

**DEVELOPMENTAL STATES AND INDUSTRIAL POLICY IN THE
AUTOMOTIVE INDUSTRY: PERSPECTIVES FROM MEXICO AND
SOUTH KOREA**

By

LOZANO MARTINEZ, Carlos Rogelio

Thesis

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MPP

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Committee in charge:

Professor PARK, Hun Joo, Supervisor



Professor Robertson, Jeffrey Scott



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ABSTRACT

DEVELOPMENTAL STATES AND INDUSTRIAL POLICY IN THE AUTOMOTIVE INDUSTRY: PERSPECTIVES FROM MEXICO AND SOUTH KOREA

By

CARLOS ROGELIO LOZANO MARTINEZ

The main finding of this study is that developmental states still hold opportunities and capacity for the promotion of economic development, even if current circumstances present a more reduced or different policy space than what their *dirigisme* or authoritarian counterparts in the late 19th and 20th centuries faced. This study presents the compared cases of Mexico and Korea (South Korea or Republic of Korea) as two newly industrialized countries that have developed their automotive sector with very similar, developmental state-led, industrial policies. In both countries, outcomes had different degrees of success depending on the circumstances and constraints for policymaking and implementation existing in each society. The main argument is that although these political and institutional circumstances, unique to each state and society, can constrain policy options and shape their outcomes, they can also create new policy opportunities, which are frequently overlooked. Understanding and leveraging these lessons towards developmental efforts of today's developing nation-states is more relevant than ever. With the new trends and directions that are already visible in the automotive industry, it is very important that governments and societies have clarity of what elements made past successes possible, to learn from them and iterate through their own constraints towards the construction of their own unique experiences of economic success.

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Introduction

The main argument presented in this work is that industrial policies in developmental states vary considerably, given different sets of domestic and international political and economic institutions, which further share the constraints faced by each country. Clarity and consideration of these institutional and political factors allow the understanding of past policies and the profiling of more realistic policies for future development.

I present the compared cases of Mexico and Korea (South Korea or Republic of Korea) as two newly industrialized countries during the 20th century that have taken divergent paths of growth in the automotive sector. By the second decade of the 21st century, Korea has consolidated itself as a major player in the automotive industry, home of one of the most important terminal firms in the world (Hyundai Motors), while Mexico has become one the most important production and export centers of the worldwide automotive industry, a platform for practically all global terminal firms, including Hyundai itself.

During the 1960's, both countries pursued very similar and almost simultaneous sets of industrial policies to create domestic automotive industries as drivers of economic growth. While policies were very similar (they both included elements of private ownership and investment, rationalization for economies of scale, and localization), the distinct features of the political institutions and patterns in each country derived in a different set of effectiveness for each policy, and therefore, different outcomes.

The argument presented is that institutions constrain policy options and shape their outcomes. Therefore, this research aims to contribute to the literature on developmental states in the 21st century. Although state autonomy has been greatly reduced thanks to their own success and to changing international conditions, developmental states still hold opportunities for economic

development promotion, even in a more reduced, or rather *different*, policy space than what their *dirigisme* or *authoritarian* counterparts in the late 19th and 20th centuries faced.

In 2019, understanding and leveraging these learnings towards developmental efforts of nation-states are more relevant than ever. With the new trends and directions that are already visible in the automotive industry, it is very important that governments and societies in developing countries have clarity of what elements made past successes possible, to learn from them and apply them within their own political and economic constraints.

Electric drivetrains, batteries, self-driving capabilities, vehicle software, artificial intelligence systems, and stringent requirements on safety and environmental impact are some of the future industry trends that can already be seen in the horizon. If we consider macro trends of world manufacturing, such as automation, environmental concerns, and a digital economy, the challenge becomes even greater. However, they all represent challenges and opportunities and it is up to each society, company, or developmental state to come up with their own set of policies that best serve their own realities.

The following chapters will focus on historical reviews of the policies used by both countries, the constraints that were faced, and their subsequent policy outcomes. In the first chapter, I will briefly describe on important concepts of developmental states to link how industrial policy makes sense for development efforts in the auto sector and in the economy. In the second chapter, I will go over the Mexican case of auto industry development and describe some of the institutional dynamics that shaped the policy space. In the third chapter, I will make a brief review of Korean automotive industry and its policies and institutional constraints. Finally, I will conclude by comparing both cases, compiling main learnings and applying them to the current status of the global auto industry.

Developmental states and their role in industrialization and economic growth

The term *developmental state* was first used by Chalmers Johnson in its well-known 1982 paper *MITI and the Japanese Miracle: The Growth of Industrial Policy*. Chalmers, while analyzing Japanese postwar economic growth, provides a perspective of economic growth, one that gives much greater weight to the state and industrial policy. He notes how the Japanese government consciously induced cooperation among its clients to achieve the right conditions for accelerated economic growth, and additionally, proving how its intervention made a crucial difference in increasing the investment rates in strategic industries. In Japan, the MITI (Ministry for International Trade and Industry), was the entity responsible for directed development (Johnson, 1982).

Developmental states, or *backward countries*, as Gerschenkron called them before Johnson, can pursue different paths of industrialization which will show important differences between other earlier industrializers, not only in the speed of development, but also regarding the productive and organizational structures of industry. Furthermore, these differences in development are the result of applying institutions that had no participation in previous advanced nations, as well as the use of different ideologies to mobilize social support (Gerschenkron, 1962), hence politics also play a key role.

While recounting the development of industry in Europe during the 19th century, Gerschenkron points out that every innovation in development of industry was different from each of the previous developers. England, France, Germany and Russia utilized different mechanisms for their industrial development. Since every country utilized strategies depending on its context, its constraints, such as geopolitics, resource endowment, or policy space, the most important

derivation of Gerschenkron's historical review was that there is strong significance in the native elements of industrialization in backward countries.

Since native elements create a different type of state, it is local politics that shape the type of state, either a developmental – the type of state that follows the behavior described by Johnson – otherwise predatory. For example, Evans proposes a spectrum of state behavior, ranging from developmental (closer to Chalmers' definition) to predatory, where this last one extracts such large amounts of otherwise investable surplus and provide so little in the way of “collective goods” (public goods) in return that they impede economic transformation. Anything in between can be called intermediary. (Evans, *Predatory, Developmental, and Other Apparatuses: A Comparative Political Economy Perspective on the Third World State*, 1989, pág. 563) In this work, I focus on Mexico and Korea given their developmental state behavior, although different circumstances may elicit more predatory behavior at times.

On the contrary, developmental states, as described by Evans:

[...] are able to foster long-term entrepreneurial perspectives among private elites by increasing incentives to engage in transformative investments and lowering the risks involved in such investments. They may not be immune to rent seeking or to using some of the social surplus for the ends of its incumbents or their friends, but on balance, the consequences of their actions promote, rather than impede, transformation. (Evans, 1989, pág. 564)

Developmental states are actively trying to reduce the gap between themselves and the more advanced economies of developed countries, mainly through industrial catch-up strategies. Industrial catch-up is used as a developmental strategy, utilizing technology transfer and economies of scale, as they play a critical role in late industrializing countries. The larger the backlog of technologies that can be absorbed from industrial leaders, the grater the

opportunities for industrialization, as Amsden (1989) and Gerschenkron point out. Additionally, other paths of development for latecomers, such as specialization, might be hostile to growth; and that technology, increasing returns, and externalities are central features of industrialization. Gerschenkron's and Amsden's analyses on latecomers to industrialization glance at how capitalism is not of a single variety but shows differences in latecomers to industrialization; but most importantly, that institutions – including the state – play crucial roles in the growth process.

The developmental state paradigm can be helpful in analyzing and understanding industrial relations within Mexico, Korea, or any other country; as well as the relations between government and industry, and with foreign industry particularly around technology for auto manufacture. Also, quite central is the interest of most underdeveloped countries to develop their own industry, in an economic preservation interest revolving around controlling current account deficits and exchange rates.

Each developmental state has a specific interest in economic development policies, however, state *dirigisme* has its roots according to the international or domestic context. Korea's Park Chung Hee, began his country's industrialization first to ensure legitimization for a military government, and later on, an industrialization drive around heavy and chemical industrialization due to the international contextual necessity to develop military industry in order for the Korean state survival (Minns & Shaw, 2006, pág. 124). Meanwhile, Mexico's post-revolutionary governments relied heavily on their numerous mass organizations to preemptively control their discontents, however capital accumulation gave them the possibility to legitimize themselves and continue their patronage, hence their continuity (Minns & Shaw, 2006, pág. 85). Therefore, this suggests that developmentalist drives also respond to domestic

and international political concerns and patterns, either as a legitimizing strategy, or simply for the survival of the nation or of the group in power.

Furthermore, comparisons between Latin America and East Asia are a staple of both developmental and neoclassical state accounts, however, catch-up requires a focus on industrialization and that objective is not likely to be achieved in the absence of state intervention and protection (Haggard, 2018). Gerschenkron promotes a similar point, establishing that the degree of state intervention is correlated with the degree of backwardness of a country. The more backward, the more State intervention required to mobilize resources and investment.

In Latin America, Raul Prebisch (1950) is largely known for being the theoretical proponent of import substitution policies, protectionism for infant industries. While agreeing with the underlying premise in all developmentalist thinking that industrialization was the key to long-run growth, through its influence on productivity growth, capital accumulation, and the generation of employment, he argued towards import substitution with caution: it was not a sustainable medium of long-term growth. He wrote that whatever supportive or protective measures the import substituting state might pursue to achieve the benefits of industrialization had to be matched by the capacity to weed out the claims of the inefficient, otherwise, a decrease in productivity would ensure.

As Prebisch writes on the international division of labor (and was also picked up by other dependency theory economic historians, most notably in the well-known work of Galeano in *The Open Veins of Latin America* (1972)), underdeveloped countries suffer from chronic problems in their current accounts stemming from the international division of labor. As latecomers to development, they are pressured to acquire technology and manufactures from abroad in order to speed up their economy. However, they are constantly pressured to export

to control deficits. With an international context where they are exporters of raw materials or other agricultural or low-value added commodities, equal terms of trade always place them in a structural and permanent disadvantage.

Amsden places the most emphasis on the gains from these early developmentalist efforts, arguing that import-substituting activities were crucial for learning in the small group of countries that subsequently accounted for the bulk of the developing world's industrial output. She notes that free trade policies devastated early industrialization during the 19th century (Amsden, *The Rise of "the Rest": Challenges to the West from Late Industrializing Economies*, 2001), a time known in Mexico as a period of serious chronic underdevelopment and social unrest.

As the developmental state's role is mostly of coordination, the Big Push theory proposed by Rosenstein-Rodan (1943) and modeled by Murphy, *et. al.* (1988) states that simultaneous industrialization of many sectors of the economy can be profitable for all of them, even when no sector can break even industrializing alone. Hence this suggests that a backward economy can make a *big push* into industrialization by coordinating investment across sectors order to increase productivity and living standards. The coordinating role of the state, not only can support industrialization of a country's economy, but, through top-down programs that encourage and coordinate industrialization in many sectors simultaneously can substantially boost income and welfare even when investment in any one sector appears unprofitable (Murphy, Shleifer, & Vishny, 1988). For example, the cost of a shared infrastructure can be borne by several (new) industries sharing it, while a single industrialization effort of a single industry would have to carry the entire expense.

However, this coordination or direction of economic policy does not occur in a vacuum, free of other political or economic vested interests. Gerschenkron's historical account of backward

countries already notes how vested interests and parts of society resist changes in the reallocation of resources. Either if the reallocation is done by the state or a private entity, any resource reallocation for development of projects will most likely create a resistance to it. Therefore, one of the key characteristics of an effective developmental state is its autonomy to be able to pursue its policy objectives, in this case, industrialization and economic development¹. This autonomy goes hand in hand with the extent of how the state can insulate itself from social pressures to reallocate resources to non-developmental uses.

For example, Minns' description of state autonomy in Newly Industrialized Countries (NICs) states:

Autonomy [...] enables developmentalist states to carry out policies such as land reform, a transfer of resources from countryside to city and from agriculture to industry, low real wages, state-directed investment for expansion rather than immediate profit, restriction of investment in speculative activity and the use of subsidies and protection for industrial growth rather than simple rent-seeking. (Minns & Shaw, 2006, pág. 42)

Along with autonomy, another key feature is the embeddedness of the state. Again, state structure is important, particularly in government bureaucrats. However, they must be autonomous, but not isolated from the rest of society. Embedded states are composed of bureaucratic apparatuses and structures that are embedded in a concrete set of social ties that bind the state to society and provide institutional channels for the continual negotiation and renegotiation of goals and policies. An autonomous state that is not embedded in its society would be a reflection of dense connecting networks without an internal structure incapable of transcending individual interests of its private counterparts (Evans, 1995). Further, Farfán-

¹ For an extensive review of the origins of Mexican state autonomy, see Hamilton, 2014.

Mares (2010) argues, specifically for the case of Mexico, that not only embedded autonomy is required for developmental states, but also their capacity to raise taxes from individuals and firms, which is generally overlooked as a measure of their embeddedness to the country's productive structure, otherwise causing the bureaucratic apparatus to focus on legitimizing the political system and surrogating political representation by delegating public affairs.

In both cases studied, during their ascending phases as developmental states, there were political conditions of embedded autonomy. The Mexican revolution had destroyed the previous dictatorial regime and had created one with autonomy (due mainly to the weakness of the remainder actors), and embeddedness. Likewise, Korea suffered the destruction of the war and a predatory state established itself afterwards (Rhee regime), therefore the new quasi-civilian government was uncontested internally and required economic and military independence to survive.

Case in point of the auto industry, not both states were autonomous from the vested interests of key agents to be coordinated: Trans National Companies (TNCs), local private sector, and organized labor. As is explained later, Mexico, thanks to its larger local industry, had already a presence of TNC assembly operations and this meant that foreign interest was already part of bargaining with government. Their presence and influence were exercised when they blocked the first automotive policy in 1960-1962 by forcing their participation to be accepted as the rationalization of the firms, effectively cancelling the possibility of an indigenous Mexican terminal firm. The former did not occur in Korea, as when Korea began its automotive policymaking, there were no considerable TNC operations and local private sector associated to the industry was very weak. TNC bargaining power in the industry is very relevant, since they command a disproportionate amount of control in the sector. If the developmental state does not hold an autonomous and local terminal firm, local policies will be severely constrained

by terminal firm TNCs that control intracompany export demand, dependency on the TNCs decisions, difficulties in enforcing sanctions, and an unequal distribution of benefits between local firms and TNCs (Bennett & Sharpe, *Transnational Corporations and the Political Economy of Export Promotion: The Case of the Mexican Automobile Industry*, 1979).

For example, most of Mexico's success in working together with TNCs to push its export manufacturing strategy is explained thanks to the convergence of interests, but TNCs got their way when interests did not converge. The growth of export oriented investment or export platform investment in the motor vehicles industry is not only about cheap labor available for TNCs, but to a concession from local governments to allow less local content in exchange for more exports on behalf of TNCs (Jenkins, 1987).

As mentioned, there are moments when interests do not converge and TNCs leverage all of their available resources to bolster their bargaining power. For example, Ford's constant lobbying to demerit the NAFIN policy report in 1960, and its pressure, through the embeddedness of their local managers in the social circles shared by Mexican bureaucrats, become one of the few "rationalized" producers after the first industry decree in 1962. Also, Nissan's pressure to the Mexican government threatening to halt Mexican cotton imports to Japan in order to be approved as well (Bennett & Sharpe, 1984). This is a pattern that is repeated when state autonomy is challenged from abroad. For example, from other regions and sectors, in 1972, the Nigerian government tried to indigenize local key industries, and failed, as local owners acted as "fronts" for foreign owners, who maintained effective power despite de appearance of indigenous control (Pearson, 1992).

Nevertheless, the "bargaining school" proposes that not everything is lost when negotiating with large foreign TNCs that control capital, technology and managerial know-how. Although the local government was at first unsuccessful while negotiating with foreign TNCs to achieve

its own objectives, over time local companies and government can take advantage of international advancements in the industry, increasing their own bargaining power (Grieco, 1993). Grieco's analysis of the Indian case in the computer industry suggests that international innovations in computer technology combined with changes in the industry's international structure allowed it to expand the country's computer opportunities and therefore its potential bargaining power, relevant for this study. For example, Korea's Hyundai Motors (HMC) could not reach an agreement with Ford or other global terminal firms to transfer technology to build a local car, however, a competitive international environment allowed Mitsubishi to agree with Hyundai's demands of not conceding managerial control of HMC.

This finding has interesting implications for latecomers to the automobile manufacturing business, as new technologies and changes in the structure of the industry create a disruption not only in technology but in the international structure of the business, hence more opportunities for a latecomer to bargain with TNCs in several industries, in distinct businesses. For example, Mexico's failed Mastretta Cars was able to transfer technology, such as a Ford engine and other key components of its MXT sportscar, for a locally designed and assembled vehicle.

While some research suggests that developmental economic policies used in the past, particularly in east Asia, are not possible to replicate today (for example, Chang, 2002; Rodrik, 2016; Regeni, 2017; World Bank, 1993; among others), they all appear to converge with Gerschenkron in the fact that with every developmental experience of a backward country a new element of innovation is implemented. Either by an artificial reduction of policy space (Chang's (2002) metaphor on developed countries "kicking away the ladder") or by other structural changes such as the reduced importance of manufacturing employment as an engine for growth due to automation (Rodrik, 2016), therefore the overall consensus is that adaptation

to the global environment and, consequently, to their domestic circumstances are the crucial lessons of the developmental states of the past, of which their contemporary and future counterparts can learn and build upon for the design of their own desired futures.

An illustration of this is that there are countering arguments regarding the shrinking of opportunities for manufacturing development in developing countries and the decrease in the importance of manufacturing for economic development. Some authors claim there is no evidence to this and recommend developing countries to not turn away from manufacturing and abandon the path of economic development through industrialization, but to emulate the experience of rapid industrialization that occurred even in recent years (Haraguchi, Cheng, & Smeets, 2017). Therefore, it is a decision that each developmental state must consider, if we think of the potential effect of a *big push* industrialization strategy. In other words, it could be that manufacturing itself could be a window slowly closing, however it is the effects and industrial relations between all production factors around manufacturing that are valuable to develop an economy.

Whichever the result of these discussions, they do not imply that developmental states' efforts for economic development are futile, only that the policy space is different, and they must take their own innovations to break into the developed world. If we also consider major trends such as the rise of a bit-driven digital economy and the growth of sustainable business, the policy options for ISI industrial development may not be available anymore, however there are still tools such as inequality countering measures, human capital accumulation (education), and more openness in world markets that allow even freer importing of cutting edge technology. In all cases, the main point is not the reorientation of policy, since we have seen it will inevitably adapt to the environment or otherwise fail, rather it is the need to deepen state-society relations (Regeni & Vidican, 2017) and provide a more responsive policy apparatus through different

bottom-up approaches that replace previous authoritarian state autonomy and respond to the requirements of embeddedness to society. For example, in Mexico, while state bureaucracy is embedded to the society, the state's control of oil revenues unembed it from the productive structure and therefore its survival and legitimacy does not rely on increased economic development and material wellbeing for the population, behavior comparable to a *rentier* state (Farfán-Mares, 2010).

The developmental states of this century need to find new ways to first, reassert their autonomy and embeddedness after their first successes in industrialization; second, they will require the creation of new internal forms of engagement with the population (or as Marxists claim, with the different *classes*), more focused on bottom-up approaches that are aimed towards policy experimentation and learning (Regeni & Vidican, 2017): an iterative development developmental approach. This recognizes the limits of institutional reform in development towards problem solving with more creative and participatory solutions (Andrews, 2013), with the state as an overarching developmental coordinator.

The Mexican auto industry

Today, the Mexican Automotive industry is one of the most important ones in the world, measured by export volume. Thanks to a carefully designed structure crafted by the Mexican government since the early years of import substitution, and participation from the foreign and domestic private sector, the auto industry in the country is the most important economic sector in the national economy today.

Albeit its importance, due to the lack of Mexican terminal firms, it still resonates to the basic structural economic pressures of underdevelopment: the industry requires imports to stay competitive, but those imports create a chronic pressure to increase exports, to avoid current account deficits. This makes it highly vulnerable to external shocks, including those from external disruptive innovations in demand markets.

In this chapter, I will briefly explain industrial policy in Mexico towards the auto industry. Mexican government officials have pushed different policies and efforts, mainly through two policy tools: through the so called '*auto decrees*' and Free Trade Agreements (FTAs). All of these have been a series of attempts to curb imports from the sector through, first, Mexicanization of existing sectors and import substitution, and later manufacture for export.

The key takeaway is that the series of *auto decrees* and other auto policies are clear evidence that Mexico has been trying to pursue industrial policy that effectively develops the automotive industry, and its degree of success in achieving it is delimited by the domestic and international constraints that the country faces.

Even today, the current policy design continues to support an industrial structure and subjacent institutions where infant indigenous terminal firms compete directly and in equal footing with global giants, making their existence short lived (as demonstrated in the cases of *Fabricas Auto-Mex*, and more recently *Mastretta*). This institutionalized behavior is geared to promoting

investment (mainly FDI) *for export* in the sector as a permanently-temporal solution to structural current account deficits both for manufacturing and domestic consumption. Without comprehensive measures such as requirements for local ownership of terminal firms, joint ventures, technology transfer, or even forms of capital control, the effect of the industry on GDP redistribution and current account balancing will continue to be limited, just like the capacity of the Mexican state to leverage the industry towards areas of its own priority vis-à-vis the foreign owners of the terminal firms.

Origins

Mexican automotive policy has had two objectives over time: 1) Control the introduction of them for the domestic consumption market to keep the balance of payments in check (exchange rate stability); and to 2) utilize the industry as a supply chain that could leverage wider economic growth in the national economy.

The first objective responds to Mexico's position in the international division of labor. As an underdeveloped country, cars represent mainly an import, either in its final assembled form or in the shape of technology. Therefore, automotive industry policy was born initially to control imports of these expensive items that quickly demanded large quantities of local currency to purchase these foreign manufactures with foreign currencies. These initial policies were reflected in trade barriers, import quotas and other policies that tried to halt imbalances that hurt exchange rates. These were mainly seen in the beginning of the 20th century, as Mexican post-revolutionary governments began stabilizing the economy.

The auto industry began in Mexico in 1908 with the import of the first vehicles for private buyers, and by 1917, over 6,000 automobiles were imported each year. By 1925, there were 50,000 automobiles in the country with an established sales and maintenance network (Montiel, 1987). By 1925, the first assembly plant in the country was opened, assembling Fords from

US-made parts, and by 1932 the company built a new assembly plant (Funding Universe, n.d.), becoming the only manufacturer in Mexico until the opening of the General Motors (GM) plant in 1937 (GM Mexico, 2015). During this time, vehicle production in Mexico was limited to the assembly of “ Completely Knocked down Kits” (also known as CKD), where simple assembly operations were held, mainly because of import restrictions in the shape of tariffs and quotas for the import of fully assembled vehicles (Bennett & Sharpe, 2014).

After this time, the second objective responds more to Mexico’s developmental policies of import substitution in the 1940’s and 1950’s. The Mexican economy was in a growth spree (a historical era known as the “Mexican miracle”) thanks to the positive effects of monetary expansion in post WW2 economy, and well known as the Golden Age of Capitalism.

This was reflected in domestic auto industry. By 1962 there were 10 other auto assembly companies, of which, most were mostly Mexican-owned, being the most important of these *Fabricas AutoMex*, assembling vehicles for Chrysler. Before the first auto decree (1962), the regulation was simple: completely assembled vehicles could not be freely imported in order to keep the balance of payments in check, and only those market players with permits and available import quotas could import them.

By the beginning of the 1960’s, the Mexican miracle of economic growth had begun to show its limits, associated to the own limits of the import substitution model. Most Mexican consumption items of low-technological value added had already been “Mexicanized” - produced locally to avoid imports- (Kehoe & Meza, 2012) and were being produced for domestic consumption. Mexico’s GDP had grown spectacularly from the beginning of import substitution in the 1940’s towards the end of the 1960’s. From 1940 to 1972, Mexico’s GDP grew on average 6.5% per year, and the Mexico City price index only grew 4.1% per year

(Ramirez, 1986). With these large rates of growth, stemming from growth in agricultural output and later on, increase in industrial activity.

The Nafin Report and the first decree of 1962

A market with such booming domestic demand for consumption products was almost irresistible by the automakers. Even as early as 1917, GM had already identified Mexico as one of the markets for expanding sales, by sending one of its first commercial prospectors to the country (GM Mexico, 2015). In this context, Mexican policy makers saw an opportunity to further increase growth, through import substitution, by the means of more local manufacture of automobiles.

A report was commissioned to Mexico's NAFIN (*Nacional Financiera*) development bank to come up with the necessary strategies to promote the growth of the auto sector. This report had specific recommendations for the creation of a new market. It recommended limiting the amount of terminal firms, amount of models, model changes, vertical integration, and focused on compact cars, standardization of parts, and the promotion of joint ventures through forced majority ownership in terminal firms, to encourage technology transfer (Bennett & Sharpe, 2014).

The Nafin report could be considered the first policy document towards the auto industry in the country. It identifies the sector as a way to move up the ladder in technological complexity of import substitution. However, the report was not directly made into law, given that the foreign auto makers in the country, Ford and GM, opposed the report as a basis for the first automobile industry policy. Thanks to pressure from its parent company and the US government, the Mexican government issued the decree in 1962 with a toned-down version,

which included a 60% national content rule in each vehicle produced, but most importantly, it failed to create the conditions for a smaller, rationalized industry, by limiting the number of firms, models and other measures to increase efficiency in the industry. This pragmatic approach provides evidence of the constraints faced domestically and internationally by Mexican policymakers.

Although the decree did not succeed in creating an industry, it did create a different type of growth. The decree was successful in speeding the rate of growth of the automotive industry in the country. Annual average was 14.8% in Automotive manufacturing from 1960 to 1970, 128,659 jobs in the sector were created in the decade, therefore, rapid increases in production and employment were set to become, and still are, the major patterns of the Mexican automobile industry (Back, 1990, pág. 284),

The policy, however, was unsuccessful in creating the required scales for a domestic industry towards import substitution and technology transfer due to lack of standardization of models, integration, or Mexicanization of terminal firms. In fact, the most transcendent and notable consequence of this first auto policy was the transformation in the ownership of terminal firms. The 1962 decree established a separation between terminal firms and auto parts firms to avoid vertical integration. Auto parts firms did not require permission to operate, they only required at least 50% Mexican equity. On the other hand, terminal firms did not require Mexican equity, but needed a permit to be authorized (rationalization), in order to avoid too many corporations. The Mexican government played the companies against each other, but political pressures made it impossible for Mexican government to limit foreign participation to just one. Political and diplomatic pressures from the United States permitted the participation of both US companies, while economic and political pressure by Japan allowed for the approval of Nissan. This bargaining between the TNCs and the Mexican government determined that eventually it

was politically impossible for any Mexican firm to not be authorized, therefore all other Mexican firms that requested permissions were authorized to initiate production.

By 1964, the goal year of the decree, all Mexican private capital had been driven out from the industry due to the lack of economies of scale and the high costs that domestic firms faced while operating. The only remaining domestic assembler remaining was *Diesel National* (DINA), in which the state had a majority equity stake (Bennett & Sharpe, 2014).

Domestically owned firms were completely incapable of competing with the subsidiaries of foreign owned corporations mainly due to these four reasons:

1. *Subsidiaries had ready sources for the importation of component parts and machinery.*
2. *They benefited from the economies of scale of their parent companies, as well as access to the most modern technologies*
3. *Superior managerial know how and experience.*
4. *Superior access to financing, either through their parent company or through local financial institutions with the backing of a mayor international corporation.* (Bennett & Sharpe, 2014, pág. p. 128)

Local auto parts makers specialized in the lowest value-added parts in order to be able to supply, while terminal firms continued importing the most critical and technology intensive parts and machinery. By the end of the decade, Mexico's growth in vehicle production made it face a balance of payments problems due to the growth of imports of vehicle parts for a growing domestic industry and the inefficiencies in industrial structure that provided high production costs due to local content requirements. To deal with this, the Mexican government promoted a new policy in 1969 in order to incentivize exports due to external pressures to counter capital flight during the end of the 1960's.

1969: export promotion prevails over domestic consolidation

The 1962 decree resulted in a market dominated by foreign owned terminal firms where production for the local market was more profitable than production for export (Holmes, 1987). This shift in the auto industry had other consequences apart from increased production. By 1969, the terminal auto firms in Mexico were producing much more, and this in turn, with the inefficiencies of the domestic parts manufacturers, generated significant parts imports. These imports created a trade imbalance that was rapidly increasing. The 1962 decree had also mandated a 60% national content rule. This national content rule had forced foreign terminal firms to source parts domestically, therefore, increasing production costs and making the cars uncompetitive for exporting. These inefficiencies in the Mexican parts manufacturers and the structure of the market itself made them incapable of delivering in the necessary scale for competitive pricing and supply and ended up forcing imports as sales in the domestic market grew. Automotive imports consisted of around 10% of the total merchandise imports of the country (Bennett & Sharpe, 2014, pág. 152), and continued growing along with domestic auto consumption.

To attend this problem, the Mexican government tried to implement a change in policy. Competing interests in the Mexican government and among the manufacturers created two main policy options. The first one was led by Ford and by a sizable part of the local private sector and political party nationalists. It proposed creating export quotas for terminal firms approved to operate in the country. The second policy option was led by AutoMex, the largest of the Mexican terminal firms. It proposed consolidating all domestic terminal firms to create economies of scale and a national champion, under AutoMex's leadership. While this was the

best option to create a domestic terminal firm, one of the objectives of the 1962 decree, nationalists in government frowned upon this option since it was assumed that AutoMex's technical link with Chrysler would effectively "sell out" the national industry to a foreign firm, giving way for presidential election of the first option, curbing imports through exports.

There were two options available to curb auto industry imports: mandating more local content or compensating imports through exports. As argued by Bennet (2014), mandating more local content would have increased production costs. Since some prices were controlled in transactions between parts suppliers and terminal firms, as well as vehicle price controls, this would have negative effects in profit margins, affecting investment by the terminal firms, and in turn, domestic consumption, economic growth, and industrial employment. On the other side, compensating imports through exports was much more complex but realistic. There were no Mexican domestic terminal firms to export completed vehicles, so only foreign owned firms could sell cars abroad. Their control of the export market mandated that only they could export completed cars that were competitive in pricing, but this was not viable due to the market structure. Regarding exporting auto parts, it was even harder, since part suppliers would struggle to find markets outside of the terminal firms' intrafirm trade, as well as their lack of competitiveness in price and quality. Nevertheless, the government saw in the terminal firms control of the international trade, having them in the country could make them the exporters.

Finally, in 1969 the auto industry *acuerdo* (pact) mandated that each terminal firm had to compensate with exports a percentage of its parts imports, with a maximum of 60% of these exports could be imports by the terminal firms. This policy switched over the responsibility of exports to foreign firms, and therefore, put greater pressure in Mexican supply firms. Unable of competing with those auto parts firms that had more foreign equity, since foreign terminal firms provided them with more support for competitiveness, Mexican private capital became less and less relevant in the industry.

Some other consequences of switching the export (balance of payments) burden to the foreign private sector was that it was almost impossible for the state to try to control the number of foreign terminal firms, since it was their exporting capacity and foreign markets that provided the Mexican state an important part of their foreign exchanges, hence losing even more ground to foreign automakers.

The 1972 auto industry decree simply formalized the rules in the 1969 *acuerdo*. Terminal firms had begun searching for export opportunities. However, after 1974, the world economic crisis made it too costly to export from Mexico instead of places with much more competitiveness in their industry. Therefore, the industry was incapable of meeting export requirements, as seen in the following table:

BALANCE OF PAYMENTS IN THE MEXICAN AUTOMOBILE INDUSTRY, 1969-1976

	<i>Imports of Assembly Material^a</i> (1)	<i>Exports of Auto Products^a</i> (2)	<i>(1)-(2)^a</i> (3)	<i>(2)/(1) (in %)</i> (4)	<i>Required Basic Level of Export Compensation (%)^b</i> (5)
1969	1,789.8	185.9	1,603.9	10.4	0
1970	1,913.3	320.6	1,592.7	16.8	5
1971	2,095.1	449.4	1,645.7	21.5	15
1972	2,401.8	699.7	1,702.1	29.1	25
1973	2,899.2	1,233.6	1,665.6	42.6	30
1974	4,109.5	1,555.2	2,554.3	37.8	40
1975	6,157.2	1,784.6	4,372.6	29.0	50
1976	7,426.5	3,072.3	4,354.2	41.4	60

Source: (Bennett & Sharpe, 2014, pág. 181)

Since most terminal firms were incapable of reaching export targets, the penalties fixed in the 1972 decree were not applied. The penalties were in the form of production quota cuts. If quotas were cut, the damage to the industry's value chain was too large of a risk for the Mexican administration to undergo, including its negative political effects in reduced employment and economic growth. Therefore, the Mexican state was more than ever dependent on the decisions taken by foreign auto assembly firms at their headquarters abroad and was less capably of

influencing their behavior. This became a key constraint in Mexico's developmental policy in the sector.

Additionally, low agricultural productivity that encouraged imports, high pressure on importing intermediate and capital goods to continue industrialization and economic growth, increased government spending to keep social redistribution demands at bay, a rising outflux of capital for repatriated earnings, royalties and other technology payments, and a skyrocketing foreign debt (over 700% between 1970 and 1976) all worked to weaken the Mexican economy, tripling the balance of payments deficit by 1975 (Bennett & Sharpe, 2014).

By 1977, the global automotive market had transformed itself and terminal firms around the world had embarked on a model of global sourcing. They were now interested in sourcing parts from around the world to build their vehicles, therefore, exporting was crucial to this strategy. The interests of the Mexican state continued the same: control the outflow of foreign exchanges. To this objective, the new 1977 auto decree determined that terminal firms would have to compensate for their entire balance of payments effect, essentially exporting for everything they had to import, including services. Also, 50% of the exports would have to come from domestic supplier firms, local content would be set at 50%, and price controls were eliminated across the supply chain (Bennett & Sharpe, 2014).

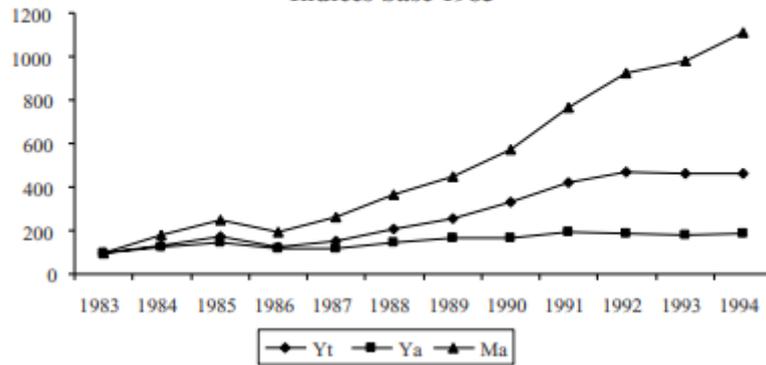
Both of these new decrees failed to increase exports, primarily due to the buffer time between investments and production commencement, but also due to the second oil shock that reduced world demand once more. Although the policies of 1969-1972-1977 to promote exports had positive effects in being promoters of growth, they also had the downside of exposing the country even more to external shocks. In the specific case of the 1977 policy, the Mexican devaluation of 1982, exacerbated even more the problem of the balance of payments. The oil bubble bursting forced the last terminal firms with Mexican state capital, through the sale of light vehicle division of DINA to Renault.

1983, 1989 and NAFTA. Towards Liberalization

In 1983, a new auto decree was made into law. This decree continued with import compensation through exports, however it mandated reduced models and makes to increase efficiency. It also eliminated the provision of importing assembled vehicles and allowed for greater vertical integration in each terminal firm only for exports (Sosa, 2005). Later on, in 1989 a new rationalizing decree was issued once more, allowing complete freedom to supply the domestic market with imports, cancelling any foreign exchange allowances or requirements for national supply chain integration. Liberalization of the market was in full blow and the industry grew largely, albeit with the same common issue of growth of imports relative to production.

The effect was the separation between the terminal industry and the auto parts domestic suppliers. There was not complete freedom to import any auto parts required. This had the effect of increasing production. In the 10 years between 1983 and 1994, export of finished vehicles grew 32% per year, however imports of finished vehicles grew 45.3% yearly, and auto parts by 20% (Sosa, 2005). Nevertheless, the industry was still incapable of accounting for all of its imports, not being able to reach that target in those years.

**Valor agregado de la industria terminal (YT) y auxiliar (YA), e importaciones de autopartes (MA)
Índices base 1983**



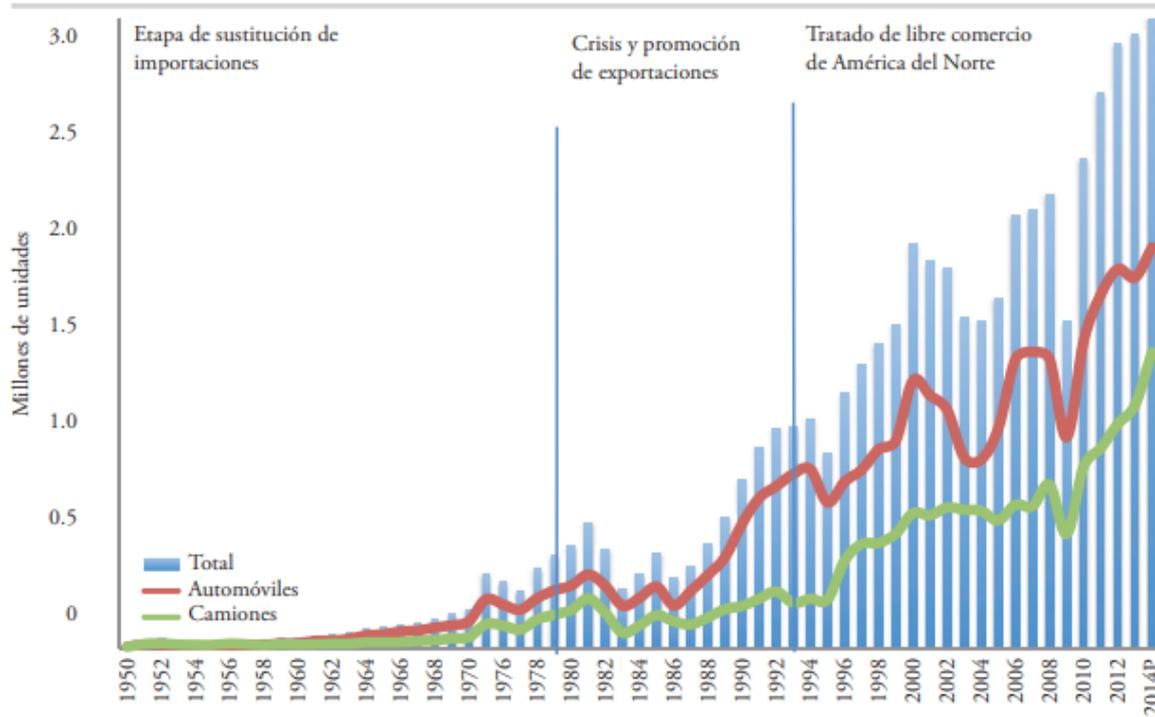
Source: (Sosa, 2005)

In this chart, Sosa maps out figures of the growth of value added by the terminal industry (YT), the auto suppliers (YA) and the importing of auto parts (MA). Sosa also argues that the liberalization in the production completely delinked the domestic economy of parts firms to the production of finished vehicles, further increasing imports.

Finally, the beginning of NAFTA provisions that slowly liberalized trade between the US, Canada and Mexico in the auto industry is what takes us to where we are today: a large foreign owned terminal industry with few backward linkages to domestic industry. NAFTA provided that the market would be gradually liberalized until completion in 2003.

In this year, a new and last auto decree was promulgated allowing even more crowding of the market, any terminal firm could enter if it produced at least 50,000 vehicles per year, import of assembled vehicles at zero tax rate up to 10% of their previous year production.

México: producción automotriz por etapas, 1950-2014



Fuente: Asociación Mexicana de la Industria Automotriz A.C. (AMIA). Asociación Nacional de Productores de Autobuses, Camiones y Tractocamiones, A.C. (ANPACT).

Source: (Ruíz Durán, 2016), with data from Mexican industry trade groups. Title: *Mexico, auto production by stages*. Blue is total production, red is light vehicles and green is trucks. The scale to the left is “millions of units”.

Ruiz Duran shows in this graph how auto production increased greatly after its liberalization in 1983, as well as the short growth spurs after each decree.

In line with current policy, large investments in car manufacturing facilities are commonly announced every year and production is hitting record levels, but the economy as a whole is not growing. Vidal (2014) identified that one of the most important reasons of why Mexico’s economy is stagnated is directly related to the export-led automotive industry. His analysis notes that the Mexican assembly operations are not linked to the domestic economy in two important ways.

First, these industries have a high import content of intermediate goods for transformation, therefore, there are few ties between local industries and foreign firms that establish themselves, skipping any kind of spillover effects in the local economy; and second, their output is almost

completely exported, hence they are separated from the internal dynamics of supply and demand. Their most important contribution to the local economy is the wages that are paid to workers and employees and taxes for their operations. And since their consumption is not linked to domestic production (which is for export), labor capital is not accumulated and is spent in the informal sector, where there is almost no technological knowledge, and the lowest productivity. In other words, the auto industry in Mexico is a means of employment and consumption, for the entire spectrum of Mexican society. Low wage laborers in the industry obtain a relatively secure salary which provide some social stability, continued exports allow for continued imports for consumption in all industries, and the government curtails spending deficits through federal taxes for the activities of the foreign exporting terminal firms.

Domestic and international constraints for *national champions*: The Mastretta car company as an example of current constraints

The current policy outcome is quite different from what the NAFIN report drafters had in mind for developing the auto industry, particularly around the notion of a *national champion* company (Back, 1990). The export-led, foreign-owned automotive industry has few linkages with the domestic industry. It relies mainly on Mexico's trade agreements and the provision of low cost labor to remain competitive.

Although a Mexican-owned terminal firm would be desirable, current political, national and international, constraints make it increasingly difficult. First, the differences between power elites (or ruling coalitions) would give any technocrat a hard time if there was an attempt to structure a new policy to achieve domestic ownership of a terminal firm, not counting the international pressure from foreign governments. Furthermore, these differences inside power

factions in Mexican society continue to swing from populism towards capitalist conservatism (Back, 1990), therefore only an unlikely wide base agreement that includes the domestic private sector towards development could create the conditions of cooperation for capital and resource mobilization towards the development of such an enterprise.

Currently, these agreements do not exist. The Mexican state lost an important part of its autonomy and embeddedness after its economic miracle ran out in the late 1960's. The 1982 debt crisis only marked the official turning point for the state: it gave up its developmental role and allowed its economic and social policy to be largely dictated by domestic and foreign capital (Minns & Shaw, 2006).

The example of Mexico's *Mastretta* car company sheds light on the situation of what it would take for Mexico to develop a *national champion* and the implications for other nations that are interested in developing the auto sector with indigenous industry and/or with current ties to global supply chains led by foreign TNCs as terminal firms. Mexico's *Mastretta* managed to self-finance, design, create a prototype, and begin production of a locally designed, award-winning, luxury sports car: the *MXT*. While the manufacture of sports cars could be questionable in terms of economic development *vis-à-vis* a smaller, more economical model if we compare it to the cases of other terminal firms in developmental states (Korea's Hyundai Pony, Yugoslavia's Zastava Yugo, etc.), the benefits of setting up a locally owned terminal firm capable of designing and manufacturing vehicles, with indigenous know-how and financing, are enormous.

In the case of learning and technology transfer which is necessary for catchup industrialization, as pointed out previously, it appears that even without state direction or intervention, this assimilation of technology will still occur: workers and local managers gain experience over time. A family company just like Hyundai, it acquired knowledge of car design and

manufacture through being employees and later suppliers for foreign terminal firms as manufacturer of parts and design services in the passenger bus supply chain during the 1980's and 1990's. Mastretta had accumulated substantial knowledge and expertise enough to not only design and manufacture passenger vehicles, but to meet all current safety and environmental regulatory requirements of modern cars which allowed them to export their production in full compliance. In other words, they had managed to develop a high-quality vehicle on their own with almost no resources (when production began in 2010, the company was valued at a mere 2.5 million USD). A firm like this could become a candidate for a national champion, capable of creating the economies of scale and benefits in the 1960 NAFIN report.

However, without a coordinator to direct short-term profit seeking towards longer term investment allocation, the lack of formal policy towards development of a sector will quickly erode any private or individual efforts by making them too slow or small to become relevant. For example, the two founders and designers of the Mastretta *MXT* were 55 and 56 years old when their first prototype was finalized in 2008 (Expansión, 2008). They financed practically the entire amount on their own savings as industrial designing firm that had been designing passenger buses for over 20 years. In contrast, Hyundai group founder Chung Ju-yung and his brother HMC founder Chung Se-yung were 60 and 42 years old, respectively when the first Korean made model began production in 1975. However, it took them only three years from their announcement in 1973 to cancel their joint venture with Ford, to develop and manufacture thousands of Hyundai *Ponys* (Back, 1990).

The same situation occurs with other elements that are crucial in the industry, like availability of capital, knowledge, available skilled labor and management expertise. Mastretta went bankrupt in 2014, mainly due to the constant pressures from private and public investors towards an inexperienced management team that did not have enough knowledge of the industry. Likewise, it is arguable that the pressures from investors were irrational, given the

large needs of capital to manufacture vehicles and to set up a sales and service network. The invested capital of less than 10m USD was insufficient. Ironically, it is also cited by Aguilar that the Mexican government taxed Mastretta's manufacturing operation while it offers numerous tax breaks for foreign terminal firms and even more ironically, the public investor NAFIN, refused to facilitate a badly needed working capital injection to continue production (Aguilar, 2015).

The *Mastretta* case surfaces the challenges in the Mexican auto industry that are still the same ones as the problems resulting the implementation of the 1962 auto decree that drove off domestic terminal firms. They are in competitive disadvantage with foreign counterparts due to technology, access to financing, parts supply, export and sales knowledge, managerial know how, and low volumes that impede economies of scale (Bennett & Sharpe, 2014).

Furthermore, by taking all of these elements as a whole, we can only imagine the enormous systemic challenges that an above-average Mexican engineer with a good idea and the right knowledge would have to face: the slow development and unavailability of technical know-how and experience that has to be self-developed during decades and has to be self-financed; the lack of capital to invest in the development stages of the technology (which can also last for decades); the current lack of government interest in the development of a national industry and endogenous technology, which is visible from the actions of Mexican development bankers. There is a lot of entrepreneurship in developing countries, but it is the systemic limitations that do not allow them to become productive and grow (Chang, 2010). It is visible from NAFIN's behavior that the Mexican state is not only unembedded but has also abandoned developmental pursuit.

The Korean Auto Industry

The Korean auto industry emerged in the 1960's and began to export its products in the 1970's (Lee & Mah, 2017). Korea is now one of the countries producing the most automobiles, producing over 4 million vehicles in 2018 (OICA, 2019), and its companies have become transnational players, with assembly and manufacturing operations around the world (Acquisdata, 2019). The auto industry has played a very important role in Korea's economic development, increasing its average income, export values and technology level. As we will see, the role of the state in developing the industry was similar to Mexico's, setting the policy, while leaving the activities and ownership to be taken care of by the private sector. A notable difference was the nationality of the leading firms, *chaebols*, or business conglomerates, the ones responsible for owning and leading the activity from the position of terminal firms.

Origins and the creation of a domestic market: First automobile decrees 1962-1977

After the destruction of the Korean war, the only vehicles that existed were those imported by US and UN forces in Korea. In 1955, the Sibal company began assembling a car from parts of military jeeps to create the "Sibal Taxi". From 1955 to 1956, the Sibal auto assembled 3,000 cars before its collapse thanks to a government policy that prohibited registration of more cars. In 1956, the Rhee government in a crude attempt to control foreign expenditure, mandated that no new automobiles could be registered, only replacement of current vehicles, pegging the number of units in May 8th, 1956 to 25,3208 units (Back, 1990). The industry at the time was regarded as a luxury, and the government at the time did not want to allocate any resources to the importation of vehicles or to the manufacture of them.

After the coup that brought Park Chung Hee to power in 1961, economic policy changed drastically, towards import substitution and export promotion, as demonstrated by the quick implementation of the Economic Planning Board (EPB). Quickly, new policy options were drafted and the Auto industry was seen as a profitable industry that could also provide political capital to legitimize and sustain the new military government (Back, 1990).

The importance of the EPB must not be underestimated. The EPB had privileged access to the highest levels of politics and had serious political influence, with its head given the rank of a deputy prime minister. This high profile gave it great speed in decision making, with some laws and policies emanating quickly, as we will see in the following chronology, but some even after only 24-hour studies (Minns & Shaw, 2006).

In April 1962, the Promotion of the Motor Vehicle Industry law was announced and in May the law protecting the industry, all part of the first five-year development plan. The protection law had three main provisions, it prohibited the import of completely assembled vehicles, it provided tax exemptions for automobile manufacturers and duty-free imports of auto parts (Lee & Mah, 2017). Also in May 1962, the Park government amended the laws governing the central bank, putting it under effective control of the Ministry of Finance. The Park government had also quickly nationalized Korean banks just five months after the coup, giving it quick and effective control of national financial system.

Not surprisingly, the policy, just like in Mexico, derived in a huge outflow of foreign reserves thanks to the import of most of the necessary parts to assemble vehicles. As it was a new industry, it is hard and takes time to develop the indigenous technological and organizational capabilities of a supplier industry. The law also included a provision that limited the participation of foreign firms, therefore, the domestic assemblers of CDKs forced domestic

firms to learn the business by acquiring production licenses from transnational companies around the world.

Although this first policy is at first glance very similar to Mexico's 1962 decree, trying to attract investment to manufacture in the country, there are important differences that are explained in the political motivations of the development in the industry. In January 1962, a retired general that had founded the Korean Central Intelligence Agency (KCIA) the past year founded the Saenara Motor Corporation to import and assemble CDKs of Nissan Bluebird cars (Back, 1990). This venture did not last after 1963, since there was disagreement between the founder and Park. The company eventually collapsed, given that the founder was trying to achieve quick profits by importing vehicles, while Park was trying to develop local industry and importing vehicles caused a drain on foreign currency reserves.

After the political scandal that ensued, a new policy was promoted in December 1963: the Plan for Unification of the Motor Vehicle Industry, which promoted the merger of all local assemblers into one, to promote economies of scale, however, this plan did not go into effect since the autoassemblers could not agree on the organization of the merged corporation. As Back argues, the Korean state, with its military power and the lack of strong contenders in society (business), was autonomous. However, this autonomy did not guarantee successful policy implementation, as exemplified in this event.

The plan was quickly revised and relaunched in August 1964 with the promotion of the Plan for the Promotion of the Motor Vehicle Industry. In contrast to the previous plan of unifying into a large manufacturer, promoted the vertical integration of numerous parts firms and a single terminal firm, in order to assemble a Korean car with full domestic contents by 1970 (Back, 1990). The terminal firm nominated, according to the government, would be the buyer of the failed Saenara corporation. After a politicized sale, the buyer was Sinjin Motor

Corporation, affiliated with the political competitors of the founder of Saenara. This policy produced a successful increase in automobile production. Sinjin Motor was able to manufacture a Toyota Corona car with 21% of local content, accounting for over 80% of car production in the late 1960's (Back, 1990). However, this quickly elicited political complaint, as Sinjin's dependency with Toyota did not allow it to meet the targets or meet demand.

However autonomous, this didn't stop other firms to lobby their way into acceptance into the industry. By 1965, Asea Motor Corporation was given authorization, and by April 1967, the Park government announced that any firm that was qualified could participate in the automobile industry. Nevertheless, this policy was probably promoted by Hyundai. In February of that same year, Ford Motor Company had visited Korea and informed the Park government of their desire to create an assembly plant in Korea, picking Hyundai as its local assembler providing CKDs and technology (Back, 1990). Negotiations quickly began with Ford, where Hyundai managed to keep managerial control of the joint assembly firm, filing for government authorization in December of 1967.

The Korean government supported Hyundai in its negotiation and acted as a gatekeeper to approve or disapprove any clauses that it did not consider appropriate. Additionally, a state request to separate investment terms from technology transfer was honored. Also, the key component of financial management by the Korean government was absolutely crucial for Hyundai's successful engagement and pretensions of becoming an auto assembler. But how did a country with limited capital stock be able to allocate enough resources for such a huge economic drive? The answer lays in a key tool used by the Korean government to control financial market, taking advantage of their autonomy.

In July 1962, the Park government issued the law on Guaranteeing Repayment for Loans, the law established a process where loans directed towards the strategic sectors established in the

first Five Year Plan would be guaranteed by the Korean state. The process involved approval by the Minister of Finance, the Governors of the Bank of Korea, the Korea Reconstruction Bank, the Cabinet and then the National Assembly (Minns & Shaw, 2006). This tool guaranteed access to finance only in the areas where the state considered appropriate and generated an investment climate that incentivized *chaebols* towards foreign lending, therefore, it was foreign resources, allocated and controlled by the Korean state that developed Korea's industry. Since the state only approved those loans that were directed towards productive and non-speculative investments, this helped the fuel productive investment for economic growth.

As described by Minns, Korea's so called "policy loans" of the time provided the best mechanism for quick flow of financial resources from abroad and to distribute them to areas selected by EPB planners but for productive use of the *chaebol*:

Most industry was to remain in private hands. The *chaebol* were to keep their assets – often under the control of a single family. But their growth and profits were reliant on government approval. To follow the plan meant a drip-feed of government finance. To stray from it was to risk immediate bankruptcy. Bank loans were used both to punish and to reward private capital in this way and to shape the future of industrial development. So-called 'policy loans' – where finance was offered on the basis of adherence to government plans predominated between the 1960s and the mid-1980s.

This mechanism, and a set of financial liberalization measures in 1965 (devalued exchange rate, raising of commercial lending rates and deregulation of certain imports) combined to create an environment where the cost of foreign borrowing became negative, after considering inflation and exchange rates. This led to a stampede of foreign loans that also had to be approved by the government (Minns & Shaw, 2006), therefore even more resources were available for

allocation. The ratio of foreign bank loans to value added in manufacturing averaged 55% in the period 1963-1973 (Chui, 1992) cited in (Minns & Shaw, 2006), illustrating the enormous role that foreign subsidized lending played in Korean economic takeoff.

This privileged access to finance of Korean entrepreneurs explains why there was such demand to participate in the auto industry, and it also helps to sustain the reasons of why Ford would be willing to partner with a company that had never worked on cars before.

In a quick comparative view of Mexico's Mastretta MXT, Mastretta followed the usual path of funding for a family venture in expansion: traded equity in exchange for capital. Eventually, it had to forego management as it did not retain enough equity in order to retain managerial control. Since Hyundai had the advantage of access to subsidized capital to launch its auto assembly operation, it was able to quickly find a foreign partner to transfer technology from and then begin production in less than a year, and of their own model in less than 6 years, while Mastretta took over 20 years to learn on its own, develop their own model, and begin small scale manufacture.

1969: The origin of the success of Hyundai's Pony and Pony Excel

In December 1969, the Automobile Industry Basic Promotion plan was presented. According to this plan, a car with 100% Korean content should be manufactured by 1976. In this plan, the government announced that only one engine plant would be authorized in order to achieve the required economies of scale.

By this time, Shinjin continued to dominate the domestic market with its CKD assembly of Toyota vehicles for the domestic market. By 1970, Shinjin and Toyota had prepared a plan to become the single authorized engine plant, which meant that they would become the dominant

player in engine sourcing for the domestic manufacture of vehicles. However, Toyota pulled from Korea due to political pressure from the Chinese government and Toyota's interest in participating in China. Shinjin hurried to find a new partner which was found in GM to found GM Korea in 1972.

Hyundai also tried to quickly reach an agreement with Ford to setup an engine plant to control the manufacture. However, Ford and Hyundai could not agree on the export element of their plan, and the deal fell off due to lack of government approval. Either way, in 1971, the policy was revisited, and the focus switched from local content to export promotion, and the plan to have a single engine plant was cancelled.

Hyundai instead chose to develop its own model, taking advantage of a series of circumstances: i) the closure order of small and medium assembly competitors (only four were left) in 1972, ii) the cancelled limitation of a single engine plant, iii) the launch of the Heavy and Chemical Industry Plan (HCIP), where the automotive industry was selected as strategic in 1973, iv) the freeze of the capital curb market by the Korean state in 1972, which freed Hyundai of immediate debt obligations and liberated more capital, and v) the new openness and competitiveness of the world automobile industry to exploit the best available technologies from the rest of the world (Back, 1990).

The Park regime promoted HCIP as a political response to the Nixon doctrine to industrialize for defense, and as an additional economic push to regain legitimacy due to the 1972 Yushin constitution and continued opposition against his regime. Park used Big Push principle to create backward linkages: the creation of POSCO allowed steel to be readily available for industrial manufactures such as weapons or vehicles at under 40% lower cost than what was available from Japanese steelmakers for Japanese vehicle production (Back, 1990).

Additionally, policy loans were crucial for the development of Hyundai's own *Pony* model. Over \$52 million USD of guaranteed loans were borrowed from banks in England, France and Japan, which represented 73% of the amount projected to develop and produce the model (Back, 1990), the rest was being invested by Hyundai itself, thanks to the freeze of the curb debt market.

As part of the HCIP, the Long Term Automobile Production Plan was announced 1974. This plan dramatically shifted the policy focus to one of technological autonomy. The main provisions of this plan were: local content of over 95%, a production scale of more than 50,000 vehicles per year, and low costs of under \$2,000 usd to remain competitive (Lee & Mah, 2017). These policies had the objective of forcing domestic manufacture while keeping costs down, creating a scale and promoting a nationally directed terminal firm group. It also prohibited the import of vehicle parts to make sure that all manufacture was done domestically by domestic players. This encouraged local players to form joint ventures with foreign companies. Hyundai partnered up with Mitsubishi Motors, KIA with Honda and Daewoo with General Motors (Lee & Mah, 2017).

The result of this policy was the development and sale of the highly successful Hyundai model *Pony*. Presented in 1975 with sales beginning in 1976, it quickly overpassed all local competition in the domestic market capturing over 50% of the market share in less than 3 years, sales increased 409%, profits skyrocketed 320%, and Hyundai's capital grew six-fold by 1979 (Back, 1990). Also, first export sales occurred in 1976 to Ecuador, the first car export ever, (Lee & Mah, 2017), with other countries around the world following, allowing it to improve quality and learn the business of international sales and marketing.

The end of state autonomy and liberalization as a response to crisis

The 1980 recession hit South Korea hard and, for the first time since the 1950s, it experienced negative growth. By 1980, the crisis of the high oil prices had hit Korea so hard that the government had to cancel new vehicle registrations to conserve fuel. Developmental policy had been successful in increasing production, consumption, and competition, however, too many firms were overcrowding the market and cancelling benefits of scale economies. Together with the demand slumps from the oil shocks, and overinvestment, the Korean state encouraged companies to merge, as well as to diminish the number of models and makes on the market, however, Kia being excluded from the passenger auto market, Daewoo and Hyundai failed to agree on the control of the new firm, forcing the Korean state to retreat and the merger plan was cancelled (Minns & Shaw, 2006). State autonomy and embeddedness was starting to fade, the state was incapable of making companies do as they were told, they had started to mature.

The Park regime's extreme autonomy and increased political isolation contributed to his assassination. After Park's murder, the new Korean regime led by set out a new automotive policy that started to let go of developmental control. In 1980, the state began introducing government cuts and deregulating as a response to the second oil shock and the slowdown of economic activity. For example, the grip on foreign capital flows was slightly reduced by allowing foreign securities firms to open offices in Korea, as well as denationalization of Korean banks, which were mainly acquired by the chaebols themselves. Further deregulation increased by gradual sale of banks, towards liberalization of interest rates in 1988 (Minns & Shaw, 2006).

In this highly negative context, it is almost incredible that Hyundai bid to create yet another domestic model, the Pony Excel. Local demand plummeted over 50% and industry-wide

capacity lowered by 26% (Green, 1992). What was the motivation to continue with the development of export products?

In response to the crisis and in accordance with the recommendations of a study by the Korean Institute of Economics and Technology (MIET), the Ministry of Trade and Industry set out to restructure and reorient the industry. The KIET report concluded that the auto industry could only survive if it expanded production to the point where volume was large enough to capture economies of scale. The domestic market was too small to accommodate such an increase, and it was therefore necessary for the industry to shift from import substitution to export orientation. There was only one market large enough and open enough to absorb the number of cars that had to be exported in order to make the plan viable and that was the United States. The decision of Korean car makers to enter the North American market was not the product of a calm, unhurried process based on an appraisal of long term goals and needs. It was rather "a bid to survive by gaining economy of scale" that constituted, according to one Korean newspaper, the "last resort for survival." (Green, 1992)

But the economy recovered quickly and for the rest of the decade grew at an average rate of nearly 10%. In the auto sector, production rose quickly from a mere 55,928 units in 1980 to over a million in 1988 (Green, 1992).

The Hyundai Pony Excel was presented in 1985 and was successfully exported to the United States in 1986, the first for a Korean car. Once again, it was a spectacular success breaking sales records. 168,000 Excels were sold in the first year, reaching 264,000 by 1988 (Back, 1990). It set the record as the bestselling import car at that moment in the US. Although Kia

and Daewoo also entered the US market in the same decade, results were very different for the rest of the vehicles. The main reason was that Kia and Daewoo both operated as OEMs of vehicles for other TNCs, while Hyundai acted as a terminal firm. Therefore, Kia and Daewoo's vehicles were sold along the rest of the Ford and GM lineup in the US, increasing price, making Hyundai's model over \$1,000 USD cheaper than Daewoo's car, sold under the GM brand (Back, 1990).

A new boom in production ensued and a series of liberalizing measures encouraged domestic demand as well as foreign exports. By 1987, exports grew considerably, exporting over 346,000 completed vehicles (Lee & Mah, 2017), reaching the one million mark in 1995 (Cho, et.al. 2014). A flow of increased exports from the rest of the world had created fears in the US for domestic overproduction and an ensuing price war where local industry would be affected (Bernstein Research, 1988).

By then, the Korean state was in full retreat. International pressure began to influence policy to open the local market. It finally backed down from artificial limitations on the domestic market and allowed import restrictions in 1983, starting in 1987 to give time for Korean companies to adapt (Cho, Kim, & Kim, 2014). It permitted the import of practically any kind of vehicle and reduced duties and taxes, lowering most entry barriers (Cho, Kim, & Kim, 2014).

Also, Hyundai and the other car manufacturers stopped being subject of the government's desires. After the last failed merger attempt, Hyundai began to branch out its activities to outside of the country. In order to support its vehicle development, Hyundai opened its own technical and design centers in the United States in 1985 and 1990. Other manufacturers followed through by opening their own R&D facilities in the US, Germany, and Japan (Cho, Kim, & Kim, 2014). Furthermore, companies began investing abroad for their production, Hyundai opened its first plant abroad in Canada in 1989. Ever since, the strategy has been

towards global expansion, foreign capital attraction, and continued growth through more technical R&D.

The Korean state's retreat from developmentalism was fueled, as Minns argues, by a descending phase of the Midas state where the state autonomy is undermined by the agents it helped develop (Minns & Shaw, 2006). The Korean state was unable to control the chaebol business groups any longer, as they had become too large, capable, and powerful to control through merely policy loans and local permits to operate. This speech from Hyundai's founder sums up the attitude of chaebols against government controls in 1988:

In the past [we] recognized that it was appropriate for the bureaucratic elite to direct [our companies]. But the passion that entrepreneurs feel in regard to the development of [their] companies is strong, and the era of desktop policy-making by the bureaucracy is over. (Minns & Shaw, 2006)

Likewise, internal political movements from the growing middle class that demanded a different distribution of benefits became increasingly important. Although it is not extensively covered in this work, the importance of labor-capital relations should not be underestimated. Organized labor had not been a powerful enough force until the growth of the industry allowed it to become one of the key driving forces in Korean politics², eventually incentivizing some of the chaebols to direct their investments abroad.

² A detailed interpretation and description of relations between Korean labor, the state, and the chaebols is available from Minns & Shaw, (2006), specifically chapter 6: "The Korean Miracle in Decline" (p. 150 – 180) where they describe several efforts to undermine the power of the chaebols in the 1980's, all failed. Among them, forcing wage hikes by declaring neutrality during labor strikes, a campaign to discredit them in the press, orders to break conglomerates, efforts to direct finance to SMEs, setting limits of share ownership to each shareholder, liberalization of the financial sector, and to open up the domestic market to foreign competition. But perhaps most importantly, the importance of the chaebols to the national economy made it self defeating for any serious effort to break them up to be effective.

The Korean automotive industry development story is nothing short of outstanding. Korean policymakers were able to utilize their own circumstance to develop this industry. They saw that their state's autonomy allowed them to control the import market, given that relative small size of domestic sales and low incomes. This allowed them to be successful with ISI policies to begin nascent industries. Also, the risk-taking attitude of Korean chaebol-owning families. Most notably Hyundai, who took large risks with enormous industries with no previous knowledge but could not have done it without the support of the Korean state to keep labor under control, to provide quality education, and most importantly, to facilitate a flow of finance. State control of finance avoided rent seeking and short term profit drives with available finance, situation that did occur when the state retreated, in the 1997 financial crisis in Korea. The Korean state's bet in quick catch up industrial development paid off. When economic growth and abundance created large political pressures and the state lost autonomy and forced it to liberalize, the chaebols had matured enough to become globally competitive players. In this context, liberalization only supported the efforts of Korean companies even further, by opening more markets through FTAs, and membership of the WTO and OECD.

Trends and disruptive innovation in the automotive industry

Up to now, this work has briefly reviewed the developmental experiences of the automotive industries in Mexico and Korea. And as noted, technological development was crucial in both cases.

In Mexico, technology was not locally developed, rather it was transferred through complete control of foreign terminal firms and a locally-owned auto parts firm. This initial forced cooperation between foreign firms and local parts firms created an environment where technology was transferred. This arrangement of no more than 49% foreign ownership still applies, however, terminal firms utilize extensive technical cooperation agreements to support these companies³.

In Korea, technology was transferred through a series of joint ventures in terminal firms. The cited example was the technology transfer agreement between Hyundai and Mitsubishi for the development of the Hyundai Pony in 1973-1975. Nevertheless, other Korean firms allied with other foreign companies to transfer technology, such as GM, Ford, and Honda, leveraging then existing restrictions to enter the local market through these joint enterprises. Today, there are no limits on the investment of foreign firms into Korea, however, local manufacturers have branched out worldwide and are now technologically independent.

However, the recent pace of technological advancements in manufacturing and automobiles places a strain on the continued operation of these industries and create a different environment for other countries that try to develop their own auto industries. In the case of Mexico and other countries where the pattern is geared towards the control of the local market and the export

³ One example of these arrangements is Japan's technical cooperation in the development of automotive suppliers in Mexico. See <https://www.jica.go.jp/mexico/espanol/activities/proveintegr.html>

activities by TNCs, then technological innovations do not represent a matter of concern. TNCs will import these new technologies as they develop and will trickle them down to the local market as their own global strategies dictate, even if it takes a long time for that to happen, and it may even never happen.

For countries such as Korea, bases of TNCs, technological innovations are usually controlled or proposed by them. However, it is disruptive innovations that can pose a threat to these TNCs and those that can open a window of opportunity for developing countries, or established countries (such as Mexico) to climb up the technological ladder.

Electric drivetrains, batteries, self-driving capabilities, vehicle software, artificial intelligence systems, and stringent requirements on safety and environmental impact are some of the noted innovations in the industry that are beginning to disrupt the established order. These components or technologies require resources, such as capital, knowledge and capable management to be developed into market-ready offerings for global value chains to assimilate.

To conceptualize the trends looming in this century, I borrow from the megatrends identified by Kurtyka (2018)⁴, and by Regeni and Vidican (2017) to determine that the four megatrends looming in the automotive industry are autonomy, urbanization, digitalization and environmental sustainability. While companies are on the most part leading these trends, as has been seen in both cases in this work, state developmental action can greatly accelerate their adoption and shape the relationship that each country will have in the future with each one of the outcomes of these trends.

⁴ Kurtyka identifies four trends of autonomy, urbanization, digitization, and electrification. The last one is merely electrification due to environmental sustainability concerns, therefore I merge it for clarity with Regeni's challenge on climate change and environmental degradation (Regeni & Vidican, 2017).

Autonomy refers to technologies that will allow vehicles to be able to drive themselves. Either for passenger transport or for long haul cargo transport, autonomy is a combination of digital technology and artificial intelligence. From 2016 to 2018, the largest operations of mergers and acquisitions of technology companies have been around an application of digital technology and artificial intelligence: machine vision (Kurtyka, 2018). This trend is expected to see major breakthroughs by the mid-2020s, where fully autonomous vehicles will be available for consumers or companies.

The second major trend is urbanization. Kurtyka estimates that the large proportion of the population that will be living in cities by mid-21st century, entailing a great need for mobility inside cities, where convenience and ease of use will be the norm. The successes of ride-hailing companies are a foreshadow of this trend. Companies like Uber, Didi, or Cabify have gained a stronghold on this market in cities around the world. The preference for access to a vehicle instead of ownership of a vehicle has already make a disruptive entry into the global taxi marketplace (The Economist, 2016). For example, Uber considers Mexico City as its third most important market worldwide, just after the US and Brazil (Bhuiyan, 2018).

However, there is only a limited supply of road space in cities and these applications have become a norm for millions around the planet. With more growth in the horizon, more cars cannot be a solution for mobility. This is a challenge not only for cities to better plan their public transportation networks, but for automakers. If continuous sale of vehicles will reach a limit, ride hailing technology along with sharing for profit will continue to be relevant.

Digitalization refers to communication and data exchange through IT devices (Kurtyka, 2018). Communication services, software development, and a new bit-driven economy trend are rising. Their uses, various, not only in the manufacture of vehicles and their systems, but on their use (think ridesharing or ridehailing apps). Additionally, some analysts find that vehicles will

become places for further trade, such as how mobile phones became monetized through app sales and subscription services. This is probably the clearest and most broad of the trends, however it also allows for more space for entry.

Cars are the new smartphone. Connectivity of vehicles, vehicle sharing, information, use of AI and big data in vehicles and more is already beginning to transform the sector. Advanced driving assistance systems, connected systems inside and outside of the car, along with smart interiors are beginning to surface. The connectivity of cars through separate payment models will see growth in the coming years.

And finally, environmental sustainability trend refers to concerns in sustainability of the use of resources. The most important and key implication in the auto industry is not that of auto manufacturing itself, but of the emissions generated by internal combustion engine powered vehicles. Electrification of transport is then the chosen solution. Although Korea's Hyundai has also bet greatly on using hydrogen cell technology, most major automakers are already designing and marketing electric vehicles. These vehicle manufacturing opportunities, perhaps made more evident by Tesla's appearance in the market, are an opportunity to combine mobility with the other trends of digitalization and automation, as Tesla is trying to achieve. For the auto industry, this trend represents a clear signal to turn to the end of combustion engines and the beginning of use of electric motors, charging stations, and batteries, and all of the elements around them.

The role of a developmental state can support environmental sustainability, such as notions of "green state" (Eckersley, 2004), however, without decisive state action, the effect of efforts will be limited (Satgar, 2014). As mentioned, states have been successful in shaping the way the private sector operates and leading its way. As noted by the countries and regions where the green transformation is occurring is where the public sector has taken a more active stance

in these issues and those led the way through policies, incentives, or derisking (Regeni & Vidican, 2017).

Regeni also argues in favor of active state action to become a developmental agent in the new context of the 21st century. They suggest deepening state society relations to support faster adaptation with measures such as mitigating rising inequality, education reorienting towards knowledge, as well as preparing new policies to raise revenues, investing in sustainable technology and incentivizing innovation and experimentation through bottom up engagement.

In the case of Korea, the Korean government strongly supports an environment for research and development, although it is still focused on big business activity of the chaebols. Mexico, on the other hand, is very behind in technological advancement, but can do more by providing better policy frameworks to enable entrepreneurs. For example, there is currently no legal framework that permits retail resale of electricity, a key requirement for the establishment of electric vehicle charging stations.

Recent trends in the industry start to show a peek of how the future will focus on intensive uses of technology to drive market growth. After all, vehicle manufacturing is becoming increasingly more crowded, as cars are essentially mature technology. Its most fundamental component, the internal combustion engine, is over 100 years old. At the forefront of this new revolution is the state. Societies and states have a fundamental question, if they want to let neoclassical economics dominate their market structures, and allow liberalization, or to pursue market direction through a neo-statist, neo-developmental approach that has the proven potential to quickly mobilize resources for development, although this can only be a temporary *turbo* button for the industry.

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