

# Trends of automotive industry FDI in Guanajuato, México\*

*(Tendencias de la Inversión Extranjera Directa  
en Guanajuato, México)*

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## **Abstract**

The objective of this article is to analyze the trend of Foreign Direct Investment (FDI) in the state of Guanajuato, in particular, that attracted by the automotive industry during the period 2000-2016. This study uses a quantitative methodology to describe the behavior and general trends of the total FDI flows, the data used were gathered from official statistics sources and the results from a research project carried out from 2014 to 2017. The main conclusions drawn are: FDI in the automotive industry

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has allowed Guanajuato to become one of the main emerging and dynamic center of this sector in Mexico. There is a positive impact on the economic development of the State, measured through created employment, exports, and economic growth, among others. The main factors that have promoted the FDI flows are: a) infrastructure, low wages, skilled workforce, etc., and b) State industrial policies have implemented attractive incentives for the companies.

**Keywords:** Foreign direct investment, automotive industry, industrial policies.

**JEL Classification:** F21, L62, L52

### **Resumen:**

El objetivo de este artículo es analizar la tendencia de la Inversión Extranjera Directa (IED) en el estado de Guanajuato, en particular, la recibida por la industria automotriz durante el período 2000-2016. Este estudio utiliza una metodología cuantitativa para describir el comportamiento y las tendencias generales de los flujos totales de IED, los datos utilizados se obtuvieron de fuentes estadísticas oficiales, así como de un proyecto de investigación llevado a cabo de 2014 a 2017. Las principales conclusiones son: la IED recibida por la industria automotriz ha permitido que Guanajuato se convierta en uno de los principales centros emergentes y dinámicos de este sector en México. Existe un impacto positivo en el desarrollo económico del Estado, medido a través del empleo creado, las exportaciones y el crecimiento económico, entre otros. Los principales factores que han promovido los flujos de IED son: a) infraestructura, bajos salarios, mano de obra calificada, etc., y b) las políticas industriales estatales han implementado incentivos atractivos para las empresas.

**Palabras clave:** inversión extranjera directa, industria automotriz, política industrial.

**Clasificación JEL:** F21, L62, L52

### **Introduction**

Many governments encourage Foreign Direct Investment (FDI) in their countries as a way to generate jobs, expand local technical capabilities, and contribute to boost economy; and Mexico is not the exception. FDI has been an important detonator of the Mexican economy, according to the Ministry of Economy (2017a) between 2000 and 2016 Mexico received just over 458 billion USD out of which 49% came from the United States. The majority of these investments

were directed towards manufacturing, the automotive industry being one of the most benefited. Some of the factors that explain investments in Mexico are: labor cost, quality of labor, internal market, proximity of Mexico to one of the main international markets, The United States, signed free trade agreements,<sup>1</sup> its commercial platform, a favorable attitude concerning foreign investment, amongst others (Word Bank, 2016; Martínez & Carrillo, 2017; ECLAC, 2017). Moreover, the availability of qualified labor and the efficient logistics in the central region of Mexico has contributed to the proliferation of high added value activities such as engineering and design (Galvin, Goracinova and Wolfe, 2015). However, 2016 marked a year of inflexion for the arrival of FDI to Mexico. According to ECLAC (2017, p. 12) “Mexico wasn’t able to sustain the dynamism of previous years and FDI fell 7.9% even though it maintained itself in historic high levels and was the second recipient country (19% of the total)”; regarding Latin America.

The automotive industry (AI) is very important for the Mexican economy since it contributes 3% of the Gross Domestic Product (GDP) and 18% of the manufacturing GDP. It includes an accumulated FDI of over 51.2 billion USD and it generates 900,000 direct jobs (ECLAC, 2017). The AI is made up of the terminal and auto parts industry; the latter has generated a significant increment since between 2009 and 2016, the production of auto parts increased from 41.2 billion to 88.4 billion USD (Export, 2016 cited in ECLAC, 2017) which has placed it as the 6<sup>th</sup> producer worldwide. The arrival of a great number of auto parts manufacturers is in line with the companies’ strategies to locate themselves near assembly plants to assure quality and on-time delivery which aids in assuring and maintain supply contracts. Even though FDI towards Mexico has continued its significance, in 2016, 32.1 billion USD were received, representing a 79% fall with regards to 2015 (ECLAC, 2017). Guanajuato is one of the states in Mexico which has benefited from FDI; many foreign automotive and auto parts companies have arrived at this state.

The objective of this article is to analyze the trend of Foreign Direct Investment (FDI) in the state of Guanajuato, in particular, that attracted by the automotive industry during the period 2000-2016. The questions that guide this document are the following: What are the factors that explain the increase of FDI in Guanajuato? What economic activity has been favored? And what kind of public policies have been promoted to attract such investments?

<sup>1</sup> According to ECLAC (2017:164), “The commercial opening of 1985, the approval of NAFTA in 1994 and the sectoral promoting politics allowed the Mexican automotive industry to triple its participation in the North America’s production between 1990 and 2016.

For this purpose, this article is divided into four sections. In the first section, some definitions associated with FDI are outlined and the reason, as well as its impact, as to why these types of flows are important for a country or region is highlighted. Additionally, within this first section, the factors that attract this type of investment are highlighted. In the second section both a description and an analysis of accumulated FDI in Mexico during the 2000-2016 period is made. Types of investment, host states, as well as their origin are emphasized. The third part analyzes the behavior of FDI in the state of Guanajuato, the role played by the industrial policy, and the flows that have been destined to the terminal and auto parts industries are focused on. Finally, a series of reflections on the matter are presented.

### **1. FDI: Definition, importance and incentives that influence its attraction**

In general terms, the concept of foreign direct investment alludes to the international capital flows whereby a country's investor (normally a company) creates or widens a company (normally an affiliate) of another country. Krugman and Obstfeld (2006, p.170) mention that by FDI:

“We understand the international flows of capital whereby the company of a country creates or expands an affiliate in another country. The distinctive characteristic of foreign direct investment is that it not only implies the transference of resources but also the acquisition of control. That is to say, the affiliate not only has a financial obligation towards the parent company, but it is also part of the same organizational structure.”

Additionally, Hill (2011, p. 224) defines FDI as an economic activity in which:

“a company invests directly in assets to produce or sell a good in another country... The FDI takes two forms. The first is the initial investment (*greenfield*), which consists in establishing a new operation in a foreign country. The second consists of acquiring shares or fusing with a company that already operates in another country.”

From these previous definitions, there is a coincidence regarding the fact that FDI implies the entrance of capital flows destined to an economic sector or activity by a foreign company to a country or region different from its own. Such investment can generally be medium or long-term and can adopt one or various forms. For

example, the creation of a new plant, the acquisition of an existing one, the fusion of other companies, the acquisition of shares, the expansion of existing companies, or any other activity that assumes some kind of financial control over invested capital.

Some consider that FDI can favor the economic growth of a locality or a nation since it allows: the generation of new direct and indirect jobs; it facilitates the arrival of a new type of raw material or work processes; it complements internal savings and contributes new capital; it facilitates the transference of technology and production or organization systems; it encourages exports and stimulates internal competition; it can improve the quality of a population's life and human capital; and it improves competitiveness (Gómez, 2010; Hill, 2011; ECLAC, 2016; Rivas and Puebla, 2016).

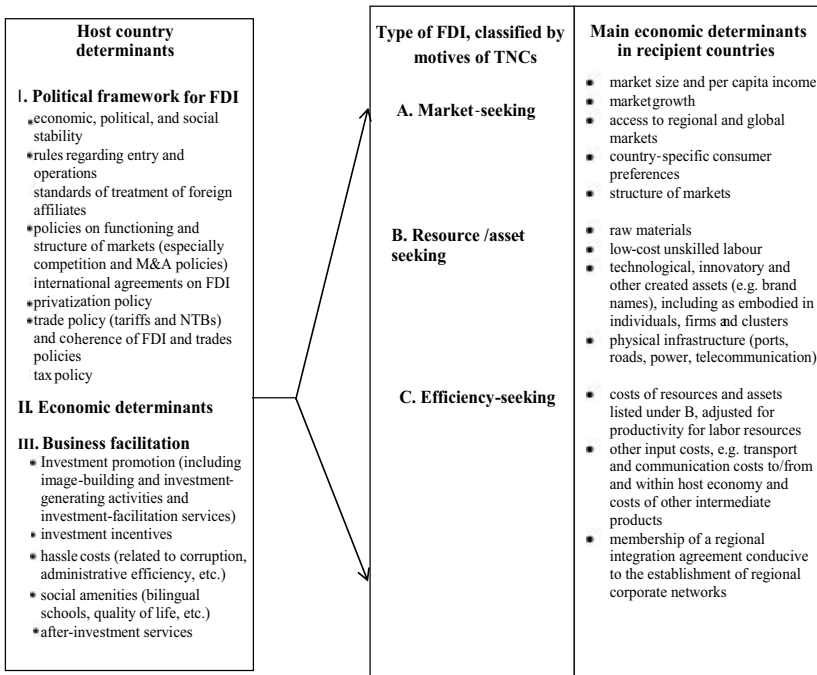
In fact, FDI is not only an alternative source of financing, through it, benefits in terms of efficiency and productive linkages can be obtained. Moreover, it facilitates the transference of new technologies and knowledge. That is to say that it makes it possible to develop technological capabilities (ECLAC, 2009).

It cannot be ruled out that FDI can generate adverse effects on a regional or national level such as: technology dependence, enclave economies, slight productivity spills, environmental deterioration, external sector imbalance, local barriers to enter or climb up the value chain, unemployment, elimination of some local companies or institutional voids, and savings and internal investment reduction which negatively impact in the competitiveness of companies (Chudnovsky and López, 2007; Carrillo *et al.*, 2012; Rivas and Puebla, 2016).

Regarding the factors that contribute to the attraction of FDI in the recipient country, according to the Organization for Economic Cooperation and Development (OECD, 2002) and the World Bank Group (2013) they include: institutional context (such as laws and corruption), staff qualifications, the flow of information related to business, investment opportunities, existing infrastructure, the size of the market and the ease of to access it, a stable political and economic climate, low operation costs, the possibility of having access to scarce raw materials, the development of new lines of production and technologic resources, amongst other aspects.

Similarly, the United Nations Conference on Trade and Development (UNCTAD, 1998) underlines that, in general terms, the factors that promote FDI can be grouped into three headings: political framework, economic determinants, and business facilitation (Figure 1).

**Figure 1**  
**Foreign direct investment determinants in the recipient country**



Source: UNCTAD, 1998, p. 91.

Notes: M&A Mergers and acquisitions; NTBs Non-Tariff Barriers; TNCs Transnational Corporations.

Within the economic factors that favor FDI are the searches of: new markets, assets and resources, and efficiency. Furthermore, Gligo (2007) mentions that the economic reasons why FDI comes to a country can be grouped into four categories: the location of raw materials; the possibility of entering new markets; the efficiency of processes; and the access to new strategic assets.<sup>2</sup>

However, whichever are the reasons why FDI comes to a country, it does not guarantee or bolster neither growth nor development of a nation. The effects that FDI generate are associated to the particular conditions of each country, to the creation

<sup>2</sup> This classification is according to Carrillo *et al.* (2012) who mention that multinational companies seek to invest in other countries different from their own in order to find natural resources, enter new markets, and elevate efficiency or get new strategic or technological assets.

of public specialized organizations that select and promote quality investment, and the deployment of an integral economic policy strategy. Particularly, institutions have to define, select, and organize investment projects hierarchically which allow the positive benefits on a national and regional level and stimulate investment. The whole of this strategy is part of the active policies that each country must promote to receive the positive benefits of FDI (ECLAC, 2016).

National impacts can be positive or negative depending on the type of investment and the economic, political, and social negotiations (for example, trade agreements, infrastructure support, training, labor union restrictions, etc.) which were previously made with the host country. It also depends on the productive capabilities which local businesses have to satisfy the requirements (inputs, labor, services and infrastructure) of the companies which arrive or the possibilities that local organizations have in order to establish strategic alliances and insert themselves in the value chains. Regarding the aforementioned, the World Bank (2016: w/p) mentions that the level of FDI attraction is associated to “the present and latent competitive advantages... It also depends on the investment climate, which includes the conditions for the establishment, operation and protection of the investment, as well as the conditions for input supply, services and labor required by investors”.

In the next section, the economic behavior of FDI in Mexico is described and analyzed.

## **2. FDI in Mexico from 2000 to 2016**

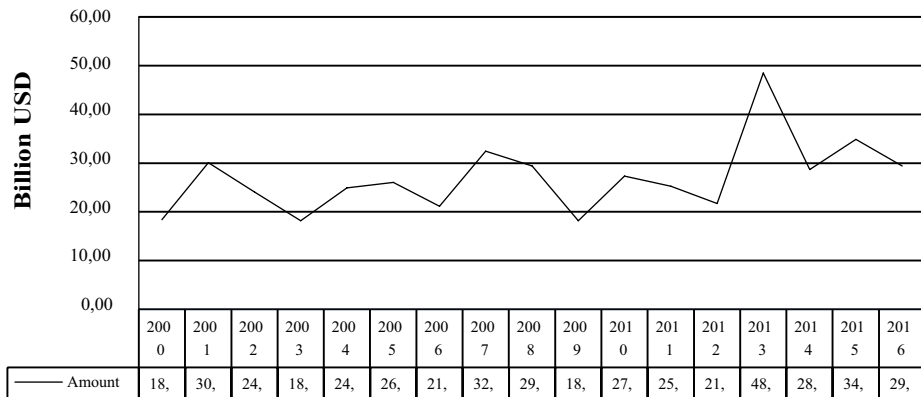
Between 2000 and 2016, in Mexico, FDI increased from 18.3 to 29.4 billion USD (Ministry of Economy, 2017a). While this growth has not been continuous, since some fluctuations have been registered (2003, 2006, 2009, 2012, 2014 y 2016), on a yearly average it has increased on a 3.0 percent during that period. It is worth highlighting that the historic maximum occurred in 2013 when 48.5 billion USD were attracted (Graph 1). It is worth mentioning that the increase in foreign investment came from the period of the president Salinas de Gortari (1988-1994), who promoted an open trade policy in order to integrate to Mexico in the context of globalization.

In effect, trade liberalization, regional agreements and international trade agreements of collaboration (such as NAFTA), as well as changes in legislation in the Law on Foreign Investment, reforms in the energy and telecommunications sector, low wages, the supply of young and skilled workforce, macroeconomic stability and geographic proximity to the United States, proactive economic policies to attract companies are, among others, some of the factors that have contributed the

increasing of FDI's flows in Mexico during the last few years (Gómez and Padilla, 2005; Garriga, 2017; ECLAC, 2017).

Studies carried out during the period from 1980 to 2015 to study the FDI effects in the Mexican economy conclude that although FDI has been growing during the aforementioned period, the jobs generated (1 per four new jobs created) are still very limited both in the manufacturing sector and in the service sector. In fact, the service sector has been the most benefited. In the case of manufacturing, the impact has not been as desired given that foreign investment leads to an increase in the intensity of capital used, as well as more efficient forms of organization and labor flexibility (Chiatoucha, Castillo and Valderrama, 2018).<sup>3</sup>

**Graph 1**  
**Total FDI in Mexico, 2000-2016**  
**Billion USD**



Source: Author's elaboration on the basis of data gathered from the Mexican Ministry of Economy (2017a).

<sup>3</sup> In a study carried out during the nineties, in Mexico, it was concluded that FDI has had positive effects on both exports and employment in the service sector and manufacturing (Turner and Martinez, 2003). It is important to mention that there is nothing conclusive about the relationship between FDI and generated employment: some studies point out that FDI contributes to the generation of a huge number of jobs, better salaries and job qualification; others show that the impact of FDI on these variables can be negative, and finally those who point out that the results can be very ambiguous (Chiatoucha, Castillo and Valderrama, 2018).



It is also important to mention that 50% of the FDI that entered the country between 2014 and 2015 was destined to the manufacturing industry; within this economic activity, the most benefitted was the automotive sector (Manufactura, 2016).

Concerning the aforementioned, the Economic Commission for Latin America, (ECLAC, 2015: 46) points out:

“In the area of manufacturing, the automotive sector plays an important role in Mexico... since it is the seventh major car manufacturer in the world. From all of the manufacturing industries, the automotive one was the main beneficiary of FDI in 2014 and it received 4.3 billion from the 12.9 billion USD from the total flows. Throughout the year, numerous announcements concerning new investments from car manufacturers from around the world were made. Amongst the most significant were the announcements from Ford and General Motors who anticipated investments for 2 and 3.6 billion USD respectively. Additionally, Korean automaker, KIA motors for 1 billion USD. Through a joint venture, German Daimler AG and Japanese Nissan are building a factory with 1.36 billion USD. Similarly, Volvo from Sweden, and Honda from Japan have launched expansion plans.”

Returning to the national context, the National Commission of Foreign Investments (NCFI, 2015) classifies FDI in three categories: a) reinvestment of earnings, b) inter-company debt, and c) new investments. The first corresponds to “earnings that are not distributed as dividends and which are considered FDI for representing an increase in the capital property of the foreign investor... (the second) are the transactions originated from debt among Mexican partnerships with FDI in their social capital and other related companies that are residents abroad (NCFI, 2015: 8).” The last one entails flows made by physical subjects or legal entities which arrive for the first time to our country; initial foreign investment or which elevate the social capital of Mexican companies; and the purchase of Mexican capital shares made by foreigners, amongst others.

In Mexico, the total FDI accumulated was 458.4 billion USD from 2000 to 2016. From it, 47.5 percent was destined to new investments, 28.7 percent to reinvestment of earnings, and 23.8 percent to inter-company debt. That is to say, nearly 50 percent of the FDI entering our country has been destined to creating new companies or is invested in some type of strategic alliance with the national capital. Nonetheless, if the new investments were almost half of the total, in the time mentioned, these increased 1.3 percent on a yearly average which was less than the initial total investment (3.0 percent), inter-company debt (3.2 percent), and the reinvestment of earnings (5.5 percent) (Mexican Ministry of Economy, 2017a).

According to data from the Mexican Ministry of Economy (2017a), if the country of origin of the FDI is considered, it is evident that between 2000 and 2016, from the 458.4 billion USD which were accumulated, nearly 49 percent were from the United States, 12.2 percent from Spain, 6.5 percent from Canada, 4 percent on average in the cases of Belgium, Japan, and the Netherlands, and 3 percent on average came from Germany and the United Kingdom.

Regarding the host entities of the accumulated FDI, during the period from 2000 to 2016, twelve of these received 77 percent of the national total. It is important to highlight Mexico City and the State of Mexico both of which received 21.3 and 9.4 percent of the investment respectively. Other entities, no less important to mention were: Nuevo Leon (9.3%), Chihuahua (6.4%), and Jalisco (5.8%) (Mexican Ministry of Economy (2017b)). Some of the variables that have influenced to attract FDI at the regional level in Mexico are the following: infrastructure, road and highway networks, salaries, level of education, social stability, size of the market, the administrative efficiency of the government, and agglomeration economies (Garriga, 2017).

On the other hand, high reception of FDI represents a challenge to the development of Mexico. Regarding the aforementioned the World Bank points out two obstacles:

“the first is maintaining and increasing its attractiveness as a destination for investment in a growing environment of global competition seeking foreign investment and strengthen its capacity to retain such investment. The second, no less important, is the creation of conditions for such investment to arrive in greater numbers to more regions, since nowadays 84.1% of FDI captured by Mexico is concentrated in 15 of the 32 states” (Word Bank, 2016: w/p).

In addition, among other factors that will influence the flows of FDI towards Mexico are: the renegotiation of NAFTA, the statements of the current administration in The United States to punish companies that invest abroad (Globerman, 2017), as well as the recently approved tributary reform to corporate taxes in The United States; which entails a decrease in FDI flows is foreseen in the coming years.

The next section addresses the situation of FDI in Guanajuato and, especially, that related to the automotive industry, as well as points out a brief description of the industrial policy carried out by this State.

### 3. Guanajuato: The most dynamic automotive cluster

The state of Guanajuato is part of the region known as Bajío. It is located in the center of Mexico and it is divided into 46 municipalities. It covers an area of 30,608.44 square kilometers which represents 1.56% of the national territory; its capital is Guanajuato. To the north it borders Zacatecas and San Luis Potosí, to the east Querétaro, to the south Michoacán, and to the west Jalisco (Inegi, w/y).

From the labor force, 11% work in agricultural activities, 21% in business, and 24% in the manufacturing industry (STPS, 2015). The strategic economic activities that have been identified in Guanajuato are: “agro-industrial, auto parts-automotive, chemical products, leather-shoes, and textiles-clothing-fashion. In the future, it is hoped that they will include: research services, tourism, medical equipment, pharmaceuticals and cosmetics” (Ministry of Economy, 2017c, p. 7).

*The role played by the industrial policy to promote the Automotive Industry (AI): brief notes*

In the study, Guanajuato XXI Century, undertaken from 1992 to 1995 by the state government, the need to promote industrialization and diversification in the Guanajuato economy was made explicit; furthermore, the automotive industry was identified for its potential for the integration of productive chains (State Government, 1995).

This study established as a course of action, “to attract productive foreign investment to generate direct employment, favour the creation of other sources of employment in related companies and align plans for regional development” (p. 1133).

Policy lines of action focused on the following aspects:

- a) Lack of adequate infrastructure: road and railway networks were developed with the aim of facilitating the reception of raw materials and delivery of products.<sup>4</sup> Regarding the development of specialised infrastructure, the establishment of the Guanajuato Internal Port (GPI) and Industrial Parks<sup>5</sup> was promoted.

<sup>4</sup> An important point in the process of state planning was the promulgation of the Planning Law for the state of Guanajuato, which included the idea of “long term”; it became obligatory to consider long term planning: 25 years, (Martínez, 2015).

<sup>5</sup> To date, 15 industrial parks have been established: Amistad Apaseo el Grande, Amistad Celaya, Castro del Río, Centro Industrial Guanajuato, Colinas León, Opción, Polígono Industrial San Miguel, Colinas Silao, Fipasi, Guanajuato Puerto Interior, Caral, Marabís, Apolo, Sendai, and Stiva.

- b) Lack of specialized technicians:<sup>6</sup> in order to address this, training programmes for specific technical positions required by Japanese and German companies were translated and adapted into Spanish; instructors from the State Training Institute (IECA) were trained in Germany and Japan; and specialized training was given in hydraulics, pneumatics and PLCs.

In addition to policies, however, it should be noted that an important component triggering FDI, was the team responsible for attracting investment. This was originally formed during the government of Vicente Fox Quesada (1995 - 1999) and continues to this day. The permanence of experienced staff with the necessary relationships has contributed to the continuity and success of the policy to attract investment. The importance of the role played by a promotion agency has been emphasized in many research (Wilson, Baack and Baack, 2014).

The main incentives given by the state government to the MNCs were:

1. Cash, in accordance with the amount invested and employment generated, for companies to use in order to address infrastructure needs. In the case of General Motors, this was used for water well drilling. It can be used for building substations for electrical energy, drainage systems, treatment plants and deceleration lanes.
2. Training grants: The State Training Institute (IECA) offers courses such as, CNC, Design and simulation, Robotics, Hydraulics, Pneumatics, Metrology, and others.
3. For the hiring of new employees, for a period of 3 to 5 months the government pays 90% of the salary and the company the remaining 10%, following which the company commits to contract the worker.
4. For new companies or those seeking to expand their facilities, economic incentives are offered for the acquisition of infrastructure, industrial equipment, recruitment, selection and hiring of personnel, grants for training workers *in situ*, as well as to update machinery.
5. Temporary exemption from local taxes, such as property and domain transfer taxes.
6. Support in normative or environmental processes, either directly by SDES personnel or the ministry reimburses the cost of contracting a Mexican firm. In order to facilitate this, the SDES formed an alliance 12 years ago with Soft Landing, who provide support to investors in understanding Mexican law.

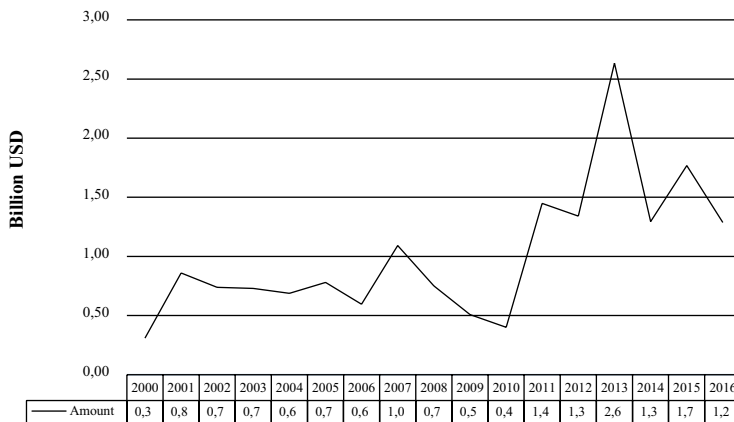
<sup>6</sup> For example, "... personnel hired by GM, initially, came from the countryside, and as such it was necessary to retrain them for industry. In the beginning, workers were hired for very basic positions: operators and low-level technicians as qualified labour was not available in the state. Twenty years on from the establishment of GM, this has changed and continues to do so" (personal communication with the Minister of SDES).

*Trend of FDI in Guanajuato: 2000 - 2016*

The state of Guanajuato has been positively affected by the FDI dynamism, especially in the automotive industry. According to data from the Ministry of Economy (2017b), between 2000 and 2016, this state was able to gather a total amount of over 17.22 billion USD in FDI. According to the type of investment: 48% corresponded to new investment, 33% to reinvestment of earnings, and 19% to inter-company debt (Mexican Ministry of Economy, 2017b).

If only the annual investment made between 2000 and 2016 is considered, the trend of FDI can be divided into three periods clearly identifiable and which are shown in Graph 2: The first covers from 2000 to 2009 where FDI grew with certain fluctuations, obtaining the maximum level of investment in 2007 (over 1 billion USD). The second period, 2010 to 2013, can be noted for an accelerated increase in FDI. The maximum achieved was obtained in the last year of this period when it reached 2.6 billion USD. The last period covers from 2014 to 2016 where FDI, on average, decreases to levels below 2011.

**Graph 2**  
**FDI in Guanajuato, 2000 -2016**  
**(Billion USD)**



Source: Author’s elaboration on the basis of data gathered from the Mexican Ministry of Economy (2017a).

Moreover, just as on a national level, Guanajuato shows an uneven capturing of FDI flows. Regarding the aforementioned, the Ministry for Sustainable Economic Development (MSED) mentioned:

“The municipality of Irapuato occupies first place statewide in the largest sum of investment captured in the current state administration with over 2.4 billion USD through 36 projects with the commitment to generate 11,165 jobs. Silao follows with 2.12 billion USD, Apaseo el Grande with 1.26 billion USD, Leon with over 869 million USD, and Celaya in fifth place with 690 million USD” (MSED, 2016b, w/p).

In relation to the place of origin of the accumulated FDI which arrived at Guanajuato between 2000 and 2016, the five most important places are associated to the following nations: The United States, 45%; Japan, 14.3%; Spain, 11.2%; Belgium, 8.4%; and Germany, 4.6%. Altogether the nine countries that are shown in Table 1 made up 95% of the total accumulated FDI in the period mentioned.

**Table 1**  
**Accumulated FDI flows in Guanajuato according to country**  
**of origin: 2000-2016**

<i>Country</i>	<i>Amount (Billion USD)</i>	<i>Participation (%)</i>
The United States	7.77	45.1
Japan	2.46	14.3
Spain	1.93	11.2
Belgium	1.45	8.4
Germany	0.79	4.6
Italy	0.71	4.1
Canada	0.64	3.7
United Kingdom	0.31	1.8
Switzerland	0.31	1.8
<i>Subtotal</i>	<i>16.37</i>	<i>95</i>
Other countries	0.85	5
<b>Total</b>	<b>17.22</b>	<b>100</b>

Source: Author’s elaboration on the basis of data gathered from the Mexican Ministry of Economy (2017b).

Furthermore, regarding what FDI in the manufacturing industry refers to, between 2000 and 2016, 10.82 billion USD were accumulated; 62.8% of the state total was concentrated in this industry. From the total that corresponded to manu-

facturing (31-33), 37.5% was located in the manufacturing of transportation (336). Within the 336 subsector, 59.5% was located in the industries groups 3363, 39.4% in 3361, and 1% in 3369 (Table 2).

**Table 2**  
**Manufacturing of transportation equipment FDI in Guanajuato,**  
**2000-2016**

<i>Sector, subsector and industry group</i>	<i>Amount Million USD</i>	<i>Participation (%)</i>
State total	17,224	
31-33 Manufacturing industries (% regarding the total FDI of the entity)	10,821	62.8
336 Transportation equipment manufacturing (% regarding FDI in manufacturing in the entity)	4,055	37.5
3361 Automobile and truck manufacturing (% regarding subsector 336)	1,597	39.4
3363 Auto-parts manufacturing (% regarding branch 336)	2,414	59.5
3369 Other type of equipment manufacturing (% regarding subsector 336)	41	1.0
Other subsectors	3	0.1

Source: Author's elaboration on the basis of data gathered from the Mexican Ministry of Economy (2017b).

Regarding to the attracted investment in the automotive industry, during the 2006-2016 period, 91% concentrated in the following 5 municipalities in order of importance: Silao, Irapuato, Celaya, Apaseo el Grande, and Salamanca (Martínez and Carrillo, 2017).

An explanation for the reception of the most FDI in auto parts has been the recent establishment of Original Equipment Manufacturer (OEM) in the state of Guanajuato (Mazda, Honda, and Toyota). A strategy of these is to promote their suppliers' close location in order to make time efficient delivery, and reduce logistics and manage risks (ECLAC, 2017). Guanajuato's specialized infrastructure encourages the establishment of companies; since some years ago, multiple industrial areas have expanded (parks, compounds, corridors, or areas) and also include services (light,

water, drainage, signposting, support services, amongst others) which the auto parts sector requires (García, 2017).

Furthermore, in September 2016, the current state governor, Miguel Marquez Marquez, announced that:

“The automotive and auto parts industry represent 231 investments that integrate more than 12.4 billion USD and 88, 300 jobs. Business opportunities in Guanajuato with the automotive and auto parts industries have a future in Guanajuato. Currently, 763 thousand vehicles are produced, and the projection is 1 million 408 thousand, one out of 4; in engines, 932 thousand are produced, the projection is 1 million 810 thousand; in transmissions, 1 million 118 thousand with a projection of 2 million 320 thousand and in tire production, currently it is 2 million and the projection is 5.5 million” (Heraldo de Leon, 2016).

### *Towards the conformation of an automotive cluster*

The beginning of the automotive industry in Guanajuato dates back to 1995 with the arrival of General Motors in Silao as well as the arrival of its suppliers of auto parts and services (García and Lara, 1998; García, 2002; Martínez, García and Murguía, 2009).

However, the productive restructuring in the automotive industry, a result from the 2008 financial crisis, favored the arrival of new companies to emerging countries since these seek to lower their costs and make their production more efficient. After the 2008 financial crisis, the Mexican AI has experienced a process of transformation, which has taken it from a low-cost platform to a “more integrated and diversified productive chain in terms of products and technological sophistication” (ECLAC, 2017, p. 163).

Factors which have promoted the arrival of new investments in the automotive industry in Guanajuato have been: wage costs, tax exemptions, job training scholarships support, formal integration of a cluster, job stability, the existence of competitive costs associated to land value and the existing infrastructure services, the existence of qualified manpower, and the industrial policy involved in attracting investment (García, 2014; Lara, 2016, Martínez and Carrillo, 2017). Precisely from the crisis and thanks to the promotion of sectoral policies, the automotive industry begins to attract a considerable growth in the region known as Bajío. Within this region, the zone of Guanajuato stands out since 4 of them assemble cars (General Motors, Mazda, Honda, and soon, Toyota), an engine plant (Volkswagen), and a transmission plant (Ford) (Table 3)



**Table 3**  
**Light automobile assembly plants and annual estimated production**  
**2016 y 202**

<i>Company</i>	<i>City</i>	<i>Starting year</i>	<i>Investment (Million USD)</i>	<i>Surface (ha)</i>	<i>Products</i>	<i>2016</i>	<i>2022</i>
General Motors	Silao	1994	420 (2014)	220	Chevrolet Silverado, GMC Sierra	378 938	324 509
Honda	Celaya	2014	1 270	566	Honda Fit / Jazz, HR-V, transmissions	144 569	170 109
Mazda	Salamanca	2013	770	254	Mazda2, Mazda 3	207 563	200 125
			240		Yaris R (Toyota)		
Toyota	Apaseo el Grande	2019	1 000	607	Corolla	-	203 645
<b>Total</b>						<b>731 070</b>	<b>898 388</b>

Source: modified from ECLAC (2017: 176) and information from the press clipping.

Amongst the new companies which have arrived at the state, the following can be highlighted: Honda with an investment of 800 million USD with an assembly plant in Celaya and generating 3,600 direct jobs. Volkswagen invested 800 million dollars to produce engines in Silao. Mazda has invested 120 million USD in its Salamanca plant in which Skyactive engines for the Mazda2 and Mazda3 models are made. Toyota will make an investment of over 1 billion USD in an assembly plant in Apaseo el Grande and it is expected to start operating in 2020. Regarding auto parts companies, some of the brands which have invested recently in Guanajuato are: Lear Corporation, Continental, American Axle, Denso, Posco, Kasai Mexicana, Pirelli, and Hella, amongst others. It can be observed in Table 4 that the investments made in the automotive industry have contributed to the creation of new jobs from 2006 to 2016.

**Table 4:**  
**Presence of the automotive industry in Guanajuato Accumulated projects**  
**2006-2016**

<i>Municipality</i>	<i>Number of companies</i>	<i>Percentage participation</i>	<i>Investment (millions of dollars)</i>	<i>Percentage participation</i>	<i>Jobs created</i>	<i>Percentage participation</i>
Silao	65	33.68	3,286.81	29.20	18,266	24.75
Irapuato	38	19.69	2,732.21	24.27	14,432	19.55
Celaya	22	11.40	1,862.92	16.55	9,975	13.52
Apaseo el Grande	17	8.81	1,445.61	12.84	7,070	9.58
Salamanca	5	2.59	914.4	8.12	6,000	8.13
Subtotals	147	76.17	10,241.95	90.98	55,743	75.53
Rest *	46	23.83	1,015.71	9.02	18,062	24.47
<b>Totals</b>	193	100	11,257.66	100	73,805	100

Source: Martínez, A. and Carrillo, J. (2017, p. 126).

With regards the labour market, according to the Minister of Economic Development, the initial employment offer was for operator positions, with a scarcity of specialized labour. Over time, however, labour has become more specialized. In this regard, the President of Claugto stated that, the employment generated is of a “(...) good level, technologically speaking, both on the operator level as well as for engineering, with the possibility of international projection... salaries are competitive” (personal communication, 20 June 2014).

According to information from the National Association of the Automotive Industry (Ruiz Mendez, 2015) it is expected for Guanajuato to duplicate its production in the next 5 years when it passes from 560 thousand units to a million, which will position the automotive cluster in Guanajuato as one of the main automotive poles in the country.

Finally, in the beginning of 2018, the Ministry for Sustainable Economic Development (MSED) in Guanajuato mentioned that, regarding the automotive industry, 169 companies will be established in the state, nearly 9 billion USD will be invested, and under the current government, more than 64 thousand jobs will be generated. Furthermore, it is affirmed that 77% of the total investment that has been received in the last 4 years in Guanajuato, is linked to the automotive industry (El Sol del Bajío, 2017). It is worth mentioning that: “from 2007 until today, 204

investment projects in the automotive-auto parts industry have been arranged with an investment of 11.4 billion USD and the generation of over 73, 263 jobs” (MSED, 2016a, w/p).

### **Final remarks**

The objective of this article is to analyze the trend of Foreign Direct Investment (FDI) in the state of Guanajuato, in particular, that attracted by the automotive industry during the period 2000-2016.

The statistical data presented in this article highlights the positive trend of the flow of FDI in the state of Guanajuato, which is particularly associated with the establishment of OEMs. The levels of investment have also been favored by the arrival of auto parts companies that are inserted into the value chain that make up the automotive industry. These investments have favored the creation of jobs in Guanajuato.

By and large, amongst the factors that have fostered the arrival of FDI in the country, and to Guanajuato in particular, have been: the existing infrastructure in the entity, the wide variety of university and technological educational institutions, the existence of young people, well skilled workforce, industrial policy, trade openness, NAFTA, the improvement of the expectations of the us economy as well as the closeness and preferential access to this market, and the lower relative costs, amongst others. This allows us to place on the discussion table the effects that the renegotiation of NAFTA, under the current US government, will have towards attraction of investments since as has been mentioned, these can cause a lowering of FDI flows in the coming years.

Amongst the challenges faced by the policies of investment attraction towards regions such as Guanajuato (and Mexico in general), we can find:

1. The changes in mobility concepts and consumer patterns
2. The regulatory exigencies regarding security, environmental, and energy efficiency.
3. The accelerated technological change, which companies nowadays face, is changing their own bases of competitiveness rapidly. Now, research, development, and manufacturing processes are integrated which marks a change in the industrial policy emphasis towards instruments which promoted collaboration networks between companies, the government, and research centers.

4. The recently approved tributary reform of corporate taxation in the US which lowered from 35 to 22% which makes the arrival of FDI more attractive to this economy.
5. The re-negotiation of NAFTA promoted by the current US government.

With the aforementioned in mind, design and implementation of an industrial policy should be formulated in order to promote the generation of endogenous innovation capabilities. As it has been mentioned, recent years have witnessed the arrival of assembly and auto parts companies on Tier 1 and Tier 2 levels which opens the possibility for local companies to insert themselves in the value chain of the automotive industry starting from Tier 3 levels; however, in order for this to happen, the challenges proposed above need to be taken into consideration.

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