Sociology Study, Mar.-Apr. 2021, Vol. 11, No. 2, 66-86
doi: 10.17265/2159-5526/2021.02.003

Historical Development in the Automotive Industries of Argentina and Turkey

Sıtkı Selim Dolanay
İstanbul Ayvansaray University, İstanbul, Turkey

It is possible to say that the automotive industries of Argentina, Brazil, and Turkey are each developed as an assembly industry and show great similarities to each other in this context. Since the 1980s, the development direction of the world automotive industry has been trying to make the country's investment environment attractive for foreign international companies to produce in their countries in all three countries. However, with the 1980s, their adaptation to the flexible production system and other new technologies being implemented in the Japanese automotive industry took time, meaning that the learning time took a long time, and local contribution rates fell. This has made the slow development mechanism that has been going on since the past work even slower, and they have suffered the punishment for not being able to develop technologies in all three countries by falling behind in the automotive industry. In the 2000s, with technological advances in electric vehicles, when the use of electric vehicles began to become widespread, we can say that all three countries began to experience a new adaptation problem in the automotive industry more severely. In Turkey, this problem was experienced with all its weight along with the other country; in 2006, the policy of attracting foreign investment to the automotive industry was partially abandoned and the approach to producing domestic cars began to be considered, and in 2011, a decision was made to produce domestic cars. As of December 2019, a prototype of the domestic car has been produced by the automobile initiative group of Turkey and work has started for mass production. Thus, the problem of adaptation to the production of electric vehicles was desired to be overcome by moving to a new stage in the path of technology development. The South Korean automotive industry used this approach in the 1980s and was successful and soon gained the ability to develop technology. In order to see the success of the application of this method in Turkey, it is thought that it is necessary to wait for the result of the domestic car project.

Keywords: automotive industry, lagging industries, acquisition of technology development ability, path dependency, domestic automobile

Introduction

Because of Turkey and Argentina's past structural shortage of foreign currency by removing the barriers that have been created in front of the economic development of the entire industry, and in particular were made to the regulations in order to support the growth of the automotive industry, the growth model based on exports since the 1980s in Turkey began to apply the appropriate economic policies, and also in Argentina the current Common Automotive Policy (CAP) has been established in accordance with Article 14 of the Economic Complementation Agreement (ECA) adopted in 1990. Within this framework, it aimed firstly to increase and

Sıtkı Selim Dolanay, Ph.D., lecturer, İstanbul Ayvansaray University, İstanbul, Turkey.

diversify mutual trade in the automotive sector, and the second was to increase the sharing of parts and tools, especially those with high added value and high technology, regionally, and to improve the current account balance by achieving positive values in their trade with third countries. However, the situation of trade balance in the automotive field in Argentina during the 25 years after the implementation of the CAP has shown that the objectives of the agreement could not be achieved sufficiently. Due to the relative weakness of Argentina's parts industry, the excess of structural imports in the sector has become chronic (Gárriz, Panigo, & Gallo, 2014, pp. 1-2; Dolanay & Oğuztürk, 2018).

The developed countries of the time advised all the lagging countries, especially in the period after the Second World War, that those who take the lead should follow the same path in order to ensure economic development, and that in order to achieve this, the developed countries should help those who fall behind and that the time of the road will be shortened with this assistance (Partant, 2005, pp. 11-21). In countries that have begun to follow the same economic development path by following these recommendations, a path-dependent economic development process has generally occurred (Dolanay & Oğuztürk, 2018). The problem applies to the automotive industry in Argentina, and we can say that it also applies to Turkey (Dolanay & Oğuztürk, 2018). Because of the import substitution industrialization model that has been applied since the 1930s in Turkey (Öndağ, 2012, p. 3), improved technology and the formation of an automotive supply industry structure has not been sufficient. Turkey in the 1980s has begun export-led growth model of the application; it has tried to increase its exports by way of intra-regional trade in Argentina. However, as in Turkey (Dolanay & Oğuztürk, 2018), Argentina was also quite far from having the technology development capabilities in the automotive industry. Thus, we can say that all these countries fell behind the world ranking in terms of automotive industry production, and the contribution of the automotive industry to the development of the country's economies remained quite limited.

A Brief Overview of the History of Argentina

Although the first human traces in Argentina's land date back to 10,000 BC, the establishment of the first known settlements took place in the 9th century. The region, where the group interested in agriculture and farming from the Argentina's indigenous peoples of this period lived, was conquered by the Inca empire since 1480. Being the richest, most unified and dynamic state of the time, the Inca state advanced 4,000 kilometers from north to south in the 1500s and had a population of 8 million. As a successful totalitarian state, it has used its resources efficiently and with an understanding of public interest. Although the Incas did not use the wheel, their military skills, communication, engineering, stone and metalworking, architecture, medicine and surgery, textile fame and ceramics were at a very advanced level. Economics, political science and art developed in the same way. With the quipu (long threads made from knotted ribbons), they have a useful computation system, but they do not have writing systems. Starting from the capital city of Cuzco in Peru, they brought different people together in areas that reached distant points by using the common language. They had the understanding of one language, one noble class, and one emperor. In 1493, a year after the "discovery" of America by Columbus, Spain formalized the Papal declaration with the Tordesillas Treaty, in which it acquired a large part of the Southern Cone, including Argentina. Spanish-born sailor Juan de Solís landed in Argentina for the first time in 1516[1].

[1] https://tr.wikipedia.org/wiki/Argentina.

In 1531, Francisco Pizarro arrived in Peru, which was under the Inca rule and included the north of Argentina. In 1536, Spanish sailor Pedro de Mendoza established a Spanish colony where Buenos Aires is located today. The Spaniards, who retreated because of the locals, then rebuilt Buenos Aires in 1580. Buenos Aires and its surroundings were governed by the Spanish governorship of Peru until the end of the 18th century. Between 1825 and 1828, Brazil fought Argentina. With the Bourbon reforms inspired by the Enlightenment Age by the Spanish Bourbon monarchy in the 18th century, the area that today mostly constitutes Argentina was separated from the Peruvian governorship in 1776 and became affiliated with the newly established governorship of Río de la Plata. Buenos Aires became the capital of this governorship[2].

In 1536, Pedro de Mendoza founded the Port of Santa María del Buen Ayre. However, settlement failed due to famine and conflicts with indigenous tribes. City residents have settled in Asunción, which has become the Spanish operations center in the area. The only place where settlers lived in Argentina was Santa Fe, the place called Arjantin. Martín del Barco Centenera gave an account of this in his historical poem "La Argentina", published in 1602. In 1580, starting from the city of Asunción and after reaching Santa Fe, Juan de Garay re-established the City of Trinidad and Puerto de Santa María de los Buenos Ayres, which in time became known only as Buenos Aires. Arriving in Argentina in 1585, the Jesuits (Spanish: Compañía de Jesús) became an influential sect in the country in theology, diplomacy, education, research, agriculture, science and arts. They built the city of Córdoba, which they reached in 1587, as the seat of the Jesuit province of Paraguay, which was assigned to the sect by the Spanish emperor in the Deputy of the King of Peru: the Jesuit Block of Córdoba (Spanish: Manzana Jesuítica), where they started teaching in 1599, and the University that became the present-day National University of Córdoba in 1613 was well established. The Jesuits came from their headquarters in the city of Córdoba to Buenos Aires in 1608 and founded Colegio de San Ignacio in the same year and Real Colegio de San Carlos in 1675. In 1654, the Buenos Aires Cabido, responsible for the administration of Buenos Aires, entrusted the education of the city's youth to the Jesuits. In 1588, they established the first Guaraní missions (Spanish: Misiones jesuíticas en Río Grande del Sur) and reached Rio Salado in the same year to herald the Pampas. The Jesuits were expelled from the Spanish Empire in 1767, causing the Jesuits to leave Latin America. This expulsion was a major blow to the level of education, as the vast majority of educational institutions in the region benefited from the Jesuits as teachers. The growing secularism, nationalism and political absolutism of the time completely contradicted the ideal of the universal "Christian World". Pope XIV. Clemens dissolved the Companions of Jesus in 1773[3].

The Upper Peruvian market enabled cotton to be cultivated in Santiago del Estero and facilitated the establishment of a textile industry with goat breeding. In 1776, which did not matter much until then, the Spanish separated it from the Viceroyalty of Peru by establishing, among other new administrative regions, the Office of the King of Río de la Plata. Buenos Aires was founded as the capital of the Río de la Plata, due to its increasing importance as a commercial center and the gateway to the interior of the continent. At first, leather was the main product in Buenos Aires. In the 1820s, Peru, Uruguay, Paraguay, Colombia, Venezuela, Argentina, and Bolivia all liberated themselves from Iberian domination. The unity that Bolívar and San Martín sought to create among the newly liberated colonies of Latin America has never been achieved. The semi-feudal aristocracies of Latin America preferred political independence to unified control. Thanks to the

[2] https://tr.wikipedia.org/wiki/Argentina.
[3] https://tr.wikipedia.org/wiki/Argentina.

establishment of the governor general of Río de la Plata in Buenos Aires in 1776 and the Bourbon reforms implemented by the Spanish Empire, the region began to develop economically[4].

In Argentina, the independence movements were affected by the American and French revolutions, taking advantage of Napoleon's invasion of the Iberian Peninsula in 1808 and the Spanish liberation war of 1808-1811. The independence movement led to the establishment of the First Junta, the first government of the United States, on May 25, 1810, resulting in the establishment of the Tucumán Congress[5].

Although the Argentina Constitution of 1819, prepared by a compromise, was adopted by Congress and the Unionists on May 25, 1819, it did not come into force due to the Federalists' refusal[6].

The power struggle in Argentina, which did not have a national government until 1852, dragged the country into a civil war environment. The parties in the struggle for power have been Unionists supporting central administration and Federalists supporting local administration. The Federalists led an alliance against the dictator Rosas, which included Brazil, Uruguay, and Argentina's states of Entre Ríos, Corrientes, and Santa Fe. In the 1852 Battle of Caseros, the alliance army under the direction of Entre Ríos governor Justo José de Urquiza, Ejército Grande, defeated the Argentina Confederation under Rosas. This defeat resulted in the resignation of Rosas from the governorship of Buenos Aires and his exile to Great Britain. The new assembly, which includes all the states except Buenos Aires, adopted the first constitution of Argentina in 1853 and moved the capital to Paraná. The increasing tension between the Argentina Confederation and the State of Buenos Aires led to the Battle of Cepeda, which ended in the defeat of the Buenos Aires State in 1859. Forced to sign the San José de Flores Agreement after the war, the State of Buenos Aires rejoined the Argentina Confederation. The final reunification took place under the rule of Buenos Aires after the Battle of Pavón (1861), which resulted in the victory of Buenos Aires during the Buenos Aires Presidency of Bartolomé Miter. In 1862, Bartolomé Miter was elected mayor of Buenos Aires as the first president of the Argentina Republic and the capital was moved back to Buenos Aires[7].

In the years after 1865, Argentina had a place in the world economy as an agricultural product exporter country supported by the advancement of an extensive railway network and education system. After two bloody revolutions in 1874 and 1880, the city of Buenos Aires was federalized, establishing a permanent balance between the provinces and the capital. During the period of Bartolomé Miter (1868-1874), former governor of Buenos Aires, who was elected as the first president of the new country in 1862, he not only made innovations but also encouraged the arrival of immigrants from European countries[8].

Argentina has become the world's 10th largest trading country and 6th in per capita income towards the end of the 19th century. In parallel with the economic enrichment, economic classes specific to modern societies have begun to take shape. The Radical Citizens' Union, which was founded in 1891 as the party of the increasingly strong middle class, took power by overthrowing the Partido Conservador, one of the first political movements of the country and representing the landowners rather than being an official party in the 1916 elections[9].

---

4 https://tr.wikipedia.org/wiki/Argentina.
5 https://tr.wikipedia.org/wiki/Argentina.
6 https://tr.wikipedia.org/wiki/Argentina.
7 https://tr.wikipedia.org/wiki/Argentina.
8 https://tr.wikipedia.org/wiki/Argentina.
9 https://tr.wikipedia.org/wiki/Argentina.

After the 1880s, many immigrants joined the Argentina population. In the early twentieth century, Latin and Slavic immigrants outnumbered the Anglo-Saxons. The peak of the movement was reached in the first decade of the century. The annual flow from Europe was about 1.5 million immigrants between 1909 and 1914[10].

Until World War I, large-scale European immigration mainly consisted of transfers of agricultural workers from low-land areas to areas with abundant land. In general, the movement of Europeans has symbolized personal will, personal hope, personal decision, personal enterprise, and personal pain[11].

Britain's total investment between 1900 and 1914 increased from $ 2.5 billion to $ 3.7 billion. In 1914, British investment in the western hemisphere was divided approximately equally; 20 percent of the bills are in Latin America, 20 percent in the United States. French investments, which have been a great resource since the 1860s, tripled in 1914 to 1.2 billion dollars. Like Britain, German capital is divided into the north and south halves of the continent. At the end of the 19th century, the Argentina Republic showed great economic growth with the European investments in Argentina's agricultural resources. Argentina, the seventh richest country in the world at the end of the 1920s, began to host 6.2 million immigrants between 1870 and 1920, half of whom were Italians and one third Spanish. During this period, Buenos Aires, which developed based on the great agricultural wealth of the Pampas, began to be called the "Paris of South America" with its European style wide boulevards[12].

With the secret voting law passed, the first presidential elections were held in 1916. The UCR (National Citizens' Association) won the elections by a big margin. However, by the 1920s, trade with North America became very important for Argentina like many Latin American countries[13].

Latin America emerged from the First World War with a new spirit of independence and a new understanding of world responsibility. They have joined the Union of Nations (the United States Congress had previously declared membership). Argentina opposed the United States but could not get support from its neighbors[14].

Until the middle of the 20th century, political conflicts between Federalists and Unionists and between civilian and military groups dominated the country's agenda. In 1943, a coup was made against the administration of the president Ramon Castillo, and the leader of the coup, Juan Domingo Perón, came to power. Perón was elected president twice, first in February 1946 and the second in 1951, when the constitution was changed. Perón, who lived in exile for many years, was re-elected president when he returned to his country in 1973. Upon his death a year later, his wife Isabel Perón was appointed president. However, Peronist could not achieve the unity and solidarity of the country with populist policies and was removed by the army in 1976. When the junta went to the elections at the end of 1983 and gave the administration back to the civilians, the country resumed democratic rule[15].

In 1989, Carlos Menem of Syrian origin was elected president for 10 years. Although Argentina's 1990s was seen as a successful model for many countries, the country fell into economic difficulties in the early 2000s. Eduardo Duhalde, who was elected president in 2002 after a three-year interim period after Menem, tried to combat the economic crisis that the country fell into and broke out in 2001-2002[16].

---

[10] https://tr.wikipedia.org/wiki/Argentina.
[11] https://tr.wikipedia.org/wiki/Argentina.
[12] https://tr.wikipedia.org/wiki/Argentina.
[13] https://tr.wikipedia.org/wiki/Argentina.
[14] https://tr.wikipedia.org/wiki/Argentina.
[15] https://tr.wikipedia.org/wiki/Argentina.
[16] https://tr.wikipedia.org/wiki/Argentina.

Depending on the economic policies applied, it is possible to examine the Argentina automotive industry by dividing it into periods. In this context, firstly, assembly industry production took place in the period between 1916-1958.

Argentina Automotive Industry in the Process Between 1916-1958

The assembly of cars in Argentina occurred in 1906, when a local entrepreneur named Anasagasti began assembling vehicles using parts imported from France. However, the first serious attempt to assemble cars on a larger scale occurred in 1916, when Ford set up an assembly facility in Buenos Aires. The Ford Assembly Factory in Argentina was the first in Latin America. During this period, there were no tax incentives for the establishment of facilities in Latin American countries, and decisions were taken to establish new facilities based on the expected savings to be obtained from the shipment of semi-disassembled (SKD) or completely dismantled (CKD) kits to these countries (CBU), unlike vehicles. Later, in the 1930s, tariff benefits were given to manufacturers as opposed to fully built (CBU) importers (Montero, 1996, p. 15).

Automobile imports grew very rapidly in the 1920s as the highway network and the country's economic growth expanded. Although multinational companies have established automobile assembly facilities in the most important Latin American countries, they have not been vertically integrated and developed as a local parts supply system. Locally, there were only sales points for CKDs provided by parent companies. As a result, the local content of the assembled vehicles was low and auto installers contributed little to capital accumulation or advanced technology (Montero, 1996, pp. 15-16).

During the interwar period, factories established in Latin America essentially tried to assemble imported kits. Theoretically, the parent companies, which have been able to obtain locally, rather than imported parts, have always found ways to ensure that this rarely happens (Montero, 1996, p. 32).

According to 1951 data, which is the oldest record we could detect, Argentina automotive industry production was only 108 units, and this figure increased rapidly in the following years and reached 27,834 in 1958[17].

Argentina Automotive Industry in the Process Between 1959-1975

Between 1951 and 1953, the Argentina government passed two laws to attract foreign capital and promote the automotive industry. In 1952, a year after the apparently established IAME (Industrias Aeronauticas y Mecanicas del Estado) started manufacturing automobiles, Mercedes Benz started production in Argentina. In 1955, IKA Renault (Industrias Kaiser Argentina) started its activities in the country (Montero, 1996, p. 17).

However, until 1959, when Decree No. 3,693 was adopted, large-scale manufacturing companies were not established in Argentina in the motor vehicle industry. Decree No. 3,693 of 1959 in Argentina established a growing table of local contribution requirements for vehicles, starting from 55-80% of the vehicle cost in the first year to 90-95% after four years. With the decree, protective measures (import ban), local contribution requirements, preferential tariffs and tax exemptions for parts and capital goods were provided for manufacturers, and 29 additional offers were submitted by seven companies for the manufacture of vehicles. No firm's offer was rejected, but as of 1961, of the annual production only three firms could exceed 2,000 units (Montero, 1996, pp. 17-19).

[17] http://www.adefa.org.ar.

As a result of the new regime, motor vehicle imports declined significantly from 1958 to 1975. By 1972, the industry had been largely fragmented and nine companies continued to produce automobiles. The largest of these accounts for 26% of the production. In the early 1960s, two-thirds of automobile production came from local companies. Ten years later, almost all production started to come from foreign companies (Montero, 1996, pp. 19-23).

We can say that the first phase of development in the Argentina automotive industry started in the mid-1950s and continued until the mid-1970s. During this period, there was a small-scale automotive industry that produced with back technology and had relatively low labor productivity. For example, when the automotive industry reached its highest production level in Argentina in 1973, only 300,000 vehicles could be produced. This year, production in some European countries ranged from 2 million to 4 million pieces. In 1973, the motor vehicle production of Argentina's largest-scale companies was able to reach a maximum of 15,000 units. On the other hand, according to a calculation made for these years, the theoretical production amount with the minimum effective scale was found to be 200,000 units. For example, the difference in scale in the final assembly has fundamentally affected the speed of the assembly line and the process in Argentina has been much slower than in the USA. This has led to a lower level of specialization of the workforce and the use of less machinery. Thus, manual tools have become more preferred than automatic machines in Argentina compared to the USA. Towards the 1960s, labor productivity was two to three times lower than in Europe and about five times lower than in the USA. Therefore, according to the data of 1967, the production cost was approximately twice that of the USA (Baranson, 1969, p. 34; Fitzsimons & Guevara, 2018, pp. 185-187).

The Argentina automotive industry's total production increased from 32,952 in 1959 to 240,036 in 1975[18].

Argentina Automotive Industry in the Process Between 1976-1982

The country experienced a period of political crisis in 1974 and 1975. With the death of President J. D. Perón in 1973 and the mismanagement that occurred in the following years, the army took power in 1976. After 20 years of protectionism, with the Decree No. 21.932 in 1979, it was decided to reduce the required local contribution rate from 90-96% in 1979 to 75-88% starting from 1982. Also, if imported parts are balanced by parts exported under a compensated trade balance system, local acceptance of imported parts is allowed (Montero, 1996, p. 23).

At the same time, the new automotive regime allowed vehicle imports with a tariff reduction program from 95% in 1979 to 45% in 1981. Tariff cuts and the local currency's overvaluation further increased automobile imports. Between 1979 and 1981, the trade balance deficit in the automotive industry stood at $ 500 million, which was approximately 30% of the trade balance deficit of the entire economy at that time. At the same time, motor vehicle production decreased significantly and the production level in 1982 was only 130,000 units, as in 1962 two decades ago (Montero, 1996, p. 24).

In 1978 General Motors, in 1979 Citroen, and in 1980 the commercial vehicle manufacturer IME exited the market, Volkswagen bought Chrysler's assets between 1979 and 1980, Fiat and Peugeot left the combined company in 1981, and Sevel in 1982 has taken over. In 1982, seven companies producing vehicles were on the market (both commercial and passenger cars), but four out of seven accounted for 96% of total production (Montero, 1996, pp. 25-26).

[18] http://wwww.adefa.org.ar.

Argentina's total production in the automotive industry decreased in 1976 compared to 1975 and was realized as 193,517 units, and in 1982 it decreased to 132,117 units[19]. We can say that between the years 1976-1982, a path-dependent structure emerged in the automotive industry and began to be felt. The total production of the automotive industry, which had increased steadily between 1951 and 1975, followed an unstable course from 1976 to 1982, and this was the reason why multinational companies that had a share in the creation of a path-dependent sectoral structure in Argentina continue this path. We can say that it led to a search for an exit.

Argentina Automotive Industry in the Process Between 1983-1995

Decree No. 1.605 of December 1982 allowed additional imports under the compensated trade balance regime. In 1983, democracy was re-established in Argentina. After seven years of military rule and the first six years of democracy, Argentina's economy and therefore automotive production remained stagnant (Montero, 1996, pp. 26-27).

After a serious economic crisis in 1990 and March 1991, the Argentina Congress approved the Conversion Plan, which was the starting point for a new economic policy. In the automotive industry, the main changes introduced were an average of 40% increase in the allowed foreign contribution rate of motor vehicles, an agreement for the import of cars and parts under discounted tariffs if compensated by the export of automakers, and the removal of import quotas on imported vehicles not produced locally. One of the main points was the existence of a preference agreement in MERCOSUR (the name of the established common market including Brazil, Argentina, Uruguay and Paraguay), which stipulated the industry to specialize in producing fewer parts in large scale production. Vehicle production increased from 100,000 units in 1990 to nearly 300,000 in 1995. However, unlike the economic breakthrough between 1975 and 1982, the main difference during this period was in exports. In 1994, the Argentina automotive industry consisted of nine companies producing passenger (cars and light trucks) and commercial (truck and bus) vehicles, and only three companies dominated the sector: these are Autolatina (ex Ford and Volkswagen), Sevel (ex Fiat and Peugeot), and Ciadea (ex Renault) (Montero, 1996, pp. 27-29).

The production level of the automotive industry of 1973 was exceeded until 1994 in the total. While the number of companies operating in the country decreased in the 1980s, many Multi-National Companies (MNCs) entered the market again in the 1990s and thus production increased. Argentina automotive industry has thus left behind its introverted character by integrating itself into the global value chain. After the 2001 crisis, the industry experienced a strong recovery and production scale growth. The modernization of factories has been made possible by the increase in labor productivity and the decline in real wages, which has contributed to the increase of competitiveness by reducing costs. As a result, there was a significant increase in the foreign trade of the sector (Barbero & Motta, 2007; López, 2007; Fitzsimons & Guevara, 2018, p. 187).

Argentina's total production in the automotive industry decreased in 1983 compared to the 1982 figure and was realized as 159,876 units, while this figure was realized as 285,435 units in 1995, slightly above the 1975 figure[20]. However, in the period between 1983-1995, it was observed that the total production of the automotive industry followed an unstable course on an annual basis, and this shows that the path dependency in the sector has deepened and continued.

[19] http://wwww.adefa.org.ar.
[20] http://wwww.adefa.org.ar.

Argentina Automotive Industry in the Process After 1995

Scale differences by firm and factory were greater than the increase in national scales. In addition, despite the expertise gained from regional integration, the proliferation of models has also created a characteristic boundary for economies of scale in Argentina. As a result of the continuing scale problems, the modernization of domestic facilities was also limited. In the 1990s, modernization, facilitated by the fact that machine imports were made much cheaper by the strong overvaluation of the national currency, and trade liberalization, consisted mainly of relative flexibilization of the pre-existing electro-mechanical technical base and was not replaced by microelectronics. For example, a study of modifications implemented at the Ford factory showed that instead of retrofitting the machines, they were adapted by adding numerical control units to older presses (in production since the 1980s) in the stamping department. Similarly, the introduction of robots has been limited to specific tasks in certain departments (especially at the source) that coexist with traditional manual labor in other operations (Lascano, Menéndez, & Vocos 1999). Indeed, the biggest innovations were applied to new forms of business organization (especially teamwork) rather than technical change; and even in this case, the implementation was partial and limited to the local application of the "hybridization" methods used in the main companies (Motta, Roitter, Delfini, Yoguel, & Milesi, 2007, p. 256). Thus, by applying some micro-electronic components to legacy electromechanical machines and partially reorganizing business relationships, capital was able to increase labor productivity without the need to comprehensively replace the equipment used. As a result, the level of automation in Argentina, although higher than in previous decades, remained significantly lower than in Japan or the USA (Motta et al., 2007, p. 264). The same can be said about the application of robotization (López, 2007, p. 43; Fitzsimons & Guevara, 2018, pp. 188-190).

For example, even at the peak of production in 2011-2013, production per worker was still two and a half times lower than in the most industrialized countries, and the absolute productivity gap was more than twice that of the 1960s (Fitzsimons & Guevara, 2018, p. 190).

First, the target market for almost all Argentina exports has been MERCOSUR (common market of the Southern Cone). This common market is much smaller compared to other regional and even national markets, half the Japanese domestic market, almost a quarter of Europe and five times smaller than the US market. In addition, it has been understood that except the existing restrictions on foreign competition in MERCOSUR, Argentina's industry is constantly dependent and extremely protected. Second, above all, the main constraint in the Argentina foreign market is due to the limited nature of regional integration. In fact, rather than being a complete integration of national markets within a larger regional market, the auto trade regime between Argentina and Brazil is structured around compensated exchange rules. Consequently, access to the protected Brazilian market depends on a proportional opening of the domestic market to imports from Brazil. Thus, exports and, consequently, domestic production are limited by the size of the domestic market, but regional integration has allowed an increase in the expertise of each country in terms of models produced (Fitzsimons & Guevara, 2018, pp. 191-192).

Let's reformulate the problem to reaffirm its importance. The normal source of profit for any industrial capital is the excess labor of the workers it employs. However, achieving a normal rate of profit depends on the workers producing under normal technical conditions for the industry. Otherwise, the lower relative productivity of labor would result in a smaller amount of physical production per unit of labor time and hence greater "individual values" of the goods produced (Marx, 1976, Chap. 12). Backward capital wastes labor-time

(surplus) by producing under non-optimal technical conditions, which normally makes profits momentarily understaffed due to higher production costs. Consequently, capitals operating under technical conditions lower than normal capitals can only earn profits if they regularly access other compensatory sources of profit that differ from the normal payment of excess labor carried out by their workers. In this sense, there have been extraordinary sources of profit in the Argentina automotive industry. Above-normal costs were compensated by selling at prices higher than current production prices or by paying below normal wages. Government policies have focused on firms applying abnormally high prices, instead of seeking technical innovations, to try to prevent abnormally high prices and low wages. Thus, it has led to the oligopolistic and/or speculative behaviors of multinational companies that continue to be inefficient in the sector (Fitzsimons & Guevara, 2018, pp. 192-193).

Farmland rent has also led to increased demand for automotive vehicles in general (and not just those directly consumed by agricultural capital and landowners). We can say that the state did this in order to convert the primary allocation into public expenditures later on. In this way, agricultural rent increased the overall demand for industrial commodities, including the automotive industry. As a result, the overpricing of vehicles for general domestic consumption has also been sustained, at least in part, by agricultural land lease (Fitzsimons & Guevara, 2018, pp. 194-196).

In Argentina, the official valuation of the currency (through various economic policy instruments) has been a recurring form of payment of social wealth. This breaks any effective comparison based on this variable. Therefore, it is clearly necessary to correct the deviations in the official exchange rate with respect to the parity corresponding to the capacity to represent the true value of the national currency. This allows us to more appropriately capture the magnitude of the value represented in the monetary wage Argentina automotive workers receive in relation to other countries (Iñigo Carrera, 2007, pp. 31-33). It can be concluded that in terms of value, the Argentina automotive price has historically been three to four times lower than its US counterpart. This means that in order to get an auto worker into production, TNCs must pay three to four times less variable capital than what is prevailing globally. This suggests that there is a relatively greater exploitation of labor power. The Argentina automotive worker's ability to consume was worth between half and three quarters of the consumption levels achieved by a US worker, much more than indicated by the value of his wage; or in other words, the fact is that the Argentina worker could buy more use value than their American counterparts. In fact, despite the relative cheapness of the labor force in Argentina, the consumption tendency is relatively high, thanks to the cheaper circulation of agricultural products from the world market. The process of allocating land rent by industrial capital largely explains the relative cheapness of the labor force in Argentina (Fitzsimons & Guevara, 2018, pp. 196-197).

As a result, automotive TNCs have compensated for the high cost of production imposed by the technical conditions in which they operate. There are two reasons for this: first, maintaining relatively high selling prices requires tariff protection; second, the extraordinary profit from the cheapening of labor power due to this protection will be greater. This opportunity has directed production towards export. The tendency to overvalue the currency has been a defining feature of the Argentina capital accumulation process, emerging as one of the most powerful mechanisms for the allocation of land rental income. However, this particular form of capital valuation has largely explained the main features of the development of the automotive industry in Argentina (i.e. the presence of the main TNCs, production for the domestic market, backward technology, etc.). TNCs were established in the country towards the end of the 1950s (Fitzsimons & Guevara, 2018, p. 198).

It should be noted that towards the middle of the twentieth century, one of the pioneers of the development of automation of the productive process of capitalist large-scale industry was the automotive production branch. Before then, the production system was based on a combination of division of labor and mechanized assembly line in production (Coriat, 1982, pp. 27-43). The installation of the transferred machines and above all their mechanical coupling in an automated production line (a system known as stationary automation) triggered a spatial reorganization of the global automotive industry. But between this technical revolution and Latin American industrialization, it has often been ignored in the literature, including of course Argentina (Fitzsimons & Guevara, 2018, pp. 198-199).

To begin with, the technical revolution, as always in the capitalist mode of production, took concrete form in the process of allocating excess profits (surplus value) associated with the innovation process by the intensification of competition between individual capitals (Marx, 1976, pp. 433-436; 1981, pp. 279, 300-301). In fact, European firms have also found a highly profitable alternative to scrapping old machinery in Argentina, with 13 U.S. firms responsible for 60 percent of these old foreign direct investment (FDI) that are obsolete for the new normal technical conditions moved to Argentina. In fact, the first FDI in the Argentina automotive industry was made directly with little or no financial investment, largely in the form of machinery, equipment and molds (Sourrouille, 1980). There has also been abundant evidence, both quantitatively and qualitatively, proving the second-hand character of a good part of this machine. This old machine, already obsolete for the level of technical development prevailing at the global level, was thought to be put into production in Argentina as a result of a particular form of valuation focused on the payment of ground rent. On this basis, automotive TNCs increased production in the country between 1960 and 1974. However, this "strategy" had a very strict limit. In fact, the reproduction of this form of valuation depended on a sufficient amount of land rent as a source of compensation for the lower productivity of labor. In other words, the reproduction of capital accumulation in the automotive industry has depended on TNCs being able to access agricultural rent to achieve the normal rate of profit. But conditions have evolved so that the quantitative need for land rent as a source of compensation has grown over time, as technical change has continued at a global level. Especially since the mid-1970s, the development of microelectronics has tended to widen, for its part, the productivity gap between normal production conditions at the global level and those prevailing in the Argentina accumulation process. After the strong cyclical movements of the 1970s, ground rent stagnated in the 1980s at levels similar to the 1960s. Following a move similar to the process of capital accumulation in Argentina as a whole, the combination of an increasing requirement for sources of compensation and the stagnation of ground rent brought the local automotive industry into a period of crisis and contraction between the late 1970s and early 1990s (Fitzsimons & Guevara, 2018, pp. 199-200).

There has been the existence of agricultural land lease which was recovered after the contraction of the 1980s and stabilized to higher levels than previously achieved in the 1990s (excluding the relatively isolated peaks of 1974 and 1979). This growing extraordinary source of profit has been generated by TNCs through previously analyzed mechanisms in connection with higher domestic prices and cheaper purchasing of labor. But secondly, the conditions of purchasing and exploitation of the labor force sharply deteriorated in the mid-1970s as an expression of the general crisis of capital accumulation in the national sphere. As a result, the consumption capacity of wages in the automotive industry has dropped sharply between 1976-1978. The consumption capacity of the Argentina automotive worker got somewhat closer to the consumption capacity of the US worker in the period 1984-1988. The recovery of the Argentina automotive industry is based on the

emergence of a new extraordinary source of profit, namely the allocation of some more of the value of the labor force. This decline in the consumption level of the working class has contributed to the cheaper agricultural goods seen earlier and further increased the wage gap (in value) between Argentina and the USA (Fitzsimons & Guevara, 2018, pp. 201-202).

The significant improvement in automotive real wage since 2004 has tended to weaken this source of profit for automotive capital. However, at the same time, the rental farmland floor grew abruptly, reaching much higher levels than in the 1990s. Thus, at least according to the data provided by automotive firms, renting space has continued its leading role as an outstanding source of profit for the automotive capital of the United States and Argentina. Indeed, during the biggest boom years in the sector (2011-2013), real wage recovery (increase in real wages) brought the consumption capacity of Argentina workers to levels close to that of US workers. Despite this virtual equalization of consumption levels, the relationship between Argentina and America wages was 45 percent in value, and the full validity of the payment of ground rent was ensured through the cheapening of the consumption package of the Argentina labor force. Another factor indicating the renewed importance of ground rent in the valuation of automotive capital has been the revival of expertise in the production of commercial vehicles designed to be used in the production and circulation of agricultural goods (Fitzsimons & Guevara, 2018, pp. 202-203).

The automotive industry started 2019, plunging into a complex scenario with decreased production volumes, exports and sales as a result of various factors. The contraction in the domestic market has been added to the relatively low demand for products from Brazil. Automotive products sales terminals accompanied the announcement of "Plan June 0 Km", a tool launched in mid-year to encourage the purchase of the brand, and decided to establish new units for the benefit of customers. The start of implementation of the plan was extended until August 2019 and the decline recorded in the market was allowed to slow down[21].

Argentina automotive industry's total production followed an unstable and fluctuating course between 1995 and 2020, while the total production figure was 285,435 in 1995, it reached 828,771 units in 2011, but fell back to 257,185 units in 2020 and was below the 1975 level. The figure for 2019 was 314,787[22]. Argentina automotive industry, which was formed as a path addict, started to decline again after reaching the highest level in 2011, despite the unstable course in total production figures, thanks to the way out after 1976.

A Brief Overview of the History of Turkey

Since the foundation of the Ottoman State, great importance has been attached to science, and sensitivity has been exercised regarding the transfer of knowledge and technology (İnalcık, 2017; Dolanay & Oğuztürk, 2019). As a matter of fact, the first Ottoman Madrasa was founded by Orhan Gazi in 1331 in Iznik (Özilgen, 2009, p. 21).

With the establishment of madrasahs and giving the necessary importance to education in the 150 years that passed from the foundation of the Ottoman Empire (1299) until the throne of Sultan Mehmet the Conqueror, there were some scientific developments among the Ottoman Turks. However, we can say that after Mehmet the Conqueror ascended to the throne, the development in positive sciences and scientific thought accelerated (Aksoy, 2008, p. 31).

[21] http://adefa.org.ar/en/index.php.
[22] http://www.adefa.org.ar; https://www.oica.net/.

However, after the year 1495, when Molla Lütfi, one of the important scholars of mental sciences, was executed, the knowledge and technology transfer process started to be interrupted with the decrease in the importance given to mental sciences (Dolanay & Oğuztürk, 2019; Zelyut, 2019; Pala, 2019). The transfer process was tried to be revitalized by the trainers brought from abroad in the military field due to the defeats in the wars, and a hendese house (geometry school) was opened by Comte de Bonneval in 1734 (Özilgen, 2009, p. 40) and this school was supported by the ilmiye class (Cihan, 2014, p. 136). This is because Mehmet Said Efendi, a member of the ilmiye class, from the madrasa, was one of the first professors of the school. Established in 1773 with the efforts of Baron de Tott, the first teachers of the engineering center were Algerian Seyyid Hasan and Seyyid Osman Efendiler. The first Europeans to teach were Baron de Tott and Scottish Kompell (Cihan, 2014, p. 140). Within the framework of the renewal movements that started during the reign of Sultan Selim III, a small group was formed around the Sultan who understands positive sciences and can translate from Western languages. The process of knowledge transfer accelerated with the Translation Room, which was established in 1833 (Karpat, 2006, pp. 24, 27). The Ottoman Academy of Sciences was established in 1862, and in 1863 Darülfunun, which would later be accepted as a University, was established (Özilgen, 2009, p. 63). One of the most important reasons why the Republican administration wanted to close Darülfunun is that Darülfunun was not interested in the new history thesis and the language reform that was made due to scientific autonomy (Erdem, 2012, p. 381; Cihan, 2014, p. 136). With the University Reform made in 1933, the institution of the Darülfunun, which was able to connect with the previous knowledge and partially carried the knowledge from the madrasah, was completely abolished and the universities were established to provide education in Western norms, and instead of the former Darülfunun's instructors, new instructors of mostly foreign origin have been brought. The 157 faculty members of Darülfunun were excluded because political and ideological criteria and academic criteria were not observed. We can say that there is no scientific autonomy left in the university. In addition, the Faculty of Language, History and Geography was established in 1935, which was understood to be intended to completely erase the knowledge of the Ottoman education system and aimed to create a new history thesis (Erdem, 2012, pp. 380-386). The expulsion of faculty members from the university in certain periods also took place in the following years of the Republic. Thus, universities remained as institutions that transfer information transferred from abroad to their students, that is, knowledge transfer.

While madrasahs fulfilled their formal education function very well in the Ottoman classical period, with the exclusion of mental sciences from madrasas, these institutions began to become institutions that only teach religious knowledge, that is, transfer sciences. However, among these deep-rooted institutions, even after the rational sciences were excluded, there were those who could develop technology such as Hezerfan Ahmet Çelebi and Lagari Hasan Çelebi (Dolanay & Oğuztürk, 2018; 2019; Cihan, 2014). We can say that the reason for this is that madrasas are institutions that are compatible with the socio-cultural and socio-economic structure of the society.

In the last period of the madrasahs, scholars such as Mustafa Sabri, who was educated from the madrasa, advocated for the madrasahs, suggested change and reform by protecting the educational tradition, and in a sense, they tried to keep these deep-rooted educational institutions alive, but they failed. Because madrasas during the Republic period, were marginalized and closed (Cihan, 2014, pp. 123-126). However, madrasahs have always supported new Western-style schools. The academic staff of Hendesehane, the Mühendishane-i Bahri Humayun, which was established in 1734, the Mühendishane-i Bahri Humayun, which was established in

1773, and the Engineering House, which was established in 1796, were included in the teaching staff of Berri Hımayun (Cihan, 2014, pp. 135-145).

Turkey Automotive Industry Development in the Process Between 1923-1960

During the Ottoman period, the industry suffered greatly after the trade agreement signed with England in 1838 (Pamuk, 1994, pp. 17-22). For this reason, in the Izmir Economy Congress, which was convened in 1923 after the War of Independence, it was decided to ensure rapid industrialization by the private sector and the state to step in when the private sector's capital was not sufficient. In this context, an assembly facility was established by Ford Motor Company in 1929 in Istanbul Tophane to produce trucks and cars. However, this facility was closed in a short time due to the world economic crisis and foreign capital enmity (Pamuk, 1994, pp. 17-22; Keyder, 1993, pp. 80-84; Dolanay & Oğuztürk, 2018). We can say that the automotive industry started to reproduce with the military jeep assembly facility under license in the 1950s. The period between 1923-1950 and even until the economic crisis in 1958 was the years of rapid economic growth and the industrial sector developed.

After the first facility opened in 1929, production facilities in different automotive products were established through a license agreement (Dolanay, 2017; Dolanay & Oğuztürk, 2018, pp. 227-251).

In 1958, Gümüş Motor, a pioneering enterprise, was established in Rami, Istanbul by Necmettiğn Erbakan, under the Czech Skoda license, to manufacture agriculture and water motors. Hasan Polatkan, Minister of Finance at the time, opened the facility in March 1960 (Şimşek, 2020, p. 67).

In October 1928, Koç Ticaret signed a distributorship agreement with Ford Motor Co. Tophane-Istanbul branch covering Ankara, Çankırı, and Polatlı regions (Nahum, 1988, p. 54), then in 1996 the agreement was signed with Ford Motor Co. with its Egyptian branch; it has been expanded to include the cities of Konya, Nevşehir, Eskişehir, Çorum, Kastamonu, Sivas, Erzincan, Erzurum, Siirt, Muş, Van, Hakkari, Diyarbakır, and Mardin (Nahum, 1988, p. 58). In later years, Ford Motor Company in Turkey with its negotiations with the United States has tried to obtain authorization to establish the assembly plant of Ford cars and trucks (Nahum, 1988, pp. 59-112). On the other hand, Ford Motor Company did not lean towards establishing an assembly facility for the Koç Group, due to the closure of its Istanbul facilities in a short time, but an agreement was reached in October 1958 as a result of the persistent efforts of Vehbi Koç and his team (Nahum, 1988, pp. 59-112). Under the agreement, Ford company would buy a certain amount of chrome from Turkey every year and the 3 million USD worth of it would be used to meet the foreign currency needs of the assembly plant of Ford Motor vehicles of the Koç Group (Nahum, 1988, pp. 59-112). Otosan was established on June 25, 1959 or July 1959 to produce Ford Motor trucks and automobiles with the main partner Koç Group and other partners (Nahum, 1988, p. 114; Azcanlı, 1995, p. 86). On July 13 or 14, 1960, the first F600 truck was manufactured (Nahum, 1988, p. 118; Azcanlı, 1995, p. 86).

Turkey Automotive Industry Development in the Process Between 1960-1980

In the 1960s, while different motor vehicles could be produced by assembly in the automotive industry, an automobile production facility has not yet been established. However, in 1961, Turkey's first indigenous car prototype could be manufactured in a short period of four months. Although the project was successful, mass production could not be started (Şimşek, 2006; Dolanay, 2017; Dolanay & Oğuztürk, 2018, pp. 251-275).

Towards the end of 1966, the production of Anadol automobiles was started by the Koç Group with the multi-license method (the hood of the car was made of fiberglass with the license of the British Reliant

company, and the engine and gearbox were purchased from Ford Motor from the USA). This initiative of the Koç Group did not turn into a permanent and ongoing success story due to the fact that export was not considered and the bodywork was manufactured from the wrong material. In 1971, TOFAŞ with the Italian Fiat license and OYAK (Army Aid Council) Renault facilities were established with the French Renault license (Dolanay & Oğuztürk, 2018; Şimşek, 2020, p. 204).

With the TOFAŞ Bird series, which started to be produced in the 1970s, in a sense, the creative imitation phase was started, but there was no development that could turn into an innovation later on (Küçükerman, 2000; Dolanay & Oğuztürk, 2018). It was thought that this was due to the lack of sufficient knowledge to lead to the acquisition of technology development capability.

In a sense, with the Assembly Industry Instruction published in 1963, the industry incentive policies of the development model were created with the import substitution industrialization strategy. With this arrangement, the aim was to produce similar imported automotive product parts under local conditions (Azcanlı, 1995; Dolanay, 2017; Dolanay & Oğuztürk, 2018, pp. 251-275).

With the newly established factories, the automotive industry production volume has increased. However, we can say that the revolution of automobile prototype, which was successfully manufactured in 1961, was prevented from going into mass production (Şimşek, 2006; 2020).

Company Representatives remained as the country's agriculture country and supported the continuation of imports. In fact, these importer circles bought the company shares cheaply by spreading the rumor that Gümüş Motor would be closed in 1964, and when the number of their shares reached 61%, they changed the name of the company and made Pancar Motor. Beet Growers Cooperative has become a voice in the management. A license agreement has been signed with the German company Hatz. Until the early 1980s, things went well. We can say that the state support for agriculture before 1980 contributed to this success (Şimşek, 2020, pp. 69-70).

We can say that while automotive industry production started to decline since the second half of the 1970s, the import substitution industrialization strategy prepared the formation of a major economic crisis at the end of the 1970s due to the currency bottleneck (Dolanay, 2017; Dolanay & Oğuztürk, 2018, pp. 276-283).

With the economic stability program announced on January 24, 1980, and with the large-scale devaluation made to ensure stability in the economy, the value of the Turkish lira was reduced against foreign currencies, while at the same time the first foundations of a major economic transformation were laid. Because, while emphasizing the necessity of exporting for the first time, it has been understood that the export-based growth model can be adopted (Azcanlı, 1995; Dolanay, 2017; Dolanay & Oğuztürk, 2018, pp. 284-301).

Turkey Automotive Industry Development in the Process Between 1980-2000

In the 1980s, all automobile manufacturers went to product diversification and tried not to be affected by the economic crisis experienced in 1980 (Dolanay & Oğuztürk, 2018). As an industrial policy choice, the export-based growth model continued to be implemented after 1983, and in this direction, the incentive system was changed and export incentives came to the fore (Dolanay & Oğuztürk, 2018, pp. 284-301). With the liberalization practice in the economy that started in 1983, foreign trade began to be liberated, and protective tariffs protecting the automotive industry from foreign competition were abolished (Dolanay & Oğuztürk, 2018, pp. 284-301). Manufacturing Industry Regulation, which was accepted in 1984, has brought quality development to the fore, unlike the Assembly Industry Instruction (Azcanlı, 1995). In a sense, it was determined that the automotive industry, which was developed with the technology imported from abroad,

should provide technological development and in addition to this, the necessity of technological development was emphasized at the national level with the first Science and Technology Report published in 1983 (Dolanay & Oğuztürk, 2018, pp. 284-301).

In the years following 1980, Beet began to lose its power as a result of rising costs and increasing competition. Since the early 1990s, it has turned into a loss-making company, and has always tried to get rid of bankruptcy by selling its assets. In 1994, it had to sell its land to some of its shareholders (Şimşek, 2020, p. 70).

It was observed that in the 1980s and especially the 1990s, reports and books on science and technology increased, but the targets set in these documents were not achieved. In 1993 the second Science and Technology Report was published and TUBITAK in 1963 (Turkey Scientific and Technical Research Council of Turkey) after the heat of the organization in the 1990s TUBA (Academy of Sciences of Turkey), TTGV (Technology Development Foundation of Turkey) was established as institution. However, despite these efforts to establish a national innovation system, the approach to ensuring development in the automotive industry by obtaining technology from abroad has continued (Dolanay & Oğuztürk, 2018; Göker, 2013).

In 1994, Turkey has been World Trade Organization (WTO) member and in 1996 between the European Union (EU) and Turkey, the Customs Union (GB) agreement was signed. Thus, direct monetary incentives were abolished in line with the agreements and state aids for exports came into effect in a way that would not contradict international commitments[23].

In the 1990s, Honda, Toyota, and Hyundai manufacturing facilities by companies were established in Turkey in 1994 and from Turkey Customs Union with the EU countries to go along with increased automobile exports to EU countries (Dolanay & Oğuztürk, 2018).

Turkey Automotive Industry Development in the Process After 2000

In the 2000s, the trend in the 1990s continued and the national innovation system gained a more developed institutional structure, and the laws that constitute the legal framework of the national innovation system were published (Dolanay & Oğuztürk, 2018, pp. 310-333, 368-385).

Following the economic crisis that occurred in 2001, from 2002 until the 2008 annual economic growth rate in Turkey has reached very high rates. This period (2002-2008) was also a period in which the results of the Customs Union began to be seen in automotive industry.

However, Hyundai wanted to build a second factory in 2006, but could not make an agreement with Turkey and has made this investment in the Czech Republic[24]. Thus, Turkey experienced a change in policy in the automotive industry, and Turkey has decided to produce its own domestic automakers. This policy change was able to give its result only in December 2018 and domestic automobile prototypes were introduced by TOGG. In July 2020, the foundation of the factory was laid[25].

Automotive industry in the 1990s has been brought by the three automobile manufacturing plants, which opened in spite of the vitality and development, as well as established a new automobile production plant in the 2000s; Hyundai applied to open its second factory in Turkey in 2006, but abandoned this project when the Turkish government did not give the incentives it wanted (Dolanay & Oğuztürk, 2018, pp. 310-333, 368-385)[26].

[23] http://iibfdergisi.ksu.edu.tr; pp. 2-3.
[24] On site https://www.hurriyet.com.tr.
[25] https://www.linkedin.com; http://www.odd.org.tr.
[26] https://www.hurriyet.com.tr.

After this investment opportunity missed in 2006. In 2009, Tata Motors has planned to invest in Turkey, but the realization of this investment was canceled. In the 2010s, domestic automobile production was turned towards, and in 2015, it was announced that the domestic automobile prototype was manufactured. However, after the reactions from the public, the domestic automobile production business was tendered. Automobile Enterprise Group of Turkey in 2020 produced the first prototype that will be announced and could move to mass production in 2022[27].

However, the fact that 2022 was determined for the transition to mass production after the first domestic automobile prototype appeared in 2015, showed how difficult it is to break the track commitment in this area. Moreover, this agreement with the government of Volkswagen in Turkey has led to ensure the setting up of the car factory, and the government is caught between its own technology developed to produce the domestic automobile and the dilemma of providing the necessary incentives to build the factory in Turkey of foreign car brands.

This dilemma of the government, on the other hand, reminded the dilemma of stopping the transfer of knowledge and technology in the Ottoman period, and withdrawing again, starting the transfer of knowledge and technology and returning to the effort to develop its own technology. Because the Ottoman Empire first executed a scientist like Molla Lütfi, who took advantage of foreign scientific developments and tried to contribute to local knowledge production, and then, when scientists with the same skills were not raised, they tried to establish the institutions of advanced countries in their countries by bringing scientists from advanced countries (Uludoğan, 2015, pp. 3-5; Ültanır, 2017; İhsanoğlu, 1992; Müller-Wiener, 1992)[28].

Starting from 1867 in Ruse and in Bursa in the 1870s, the company Uzel, which produced horse carriages with mass production technique, continued its production as a part manufacturer and tractor assembly company in the following years, and succeeded to produce the first domestic tractor in 2009. However, this innovative and entrepreneurial firm could not survive bankruptcy in the following years (Dolanay & Oğuztürk, 2018, p. 216)[29]. However, the government, stating that it made a major policy change by saying that we will produce our domestic car in 2000, could not ensure that Uzel company continues its innovative activities. In February 2011, the request to produce domestic cars was reported to the companies by the government. Again, the first domestic electric car, whose prototype was manufactured in 2015 at Hacettepe University's technopark, could not be put into mass production, as it could not find sufficient support, and the project was canceled after the Devrim cars project. However, the information that the prototype production was completed in December 2019 in domestic automobile production was shared with the public and the foundation of the factory was laid in July 2020 (Şimşek, 2020, pp. 202-205). It has been understood that the project is progressing, albeit with a delay.

President Recep Tayyip Erdogan has announced that Ford Otosan has started an investment that will increase its production volume from 440,000 units to 650,000 units, and that with this investment, 90% of the production will be exported and Ford Otosan will be able to meet 25% of the total exports. It has been announced that the vehicles to be produced with this new investment will have both fully electric and hybrid electric and diesel models. Thus it is explained that TOGG can become the leader of Turkey's electric vehicle production in the country with the Ford Otosan manufacturing (TRT News).

---

[27] https://www.togg.com.tr; https://www.haberturk.com.
[28] http://blog.milliyet.com.tr.
[29] https://www.hurriyet.com.tr; https:// www.haberler.com/ekonomi/.

At the beginning of 2010, Pancar Motor started to recover a little, got over the risks of bankruptcy and was able to achieve a small capital increase. Accordingly, some of the debts could be paid and a lower-cost domestic engine production business was initiated in accordance with the conditions of the day. A previously imported engine was completely adapted to domestic conditions and was produced completely domestically by Pancar Motor in a short period of 10 months with a low price and high performance. In December 2010, this domestic engine started to be sold in dealers. The weak structure of the firm could not stand the land wars and production was terminated in December 2011 (Şimşek, 2020, pp. 70-71). Thus, Pancar Motor, another innovative company, which was the fate of the Uzel company, disappeared from the market.

General Assessment

It is sufficient to look at the automotive industry production figures of the last decade in order to determine whether there is a path commitment in the Argentina automotive industry.

According to David (2000), if there is a path dependency somewhere, the numbers do not show an ergodic change from year to year. We can say that ergodic change figures show a continuous linear increase from year to year and sectoral figures are high for one or two years and then declining for one or two years[30].

In the period between 2010 and 2020, Argentina automotive industry's total production was as follows: There were 716,540 in 2010, 828,771 in 2011, 764,495 in 2012, 791,007 in 2013, 617,329 in 2014, 533,683 in 2015, 472,776 in 2016, 472,158 in 2017, 466,649 in 2018, 314,787 in 2019, and 287,157 in 2020[31].

The fact that the figures do not follow a constantly increasing trend over the decade implies that the total production of the Argentina automotive industry did not show an ergodic change, which suggests that there is a path dependency in the Argentina automotive industry. In addition, considering that multinational automotive companies have been producing mainly since the establishment of the automotive industry in the country and that even technological change in the sector is realized when multinational companies want, we can say that the presence of path dependency becomes clear.

In order to better understand and determine the status of Turkey, Turkey also showed the total production figures for the last 10 years in the automotive industry.

In the period between the years 2010-2020, Turkey automotive industry's total production was as follows: There were 1,094,550 in 2010, 1,189,131 in 2011, 1,072,978 in 2012, 1,125,534 in 2013, 1,170,445 in 2014, 1,358,796 in 2015, 1,485,927 in 2016, 1,695,731 in 2017, 1,550,150 in 2018, 1,461,244 in 2019, and 1,297,878 in 2020[32].

Total production figure of 2012 is lower compared to 2010 and 2011. The total production figures increased in 2013, 2014, 2015, 2016, and 2017; there was a decrease in 2018 compared to 2017, a decrease in 2019 compared to 2018, and a decrease in 2020 compared to 2019. Turkey's automotive industry total production figures did not show any change on an annual basis in ergodic decade. This is a clear indication that Turkey has become a path dependence in the automotive industry. Since 2011, there has been an effort to produce domestic electric cars in order to get rid of the path loyalty and create a new path in the automotive industry (Şimşek, 2020). The process that has taken place since 2011 has shown how difficult it is to get rid of the path dependency and create a new path.

[30] https://qastack.info.tr/signals/1167/what-is-the-distinction-between-ergodic-and-stationary.
[31] https://www.oica.net/.
[32] https://www.oica.net/.

Conclusions

From Argentina and Turkey's investigation that we have done on the historical development of the automotive industry, the automotive industry depending on the path showed that every country has shown an improvement. But if having reached higher production figures by the Argentina automotive industry as in Turkey, to make effort in constant domestic automobile production in the process from the 1960-1980 years as in Turkey, it can say that the sector will be brought to a local character. Although the technical knowledge gained by using reverse engineering and other technology learning methods has not yielded successful results, we can say that it has helped the automotive industry to develop relatively more by influencing the technological learning process. In the Argentina automotive industry, no effort was made to produce domestic automobiles.

Also Argentina has taken place in the MERCOSUR, a regional economic cooperation organization in the 1990s, and Turkey's preference in 1980s to the growth model was increasingly based on changes in economic policy through export led economic growth model and then the signing of the Customs Union agreement with the EU in 1996. We can say that the two countries' automotive industries contributed to the increase in total production figures in the industry.

References

Aksoy, Y. (Ed.). (2008). *Tarihte Osmanlı Bilim ve Teknolojisi (2008)* [Ottoman science and technology in history (2008)]. Birinci Baskı (First edition). İstanbul: Karma Kitapları (Karma Books).

Azcanlı, A. (1995). *Türk Otomotiv Sanayinin Tarihsel Gelişimi* (Historical development of the Turkish automotive industry). İstanbul: OSD (Otomotiv Sanayicileri Derneği—Automotive Industrialists Association) Yayını (Publication).

Balassa, B. (1964). The purchasing-power parity doctrine: A reappraisal. *Journal of Political Economy, 72*(6), 584-596.

Baranson, J. (1969). *Automotive industries in developing countries*. World Bank staff occasional papers, no. OCP-8, Washington, D.C. Retrieved from http://documents.worldbank.org/curated/en/1969/01/1558302/automotiveindustries-developing- countries

Barbero, M., & Motta, J. (2007). Trayectoria de la industria automotriz en la Argentina desde sus inicios hasta finales de la década de 1990. In M. Delfini, M. Luggones, I. Rivero, and D. Dubbini (Eds.), *Innovación y Empleo en tramas productivas de Argentina*. Buenos Aires: Prometeo.

Cihan, A. (2014). *Osmanlı'da Eğitim (Education in the Ottoman)*. İstanbul: Akademik Kitaplar (Academic Books).

Coriat, B. (1982). *El Taller y el cronometro*. Madrid: Siglo XXI.

David, P. (2000). *Path dependence, its critics and the quest for 'historical economics'*. Retrieved from https://core.ac.uk/download/pdf/9312402.pdf

Demirer, A., & Aydoğan, Ö. (2008). *Başlangıcından Bitişine Anadol'un Hikayesi* (The story of Anadol from beginning to end). İkinci Basım (Second edition). İstanbul: Güncel Yayıncılık (Actual Publishing) Ltd. Şti.

Dolanay, S. S. (2017). Otomotiv Sektöründe Teknoloji Transferi ve Teknoloji Geliştirme Yeteneğinin Kazanılması: Güney Kore ve Türkiye Örneği (Acquisition of technology transfer and technology development capability in the automotive sector: The case of South Korea and Turkey). Doktora Tezi (PhD thesis), Isparta.

Dolanay, S. S., & Oğuztürk, B. S. (2018). *Otomotiv Sanayinde Teknolojik Gelişme (Güney Kore-Türkiye) Teknoloji Öncülüğünde Ekonomik Gelişme ve Patika Bağlılığı Güney Kore ve Türkiye Otomotiv Sektörlerinde Tarihsel Gelişimi Esas Alan Bir İnceleme* [Technological developments in the automotive industry (South Korea-Turkey) economic development under the leadership of technology and path dependency. A review based on historical development in the automotive sectors of South Korea and Turkey]. Ankara: Alter Yayıncılık (Alter Publishing) Ltd. Şti.

Dolanay, S. S., & Oğuztürk, B. S. (2019). Ulusal Yenilik Sisteminin Bir Unsuru Olarak Araştırma Odaklı ve Girişimci Üniversite: Güney Kore ve Türkiye Örneği (Research oriented entrepreneurial university as an element of a national innovation system: The case of South Korea and Turkey). Proceedings from *International Conference on Empirical Economics and Social Sciences (ICEESS)*, Bandırma.

Erdem, A. R. (2012). Atatürk'ün Liderliğinde Üniversite Reformu: Yükseköğretim ve Bilim Tarihimizde Dönüm Noktası (University reform under Atatürk's leadership: A turning point in our history of higher education and science). *Belgi Dergisi, 4*, 376-388.

Fitzsimons, A., & Guevara, S. (2018). Transnational corporations and the 'restructuring' of the Argentine automotive industry: Change or continuity? In G. Charnock and G. Starosta (Eds.), *The new international division of labour* (pp. 183-213). London: Palgrave Macmillan.

Gárriz, A., Panigo, D. T., & Gallo, P. (2014). *Common automotive policy of Argentina and Brazil: Its impact on local and regional auto part industries*. Conference paper. Retrieved from https://www.researchgate.net/publication/303471204_Common_Automotive_Policy_of_Argentina_and_Brazil_its_impact_on_local_and_regional_auto_part_industries

Göker, H. A. (2013). *Yaratıcılık ve Yenilikçiliğin Kültürel Kökenleri ve Bizim Toplumumuz—Çözümleme Denemesi* (Cultural roots of creativity and innovativeness and our society—Analysis essay). II. Sürüm (II. version). Retrieved from https://www.emo.org.tr/ekler/e5959b39814489b_ek.pdf?tipi=2&turu=X&sube=14

İhsanoğlu, E. (1992). Osmanlıların Batı'da Gelişen Bazı Teknolojik Yeniliklerden Etkilenmeleri (The Ottomans being affected by some technological innovations developing in the West). In E. İhsanoğlu (Ed.), *Osmanlılar ve Batı Teknolojisi Yeni Araştırmalar Yeni Görüşler* (Ottomans and Western technology. New researches, new opinions. Pp. 121-139). İstanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları (Istanbul University Faculty of Letters Publications), Edebiyat Fakültesi Basımevi (Faculty of Letters Printing House).

İnalcık, H. (2017). *Osmanlı ve Modern Türkiye* (Ottoman and modern Turkey). 5. Baskı (5th edition). İstanbul: TİMAŞ Yayınları (TİMAŞ Publication).

Iñigo Carrera, J. (2007). *La formación económica de la sociedad argentina. Volumen I, Renta agraria, ganancia industrial y deuda externa. 1882-2004*. Buenos Aires: Imago Mundi.

Karpat, K. H. (2006). *Osmanlı'da Değişim, Modernleşme ve Uluslaşma* (Change, modernization and nationalization in the Ottoman Empire). Çeviren (Translator): Özdemir Dilek. Ankara: İmge Kitabevi Yayınları (Imge Bookstore Publications).

Keyder, Ç. (1993). *Dünya Ekonomisi İçinde Türkiye (1923-1929)* [Turkey in the world economy (1923-1929)]. İkinci Basım (Second edition). İstanbul: Tarih Vakfı Yurt Yayınları (History Foundation Yurt Publishing), Türkiye Ekonomik ve Toplumsal Tarih Vakfı Yayını (Turkey Economic and Social History Foundation Publications), Türkiye Araştırmaları (Studies Turkey).

Küçükerman, Ö. (2000). *Anadolu Tasarım Mirasının Ayak İzlerinde Türk Otomotiv Sanayi ve TOFAŞ* (Turkish automotive industry and TOFAŞ in the footprints of the Anatolian design heritage). İstanbul: TOFAŞ ve FIAT.

Lascano, V., Menéndez, F., & Vocos, F. (1999). *Análisis del proceso de trabajo en la planta de automóviles Ford*. Taller de Estudios Laborales Report. Retrieved from http://www.tel.org.ar/lectura/ford.html

López, A. (Ed.). (2007). *Complementación productiva en la industria automotriz en el Mercosur*. Montevideo: Red de Investigaciones Económicas del Mercosur.

MacDonald, N. (1988). Henry J. Kaiser and the establishment of an automobile industry in Argentina. *Business History 30*(3), 329-345.

Marx, K. (1976). *Capital* (Vol. 1). Harmondsworth: Penguin.

Marx, K. (1981). *Capital* (Vol. 3). Harmondsworth: Penguin.

Montero, O. (1996). *Supplier relationships within the Argentine automotive industry: Stamping strategies and the role of the steel industry*. Massachusetts Institute of Technology. Retrieved from https://dspace.mit.edu/bitstream/handle/1721.1/10964/35764242-MIT.pdf?sequence=2

Motta, J., Roitter, S., Delfini, M., Yoguel, G., & Milesi, D. (2007). Articulación y desarrollo de competencias en la trama automotriz argentina: morfología, innovación y empleo. In M. Delfini, M. Luggones, I. Rivero, and D. Dubbini (Eds.), *Innovación y Empleo en tramas productivas de Argentina*. Buenos Aires: Prometeo.

Müller-Wiener, W. (1992). 15-19 Yüzyılları Arasında İstanbul'da İmalathane ve Fabrikalar (Workshops and factories in Istanbul between 15-19 centuries). In E. İhsanoğlu (Ed.), *Osmanlılar ve Batı Teknolojisi Yeni Araştırmalar Yeni Görüşler* (Ottomans and Western technology. New researches, new opinions. Pp. 53-120). İstanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları (Istanbul University Faculty of Letters Publications), Edebiyat Fakültesi Basımevi (Faculty of Letters Printing House).

Nahum, B. (1988). *Koç'ta 44 Yılım: Bir Otomotiv Sanayii Kuruluyor* (44 years in Koç: An automotive industry is being established). Birinci Baskı (First edition). İstanbul: Milliyet Yayınları (Milliyet Publications).

Öndağ, F. (2012). *1980 Öncesi Türkiye Sanayileşme Süreci ve Sanayi Toplumu Oluşturma Çabalarının Karma Ekonomi Modeli Perfspektifinde Değerlendirilmesi* (Evaluation of the industrialization process of Turkey before 1980 and the efforts to create an industrial society in the mixed economy model perspective). İstanbul: Yıldız Teknik Üniversitesi (Yildiz Technical University), Siyaset Bilimi ve Uluslararası İlişkiler Bölümü 2009-2014 (Department of Political Science and International Relations 2009-2014).

Özilgen, M. (2009). *Endüstrileşme Sürecinde Bilgi Birikiminin Öyküsü* (The story of know-how in the industrialization process). Ankara: Arkadaş Yayınevi (Friends Publishing House).

Pala, İ. (2019). *İtiraf* (Confession). 1. Basım (1st edition). İstanbul: Kapı Yayınları (Door Publications).

Pamuk, Ş. (1994). *Osmanlı Ekonomisinde Bağımlılık ve Büyüme (1820-1913)* [Dependence and growth in the Ottoman economy (1820-1913)]. Gözden Geçirilmiş 2. Baskı (Revised 2nd edition). İstanbul: Türkiye Ekonomik ve Toplumsal Tarih Vakfı Yayınları (Turkey Economic and Social History Foundation Publications), Tarih Vakfı Yurt Yayınları (History Foundation Yurt Publishing), Türkiye Araştırmaları (Studies Turkey).

Partant, F. (2005). *Kalkınmanın Sonu "Bir Alternatif mi Doğuyor?"* (End of development is an alternative born?). 3. Baskı (3rd edition). Ankara: Türkiye ve Ortadoğu Forumu Vakfı (Turkey and Middle East Forum Foundation), Özgür Üniversite (Free University), Maki Basın Yayın Ltd. Şti. (Maki Press Publishing Limited Co.).

Şimşek, M. (2006). *Yarım Kalan Devrim Rüyası: Cumhuriyet Dönemi Endüstrileşme Maceramız* (Unfinished dream of revolution: Our republican industrialization adventure). 1. Basım (1st edition). İstanbul: Alfa Yayınları (Alpha Publishing).

Şimşek, M. (2020). *Ben Devrim Beni Benden Dinleyin* (I'm revolution, listen to me). İstanbul: ALFA Basım Yayım Dağıtım San. ve Tic. Ltd. Şti. (ALPHA Printing Distribution Ind. Trade Limited Co.).

Sourrouille, J. V. (1980). *El complejo automotor en Argentina: (síntesis)*. Argentina: Instituto Latinoamericano de Estudios Transnacionales.

Ültanır, M. Ö. (2017). *Medrese Üniversitelerinden Araştırma Üniversitelerine mi? (From madrasa universities to research universities?)*. 3 Kasım 2017 (3 November, 2017). Retrieved from http://www.ultanirplatformu.com/03-11-2017-medrese-universiterinden-arastirma-universitelerine-mi.html

Uludoğan, B. (2015). *Molla Lütfi*. T.C. Üsküdar Üniversitesi, İnsan ve Toplum Bilimleri Fakültesi, Felsefe Bölümü (Üsküdar University, Faculty of Humanities and Social Sciences, Department of Philosophy), İslam Felsefesi Dersi I. Dönem (Islamic Philosophy Course 1st semester), İstanbul, pp. 1-8. Retrieved from https://www.academia.edu/10264740/Molla_L%C3%BCtfi

Zelyut, R. (2019). *Osmanlı'da İdam Edilen Alimler Düşünceleri Yüzünden Ölüme Gidenler* (Those who died because of the thoughts of scholars executed in the Ottoman Empire). 1. Baskı (1st edition). Ankara: Kripto Basım Yayım ve Dağıtım Ltd. Şti. (Kripto Publishing Distributing Limited Co.).