Nissan are launching from Mexico to the world a set of brand-new projects --namely the Premium Fiat 500, the Cactus/Aveo, the New Jetta/the Post-New Beetle, and the Micra-March, respectively. At the same time all they are opening up a number of new engine and transmission plants to supplement power train systems more economic and fuel efficient. From this perspective, the market and productive strategies of these firms share many common features irrespectively of their nationality. Our essay goes to identify them and discuss their implications for the North American auto sector. We also identify their implications for Mexico in terms of the spatial regionalization that is unfolding as brown-fields worksites become green ones, green-fields worksites become old ones, and 'brand-new-green-field worksites add to the sector.

Introduction

For now we all know that the crisis of the largest automakers, particularly U.S. ones, experienced during the summer of 2008 paralleled the financial disaster unveiled with the bankruptcy of Lehman Brothers. What is not so neat is that below the economic turmoil of that year the auto-sector as a whole was experiencing radical waves of pressures. All of them related to production design, manufacturing, marketing and employment systems followed by firms under unsustainable industrial models (Freyssenet, 2009; Mc Duffie, 2010). The former author, in a seminal work, postulates that all this is setting up the threshold of the "second automobile revolution" (Freyssenet, 2009) –i.e., a radical industrial movement that will come to replace the internal combustion engine as a dominant industrial paradigm for new eco-friendly displacement systems.

In 2008 the auto output fell by almost three million as compared to the previous year. U.S. market took the worst part, decreasing production in more than two million. From the outset this meant that the U.S. lost a big chunk of worldwide market share between 2004 and 2008, from 18.4 to 12.2%. By then not only Japan produced more cars than the U.S., 11.4 versus 8.7 million, but also China --9.3 million.¹ China would not need more than a few months to take the lead as the new global center of sales and production. Indeed during 2009 sales plumped by 27% in the U.S. whereas in China reached 13.5 million, displacing it as the world's largest market.

As for output the evolution was no different; after years of beating its own and others records, by 2010 China turned out to be a powerful engine supporting recovery elsewhere. While the industry worldwide had an unexpected rebound, China's growth

¹ As known, four years earlier China was not even producing half of vehicles produced in the U.S. Data from INEGI, 2010: **The Automotive Sector in Mexico**; see Table 2 (Statistical Annex).

went far beyond any previous standard –more than doubling the figures reached just two years before.²

As these developments evolved in the midst of the crisis and recovery of the last three years, the reconfiguration of the global geography of auto production, trade and marketing proceed at an accelerated pace. To start with, there were the BRICs with China at the forefront that allowed the rapid recovery of production by 2010. To continue, projections indicate that in 2011 the added output of Brazil, Russia, China and India will be already exceeding that of the mature markets of U.S., Europe and Japan (Weekly Newsletter. October 13, 2010). In the same vein, there could be additional room to platforms for exports in such less developed countries as Mexico, which would explain the extraordinary rebound of auto-production taking place in there in the last few months.³

A related fact is that additional emerging economies may enter to the circle of top consumer markets. Let's take the case of Brazil as an example. In it on August 2010 sales of cars and light commercial vehicles reached 2.08 million units, making it the fourth global market – a place Germany used to be in.⁴

Where the auto industry is in the medium term heading to – not to mention the long term--? It is a question with no answer at all. Even in the short term a number of pressing questions piles up. A first group concerns the way the Big Three U.S. automakers

² At the beginning of 2011 China Association of Automobile Manufacturers (CAAM) underscored the way the country have taken the lead worldwide. In a press conference CAAM stated that "... China had produced 18.2647 million automobiles and sold 18.0619 million in 2010, up 32.44 percent and 32.37 percent year on year." In China Economic Net. In http://en.ce.cn/Insight/201102/10/t20110210_22201313.shtml. In the U.S, by comparison, sales closed at 11.6 million, an increase of 11% over 2009. As seen, China had no problem to overcome the car sales record set up by the U.S. in 2000. Back then it sold 17.4 million units. In this scenario in 2011 China will be easily marketing more than 19 million vehicles. Cf. J.D. Power and Automotive News, several issues from November to December 2010. For USA the data belongs to the National Automobile Dealers Association (NADA), 2011.

³ We are to document in this work such a recovery and rebound in Mexico. Alvarez et al. (2010) early on pointed out the rapid recovery of auto production in Mexico. For an analysis of the policies implemented by the Mexican government to support the industry during the crisis, see Lacayo (2010).

⁴ While Brazil continued a rising sales path in the same period, car sales in Germany fell by 27.3% (Automotive News, Weekly Newsletter. October 13, 2010).

will emerge (if they will) after the rescue⁵ and intervention ordered by President Barack Obama in March 2009 --the so called "bailout."⁶ Recall that solely in 2008 GM lost \$30.9 billion, as well as the spot as the first sales company, following Toyota's most profitable fiscal year. The fact is that nowadays the single possibility for the former "Big Three" to keep alive is called into question (Sturgeon, Gereffi, et al., 2010).

Then it was not only American's. The crisis took other great icons of the industry down. Particularly Toyota, which in addition to its accumulated financial problems, underwent severe hardships due to the longest chain of security flaws and functional failures in a number of its cars. This, an authentic 'recall crisis' encompassing more than 10 million vehicles, brought down consumer confidence on the firm -one of Toyota's greatest assets along with its allegedly quality and reliability standards. Consumer Reports revealed that in the past two years, scores of confidence in Toyota were down 46 points while Ford's rose 35 points (<http://www.consumerreports.org/cro/cars/reliability/index.htm>). Product recalls, consumer claims and replacements caused Toyota ends 2010 as the only major firm suffering a drop in sales while the industry climbed 10%.

As a result the question about the likely future of the (ex) Big Three extends to all large automakers, bringing about a second group of critical questions. Who will rule the auto world of the future? Who will survive? Who and how will they emerge from the current crisis? Which new and major mergers and takeovers will they experience? Which

⁵ Ford could resist the bailout despite its huge debt. While the collapse of GM and Chrysler would seal its own debacle, it promoted the rescue itself. A movement that established how extraordinarily interdependent has become the North American automotive industry within and across its whole chain --i.e., from producers to suppliers, from distributors to consumers, etc. The bailout, a billionaire financial intervention with no precedent, represented to the Obama administration 'a reason of state,' as an eventual collapse of the 'Big Three' would mean the failure of some of the most emblematic firms of American capitalism. Furthermore, it would imply that in the short term up to 3 million jobs would be lost. For an insider view of the bailout Cf... Rattner (2010) --the first head of the "Presidential Task Force on the Auto Industry" created by Obama.

⁶ Obama announced the final bailout plan on March 30th, 2009. The transfer of resources was the greatest in the auto industry's history, lending \$ 60 billion to GM and Chrysler. If we take into account the 17.4 billion granted as emergency loans by the Bush administration, plus the resources directed to the sector's financial institutions, the bailout raised as much as 85 billion (CNN-Expansion, 03-30-2009, The New Herald, 01-08-2010).

technological trajectories, global and regional alliances, productive chains and markets will they target at? Which social systems of production and employment relations will prove more enduring at the end? Will we witness in the following few years a second automobile revolution lead by more sustainable displacement systems or such a revolution will be out of our horizons?

All those challenges of the major automakers have direct implications for the Mexican auto industry, as it is greatly dominated by the American Big 3, hosts a huge number of auto factories that are U.S. market-dependent, and holds up to a million of the best country's jobs.

As a first building block of a larger research project,⁷ in this essay we focus on the adjustments in productive and market strategies the seven automotive firms working in Mexico put in place throughout the years 2008-2010.⁸ Provided that Mexico has become increasingly important within the auto sector of the North America region, by studying this country we expect to gain a privileged window to examine how these firms are coping with the current crisis and the number of pressures and challenges aforementioned.

⁷ The research project, "The reconfiguration of social systems of production and employment relations in North America auto industry", focuses on the ex-Big Three's actions and reactions to surpassing the current moment, along with the labor responses that all of this is bringing about.

⁸ That is, the three U.S. firms, the German VW, and the Japanese Toyota, Honda and Nissan. There has not been any new corporative setting up assembly or stamping plants in Mexico since 2004, when Toyota started up operations in Baja California. Back in 2007 First Auto Works, one of the Chinese largest automakers, presumably would open a factory in Michoacán, Mexico in a joint venture with either of its main partners with a strong muscle in the region—i.e., GM or VW. Actually the only agreement signed by FAW for Mexico was with the 'Grupo Salinas' (one of the largest Mexican firms in the entertainment industry) to introduce the compact-extra-economics Xiali and Vita. The Salinas Group would sell the Xialis in Mexico throughout its 'Elektra' popular outlets—a national chain of electro-domestic retailers. The agreement faded in the summer of 2009, while FAW withdrew from its chief commitment, namely that it would set up a factory in Mexico with a minimum investment of \$ US 100 million and an output of 50, 000 cars following Auto Mexican Law, which enforces such requirements for a foreign firm from the North American region to import finished vehicles. It seems that FAW abandoned its plans for coming in Latin America afraid of landing in the middle of the crisis. See (http://www.faw.com/news/dzjy_jybj/jyzb/20090625160900044.htm).

Early on some authors stated that the investments coming to Mexico could be forestalled as the bailout would expose the Big 3 to further political pressures. In other words, while drawing money from the public sphere to survive, there will not be political correct for the Big 3 to turn it over to such offshore cheap labor settings as México's. As Sturgeon et al. put it: "With the current severe recession in the United States, the Big 3 at the brink of declaring bankruptcy, and many Japanese plants temporarily shut down to forestall the build up of additional excess inventory, the future of planned and even existing investments in Mexico must be called into question."⁹

We are to show that facts have evolved quite differently. Most of the auto corporations working in México neither cancelled their planned investments nor delayed their portfolio for future projects. This holds more true as to the American Big 3 which were pouring a great deal of resources in Mexico to opening and retooling facilities, as well as launching new projects, despite the fact that they simultaneously were shrinking business elsewhere. Why and how did this happen? Our thesis is straightforward: Most of the auto corporations, and especially the Big 3, further reaffirmed México's low costs and highly reliable platform for exports for the North American Market as strategic assets to both resorting the crisis and shielding their own market share in the whole region.

The study is made up of three sections in addition to this introduction. In the first we pull together basic data of the Mexican automotive industry to illustrate its evolution during the last few years. In the second and central part of the work we analyze one by one the seven firms producing cars in the country, focusing on their productive and markets strategies implemented between 2008 and 2010. In the last part we provide some discussion and recapitulate to build some thesis for future research.

We support this essay in a field work that is in progress. As a part of it we carried out a first round of interviews with directives of Ford of Mexico and GM, as well as with

⁹ And they conclude: "For General Motors and Chrysler especially, which have accepted federal loans, and even for Ford, which has not yet accepted any bailout money but may well be forced to do so, investing further in Mexico may be a political impossibility for some time." (Sturgeon et al., 2010: 18). In Actes du GERPISA n°42.

public officers in charge of promoting the auto sector in Northern Mexico. Yet at this stage of our research project, we work primarily with information provided by firms' conference rooms. Data related to firms provided in part II of the essay, unless otherwise indicated, comes from these sources. The rest of the information we use comes from databases, studies and analysis carried out by specialized organizations and publications of the sector.

I. Regionalization that matters. The automotive market in Mexico: From Falling to Rebounding.

Automotive production has been organized regionally; yet in the height of globalization auto corporations emphasized regionalization strategies within distinctive regional production systems.¹⁰ A number of scholars have examined these trends (Lung, Tulder and Carrillo, 2004; De la Garza, 2006-2010; Carrillo, 1990-1995-2004, Carrillo and Contreras, 2008; Covarrubias and Cardoso, 2006; Bensusán and Sanchez, 2006; Freyssenet, Shimizu and Volpato, 2003; Boyer and Freyssenet, 2002; Humphrey, Leclerc and Salerno, 2000; Covarrubias, 2000-2009; Arteaga, 1994-2007). Regional strategies are not new; rather they have been a corporative approach to shape a 'regiocentric' space -- within and across borders—where its productive and marketing strategies are to thrive and eventually prevail. In fact, as core scholars on multinational's strategies have extensively shown, between ethnocentric and geocentric strategies lie down regiocentric's while firms need an approach that fits global with local responsiveness, along with encouraging worldwide learning (Bartlett, Ghoshal & Birkinshaw, 2003; Prahalad and Hart, 2002). In brief regionalization, which we translate into regiocentric strategies, means that firms determine geographical areas to arrange an integrative network of producers and suppliers aimed at gaining competitiveness and market governance within them.

¹⁰ Globalization opened up regional production systems to a number of dense value chains of interconnected linkages "... consisting of flows of intermediate goods, information and instructions, and finance." (Sturgeon et al: 2010: 12).

The regionalization in Mexico's automobile industry was more than evident in the 90s. Auto production grew dramatically driven by the place automakers gave to the country as a reliable and low cost frontier to deploying and replacing operations. The North American Free Trade Agreement (NAFTA), signed in 1994 among the U.S., Mexico and Canada, further accelerated a regional production system by removing inter-regional duties and imposing higher barriers to outsiders.

Between 1988 and 1998, auto output in Mexico increased by 130% - from 629,000 to 1, 453.000 units.¹¹ In 2000 production reached 1, 889, 486 units and even when four year later decreased to 1.5 million, since then it climbed steadily setting up historic records for the years 2007 and 2008, with 2,105,789, and 2,180, 294 units, respectively. Then it landed the crisis, decreasing output by 28.3% in 2009 as the total production plumped to 1, 566, 842 units (See tables 3 and 4, Statistical Annex). The rebound was quick and considerably stronger. At the end of 2010 production in Mexico reached 2, 260, 776 units (Table 4)¹² and for the current year most specialized forecast indicate that output will beat any previous record.

In short, what we saw in these three years is that the crisis took a little longer for landing in Mexico and -conversely- much less for recovering. More important is to note that recovery has been as dramatic as the crisis, taking Mexican production of finished vehicles to new peaks. Such remarkable oscillations in auto output may well imply from the outset that the productive and market trajectory of automakers –hence of the auto industry as a whole-- has become more and more unpredictable. But it also means that, as we shall discuss in this essay, auto firms quickly upgrade Mexico as a critical asset for prevailing within the North American region while overcoming the crisis and shielding their own market share.

Meanwhile the Mexican domestic market remained tied to its own weak-stagnant pathway. Sales of units in 2010, both domestically produced and imported, increased by

¹¹ It was the largest increase among the countries of North America (Bensusán and Sánchez, 2006).

¹² The collapse of auto output was more dramatic during the first half of 2009. By then, the first semester report registered that production fell by 42%.

7.3% in light vehicles (equivalent to almost 810, 000 units) and 13% in heavy trucks (close to 26, 000 vehicles). Though, compared with 2008, these figures are lower by 21% in light vehicles and 45% in heavy trucks. Moreover, the Mexican Association of Automobile Dealers is voicing that if these trends of 'slow growth' continue in 2011 -as indeed they expect to- national car sales barely "... will be at similar levels to 2000 and still far away from the results previous at the 2008 crisis" (Cf.... <http://www.amda.org.mx/Ultimas-noticias/pronostica-amda-lento-crecimiento-del-mercado-automotor-en-2011.html>).

Nissan seized the largest share of the domestic market. By models the Nissan Tsuru is the best seller in the Mexican market with 7.6% share, followed by the Volkswagen Jetta (4.8) and the Tiida (4.0%); then come the GM Aveo (3.4), the VW Bora (3.1), the Nissan Sentra (2.7), the three-door Chevy GM (2.5), the Nissan large chassis (2.3), the four-door Chevy (1.9), and the VW Gol Sedan (with 1.8 percent of the market).

At the beginning of the crisis Mexico manufactured for the regional production system as many as 24 auto models, 80% of them for export mainly to the U.S. market, of which GM, Ford and Chrysler accounted for 70%. The rest of exports were divided among the other four automakers established in the country –i.e., the Japanese Nissan, Toyota and Honda and the Germany's Volkswagen. Sales of finished vehicles and auto parts to foreign markets totaled around \$ 45 billion.

The automotive industry was made up of 20 assembly plants, 2000 part and components factories and a network of more than 1400 dealers. Adding up manufacturing activities, trade and services related to the automotive industry employment reached one million, representing 13.5% of industrial employment, 4.0% of GNP and 16% of manufacturing GNP (Alvarez et al, 2010; Cepal, 2010).¹³ While GNP fell by 7% in 2009, the automobile sector contribution to GNP slipped to 2.7 and to 15% of manufacturing GNP (Table 4). In the meantime plants closing and layoffs reduced workforce by 15%.

¹³ Informe de la Cepal: "La Inversión Extranjera Directa (IED) en América Latina y el Caribe". Mayo, 2010.

Assembly and component factories lost about 35,000 jobs between 2008 and 2009, descending from 194, 953 to 159, 989 employees. This level of employment was similar to that of the early years of the previous decade and when compared with 2007 -the year auto industry employment reached its peak with 209, 876 jobs--- it had a reduction of about 50, 000 jobs.

During the crisis Nissan replaced GM as the first auto manufacturer in Mexico; though it did not last long at the forefront. By 2010 GM recovered the spot as the largest producer followed closely by Nissan, VW, Ford and Chrysler. Honda and Toyota appeared at the very bottom with a modest output of about 50,000 vehicles each (Table 4).

Now we turn to production and market strategies of these seven automakers.

II. Sorting Out the crisis: Perspectives from Mexico.

Ford

The only one of the American auto-makers that can claim to stand by itself, Ford has not ceased its expansion investments plans in the country throughout these years. Because their financial position was less astringent than GM and Chrysler's and its plans to strengthen from Mexico come since 2005, Ford kept a balanced flow of both planned and new investments. Actually since the retooling of the Ford Hermosillo plant (HSAP) in Northern Mexico in 2005 to launch the Ford Fusion and several varieties of Lincoln MKZ and Mercury Milan based on the CD3 project, Ford made it clear that Mexico was a keystone within its global strategy "Way Forward".¹⁴ The CD3 project itself portrayed a clear upgrading for the Hermosillo plant in Ford's global value chain, signaling

¹⁴ It includes four areas: "product development, investment and development in manufacturing, effects and affects in the consumer experience and social responsibility." (<http://www.at.ford.com/news/cn/Pages>).

an important shift to refocus on the development of more fuel-efficient and technologically advanced vehicles.¹⁵

In May 2008 the firm announced an investment up to 3 billion for Mexico --actually it will sum up more than 3.1 billion; see the corresponding Table 1 below--, its largest ever, to be distributed on three distinctive projects, namely the restructuring of the Cuautitlan Plant, the launching of a new diesel engine plant at the Chihuahua Ford Complex and the opening of a new plant in Guanajuato --jointly developed with Getrag Company-- to manufacture transmissions. In early 2011 some auto publishers have revealed that the Ford's CD4 project is in the making and has been granted to the Hermosillo plant, to which it will invest 1.5 billion dollars to launching the next generation of Ford's mid-size vehicles --a 'Fusion-Mondeo convergence.'¹⁶ Next we provide further detail of each project.

-) During the spring of 2008 Ford began works to build a new engine plant at its Chihuahua Complex, next to Plant II. Getting ready for "Job One" in November 2009, the new facility is to produce the diesel engine 6.7-liter Power Stroke V-8 turbo-charged, under a power train design emphasizing on fuel economy --purportedly the most advanced of its class.

¹⁵ Consuming up to 1.3 billion dollars, the CD3 project implied that HSAP become a launching facility for a brand new vehicle in the segment of medium cars, contrary to what the plant had been from the very beginning -i.e., a plant to assembly compact cars, previously manufactured and consolidated elsewhere. As a way to made it clear that HSAP was to signal Ford's commitment towards manufacturing more fuel-efficient and technologically more advanced cars, yielding 17k per gallon, the Fusion and the Lincoln were designed to start filling the hybrid car segment and compete in it. The CD3 project also put into place a whole modular production system for the firm's first time which supposed to build a new campus for suppliers connected to the plant by three tunnels. It is integrated with 14 facilities housing 19 suppliers that synchronically deliver sub-assemblies and modules directly in HSAP assembly lines (Cf... Covarrubias, 2006-08).

¹⁶ In an interview carried out in March 2011, one Ford directive confirmed me that the works for landing the CD4 project in Hermosillo had started up.

Its goal is to offer the first diesel engine manufactured in North America for trucks Super Duty F-250, F-350, F-450 and F-550, version 2011.¹⁷ From Ford's perspective, this new plant would come to represent a corporative worldwide model for innovations –just as Hermosillo did with the CD3 project. With an investment of \$ US 838 million the whole project will generate 1,100 direct jobs and 3,300 indirect jobs in its final stage, adding up an annual capacity of 200,000 engines.

The opening of a new plant in Guanajuato to manufacture transmissions was another Ford's milestone in 2010. It will produce the 6DCT250, employing 1, 200 workers for a yearly capacity of 350, 000. The project, jointly developed with Getrag Company, reached an investment of 500 USD million.

-) In Cuautitlan, the oldest Ford plant, the corporative proceeded to bring back into life a practically extinct-brown field work factory.¹⁸ In a major operation costing 1.2 USD billion, the plant was wholly retooled to manufacture in the first quarter of 2010 a redesigned Ford Fiesta, aimed at filling the North American market firstly and South America secondly. It will debut as the Ford Fiesta 2011. The plant will work through a global platform and integrate designs based on the European 'Kinetic Design', bringing forward higher quality and reliability, increased performance and fuel efficiency. It will have an annual capacity up to 324.000 vehicles, employing 2, 000 workers.¹⁹

Its technical and social layout is expected to represent one of the most advanced flexible manufacturing systems in the North American region. Constructed over an additional 25,800 M2 to shelter the manufacturing process, its layout includes a line of 5-

¹⁷ The Chihuahua Complex, established in 1983, shelters the engine plants I and II. As part of a deep reorganization brought about for the new project, the Engine Plant I, the first of the complex, kept the production of the 'Duratec' I-4 (2.0-and 2.5-liter gasoline) for the Ford Escape, Ford Fusion, Ford EcoSport, and Mercury Milan, among others --within an installed capacity of 428,000 engines annually. The Engine Plant II, which assembles engines under the project 'Zetec', was further reconfigured to also shelter the new diesel engine lines.

¹⁸ Over four decades of operating, Ford Cuautitlan (1964) has produced engines, mono-blocks and such variety of vehicles as the Mustang, Cougar, Ikon, Thunderbird, LTD, Crown Victoria, Grand Marquis, Taurus, Mystique, Contour and light and medium trucks of the F and F-600 Series, among others. At the end of 2008, more than 2.2 million units have run from its assembly lines.

¹⁹ During 2010, the first year of production, was expected to reach an 180,000 units.

highly productive presses, 270 robots, online measurement systems and ergonomic adjustable platforms in the area of seats. In the painting area was incorporated a new process known as 'Wet', which makes the application of primer, base paint and transparent 'on wet'. In the stamping area, the retooling was complete on the ground that all major sub-assemblies and body system modules will be manufactured in the plant.

-) At the Hermosillo plant, in 2008 the company invested \$ 600 million additional dollars in facilities and equipment to produce the 2010 versions of the hybrid models of Fusion and Mercury, which have been produced since December 2008. In September 2009 the firm celebrated the production of its 1 millionth Ford Fusion, underscoring the success of both the CD3 strategy in the U.S. market and its global strategy "Way Forward".²⁰

Then the CD4 project comes. As stated, it features a 1.5 billion additional investment for HSAP to launch the next generation of Ford's mid-size sedans as early as 2012, for the 2013 model year. It will occupy 2,000 more workers, summing up 5, 000, and rise output up to 500, 000 units. To this end HSAP will expand facilities across 43, 000 M2 and 6 new buildings.

The CD4 platform is attempted to be the backbone of Ford's global lineup of vehicles.²¹ The Fusion and Mondeo 'convergence' will be the first to share this chassis followed by the Taurus, MKZ, the new Lincoln C Concept, and several other Fords.²² It will feature a power train developed in Europe, the EcoBoost turbo-charging system with 1.6-liter and 2.0-liter inline-4 engines and a dual-clutch six-speed gearbox, which produce 180

²⁰ The Ford Fusion and the Mercury Milan have been consistently granted the North American President's Quality Award, and Consumer Reports has recognized them as the most efficient vehicles in North America and tagged them as 'Best Buy,' including the Lincoln MKZ (<http://www.at.ford.com/news/cn/Pages; JD Power>).

²¹ At the same time, at the closing of 2010 Ford announced that was ending the production of the Mercury, a move revealing its preparation for the coming CD4 and the getting rid of brand names less profitable and gas guzzlers, no matter how emblematic they are.

²² Based on a modified version of the EUCD platform, the CD4 is also a Ford's response to its decreased stake in Mazda as the CD3 platform derived from the Mazda6 sedan.

HP and can achieve 43 MPG. It will also feature the Ford's 'Kinetic Style,' a mix of the new Focus and Taurus.²³

The granting of the CD4 to the Hermosillo plant entails not only the continuation of the CD3 trajectory, but a recognition to the HSAP-CD3's achievements just mentioned along with the undisputed fact that Hermosillo has confirmed its position as the firm's number one facility in terms of quality and costs.²⁴

General Motors

During these years GM history for Mexico has been no quite different from Ford's, delivering also a strong message as to what extent Mexico's operation are crucial to both its North America position and efforts to overcome the factors that placed it in the verge of bankruptcy. And like Ford, GM channeled a good deal of planned and new resources to the country. Indeed, between 2006 and 2009 the firm invested 2.8 billion USD and from the last year to 2011 GM estimates additional investments of 1.2 billion USD. These resources are directed to open a new plant, the San Luis Complex, a Test Track for Extreme Hot Weather, and to modernize and make new releases in the Ramos Arizpe Complex. In both complexes, plus the Silao one, GM opened up transmission plants.

-) In early 2007, in the municipality of Villa de Reyes, 30 km from the city of San Luis Potosi, GM began to build what will become "one of the most important factories of GM worldwide ... a reference factory for rest of the world" (words of Kevin Williams, president and CEO of General Motors Mexico. *Expansión*, July 26-2008). The 1 billion USD investments resulted in what has been known as the "Cactus Project" which targeted at making models T250- AVEO to compete in the sub-compact segment and offering GM's

²³ So that the CD4 will lead to a significant improvement over the current car's 35-mph highway rating and can be also placed in the next Focus and Ford Fiesta. Data from: <http://wot.motortrend.com/ford-moving-to-one-global-midsize-platform-4cyl-ecoboost-could-get-43-mpg-3329.html#ixzz1MBLlKjGu>.

²⁴ In this respect it could be noted that in 2010 HSAP produced about 312, 000 units, 80, 000 more than in 2009; a record for its 24 years of operation based on the manufacture of 54 cars per hour.

answers to fuel prices hikes and demands for fuel efficiency. In some respects after the San Luis complex GM was replicating the Ford CD3 launched in HSAP. When exploring the options to set up this plant San Luis Potosi take the lead for a number of reasons,²⁵ the most important being its location in Central Mexico –near to both the U.S. border and the greater Mexican markets-- as the ‘Cactus project’ meant a dual purpose production to serve local and export markets, first the U.S. then the South American’s. Becoming the fourth GM complex in Mexico, the plant opened up in July 2008 employing 2,000 workers, plus an estimated of 10,000 to be employed by the 15 first and second tier-supplier firms linked to it. Among these are Posco MPC, Valeo Transmissions, Lear and Dong Kwan.

The AVEO features Korean technology, carrying four-cylinder gasoline engine equipped with a standard 1.6L I-4 engine and standard 5-speed manual transmission, and a 5.7 L/100 km highway fuel consumption rating, all of them in turn based on GM-DaeWoo variable valve timing technology that supported ‘Double Continuous Variable Cam Phasing’ (DCVCP) (http://media.gm.com/content/media/us/en/news/news_detail.globalnews.brand_chevrolet.html/content/Pages/news/global/Chevrolet/0208_aveo).²⁶

Its production capacity started at 75,000 units per year, a productivity of 31 units per hour with a single platform. But the plant is enabled to accommodate multiple platforms ranging production from sub-compact to compact cars, for a total annual capacity of 360, 000 units. Its technical and organizational layout seeks to set up standards of a highly flexible-technologically advanced factory that is easily able to climb to a productivity of 52 cars per hour.

²⁵ Back in 2005 GM had taken the decision to build a complex of this magnitude. According to GM executives Mexico became a natural choice provided its key role in the North American region. San Luis Potosi quickly emerged as ‘the best option’ when local and federal governments contributed around 100 million USD to provide land, a power station, intermodal transport infrastructure, and a railroad connection, among others. Additionally the local government offered a first-year-long tax exemption (Cf... Expansion, July 26, 2008).

²⁶ As known, GM allied with the former Daewoo Group following its bankruptcy back in 1999. On January 20, 2011, General Motors announced that GM Daewoo would be renamed GM Korea Co.

One year after the startup of San Luis, the Complex included a transmission plant with an investment of 400 million USD, capacity of 300, 000 units and hiring 600 workers. The plant will generate automatic transmissions that can be used by all the compact cars of the GM range, incorporating four-speed for the front-wheel drive and four-wheel drive, gear shifts from clutch to clutch and advanced technology for more efficient fuel consumption.

-) In the Complex of Ramos Arizpe, Coahuila, GM poured the largest investment in place between 2006 and 2009 –i.e., US\$ 1,360 million. 500 of them ended at the preparation of a production line to manufacture the hybrid version of the Captiva SUV, which added up to the other models manufactured in this assembly and stamping complex, namely the Chevrolet Chevy (all versions), Chevrolet Captiva Sport, HHR and Cadillac SRX.

US\$ 469 million went to a new engine plant that will produce the versions HVV6 3.5 L / HVV6 3.9 L / HFV6, whereas the rest of the investment went to a new transmission plant to produce 6-speed FWD / 2-mode hybrid / 4L60E and 4L70E Heavy Duty. Adding up employees in both plants new hires reached 875.

Furthermore, in August 2010, the company announced an additional investment of US\$ 500 million for Ramos Arizpe. 284 million are directed to produce a new generation of eight-cylinder engine employing 390 new direct workers. The remaining resources are reserved to build a new platform for the production of a new vehicle (not yet disclosure), adding up 400 jobs.

-) In the Complex of Silao, Guanajuato --where the Chevrolet Avalanche, Chevrolet Silverado Crew Cab, Cadillac Escalade EXT, GMC Sierra Crew Cab and Cheyenne Crew Cab are manufactured-- GM disbursed US\$ 660 million and hired 1, 100 new workers to build another transmission plant with an annual capacity of 500, 000 units for the versions 6L50 / 6L80 and 6L90. Summing up capacities from the San Luis, Ramos Arizpe and Silao plants, GM expects to produce one million transmissions per year.

-) Another 50 million USD were invested to build a Test Track for Higher Temperature Conditions, located in Cupuan del Rio, Michoacán. Opened up in 2008, it is intended to be the largest of its kind in Latin America, equipped with a circular track, 4 testing lanes, safety rails, serpentine traffic track, city traffic track, gravel track, dust trail track, and "soak & idle" for climate static testing. It employs 134 jobs.

-) By the contrary, in the Toluca Complex the company stopped producing the Kodiak truck, leaving its production to the manufacture of engines L4 3.0L / L4 1.6L Family One / V8 5.0 and 5.7L, as well as cast blocks , heads, and crankshafts.

Chrysler

The most troubled American automaker, against all the odds also made investments in Mexico during these years, while trying to get a greater leverage in the region.²⁷ Between January and July 2009 Chrysler auto output, including the U.S., Canada and Mexico plants, fell to 353, 536 units from 1, 190, 679 units produced in the same period in 2008. At the same time in the United States it closed more than 300 dealerships, while between 2008 and the first half of 2009 cut 30, 000 jobs.

The impacts of Chrysler's anguishes on Mexico were straightforward. In the summer of 2009 Chrysler of Mexico's production had fallen to less than half. Particularly in the Toluca Complex, technical stoppages affected the production of the PT Cruiser and Journey. In 2010 developments became more critical to the extent that the Cruiser was discontinued from the firm's portfolio, whereas at the Ramos Arizpe Complex in

²⁷ In order to survive and as a part of the bailout, Chrysler went to critical moves and different kind of alliances with the UAW and the governments of the U.S. and Canada. Later on, in early 2009 Chrysler and Fiat signed a global strategic alliance by which the latter will own a 20% stake in the company, which can grow to as much as 35%. After this arrangement, the UAW Retiree Medical Benefits Trust owned 55% of the new Chrysler Group whereas the rest was split between the U.S. Treasury and Canadian Government at 8% and 2%, respectively. The Wall Street Journal (<http://online.wsj.com/article/SB123245481832897597.html>). On Chrysler's tribulations and its uncertain future see MacDuffie, 2010.

Derramadero, Coahuila, the output of the RAM truck fell by 65% --although in November 2010 the plant was operating again at 90% capacity, with 2,200 workers in two shifts.

The fact is that Chrysler maintained its expansion and investment plans, nevertheless its modest extent as compared with that of the other U.S. giants. As stated by Manuel Duarte and Dave Elshoff, Chrysler spokesmen for Mexico and the international community, respectively, "... while (the firm) closes plants in the U.S. and withdraw from other countries, it maintains its expectations in Mexico and in particular at Coahuila" (Zócalo Saltillo, 02/03/2009).

-) Two projects continued. One was the project of a new engine plant in the Derramadero Complex, with an investment of 570 million USD. The construction began in June 2007 and after several delays and schedule adjustments the new plant started up in October 2010. Introduced as the Engine 'Plant Centenary' by Chrysler,²⁸ it will employ up to 700 workers to produce 440,000 units. It was also introduced as the first 'green' plant in the Mexican automobile industry, as it will use solar power generated by 1,900 solar cells and avoid emitting up to 7,500 tons of CO₂ a year. It will manufacture the Chrysler Pentastar V6 engine, a series of aluminum dual overhead cam 24-valve V-6 engines introduced for model-year 2011, to replace the seven different V6 engines currently used in the Chrysler product line, Ram, Jeep and Dodge. The engine will be assembled in 13 vehicles, including vans and SUVs, Challenger, Jeep Grand Cherokee, Town & Country, 300 and 200 and Dodge Charger, Avenger, Durango and Journey. It will provide fuel efficiency in an average range of 7%.

Summing up this plant, Chrysler has three plants in Saltillo –i.e., the original stamping and assembly plant and two engine factories. A specific project that is worth to notice in the Derramadero plant is the assembling of the light truck "Titan" for Nissan as of

²⁸ It was named after the official century of the Mexican Revolution.

2011. It tells us a little more as to the desperate measures the company has been taking to survive.²⁹

-) A second and the most highlighted project arrived in early 2011 to inject new life into the Toluca Complex –originally it was planned for running in 2010. The firm invests 550 million USD to enable a new production line for manufacturing the sub-compact Fiat 500 Premium. It aims to reach an output of 100, 000 yearly units employing 500 direct jobs, in addition to the 2, 000 previously existing, and 3,000 indirect jobs.

The Fiat 500 Premium will serve the U.S. market from 2011 on, and secondarily the South America one. Considering that since two decades ago Fiat has not introduced any car in the US market, the 500 Premium is called to penetrate its small-compact segment market with a mini car highly rated in Europe for both its stylish tradition and its fuel efficiency.³⁰ Waiting for a positive answer from the American market, Fiat/Chrysler has plans to turn to an electrical version of the 500 Premium in 2012. This way it will chase after the Nissan Leaf which has been introduced in the U.S. since the end of 2010.

With this project Fiat/Chrysler expects also to reactivate the so-called 'Chrysler of Mexico's Strategic Industrial Park of Suppliers,' which was opened back in 2007 under a published architecture of modular manufacturing production, provided that the manufacturing of the Fiat 500 as planned will demand an estimated of US \$500 million in auto components.³¹

²⁹ This was another of the critical moves made by Chrysler to come through the crisis. That is, making arrangements of shared production and assembly with Nissan and Volkswagen for trucks and minivans, respectively.

³⁰ The Fiat 500 Premium features the FIRE engine --Full Integrated Robotized Engine--, a Multi-Air 1.4 liters power train more eco-friendly.

³¹ Back then the Toluca Industrial Park had an investment of \$ 1 US billion distributed in the expansion of the Chrysler plant and eight suppliers –among others, TRW, Hella Behr Plastic Omnium (HBPO), Android, Brose, IPO, Intier and Seglo. Initially it had the goal to produce the Journey crossover, with an annual capacity of 200,000 units, hiring 1,600 workers.

Volkswagen

While attempting to become the first car produce worldwide, and knowing that such an attempt implies conquering the US market, VW keeps Mexico as a key output-boot camp for deploying its regional strategies. Indeed, VW has repeatedly voiced its aspirations to take the lead from Toyota and GM in just a few years.³²

VW has made two main moves over these past three years in Mexico, both targeted at upgrading its muscle from Mexico. Firstly, it has improving Puebla capacity. Secondly, it has put definitely away its long lasting Puebla-only production strategy by opening a new facility in Silao in the state of Guanajuato.

-) In 2008 Volkswagen Puebla reached an output record manufacturing 450,802 units and nineteen months later, despite the turmoil brought about for the crisis, in July 2010 Puebla grasped the highest production of all plants in North America.³³ This was a result of VW's commitment to investing and improving nevertheless the crisis. For the summer of 2009, the firm confirmed that would be investing in Mexico 1 billion USD for developing a new model -the sixth generation of the Jetta- and expanding capacity with the construction of the West Segment Production Area.³⁴ With this expansion, production capacity increased to half a million units annually. The project started in 2008 and was completed by the summer 2010, hiring 2000 additional workers.

³² VW aims to surpass GM and Toyota by 2018, a goal aired elsewhere (among others quoted in the German financial journal Handelsblatt (reproduced by El Universal, 07/21/2010). Regarding some recent developments, it seems to be on the right track. For instance VW last year reported the highest net margin among the five largest carmakers at 5.4 percent, according to Bloomberg data, followed by Ford (5.1), GM (4.6), and Toyota (2.5 percent net margin)(<http://www.autonews.com/article/20110503/COPY01/305039901/1131/FRONTPAGE#ixzz1LP1r5IbD>).

³³ Automotive News listed the 10 most productive plants in North America, ranking VW Puebla in the first place by its 42,400 units manufactured in July 2010, above others highest ranked plants such as GM, Toyota, Hyundai, Honda and Ford in the U.S. and Nissan in Aguascalientes, Mexico.

³⁴ From the new production area came out the New Jetta, called in Mexico "Special Bicentennial Edition." Puebla's model production is completed by the lines of Golf, Bora, SportWagen and New Beetle. Additional investments, not yet revealed, will be directed to set up the succession of the New Beetle in 2011.

-) In September 2010 VW revealed plans to grow outside Puebla "... as a part of its strategy for long-term growth in North America..." -- the company quoted on its website (<http://mx.volkswagen.com/vwcms/masterpublic/virtualmaster/esmx.html>). It will be pouring an estimated investment of 550 million USD to build an engine plant in Silao, Guanajuato,³⁵ for an annual output of 330, 000 units employing 700 workers. The engine represents a new-generation of VW power train systems for energy saving and producing fewer emissions. Scheduled to start up in 2013, it will provide the Puebla plant and Chattanooga, Tennessee, USA.³⁶ Here is worth to notice that Chattanooga will start producing from 2011 on a new midsize sedan type Passat designed specifically to compete with the Toyota Corolla in the U.S. market. According to VW directives, the firm will disburse about \$ 4 billion USD in research and development of this model, along with expanding Puebla, building Silao and preparing the launching of new models from Mexico (<http://mx.volkswagen.com/vwcms/masterpublic/virtualmaster/esmx.html>).

The Japanese. Toyota, Honda and Nissan.

As noted elsewhere, when trying to reap market share in North America Japanese automakers, with the exception of Nissan, put the bulk of their investment in the US and only marginally in Mexico and Canada.³⁷ This has been a crystal tendency since the original 'transplants' came to North America. We find no change in this tendency as yet –

³⁵ It will be located in the Industrial Park 'Puerto Interior,' where VW constructs this facility over 60 acres.

³⁶ The Chattanooga plant was the first move VW made to end its Mexico-only production strategy (Sturgeon et al., 2010). With the Chattanooga Passat, the Touareg TDI (Auto Show recognized as "The Best Premium SUV 2010"), the New Jetta (awarded "Car of the Year 2010"), and the New Jetta (Magazine SuperCar included it among the best releases of 2010), VW plans to gain a greater share of the American market. As a reference point we can consider that in 2009 VW sold in the U.S. market 300, 00 cars. This represented a market share of 2.9%, significantly below the 11.3% average reaped by VW in the world and truly far away from the 17% grabbed by Toyota in the U.S. (<http://mx.volkswagen.com/vwcms/masterpublic/virtualmaster/esmx.html>).

³⁷ Sturgeon et al, 2010. For recent developments of some of the Japanese in the US market, see Huelsemann (2011); Byosiereand Luethge (2010).

at least as to Mexico. Toyota and Honda kept their operations in Mexico at a minimum level whereas Nissan keeps constantly expanding it.

Toyota. The firm, which still continues to be the first automaker in the world, in the case of Mexico did not do anything but endure the crisis of these years, afflicted as it has been because of its financial, quality and reliability hardships.

During 2009, the Toyota plant in Tijuana went to several 'stoppages' to sort out the slow-down of the regional market. The plant closed the year barely exceeding the production of 40 000 units -versus around 50 000 it had in 2008. By 2010, it returned to operate at 100% of its installed capacity as manufactured over 50,000 Tacoma pick-ups for sale in the United States and Mexico³⁸ -the single model and the original output capacity the Tijuana plant has had since 2004. Then it continued to employ about 800 direct workers and 376 indirect ones.

Honda. The second major Japanese automaker, continued with a cautious policy in its operations in Mexico. In our study two events were remarkable during the last three years. The first is that its plant El Salto, Jalisco, went ahead with the plans Honda had formulated since 2007 – i.e., retooling the plant to produce the crossover Honda CR-V. The second is that in 2010 broke a labor dispute that turned the spotlight on Honda El Salto putting under question the type of industrial relations that have maintained for these years.³⁹

Honda early planned to take advantage of the shift in consumer preference to the segment of smaller-more efficient-fuel savers crossovers. El Salto plant had been producing the Honda Accord --with a modest capacity of 30, 000 yearly units--,

³⁸ As previously noted, such a capacity is the minimum that foreigner firms are to produce in Mexico according to Mexican Auto Law.

³⁹ Clearly this issue goes beyond the scope of this essay. As a reference point, a brief account follows: In December 2010 about 40 workers spoke to the media reporting Honda had them under precarious employment conditions, with a fake union and collective bargaining agreement, and rejecting their right to organize a union of their own –namely United Workers of Honda Mexico. They went to the media with their faces covered by paper bags, as portraying their fear to be repressed, complaining about low wages –from 13 to 15 USD per day—job (in) security, work overloading, unfair firing procedures, and no opportunities for promoting and training (Cf.. Milenio.com, 12/12/2010).

motorcycles and parts for the Mexican market, and secondarily for export. Under the new plan Honda invested \$ US 200 million, rising production capacity by two thirds, and increasing workforce from 1, 400 to 2, 100. The plant was redirected to produce 50, 000 CR-V from 2008 on, with a motor i-VTEC 2.0-liter, 166 hp at 6200 pmr, top speed of 116 mph and 0 to 60 mph in 10.3 seconds. Honda aimed at selling half in Mexico and the rest in the US and Latin American markets.⁴⁰ The latest data confirm that predictions were accurate. In 2009 production reached 48, 000 units and a year later exceeded their capacity to produce over 50, 000 units in two shifts --80% of them for export.

Nissan. Nissan has been very active in these years. It reaffirmed its position in the Mexican market up to the point to take the lead in sales, disclosed \$ US 1.1 billion investment for launching the new Micra model in Aguas Calientes, expanding capacities, and built an Engineering Design Center in Baja California. Furthermore, just in May 2011, Nissan won the New York's "Taxi of Tomorrow" competition with the Nissan NV200 taking on an exclusive 10-year contract worth \$ US1.1 billion to provide all 13,000 yellow cabs in the city. The point is that these cars will be built in Mexico. Likewise, Nissan signed an agreement with the Mexico City government to introduce the electrical Leaf in this metropolis.

-) In 2008 Nissan produced 450, 000 for domestic and export markets; 212,000 vehicles were sold in Mexico for a market share of 20.7%. No one of its industrial complexes fired workers during the crisis; rather there were just some stoppages.⁴¹ Although in 2009 total output fell to 355.414 units, at the end of 2010 it soared and exceeded 500 thousand units placing Nissan second –just behind GM. Nissan reaffirmed

⁴⁰ The expansion also helped boost production of auto parts to reach 1 million of injected plastic parts and 1.4 million of die-cast metal parts. It also supported starting up the production of the "Big Red", a small displacement unit used in agricultural activities, camping and hunting in the U.S. and other developed countries.

⁴¹ The Aguascalientes Complex kept running with a payroll of 6 thousand workers, manufacturing the Sentra and Versa (Tiida) models to export. Its components plant continued the production of the series QR 2.5 Lt. for the Sentra SE-R and the serie MR in versions of 1.8 Lt. and 2.0 Lt. for Tiida (Versa in U.S. and Canada). They are exported to 60 countries, in addition to supply the domestic market. It also continued assembling transmission for trucks D22 and Tsuru, as well as the engines of both vehicles and the current Tsuru (B13). The CIVAC Complex in Cuernavaca did the same, with a 1, 700 workers payroll producing the Tsuru, Tiida and Trucks NP300 for the local market.

its leadership in domestic sales with as much as 24% of market share, though. At the same time it placed exports in 75 countries.

In 2011 the company will introduce the 100% electrical Leaf – ‘Leading, Environmentally friendly, Affordable, Family car’-- and the Juke in Mexico.⁴² The Leaf comes first to Mexico City as a part of an agreement signed with the local government to advance the program ‘Green Strategy’ –the company will bring 500 Leafs, while the government build electrical power stations for charging. It could be used either in taxis or public services, before Nissan will sale it to particulars next year (<http://www.automovilonline.autoplaza.com.mx/nota-2202--nissan-probara-500-unidades-del-leaf-en-la-ciudad-de-mexico-en-2011>).

-) In the middle of 2010 Nissan announced an investment of 600 million USD to produce the new Micra-March in Aguascalientes to enter the market the first quarter of 2011. It will be based on the Platform V meant to reduce weight and the number of component in a given small-model decreasing emissions and increasing fuel efficiency.⁴³ The Micra – March X02A--, which will be also produced in India and Thailand, target at the emergent markets of China, Africa, India and Mexico. The information indicates that at an early stage the plant will have an output of 50 thousand units. 30 percent will go to the Mexican market and the rest to Latin American markets mostly the Brazilian one. (MilenioOnline. 2011-03-05).

⁴² The highly published electrical car just started to be introduced in Japan and the U.S. at the end of 2010. Powered by Lithium Ion batteries for zero gas and emissions, it features a range of 117 kilometers with an energy consumption of 765 kJ/km (34kWh per 100 miles) and a combined fuel economy at 99 miles per gallon gasoline equivalent.

⁴³ The V-platform models will have 18 per cent fewer parts; a dashboard made up of just 28 parts instead of 56 and seats made up of 50 parts, down from 85. It will hold up cars up to 1600kg in weight and with a maximum torque output of 148lb ft. Most V-platform cars will be powered by three-cylinder engines, which will come in 0.9- and 1.2-litre capacities (<http://www.autoincar.com/nissan-v-platform-a-platform-original-namedcut-cost-and-cut-weight-50-kg-off/>).

The rest of the planned \$ US 1.1 billion investments will supplement the developing of new models and expanding facilities. Part of these will go to the making of an electrical version of the Micra-March and the L02V.

The recent success of Nissan winning the New York's "Taxi of Tomorrow" competition will fuel Mexican operations, as the Nissan NV200 will be manufactured in the country. While it has not been revealed yet in which one of its facilities the 'Tomorrow Things' will be made up, the 10-year contract asset additional flows of resources to Mexican industry.⁴⁴

-) In 2010 also Nissan announced the opening of its Center for Automobile Modeling in Mexicali, BC. It is equipped with the most advanced modeling technology in America, featuring CAD systems able to create foam and clay three-dimensional models cutting two models simultaneously. It also can manipulate small parts, large buses, trucks and cars, supported by a metal and wood workshop. The center joins the Nissan Technology Development Center in Mexico, which has facilities in Mexico City, Toluca, Aguascalientes and Manzanillo.⁴⁵

⁴⁴ The history that is unfolding around this 'Tomorrow Taxies' has been and will be interesting. In the competence Nissan beat out Ford's Crown Victoria and Karsan-Turkish Company, which planned to set up a plant in New York as a part of its proposal, arising bitter complains against the Mayor M.R. Blommborg. The fact is that Nissan won with the NV 200, a minivan previously built for Asian and European markets, tailored for taxies NY environment. It features power outlets to plug in phones and laptops; a transparent roof; exterior lights that warn cyclists and pedestrians about opening doors; custom climate controls for each seat; and sliding doors to prevent "dooring" of cyclists and passing cars; among others. (<http://cityroom.blogs.nytimes.com/2011/05/03/nissan-chosen-as-the-taxi-of-tomorrow/?scp=1&sq=nissan&st=cse>).

⁴⁵ According to the firm, the Mexican Development Center is Nissan's third largest in the world. It works on technologies for improving quality, safety and comfort; reducing emissions and increase fuel efficiency.

III. Summary and Conclusions

In the outburst of the crisis some scholars believed that the automakers' investment coming to Mexico could be called into question. This would be more applicable to the Big 3 provided they were receiving federal loans to help them avoid bankruptcy. We find no evidence supporting this contention. To the contrary, what we found is that during these years automakers have been pouring in Mexico more resources than ever. Indeed, neither economic hardships nor political pressures, if any, stopped the flow of auto money getting into Mexican auto industry. Summing up firms' planned and future investment the country has been receiving more than \$ US 13 billion during these a few years, creating more than 17, 000 new jobs. Moreover, the American Big 3 alone have been bucketing about \$ US 9 billion, opening up 3 new engine and 4 transmission plants as well as one new assembly plant, accounting for more than 80% of new hires.

In simple terms, when it comes to fight for surviving and remaining competitive automakers set aside any political premise and put business first ---namely business as usual.⁴⁶ That is the lesson of these years coming from Mexico; and this is why Mexico's auto industry did not only rapidly dodge the crisis exploded in 2008 but recover growth spectacularly, receiving investments and developing old and new projects as never before. A somehow related history is now developing. As of May 2011 the Mayor of New York is weathering a mass of acrimonious critics because the city granted the 'Taxi of Tomorrow' project to Nissan, which is to be manufactured by a Mexican plant.⁴⁷ The Mayor Bloomberg's words were revealing when stressing they were catching the best offer: "...looks romantic to me ... what can you do?" (<http://cityroom.blogs.nytimes.com/2011/05/03/nissan-chosen-as-the-taxi-of-tomorrow/?scp=1&sq=nissan&st=cse>).

⁴⁶ This was not surprising at all; yet what was unforeseen is that corporations had no problem at handling the federal loans the way they did.

⁴⁷ See (http://www.nytimes.com/2011/05/04/nyregion/nissan-minivan-chosen-as-new-york-citys-next-taxi.html?_r=1&scp=3&sq=nissan&st=cse)(<http://www.dailymail.co.uk/travel/article-1383773/New-York-taxis-Nissan-supply-Big-Apple-new-cabs.html>) (<http://www.businesswire.com/news/mfrtech/20110503006507/en/Union-Unemployed-Calls-%E2%80%98Taxi-Tomorrow%E2%80%99-USA>).

TABLE 1

EXISTING PLANTS. PROJECTS

	PROJECT	MODELS	INVESTMENT	LOCATION	NEW JOBS	CAPACITY	OPENING / LAUNCHING DATE
FORD	Plant Retooling 'Kinetic Desing'	Redesigned Ford Fiesta 2011	1.2 billion USD	Cuautitlan, Edo Mexico	2,000	324,000 Units	May 2010
	CD3 Additional Facilities and Equipment	Hybrid Fusion and Mercury 2010	600 million USD	Hermosillo, Sonora		Increases to 312,000 Units	December 2008
	CD4 Next Generation Mid-Size Cars	Fusion- Mondeo Convergency 2013	1.5 billion USD	Hermosillo, Sonora	2,000	Increases to 500,000 Units	2012
GM	Additional Facilities and Equipment	Hybrid Captiva SUV	500 million USD	Ramos Arizpe, Coahuila	-	6,500 Units	November 2007
	New Generation of V-8 Engine.		284 million USD	Ramos Arizpe, Coahuila	390		August 2010
	Enable a New Platform for a New Vehicle.	Not Yet Released	215 million USD	Ramos Arizpe, Coahuila	400	-	August 2010
CHRYSLER	New Production Line	Sub-Compact Fiat 500 Premium	550 million USD	Toluca, Edo Mexico	500	100,000 Units	March 2011
Vw	Development of a New Jetta	6th generation "Special Bicentennial Edition."	450 million USD	Puebla	2000	Increases to 500,000 Units	July 2010
NISSAN		Micra-March Plant Retooling / Micro-March Electrical Version	600 million USD 500 million USD	Aguascalientes, Aguascalientes		50,000 Units	Building June 2010 Launching 2012
		New York 'Taxi of Tomorrow'	1.1 billion USD (Contract)	-		13,000 Units	Building 2012 Launching 2013
		Mexico City 'Green Strategy'	Leaf	Not revealed yet		500 Units	Debuting 2011
HONDA	Plant Retooling	Honda CR-V 'Crossover'	200 million USD	El Salto, Jalisco	700	50,000 Units	September 2009

(Continue)
NEW PLANTS PROJECTS

	PROJECT	INVESTMENT	LOCATION	NEW JOBS	CAPACITY	OPENING / LAUNCHING DATE	
FORD	New Engine Plant II	Diesel Power Stroke 6.7-liter V-8 turbocharged Engine	838 million USD	Chih. Complex, Chihuahua	1,100	200,000 Units	November 2009
	New Transmission Plant	6DCT250	500 million USD	Guanajuato	1,200	350,000 units	June 2010
GM	New Plant Cactus Project	T250- AVEO	1 billion USD	Villa de Reyes, San Luis Potosi	2,000	1st year 1 Platform: 75,000 units Multiple Platforms: 360,000 units	July 2008
	New Transmission Plant	6T40/6T45	400 million USD	Villa de Reyes, San Luis Potosi	600	300,000 Units	August 2009
	New Engine Plant	HVV6 3.5 L / HVV6 3.9 L / HFV6	469 million USD	Ramos Arizpe, Coahuila	438	350,000 Units	June 2008
	New Transmission Plant	FWD 6T70/75	391 million USD	Ramos Arizpe, Coahuila	437	360,000 Units	June 2008
	New Transmission Plant	6L50 / 6L80 / 6L90	660 million USD	Silao, Guanajuato	1,100	500,000 Units	February 2008
	Test Track for Higher Temperature Conditions	-	50 million USD	Cuapan del Rio, Michoacan	134	-	January 2008
CHRYSLER	New Engine Plant 'Centenary'	Pentastar V-6 Engine	570 million USD	Derramadero, Coahuila	700	440,000 Units	October 2010
VW	New Engine Plant	New-Generation Engines	550 million USD	Silao, Guanajuato	700	330,000 Units	Building Oct 2010 Launching 2013
NISSAN	New Center for Automotive Modeling	-	10 million USD	Mexicali, Baja California	-	-	January 2010

We think this is happening because México's low costs and highly reliable platform for exports, along with its nested and proved networks of suppliers built over the last two decades, has turned it into a more valuable asset for auto firms defending their shares in the North American region. Add to this that the market is greatly moving to small-economic-fuel efficient cars, the segment which the Mexican industry is specialized in, due to both soaring gas prices and environmental concerns. Therefore, automakers with greater experience and stakes in the country, while striving for gaining competitiveness and market governance within the North American region are upgrading Mexico into their regional-production systems. The crisis factor and shifts in consumer preferences make the rest. From all these variables Mexican auto industry has been taking on a more regio-centric sway.

Some things do not change. Toyota and Honda continue maintaining a minimum of manufacturing activities in Mexico, in particular as to finished vehicles production, in order to comply with the Mexican Auto Law. This allows them to operate import and export platforms from Mexico to the whole region whereas they rather place their core business and operations in the U.S.

The other five auto firms haul the bulk of investments and increasing auto manufacturing activities that are further incorporating Mexico into their regional chain-value, productive and market strategies. Theirs share many features:

-) They are launching from Mexico a set of brand-new projects. As Ford did it with the CD3 Project from 2005 on and now it does it with the making of its successor –the CD4--, at the present Chrysler, GM, VW and Nissan are launching from Mexico brand-new projects --namely the Premium Fiat 500, the Cactus/Aveo, the New Jetta/the Post-New Beetle, and the Micra-March, respectively.

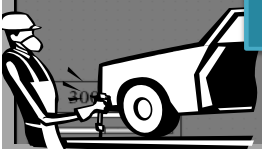
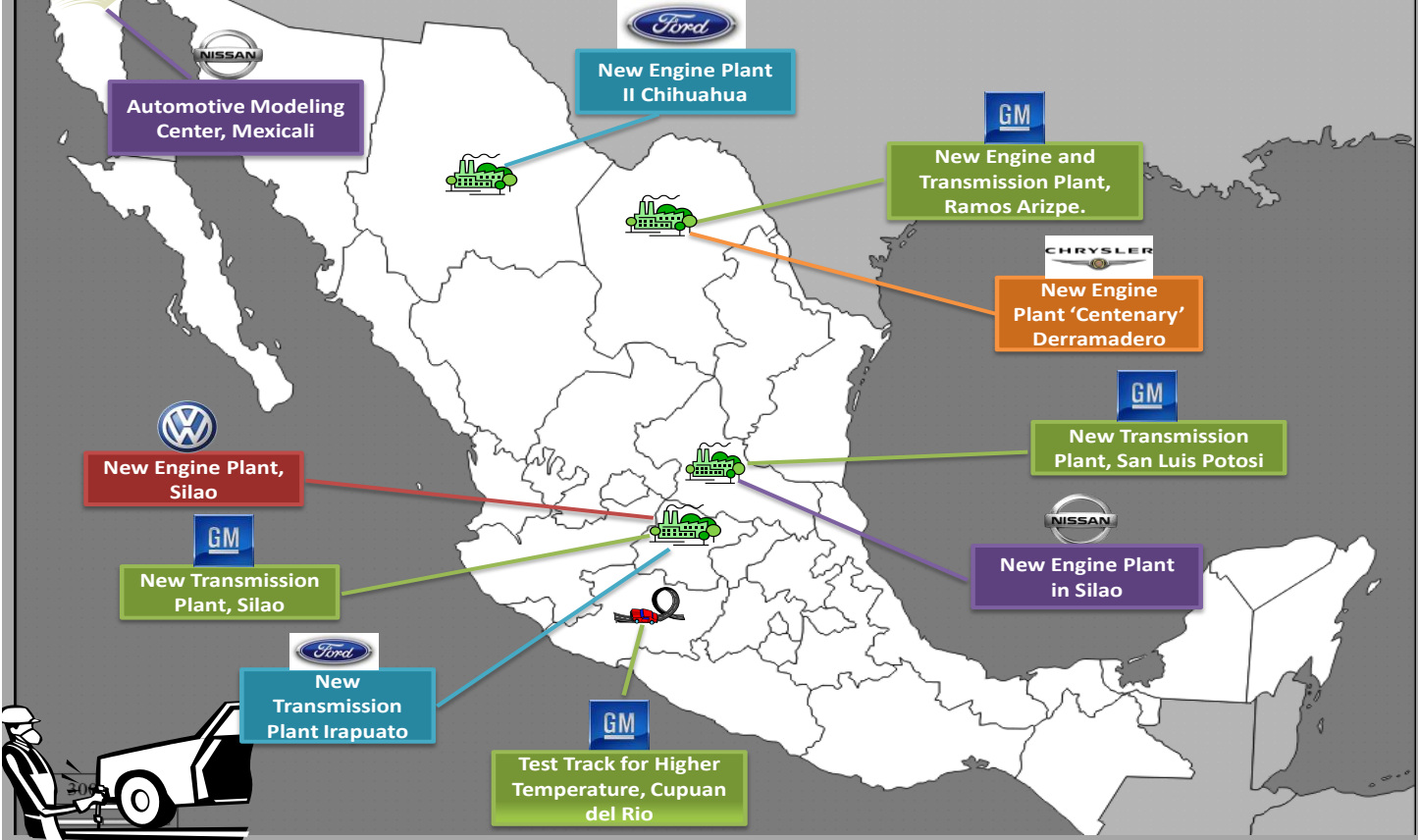
-) All they are redirecting investment into Mexico with a broader approach to deal with the demand for more economic-fuel efficient autos by opening up a number of new engine and transmission plants to supplement power train systems with such a features the market now is commanding. Therefore, while retooling of old facilities and the opening of new ones from assembly to engine to transmissions they are pulling together a network of complementarities and value chains to serve the small-segment of more eco-friendly auto systems in North America.

-) These five companies, of course, have differences in their strategic approaches. For instance while Nissan, GM and VW are further upgrading Mexico by setting up new development and engineering facilities, Ford and Chrysler-Fiat kept such activities mostly in their home countries.

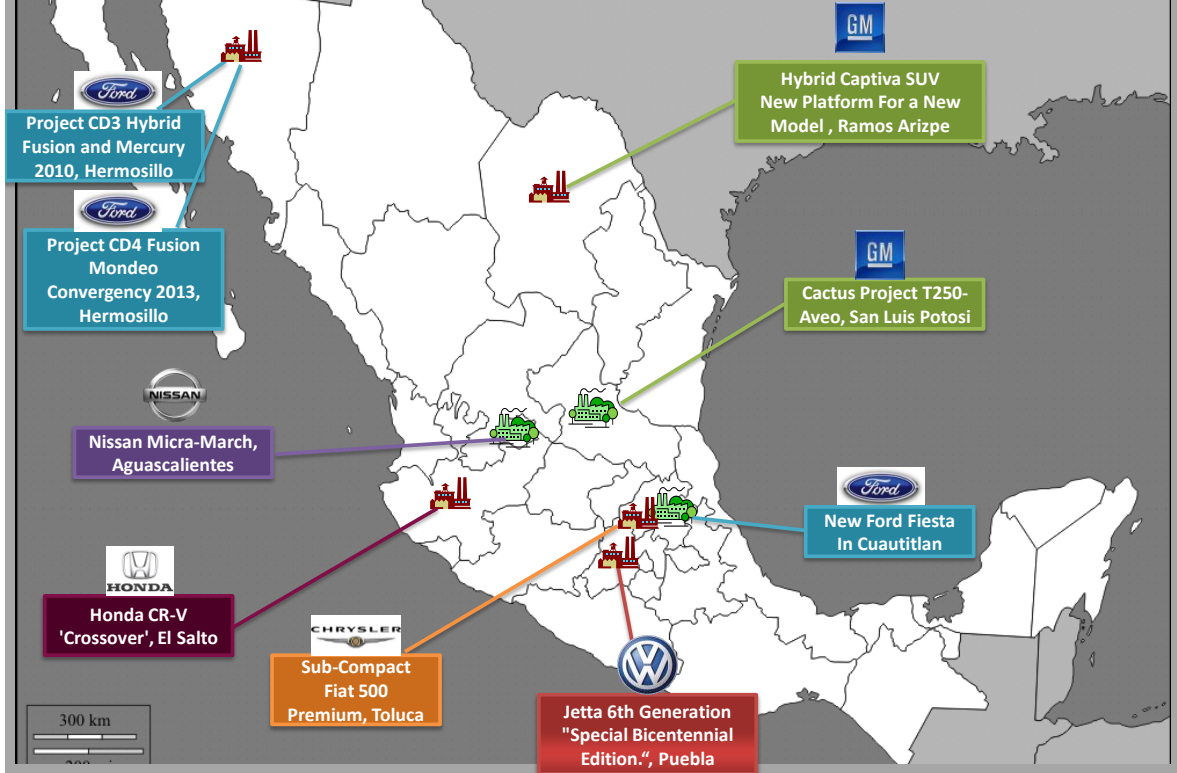
-) This avalanche of firms' retooling, opening and launching facilities is altering the geography of spatial regionalization in the Mexican auto industry as brown-fields worksites become green ones, green-fields worksites become old ones, and brand-new-green-field worksites add to the sector. We can identify seven distinctive regional clusters: a) The oldest in the central region of Toluca-Estado de Mexico, which is going from brown to green auto settings; b) The clusters distributed in the Bajio, Puebla and Aguascalientes regions, which now hold a mix of green and brown auto settings; and c) The clusters of the Northern region, from Baja California to, Sonora, Chihuahua and Coahuila, which also hold now a mix of old brown-fields and green-fields work settings.

- What strategy does each firm set up: quality, diversity & flexibility, volume, volume & diversity, permanent reduction in costs, innovation & flexibility (Freysenet).
- Recall that firms are much less efficient and maximizers in taking decisions.

Mexican Auto Industry From 2008 On New Engine, Transmissions and Center Facilities.



Mexican Auto Industry From 2008 On Finished Vehicles New Projets



Statistical Annex

Table 2**World Production of Motor Vehicles. Selected Countries.****Annual production from 2004 to 2008**

(Thousand of units)

Country	2004	2005	2006	2007	2008
Total	65,131	67,248	70,129	74,148	71,260
United States	11,989	11,981	11,264	10,781	8,705
Japan	10,512	10,800	11,484	11,596	11,564
Germany	5,570	5,758	5,820	6,213	6,041
China	5,234	5,708	7,189	8,882	9,345
France	3,666	3,549	3,169	3,016	2,569
South Korea	3,469	3,699	3,840	4,086	3,807
Spain	3,012	2,753	2,777	2,890	2,542
Canada	2,712	2,688	2,572	2,578	2,078
Brazil	2,317	2,528	2,611	2,971	3,220
United Kingdom	1,857	1,803	1,648	1,750	1,650
Mexico	1,509	1,688	2,069	2,106	2,180
India	1,511	1,627	2,020	2,307	2,315
Russia	1,386	1,351	1,508	1,660	1,790
Italy	1,142	1,038	1,212	1,284	1,024
Others	9,245	10,277	10,946	12,028	12,430

Note: This includes cars, light trucks and heavy trucks, except 2004 where only include cars and light trucks.

Source: INEGI (2010). **La industria automotriz en México 2010. Serie estadísticas sectoriales.**

Table 3**Mexico Automobile Production by Market and Type of Vehicle****Annual production from 2004 to 2009**

(Units)

Market	2004	2005	2006	2007	2008	2009
Type of vehicle						
TOTAL	1,509,134	1,688,177	2,068,929	2,105,789	2,180,294	1,566,842
Domestic Market	466,898	495,327	512,331	481,826	515,161	340,329
Cars	323,693	320,209	310,874	288,833	284,877	199,307
Light trucks	79,907	90,700	109,173	106,651	151,351	81,707
Heavy Trucks Fifth wheel trucks and construction segment / others	26,152 28,101	43,750 29,284	46,014 35,336	42,298 34,735	34,262 33,377	24,817 29,298
Passenger Cars	1,539	1,788	1,933	1,298	1,827	895
Chassis	7,506	9,596	9,001	8,011	9,467	4,305
International Market	1,042,236	1,192,850	1,556,598	1,623,963	1,665,133	1,226,513
Cars	520,298	732,614	1,060,019	1,127,832	1,103,036	810,607
Trucks	521,938	460,236	496,579	496,131	562,097	415,906

Source: Inegi, (2010). **La industria automotriz en México 2010. Serie estadísticas sectoriales.**

Table 4

Mexico 2010-11. Auto Output by Firm.

Periodo	chrysler	ford motor	general motors	honda	nissan	toyota	volks wagen	total
Ene	20,870	26,826	45,806	4,584	38,023	4,354	24,595	165,058
Feb	20,766	25,780	43,005	4,200	37,086	4,354	32,101	167,292
Mar	25,156	29,763	49,558	4,830	38,508	5,188	37,088	190,091
Abr	19,771	25,338	45,159	4,067	37,449	4,496	33,997	170,277
May	20,250	31,264	51,412	4,822	39,107	4,387	27,496	178,738
Jun	23,408	39,484	50,212	4,971	45,966	4,730	37,424	206,195
Jul	16,268	24,786	43,119	4,442	45,419	3,697	42,352	180,083
Ago	23,989	39,662	52,416	5,148	39,946	4,844	39,735	205,740
Sep	24,653	39,943	47,098	4,649	45,293	4,763	31,019	197,418
Oct	25,222	43,171	46,872	4,612	52,278	4,710	43,843	220,708
Nov	19,555	39,971	45,497	4,809	48,304	4,943	44,481	207,560
Dic	17,411	27,661	39,196	3,867	39,115	3,812	40,554	171,616
Acum 2010	257,319	393,649	559,350	55,001	506,494	54,278	434,685	2,260,776
Ene	17,515	39,476	45,832	4,547	51,398	4,582	35,959	199,309
Feb	19,149	34,978	44,414	4,408	45,368	4,094	41,114	193,525
Mar	27,680	41,866	57,195	4,894	52,968	4,642	50,835	240,080
Abr	20,570	27,681	44,153	2,647	26,281	2,756	28,426	152,514
Acum 2011	84,914	144,001	191,594	16,496	176,015	16,074	156,334	785,428
Dif % acum	-1.9	33.7	4.4	-6.7	16.5	-12.6	22.3	13.4

Source: Asociación Mexicana de la Industria Automotriz (AMIA). In www.amia.com.mx.

Table 5. Automobile Industry in Mexico. Macro Indicators.

Summary 2008 and 2009

End of 2009 stats

Concept	2008	2009	Annual percentage variation		
			2007/2006	2008/2007	2009/2008
1.- Economic Importance a					
Percentage share in the gross value added					
At current prices					
National	2.8	2.7	0.1 b	-0.1 b	-0.2 b
Manufacture	15.3	15.0	0.5 b	-0.3 b	-0.4 b
At constant prices in 2003					
National	3.2	3.2	0.3 b	0.0 b	0.0 b
Manufacture	17.3	17.5	1.3 b	0.2 b	0.2 b
Gross value added in Basic Values (Millions of pesos)					
At current prices	306 836	316 783	18.4	5.5	3.2
At constant prices in 2003	269 432	269 432	14.3	3.1	0.5
Gross production in Basic Values (Millions of pesos)					
At current prices	961 667	984 175	17.5	5.8	2.3
At constant prices in 2003	861 824	858 517	13.9	3.5	-0.4
Intermediate expenditure in Basic Values (Millions of pesos)					
At current prices	654 832	667 392	17.0	5.9	1.9
At constant prices in 2003	592 392	587 857	13.7	3.7	-0.8
2.- Production Estructure					
Annual vehicle production (Units)	2 205 090	1 566 842	0.6	6.0	-28.9
Cars	284 877	199 307	-7.1	-1.4	-30.0
Light trucks	151 351	81 707	-2.3	41.9	-46.0
Heavy trucks	34 262	24 817	-8.1	-19.0	-27.6
Passenger cars	1 827	895	-32.9	40.8	-51.0
Chassis	9 467	4 305	-11.0	18.2	-54.5
Semi-Trailer Trucks	30 280	28 747	-4.8	-2.4	-5.1
Construction segment/others	3 097	551	34.6	-16.6	-82.2
Cars to export	1 127 832	810 607	4.1	2.2	-28.1
Trucks to export	562 097	415 906	-0.1	13.3	-26.0
3.- Marketing (Units)					
Car Wholesaling	2 720 430	2 010 912	-0.5	-2.1	-26.1
National market	1 022 283	744 880	-6.6	-9.2	-27.1
Cars	538 027	424 264	-9.9	-13.3	-21.1
Light trucks	433 998	299 159	-3.1	-4.4	-31.1
Heavy trucks	23 873	12 127	1.8	4.0	-49.2
Passenger cars	2 024	3 563	-26.3	47.6	76.0
Chassis	9 080	215	-9.2	14.2	-97.6
Semi-Trailer Trucks	14 400	855	28.2	-18.8	-94.1
Construction segment/others	881 4	697	31.4	-52.5	433.1

International market	1 698 147	1 266 032	4.2	2.7	-25.4
Cars	1 106 040	809 139	4.7	-0.4	-26.8
Light trucks	555 366	414 194	5.6	10.4	-25.4
Heavy trucks	16 372	15 866	-23	-26.5	-3.1
Semi-Trailer Trucks	17 713	26 220	-23.1	14.2	48
Construction segment/others	2 469	429	0.0	21	-82.6
Passenger cars	0	73	NC	NC	NC
Chasis	187	111	-16.7	120	-40.6
Customer Price Index					
(Based in the 2nd Half of June 2002 = 100.0)					
National	133.8	138.5	3.8	6.5	3.5
Cars	105.9	113.8	0.4	0.6	7.5
Auto Parts and Accessories	132.7	144.6	2.8	5.2	9.0
Automotive Rubber Parts	141.4	151.1	4.7	11.5	6.9

a Data for 2007 and 2008, respectively.

b The variation is the difference in percentage points.

Source: Inegi, (2010). La industria automotriz en México 2010. Serie estadísticas sectoriales.

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