Challenges for Implementing Industrial Policy in Mexico

by

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ABSTRACT

Although Mexico experienced high growth rates in the 1960s, 1970s, and early 1980s, the country has not fared well in terms of improvements in poverty and equality, growth in GDP, and job growth in some sectors in the last couple of decades. In conjunction, during the last twenty-five years, the traditional industrial policies of tariffs, local content requirements and quotas have been phased out of Mexico’s policy toolkit. However, there have been some industrial policies implemented in Mexico such as investments in training, R&D, and infrastructure especially on the subnational (state) level. Although some state governments have been able to implement industrial policies, there are still many challenges that hinder opportunities to implement these policies such as the national ideology that supports liberalization, insufficient funding and resources, limited governmental capacity, lack of shared vision, and lack of credit available. Even though some states have been able to implement industrial policies in this climate, there are ways in which the government could improve opportunities for executing these policies such as creating a national framework that provides a lot of flexibility at the subnational level, providing more funding and capacity for subnational actors, requiring evaluation to measure the effectiveness of these programs and creating mechanisms that help officials generate a shared vision for strategic planning.
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Introduction

Although Mexico experienced high growth rates in the 1960s, 1970s, and early 1980s, the country has not fared well in terms of improvements in poverty and equality, growth in GDP, and job growth in some sectors in the last couple of decades. In conjunction, during the last twenty-five years, the traditional industrial policies of tariffs, local content requirements and quotas have been phased out of Mexico’s policy toolkit. However, there have been some industrial policies implemented in Mexico such as investments in training, R&D, and infrastructure especially on the subnational (state) level. Although some state governments have been able to implement industrial policies, there are still many challenges that hinder opportunities to implement these policies such as the national ideology that supports liberalization, insufficient funding and resources, limited governmental capacity, lack of shared vision, and lack of credit available. Even though some states have been able to implement industrial policies in this climate, there are ways in which the government could improve opportunities for executing these policies such as creating a national framework that provides a lot of flexibility at the subnational level, providing more funding and capacity for subnational actors, requiring evaluation to measure the effectiveness of these programs and creating mechanisms that help officials generate a shared vision for strategic planning.

This paper will assess whether industrial policy has existed in Mexico, outline which policies have been implemented, describe the challenges to implementing industrial policy in Mexico, and make recommendations for how Mexico and the city of
Saltillo, which is located in the northern state of Coahuila, might overcome these challenges. It will use Saltillo, Mexico as a case study. It will begin by outlining economic policies in Mexico. It will then give an overview of some reasons why Mexico and Saltillo may or may not be competitive as compared to other parts of the world. The paper will then discuss industrial policy in Mexico and the state of Coahuila. It will then highlight some of the challenges and address policies to overcome the challenges. It will then conclude with recommendations for future research.

It is important to note that when I began this research in the spring of 2008, Saltillo served as a working model for implementing industrial policy in Mexico. I planned to analyze some of the challenges of implementing industrial policy at the subnational level and use Saltillo as a case study. Although this example is still applicable, the city is changing rapidly. Saltillo, which is heavily dependent on the auto industry, has been suffering significantly because GM and Chrysler (the major employers in Saltillo) have been forced to lay off thousands of workers. The situation continues to worsen each day. Unfortunately, it is outside of the scope of this paper to analyze the complete effects of these events especially because they are still evolving. However, Saltillo serves as an example of a city where the state government has been implementing industrial policy. I will use this case study to analyze some of the challenges for implementing industrial policy especially at the state level and make recommendations as to how one might overcome these challenges.
Core research questions

Since the mid 1980s, Mexico has been practicing neoliberal policies of free trade and limited government intervention. In fact, Jaime Serra Puche, as the Secretary of Industry and Commerce under President Salinas, coined the phrase, “Mexico’s industrial policy is no industrial policy.” Although government interventions have been limited since the mid 1980s, has industrial policy existed in Mexico? If it has existed, what form has it taken?

Following up on these questions, if Mexico has been implementing industrial policy or plans to implement it in the future, what are the greatest challenges to implementing industrial policy on the national and subnational levels of government? How can Mexico and Saltillo overcome these challenges?

Hypotheses

There have been industrial policy interventions in Mexico especially at the state level in the form of credit opportunities, support for R&D and workforce training, and coordination of the public and private sectors. These “softer” policies replaced strategies like local content requirements, tariffs, and performance standards.

Although there have been examples of industrial policy interventions in Mexico in the last few decades, there have also been many challenges to implementing industrial policy such as the current political and economic ideology in Mexico, a lack of shared vision and strategic approach to planning, limited credit opportunities, a lack of tax
revenues, limited governmental capacity, a lack evaluation, and the politics involved in making a decision especially at the state level. These factors have limited opportunities for implementing effective industrial policies in Mexico. This paper will outline some of the ways in which Mexico and Saltillo might overcome these challenges.

How might Mexico and Saltillo overcome these challenges? The government could improve opportunities for executing these policies by creating a national framework (which will require a shift in ideology) that provides a lot of flexibility at the subnational level, providing more funding and capacity for subnational actors, requiring evaluation to measure the effectiveness of these programs, providing better access to credit, and creating mechanisms that help officials create a shared vision for strategic planning.

**Methodology**

The methodology for this research paper consisted largely of a literature review and interviews with government officials at the state and national levels, private sector employees, and staff members and professors at universities in Saltillo and Mexico City.

During the summer 2008, I traveled to Saltillo, Mexico to carry out research for this project. I conducted 31 interviews with managers and employees in the private sector, staff members at the local technological university, and state government officials.

In January 2009, I returned to Mexico and spent some time in Mexico City and Saltillo, Mexico to complete research for my thesis. During the two and a half weeks that
I was in Mexico City and Saltillo, I conducted 15 interviews with managers and employees in the private sector, faculty members at the local and national universities, and state and federal government officials.

Before discussing industrial policy in Mexico, it is important to understand Mexico’s political economy history. This section will outline some of the critical points in Mexico’s economic history and the country’s reaction to them.

**Brief History of Economic Policies in Mexico**

*Import Substitution Industrialization to Liberal Economic Policies*

Prior to the 1930s, neoclassical economic strategies dominated the policy arena. However, with the Great Depression of the 1930s, came unemployment as high as twenty five percent and the underutilization of resources such as labor, land, and capital. Most of the world was in a serious economic crisis. As a result, these events significantly challenged the neoclassical ideals of a self-regulating market and supply creating its own demand. The response to this crisis was Keynesian economics, which made a case for interventionist government policy (Keynes, 1964) to ensure full employment. México, like many countries around the world adopted interventionist strategies. Many countries in the developing world actually tried to promote self sufficiency through import substitution industrialization (ISI) in hopes of closing the gap between South and the North left behind after World War II. Under import substitution industrialization,
governments manipulated market prices, barriers to entry, and access to financing to promote the development of industrialization in their own countries (Felix, 1989). Following with these policies, the Mexican government adopted strategies such as wage controls, exchange rate controls, and government investment in particular sectors.

Although industrialization was underway in Mexico, by the early 1950s, two economists, Prebisch and Singer, recognized that Latin America had not profited substantially from international trade because the terms of trade did not favor minerals and agricultural products, which were in abundant supply in Latin America. As a result, many economists thought that Mexico and other Latin American countries should shift their efforts toward increasing production in manufacturing. Mexico did switch over to manufacturing and through its ISI policies, conditional government support, and construction of infrastructure, Mexico was able to industrialize, which led to substantial growth (6% annually) until the late 1970s (Bruton, 1998).

During this time, the developmental state of Mexico supported manufacturing through import protection, government subsidies, and loans from the national development bank in exchange for performance standards such as local content requirements and technological innovations (Gallagher, 2004). Through these policies, the Mexican government supported state owned enterprises in petroleum and steel, which were linked to the textile, chemical, and machinery industries (Amsden, 2000). In addition, the government supported the development of export processing zones, or maquiladoras, where companies in the electrical, apparel, machinery, and transport
industries could import unfinished goods duty-free and then receive a guarantee that they could export the finished goods. With the aid of these policies, by the end of the 1970s, Mexico was growing at a rate of nearly 8% annually, which was very positive (Gallagher & Zarsky, 2004).

However, this success also led to Mexico’s downfall to some extent because with this high growth rate, the government and private companies began to borrow significant amounts of funds and spent large sums of money on public investments. With this large mounting debt and a fixed nominal exchange rate, Mexico faced inflation, real exchange rate appreciation, and current account deficits. From 1970 to the early 1980s, Mexico’s foreign debt increased from $3.2 billion to over $100 billion (Gallagher & Zarsky, 2004). When oil prices spiked in 1979 and then dropped in the early 1980s, Mexico could not meet its debt obligations (Rodrik, 1999). With currency devaluation, Mexico entered into an economic crisis. Although the de la Madrid administration tried to improve the situation with additional ISI policies, the ISI interventions of currency devaluation, adjustments of minimum wage, and trade restrictions of tariffs of up to 100%, were unsuccessful in promoting stability in the economy. In addition, loans totaling $10.7 billion from International Monetary Fund, private banks in the US, and the Paris group brought little relief (Lustig, 1992). By 1985, the government had increased spending again, the IMF money had run out, there was a massive earthquake that affected Mexico City, and oil prices had dropped significantly, which led to another current account deficit. As a result, the peso depreciated and Mexico recognized that it would have to
change its policies (Gallagher & Zarsky, 2004).

In response to the dire economic climate, the de la Madrid administration decided to experiment with liberal economic strategies. For instance, the administration decreased the tariff rate from 100% in 1982 to 45% by 1986. In addition, in 1986, Mexico joined the General Agreement on Trade and Tariffs (GATT), which forced Mexico to liberalize further (de Maria y Campos, personal communication, 2009). In the next administration, President Salinas and his staff increased Mexico’s openness further and promoted stable economic policies by setting goals to increase foreign direct investment, improve growth and competitiveness in the manufacturing sector, create new employment, and upgrade manufacturing sector technologies through transfers from transnational companies. The government planned to accomplish these goals by creating pacts with the labor representatives, agricultural producers, and the business sector to decrease the fiscal deficit, tighten monetary policy, and further trade liberalization. These policies were successful as inflation decreased from 159.2% to 7.1% from 1987 to 1994 and GDP increased by 23.1% during that same time period (Gallagher & Zarsky, 2004).

In the early 1990s, Mexico looked to open its borders further. After failed attempts to create trade pacts with Japan and Europe, Salinas approached the US about creating a North American Free Trade Agreement. After a couple years of negotiation, Mexico, the US, and Canada signed NAFTA on January 1, 1994. This agreement meant that the countries had to lift trade restrictions and liberalize investment. It is interesting
to note that NAFTA came partly out of auto and sectoral agreements in steel, etc. with US companies. Some argue that 60-70% of NAFTA was related to auto agreements between the US, Mexico, and Canada (Flores-Quiroga, personal communication, 2009). By the time NAFTA came into effect, Mexico had already reformed some of its policies to promote easier and more efficient foreign investment. For instance, Mexico repealed a 1973 law on foreign investment. This act provided foreign firms with the opportunity to own 100% of new some industries (UNCTC, 1992). With the signing of NAFTA, Mexico lifted trade restrictions further. For instance, performance standards for local content and export requirements for companies were also phased out or replaced by NAFTA country standards. In addition, technology transfers were slowly phased out and environmental standards were relaxed (Gallagher & Zarsky, 2004).

Mexico increased liberalization further by signing Trade Related Investment Measures and Trade in Intellectual Property Rights under the World Trade Organization, which limited Mexico’s ability to impose performance standards on foreign firms and prevented knowledge transfers through reverse engineering. These liberal economic policies made it possible for FDI in the manufacturing sector, which served as the opportunity for growth in Mexico (Gallagher & Zarsky, 2004).

During the mid 1990s, Mexico’s approach to industrial policy also changed. Instead of targeting a few firms and industries as it did under ISI, the Mexican government treated all companies and sectors equally. In addition, the government liberalized imports and exports, reduced or eliminated subsidies and price controls, and
privatized many of the state owned enterprises. The government adopted policies like promoting industrial clustering to take advantage of spillovers and providing consulting services for Mexican owned small and medium size enterprises (Gallagher & Zarsky, 2004). Through these strategies, the Mexican government created pro-market industrial policies.

The Mexican government also initiated with Program for Industrial and Foreign Trade Policy (PROPICE) to manage the integration of foreign firms into the manufacturing sector in Mexico. PROPICE emphasized the need to increase productivity, employment and competitiveness. In addition, it also highlighted the importance of developing supply networks through small and medium sized enterprises and recognized that Mexico needed to prepare for potential competitive pressures from low wage manufacturing in China (Gallagher & Zarsky, 2004).

Although the complete liberalization process took over a decade, with these policies finally in place, Mexico was fertile ground for foreign direct investment. As a result, many economists thought that Mexico was on its way toward recovery. However, in 1994, Mexico suffered from another devaluation of the peso and consequently, an investment panic. As a result, the value of the peso declined even further (Dornbusch & Werner, 1994).

To escape from this potential crisis, the new president, Ernesto Zedillo requested $53 billion in aid from the IMF, the US, and the Paris group. In addition, the Mexican government reduced domestic spending, tightened fiscal and monetary policy, and floated
the exchange rate. As a result, the Mexican government was able to stop the devaluation of the Mexican peso and restore foreign investors’ confidence in Mexico (Gallagher & Zarsky, 2004).

Since that time, Mexico has maintained its liberal policies of limited government intervention and industrial policies. However, the economy has not fared well as it has only been growing at a rate of 2%-3%, which is significantly less than previous growth rates in Mexico. In addition, with the current economic crisis, it is unlikely that the government will be able to maintain its neo-liberal policies. How will the government intervene? In recent years, the central government has decentralized much of its power to the state level. However, this devolution of power has not been matched by funding and capacity to run the programs. Nevertheless, the state government has intervened to create industrial policies, economic growth, social policies, and environmental planning strategies.
Chapter One

What advantages or disadvantages do Mexico and Saltillo possess as compared to other countries and cities (i.e. pre-war manufacturing experience, break with the colonial powers, education, infrastructure, proximity to the U.S.)? Are the advantages of pre-war manufacturing experience, good educational institutions, and proximity to the US sufficient? I will argue that they are not.

Why are some countries more successful than others? How do some countries achieve higher growth rates? There are several factors including, but not limited to the presence of pre-war manufacturing experience and the ability to remove colonial powers and foreign owned firms from countries that affect the growth rates of these nations according to Amsden. In addition, other factors such as educational institutions and infrastructure may also have an impact on whether a country can remain competitive in the future. This chapter will explore some of these characteristics as they apply to several countries, but it will focus on Mexico and even more specifically, on the city of Saltillo in the state of Coahuila.

Saltillo, Mexico is small city located in the southeastern part of the northeastern state of Coahuila. It is home to about 650,000 residents and its major industries are auto parts and the automotive industry.
Here are some of the reasons why Mexico and Saltillo may or may not be competitive in the future. Are their competitive advantages enough to ensure that they will be competitive in the future?

Pre-war manufacturing experience

For Amsden, the distinction between the rise of the rest and the remaining countries depends partly on pre-war manufacturing experience. In countries like Korea,
Taiwan, Thailand and China, colonizing countries like Japan provided the nations with pre-war manufacturing experience. Pre-war manufacturing experience is critical. Without this experience, Amsden notes machinery is likely to forsake capital accumulation and degenerate into rent seeking, in which people can redistribute assets for their own personal benefit. In addition, without manufacturing experience, it is difficult for a country to identify a marketable product, raise finance, build a firm and produce to specification, which is necessary for entrepreneurship. In contrast, in countries with manufacturing experience, Amsden states that investors have high expectations that manufacturing will succeed. In addition, this experience gives companies confidence that they can earn long-term profits and creates qualified managers and engineers, which provide opportunities for growth. Similarly, Amsden argues that manufacturing experience means that government is more effective. Government postwar subsidies are much more likely to lead to successful enterprises if the countries have experienced managers. (Amsden & Hikino) In addition, the more manufacturing experience, the more capital that is likely to flow to that industry, which reduces the burden on the government to finance that industry. Foreign capital will also flow to these countries for the same reasons. Evidence shows that in the 12 countries (China, India, Mexico, Indonesia, Taiwan, Thailand, Malaysia, Turkey, Brazil, Argentina, Korea, Chile) that were exposed to manufacturing experience, growth rates were much higher than those without this experience.

Luckily, Mexico had some manufacturing experience. However, Mexico received
a different kind of manufacturing experience than many of the most successful countries and their firms. There were three types of manufacturing experience: pre-modern, émigré, and colonial. Pre-modern manufacturing experience featured the skills associated with artisan handicrafts. In the émigré experience, know-how was transferred by permanent or quasi-permanent emigrants. Argentina, Brazil, Chile, Mexico, and Turkey all had North Atlantic émigré experience. However, other countries like Korea, Taiwan, China, and India received their know-how from the colonial powers in the North Atlantic or Japan. The colonial manufacturing experience countries were much more likely to invest in their own national skills, unlike the émigré manufacturing experience countries. In addition, colonial firms were much more likely to be strategic about their investments. Unfortunately, countries with émigré experience also had a larger amount of foreign direct investment because their manufacturing experience had expanded the most and thus, their countries attracted a lot of foreign investors (Amsden, 2001). This meant that countries like Mexico had a harder time removing foreign investors and advancing in their own national skills, which would have a negative impact on the acquisition of their own production engineering skills.

Like Mexico, Saltillo also had some pre-war manufacturing experience. Saltillo, which is located in the southeastern part of the state of Coahuila, is known for its ceramic tiles and zarapes, or brightly colored woven blankets, which is one of the national symbols of Mexico. Although Saltillo started producing zarapes centuries ago, it was not until 1900, when the Purcell family came from Ireland to Saltillo and developed the
textile industry further. Purcell used the abundant supply of cotton in Saltillo and brought looms and other machinery from Ireland to develop the textile industry. In addition to producing textiles, Saltillo also produced tiles for the walls and floors of homes. With an abundant supply of fine sand, Saltillo was able to produce some of the best ceramics in Mexico (Arsamendi, personal communication, 2008). The experience acquired through the textile and the ceramics industries would prove to be very valuable in the future.

In fact, Don Isidro Lopez, the founder of Grupo Industrial Saltillo (GIS) learned directly from Purcell. He took the experience and knowledge from working with Purcell to develop his own foundry and industrial center. In 1928, he founded GIS with his brothers Carlos and Ricardo. Throughout the history of GIS, the group produced many different products. It currently specializes in the production and sale of ceramic wall and floor tiles, water heaters, and pipe fittings, runs iron and aluminum foundries for on the production of engine blocks and heads, and auto parts, and produces kitchen and tableware. Initially, they produced aluminum pipes and pipe fittings for stoves and heaters, pails and buckets, and other steel products. Over the years, they expanded production to produce items in porcelanized-on-steel or enamel-on-steel. Later, they would acquire Molinos del Fénix, S.A., which produced flour, whole flour, bran, middlings and semolina for pasta. In 1956, the first motorbike company, Moto Islo, S.A, came to Latin America. GIS supplied some of the parts for this company. Although the motorbike industry floundered in Mexico because drivers wanted to be able to transport
their families in their vehicles, it still provided GIS with valuable experience in producing parts for autos, which would be useful in the coming years. Later, GIS expanded to produce bathroom fixtures and ceramic tiles. In 1979, Cifunsas, which was part of GIS, started to produce iron engine blocks and heads for the automotive industry. Consorcio de Fabricantes de Aparatos Domésticos (CONFAD) was created in 1983, in a joint venture between GIS and General Electric and was later divested. In September 1997, Line 4 at Cifunsas began production of iron engine blocks (diesel) for the export market. In 1999, Grupo Industrial Saltillo in a joint venture with Germany’s VAW Motor GMBH started Castech, which focused on the production of aluminum engine blocks and heads for the automotive industry. As of 2002, GIS was the lowest cost producer of ceramic tiles in Mexico, which was possible through ongoing investments in state-of-the-art technology.

It is apparent that GIS has diverse portfolio. With the pre-war manufacturing experience in the textile and ceramics industries, GIS was able to learn and internalize the knowledge. In addition, it was able to innovate and diversify. Because of GIS, unlike other parts of Mexico, Saltillo could rely own know-how and innovations, rather than being dependent on foreign owned firms. Nevertheless, because GIS was so successful initially, many foreign firms like GM and Chrysler were also attracted to Saltillo.

Although other factors such as low costs and proximity to the United States influenced GM and Chrysler’s decisions to locate in the city, evidence shows that GIS was a strong factor. In addition, some argue that it was in fact, GIS that alerted the local government
in Saltillo that GM was looking to locate in Mexico (de la Pena, personal communication, 2008). Now, GIS is the only major Mexican firm in the auto industry in Mexico, which is good for Saltillo, but not for the rest of Mexico. Unfortunately, like the rest of Mexico, with the exception of GIS, Saltillo is still heavily dependent on foreign firms like GM, Chrysler, and Magna. Although Saltillo is looking to diversify its economic portfolio to the information communications technology and the aerospace industries, development has been slow. Nevertheless, these industries do offer hope for viable opportunities to increase growth.

**Break with the colonial power and removal of foreign firms**

It is also important to mention that growth rates were also related to whether or not countries were able to make a clear break from their colonial rulers and were able to create their own nationally owned firms after decolonization. Even though the twelve countries including Mexico received some pre-war manufacturing experience, not all of them were able to achieve complete independence after decolonization, which also hurt opportunities to regain control and develop their national knowledge based assets. However, some countries like Korea and Taiwan were able to make a clean break from their colonizer, Japan. They were able to retake their land, companies and modern banking system. Nevertheless, many countries in Africa and Latin America were not so lucky. Foreign owned firms remained in many parts Latin America and Africa maintaining their control over valuable natural resources in goldmines and plantations.
Amsden notes that they often dominated resource intensive industries. In Africa, foreigners often exploited the region for its ivory, slaves, and other raw materials. In exchange for these goods, the countries received luxury items and consumable goods, but not technology according to Alpers (1975). It is important to note that after World War II, while countries like China, India, Korea, and Taiwan were investing in their own national skills, countries such as Mexico and Brazil increased their dependence on foreign investors, which made it more difficult to acquire their own production engineering skills.

To this day, the city of Saltillo is still dependent on foreign investors. Even though GIS has been successful in the past, evidence shows that its sales are declining. In addition, GIS is the only major Mexican firm in the auto industry in Mexico. Although companies like Metalsa and Technocast, which stamp the bodies of cars and produce mono blocks, are from Mexico, most of the companies in Saltillo are foreign. For instance, Freightliner, which assembles trucks and employs nearly 3,000 employees, is from the United States. Freightliner is in the process of setting up a new plant in Ramos Arizpe in the southern part of Saltillo. In addition, GM, which produces transmissions and assembles cars in Saltillo, is Mexico's single largest private employer. In Saltillo alone, GM employs several thousand workers in its plants. However, the number of employees necessary at each plant keeps declining. In addition, foreign companies like Chrysler continue to idle plants and lay off workers. So, what is the benefit for Saltillo?
**Education and R&D**

It was also crucial for countries and firms to invest in their own education, training, and R&D according to Amsden. First, many countries and firms invested in their employees’ training and education. For instance, POSCO in Korea sent hundreds of production and non-production workers abroad for hands-on training after World War II (Amsden, 1997). Other companies like the Tata group in India sent employees abroad to acquire a better understanding of steel mills in the U.S. for the creation of their own steel mills in India. In addition, some countries sent their students abroad. For example, Park Chung Hee, Korea’s developmental president was educated at a Japanese military academy and through the local communist party. In addition, Fidel Castro was trained by the Jesuits (Amsden). Recently, Mexico also sent some employees abroad to be trained in the IT industry in Bangalore, India. Although this has become more common in Mexico it is still much less common in Mexico than in other countries like India and Korea. Through the acquisition of knowledge abroad, employees and students have been able to learn from role models and obtain an understanding of the western world that would supplement their extensive knowledge on their own home countries.

In addition to sending employees abroad, many countries and firms invested heavily in R&D. The most successful countries for production engineering recognized the need to supplement the know-how they acquired through suppliers, consultants, and government supported programs, with R&D. First, it is important to note that many
foreign firms do not complete very much R&D outside of their home countries. Amsden argues that if firms want to accumulate engineering know-how, then they must invest in their own R&D, rather than relying on foreign firms. Nelson (1987) also states that investing in R&D provides access to new knowledge and other technologies. He also argues that it creates new techniques and production choice options. It also provides firms with the opportunity to understand their own production capabilities. As a result, many of the most successful firms including POSCO in Korea and USIMINAS, a steel manufacturing firm in Brazil, invested in their own R&D. For example, USIMINAS needed additional technologies in the late 1970s, so it invested in an R&D center which allowed the company to reorganize its internal structure to develop its own basic engineering (Dahlman & Fonseca, 1987).

Although USIMINAS invested in its own R&D, most of Latin America did not. As of 1990, R&D in the region amounted to only $2.9 billion or 0.63 percent of world expenditure. In addition, from 1980 to 1990, R&D ratio over GDP rose from 2.22 percent to 2.92 percent for developed countries, while that of other developing countries, including the ‘tigers’ increased from 0.65 percent to 0.85 percent. However, during that same time, R&D ratio over GDP fell from 0.44 percent to 0.40 percent for Latin America. Even Brazil, which had the second highest ratio for the region (0.91 percent) was only slightly higher than the average for non-African and non-Latin American developing countries. Fortunately, Mexico increased its R&D ratio over GDP from 0.44 percent to 0.48 percent from 1980 to 1990. However, this percentage was still fairly low
even compared to Chile (0.71 percent) and Uruguay (0.59 percent) (Alcorta & Peres, 1998). Thus, Latin America and Mexico in particular have been lagging behind other countries in terms of R&D, which has made it more difficult to acquire the basic manufacturing know-how to develop successful production engineering.

Saltillo and the state of Coahuila have invested heavily in the educational institutions in Saltillo. Saltillo is currently home to twenty-one universities and technical schools including, but not limited to Universidad Tecnológica de Coahuila, Universidad Autónoma de Coahuila, Instituto Tecnológico y de Estudios Superiores de Monterrey, and Tecnológico Sierra Madre. These institutions offer degrees in mechatronics engineering, production industrial engineering, international labor law, electrical engineering, and international business, among other fields. Each year, the state, which is home to 72 institutions of higher education, graduates nearly 33,000 students from higher education institutions. This makes it the state with the highest percentage of college graduates (Davila, personal communication, 2008).

In addition to the educational institutions in the area, Saltillo is also home to several research centers such as Centro de Investigación de Estudios Avanzados del IPN (CINVESTAV), Centro de Investigación en Química Aplicada (CIQA), and Cooporación Mexicana de Investigación en Materiales, S.A. de C.V. (COMIMSA), which focus on research for ceramics, engineering and non ferrous materials, polymers, and materials in general. Several of the universities also have research centers which focus on models for regional economic analysis, the purification and application of enzymes, ceramic and
meal smelting, and biotechnology, among other areas (Davila, personal communication, 2008). A new innovation center, Centro para la Integración y el Desarrollo de la Industria Automotriz de Coahuila, A.C., CIDIAC, has also been developed in Saltillo. It focuses on the integration of local, national and international businesses into the automotive industry supply chain (Ramos, personal communication, 2009).

Similarly, Saltillo is in the process of securing land for an R&D park for the information technology (IT) industry. The government is looking to diversify the economy by supporting the IT industry. At the park in Saltillo, students, industry, R&D consultants, and agencies for the federal government would come together to generate innovative ideas for new technologies. Although Saltillo plans to build this park, the government started this project a little over a year ago and very little progress has been made. First, the government has not secured the land. In addition, it has been difficult to attain buy-in from all of the different entities. Nevertheless, the government is making the effort to develop the new IT park, which could provide opportunities for learning and give Saltillo the competitive advantage that it needs for the future. Thus, although Mexico has not invested as much in learning and research and development as countries like Taiwan and Korea or even other parts of Latin America such as Brazil and Chile, it appears that Saltillo and the state of Coahuila have invested in education and learning. However, is this sufficient to ensure that Saltillo will remain competitive in the future?

Proximity to the United States
Mexico and the US share a border of 1969 miles. In the 1980s, many companies like GM and Chrysler left the US to go to Mexico and take advantage of the cheaper labor costs. The flow of goods and services across the border has only increased since that time especially with the signing of NAFTA in 1994. Railways and highways have been established to make this exchange of goods and services easier. Mexico now exports 82% of its goods to the US and purchases about 50% of its imports from the US. In addition, the US exports 12% of its goods and services to Mexico and purchases 11% of its imports from Mexico (CIA World Factbook, 2009). Although the close connection between the US and Mexico can have a positive impact on Mexico’s economy because Mexico has good access to one of the largest economies in the world, it also suffers significantly when the US is not well, which can be a huge disadvantage.

It is also important to note that Saltillo is only a couple hundred miles from the U.S. border, which makes it easy to move goods and services from the U.S. to Mexico and vice versa. For instance, a company like Green Heck, which was originally based in Wisconsin, can produce its fans in Mexico at a lower cost because of cheaper wage rates. Because of its proximity to the U.S., it can ship four to five trucks worth of fans across the U.S./Mexican border every day. In addition, after the U.S., Mexico, and Canada signed the NAFTA agreement, it was significantly easier firms to move capital, products, and employees across the border. As a result, Saltillo’s strategic location is a competitive advantage.
Are the advantages of Mexico and Saltillo sufficient? No, why?

With the competitive advantages manufacturing experience, proximity to the US and some investments in R&D and education in Saltillo, how have Mexico and Saltillo fared? Even with the all of the foreign investment in Mexico, the country is not doing well in terms of job growth and improving inequality. This chapter will describe the current status of Mexico and Saltillo. It will also highlight the fact that the competitive advantages of cheap labor, good universities, and proximity to the U.S. for Saltillo will not be sufficient to remain competitive in the future.

Mexico

Economy

Despite large investments in Mexico, the country still has not performed well with regards to job growth, poverty, domestic investment, and growth in GDP. For instance, foreign direct investment has not had a significant impact on job growth. The manufacturing sector has eliminated jobs rather than created them since 1997. Although wages have been much higher in FDI firms in manufacturing, there has been a gap between wages and productivity increases. For instance, despite an eighteen percent increase in productivity, there has been a thirteen percent decline in wages in the manufacturing sector. As of 2003, wages in manufacturing were twenty-four percent lower than wages in 1982. For the jobs that have been created in the economy in general, 55.3% of them do not provide benefits (Dussel, 2008).
In addition, after adjusting for purchasing power, the percentage of people in extreme poverty (less than $2/day) in Mexico increased from thirty to thirty-eight percent between 1984 and 1996. The total population in poverty ($1.60-$4/day) increased from 58.5% to 79.5% during that same time period (Gallagher & Zarsky, 2004).

In addition, foreign investment has crowded out domestic investment, which has undermined market competition, leading to higher prices. Most of the crowding out has been attributed to the macroeconomic stabilization policies from the federal government, which led to high interest rates and an overvalued currency (Gallagher & Zarsky, 2004).

Finally, Mexico has only been growing at a rate of 2%-4% in the last decade, which is not very impressive, especially when compared to previous growth rates in Mexico (Dussel, 2008). In 2008, Mexico only grew at a rate of 2%. For 2009, it's estimated that Mexico will only grow by 0.5%-1.5% (Ornelas, 2008). In addition, some argue that the Mexican economy must grow at a rate of 5-6% each year to create sufficient jobs if the labor force expands at a rate of 2.5% each year. That growth rate will have to be even higher if Mexico hopes to improve the living standards of the 13 million people living in extreme poverty (Moreno-Brid, 2005).

Mexico has been very dependent on the US. Mexico sends 82% of its exports to the US and receives 50% of its foreign direct investment from the US. In addition, $30 billion worth of remittances come from the US each year. This means that even a small hiccup in the US could have a major impact on the economy in Mexico. Some say that if the US catches a cold, Mexico will catch pneumonia. Unfortunately, it is predicted that
the economy in the US will continue to contract by 0.1% through the first quarter and will only grow by 2.5% by the end of 2009 (Ornelas, 2008).

Mexico has suffered particularly under the current economic crisis. In addition to the slow rates of growth of GDP, it's estimated that manufacturing exports will decline by 3%-5% in 2009. Similarly, remittances from family members in the US have fallen by 12% since August and are expected to continue to decline. In addition, 21% of companies in Mexico plan to cut their workforce in response to the crisis. Additionally, many of the companies have decided to reduce wages, working hours, and employees’ benefits to avoid laying off workers. Similarly, some companies have introduced technical stoppages, which have been the case in the auto industry (Orlenas, 2008).

However, Mexico has maintained a small budget deficit, low inflation, and has increased its non-oil exports significantly (Moreno-Brid, 2005). Nevertheless, exports have not been a sufficiently strong engine of growth for the manufacturing sector or the economy as a whole. This is due partly to the fact that manufactured exports have become much more dependent on imports, with reduced local content and weak linkages with domestic suppliers. This is a major concern because it demonstrates limited emphasis on backward linkages and shows why the impact of manufactured exports on domestic value added has been somewhat limited.

*Spillovers in skills acquisition and innovation*

Just as Mexico’s economy has not been doing well in recent years, many note that
there has also been limited development of national skills and a lack of emphasis on innovation. Although the firms (whether foreign or Mexican) train the employees, there has been little additional investment in transferring knowledge or developing opportunities for innovation (Flores-Quiroga, personal communication, 2009). In addition, there has been mixed evidence about whether foreign firms have transferred knowledge and technologies to Mexico. In the auto industry, within five years of the arrival of foreign firms, there were three hundred ten domestic producers of parts and accessories. Although there have been some positive knowledge spillovers in the auto industry in Mexico, there has been little evidence of positive spillovers in the high tech industry. Rather than building local linkages in the high tech industry, companies sourced inputs from their global supply chains. Instead of upgrading, many of Mexico’s SMEs went out of business. Without the linkages, many companies moved from Guadalajara to China. As a result, Guadalajara is now a low-value assembly and subassembly plant for computers and other electronics to be sent to the US. When foreign firms did come to Mexico, they brought higher levels of productivity and higher wages, but created few backwards linkages with the domestic market and few knowledge spillovers (Zarsky & Gallagher, 2008). Similarly, other studies have found that foreign presence has had limited impacts on technical knowledge transfers. Zarsky and Gallagher (2008) note that although firms brought technologies, they did not add to the research and design expenditures in those countries. Spending on R&D in manufacturing fell from 0.39% in 1994 to 0.07% in 2002. Amsden and Chu (2003) argue that
government support has been critical for the transfer of knowledge from foreign to domestic firms. The limited knowledge transfer is not surprising especially since Mexico eliminated many of its restrictions when it liberalized in the 1980s and 1990s.

Saltillo

Although Saltillo has had some manufacturing experience and has been doing well the last couple decades with many new investment and job opportunities, the future is not looking so bright. For the last couple decades, Saltillo has been heavily dependent on the auto industry especially GM and Chrysler. For instance, the auto industry (including assembly and auto parts) represents about 60%-70% of the employment in the city (Trejo, personal communication, 2009). Unfortunately, recently the auto industry has not been doing well. Chrysler just filed for bankruptcy and will have to close its plants in Ramos Arizpe for thirty to sixty days during the restructuring. This means that the company will have to lay off approximately 4000 employees in the next month. In addition, GM has been restructuring and preparing to file for bankruptcy. It will have to close 2100 dealerships in the US (Bunkley, 2009). The decline of the auto industry has had major ramifications for Saltillo. For instance, Chrysler and GM have both instituted technical stoppages recently. As of a February 1, 2009, GM also laid off an additional 600 workers. As of the beginning of March, GM also threatened to lay off an additional 400 workers if it did not receive additional help from the state government of Coahuila. This has an impact on many of the suppliers. For instance, Delphi did not have any work
for about a month and a half at the beginning of 2009 because GM had not made any requests for parts (Agusto, personal communication, 2009). Despite this bleak picture, the secretary of economic development for the state of Coahuila plans to continue to count on the auto industry as the engine for economic growth in the southeastern part of the state (i.e. where Saltillo is located). In addition, the state secretary of economic development was recently quoted as saying that Saltillo will be able to produce more and absorb the production from the US. Although this will not happen in the near future, the Secretary of Economic Development argues that Ramos Arizpe will be able to absorb production from the US with its close proximity to the US, good productivity, and low cost of labor (Medina, personal communication, 2009).

It is also important to note that although the government is trying to diversify its portfolio through the information communication technology and the aerospace industries, government investments to support these industries have been slow mostly because they have been subject to a complicated decision making process.

Spillovers in skills acquisition and innovation

Has there been technology transfer in Saltillo? After all, Gallagher notes that there has been some technology transfer in the auto industry. Evidence shows that although Chrysler and GM have transferred technologies to Saltillo for the production of their cars, transmissions, and engine heads, these companies have not transferred much tacit knowledge. In addition, GM and Chrysler have not encouraged the employees at
their plants to innovate like Japanese firms have. This makes it more difficult to acquire knowledge that could allow Saltillo to remain competitive in the future, which is critical especially because Chrysler and GM continue to idle plants. As a result, it is even more important for Saltillo to generate its own knowledge and know how, rather than remaining dependent on foreign firms. Investments in education and research and development (R&D) may provide Saltillo and Mexico with the opportunity to invest in its own learning.
Chapter Two

How can Saltillo and Mexico remain competitive in the future? I will argue that industrial policy is an effective way. Has industrial policy in Mexico existed in the last couple decades? If it has existed, what policies has the Mexican government implemented?

Although Mexico has opened its markets and liberalized its trade, there are some economists in Mexico that argue that government intervention through support of particular industries is necessary. Even though the government has played a very limited role in the economy in the last couple decades, some argue that state participation in the economy is essential if Mexico wants to remain competitive (Flores-Quiroga and Tello, personal communication, 2009). One form of intervention is through industrial policy. What is industrial policy and what has it looked like in Mexico?

First of all, why government intervention? There are many arguments in favor of government planning. For instance, Amsden argues that government interventionist policies of getting prices wrong such as interference in the capital markets and development of mechanisms through which business and government could exchange information and coordinate investment decisions in places like East Asia helped create good opportunities for development. Cypher and Dietz support this statement by
claiming that markets are often do not function properly in society for countries in transition. In addition, Johnson notes that the success of Japanese model was perfection of market-conforming methods of state intervention in the economy. Even though Japan conformed to the restrictions of the market, it also had a strong government to protect its industries. In addition, evidence shows that growth was faster on average under government intervention than under the free markets in places like Latin America or Africa.

However, some would argue that these arguments are not valid. For instance, Bauer criticizes state for over-extending itself in the economy, over-emphasizing capital formation and mega-investment projects, and causing the growth of economically distorting controls in economy. Even though some of Bauer’s arguments are not well supported, other neoliberals like Krueger argue for a minimal role of the state. Some, including Chen, even claim that state intervention was absent in East Asian miracle countries and others attributed the economic success of the region to liberalizations before take-off. In addition, others also argue that governments have been unsuccessful in improving economic performance through attempts to guide resource allocations. However, Amsden refutes this claim by presenting evidence on the success of strong interventionist policies like subsidies in the case of many East Asian countries like Korea. It is apparent that while there are some concerns for a very interventionist government, it is clear that government involvement played a critical role in the success of the East Asian countries.
In places like Korea, where the developmental state was evident, government planning played an important role in ensuring successful development. For instance, the Korean government subsidized the Korean automobile industry because it often takes a long time for these industries to develop and as a result, they need some protection from outside competition. In addition, Amsden contends that exchange rates were not grossly distorted, but adjusted by the government to help stimulate exports. Evans argues that Korea was able to exercise autonomy and utilize power to provide guidance and strong, flexible linkages between state and society. With this developmental state, Korea reached annual growth rates of 9% and export growth rates of 28%. Even though Korea still conformed to the market by pursuing its comparative advantages, it still practiced interventionist policies to avoid external shocks and to ensure that its industries could compete.

This form of planning is in direct contrast to planning in Kenya, which possesses a predatory state according to Evans. In a predatory state, the appropriation of unearned income via rent-seeking becomes endemic and structural. In this state, everything is for sale and it is all for personal gain. This state is often marked by inefficiencies and corruption. In addition, evidence shows that the extended policy of import substitution in places like Latin America and Africa, which had predatory states, did not have positive effects on growth in the end. In the period after decolonization, growth rates were much lower in places like Africa and Latin America. The predatory state and policies like extensive import substitution had a negative impact on growth in countries like Kenya.
Why is government intervention relevant in the cases of Mexico and Saltillo?

First, Mexico has not done a great job of developing tacit knowledge and backward linkages with suppliers. However, suppliers in the auto industry in Saltillo have experienced some transfer of skills and technologies. According to Covarrubias (personal communication, 2009), the auto makers in Saltillo do help the auto parts companies innovate. They might help improve a process or component in the production. The auto parts suppliers are learning from their clients and the auto makers do have a genuine interest in developing innovations with their suppliers. These companies are interested in transferring knowledge and know-how to their suppliers. For instance, when Magna (automotive supplier from Canada) came to Mexico, 100% of its components came from outside of Mexico. However, now 65% of the parts are produced in Mexico. Nevertheless, with the elimination of local content requirements, it is possible that the percentage of locally produced inputs will decrease, as has been the case in other regions of Mexico like Hermosillo.

It’s not always the case that auto makers support innovation and transfer of tacit knowledge. For instance, most of the training at the auto parts producer, Delphi (also located in Saltillo), takes place in house. In addition, most of the innovation occurs in the US or the Middle East. As a result, there has been very little transfer of knowledge and innovation to Mexico as a country as a whole (Agusto, personal communication, 2009). Delphi supplies parts to GM. This serves as an example of the lack of technology and knowledge transfers that occur in the GM supply chains.
Thus, there is still the case for the government to act as a coordinator to help develop tacit knowledge and create opportunities for innovation. For instance, some argue that the government should work as a mediator and/or a coordinator for training and technical development as Rodrik (2003) argues. It can coordinate efforts between universities, research institutions, and the private sector. This will allow for exchanges of knowledge and opportunities for learning. In some sectors, there is very little collaboration between the government, the universities, the R&D centers and the private sector (Cordera, personal communication, 2009). Others also argue that the government can play an important role in coordination and complementarities of investments (Casar, personal communication, 2009). Luckily, Saltillo has a good base with the research and educational institutions in the area. However, if Mexico and Saltillo do not invest in the development of tacit knowledge, skills, and opportunities for innovation, then they will continue to fall behind. Thus, government intervention is critical.

To some extent, government has already been taking on the role of coordinator. For instance, in Cancun, the government helped solve the coordination problem of connecting the private sector and the public sector. One company might only be willing to build a hotel if someone else builds an airport, a discotech, and restaurant. The state government worked with the National Tourism Fund to provide coordination and infrastructure for this project (Flores-Quiroga, personal communication, 2009).

CONACYT (National Council on Science and Technology) is also working to pair labs at the universities with the companies that might potentially use the innovations
and technologies created in these labs. For instance, the genome lab at UNAM has worked on reversing the effects of cirrhosis of the liver. These studies could be used industry to sell a particular treatment (Ruiz Durán, personal communication, 2009).

Although these cases serve as examples of the government in the role of a coordinator, they are somewhat ad hoc and one-off examples. The national and state governments should be much more strategic about developing these connections.

Although the government has played a small role as a coordinator in some states, the state government in Coahuila has not been very strategic or proactive about attracting investments. As was the case with GM when the company wanted to locate in Coahuila, the state government often does not take a lot of action until it realizes that a company is interested in locating in the area. What has the impact been? It is apparent that the thousands of layoffs in the auto industry have not been positive for the city of Saltillo. Although the government is investing in other industries such as the IT and aerospace industries, securing buy-in from stakeholders and obtaining the financial resources have not been easy. In addition, the development of these programs has been slow due to the extensive decision-making process in the state of Coahuila. Despite the bleak outlook for the auto industry, as recently as January 2009, the Secretary of Economic Development said that the state would absorb the auto plants that close in the US and that it would remain dependent on auto industry for the next couple decades. How can the government just sit idle? Although the state of Coahuila has some industrial policy programs in place, which this paper will discuss momentarily, it appears that they are not sufficient because
if they were, the economy would not be so dependent on the failing foreign-owned auto firms. As a result, the government needs to take a more active role in economic development policy.

In addition, there are few to no requirements placed on companies in exchange for this aid. In exchange for tax breaks, infrastructure such as electricity and water, and worker training, companies like Delphi only have to promise to invest a certain amount or create a particular number of jobs. However, this requirement is often only met with the initial investment (Agusto, personal communication, 2009). This example demonstrates that passivity of the state government. Without a more active government that makes demands on the companies and develops institutional tacit knowledge, places like Saltillo will remain at the hand of the companies that run the towns. Industrial policy is one way to develop this institutional knowledge.

**Industrial policy**

One form of government intervention is industrial policy. The definition of industrial policy has changed over the last few decades. Generally, it has been defined as government intervention in and support for particular industries. In the past, it meant government support for research and design, tariff barriers, local content requirements, and performance standards, among others. These policies were more restrictive. From here on out, they will be referred to “harder” industrial policies. However, with the economic crisis in the 1980s and the institution of the free trade agreements, many of
these policies were phased out. They have since been replaced by “softer” policies such as government support for training, some research and design, and coordination within industries, among others. The question remains, is this enough? Can these industrial policies have a substantial impact on the industries such that they change the current path that they are on (i.e. do these policies encourage firms in to innovate, try new things, and develop the skills of the workers even further)?

**What are the arguments for and against industrial policy?**

First, there several arguments against industrial policy such as developing country governments do not have the capacity and competency to implement industrial policy. Others argue that there is little evidence that industrial policy has been effective. In addition, some state that the government cannot pick winners, the government interventions in industries have just led to corruption and capture of political power, and that countries do not need industrial policy, but rather, they need substantial support for R&D and intellectual property protection. Finally, some argue that with the current international rules laid out by the World Trade Organization, NAFTA, and the GATT, there is no longer space for industrial policy interventions.

Although these arguments are true to some extent, there are also several counter arguments that are very valid. For instance, there are successful cases of bureaucratic competence and lack of government intervention in which the market rules does not necessarily improve the competency of the government. Recent evidence during this
current economic crisis demonstrates that government regulation of the free market economy is necessary. In addition, there is also not a lot of evidence that industrial policy has been ineffective. In fact, most of the winners in Latin America, such as the auto industry in Mexico, were the product of industrial policy interventions. Additionally, it is true that the government cannot pick winners, but industrial policy is more about reducing the costs once mistakes have been made. Making mistakes is part of good industrial policy. In addition, although government officials can benefit from industrial policy interventions, they can also do so in the private sector as well, which has been a bonus for insiders especially in the government. Finally, although some would argue that the policy arena has been very restrictive, evidence shows that there have been many industrial policies implemented in the last few decades and Mexico is no exception (Rodrik, 2003).

For the last several decades, there have been industrial policy programs in Latin America. In fact, many of the top five export items to the US from Brazil, Chile and Mexico were the product of industrial policy. For instance, in Brazil, high levels of protection for steel and shoes and public ownership, investments in R&D, and subsidized credit in the aircraft industry provided incentives for entrepreneurs to invest in new areas of the economy. In Chile, the grape, forestry and salmon industries have also benefitted from industrial policy programs like R&D and subsidizing plantations. Finally, in Mexico, sectors like the automotive and computer industries have been successful as a result of import substitution industrialization policies and preferential tariff policies under
NAFTA according to Rodrik. So, it is apparent that industrial policies in Latin America have had a positive impact on many industries. However, countries in Latin America have not been nearly as successful East Asian countries like Korea and Taiwan. Rodrik argues that this is not because Korea and Taiwan have been state-led and the Latin American countries have been dominated by pro-market policies. Rather, industrial policy has not been as coherent in Latin America as it has been in East Asia.

What has industrial policy looked like in Mexico? First of all, import substitution industrialization began after the First World War and intensified after the Second World War in 1945. Import substitution industrialization meant that governments would manipulate market prices, barriers to entry, and access to financing to promote the development of industrialization in their own countries (Felix, 1989). Under this regime, the Mexican government adopted policies such as wage controls, exchange rate controls, and government investment in particular sectors. For instance, in the auto industry, the national government talked to GM, Chrysler, and the Japanese auto producers to set standards for local content requirements. The companies had to increase the percentage of local content over time. This had a major impact on the development of Mexican auto parts producers. After the Second World War, the government has also supported the energy sector by helping firms in petroleum and electricity clearly define the different inputs necessary for production and promoting the usage of electricity and petrol (Tello, personal communication, 2009). The government also promoted activities essential to economic growth and expansion such as steel in Monterrey, fertilizers, computers, and
pharmaceuticals. State-owned companies complemented these programs by investing in projects that the private sector could not or did not want to undertake (Moreno-Brid, 2005). The state also developed physical infrastructure such as dams, roads, railroads, ports, and telecommunications (Tello, personal communication, 2009).

A large part of industrial policy in Mexico was targeted at maquiladoras through tax-free access to imported inputs and machinery, as well as exemption from sales and income taxes. The state-owned and private banks also provided subsidized financial support for industrial activities in the maquiladora region. The goal was to stimulate labor intensive export processing plants along the northern border (Moreno-Brid, 2005).

These industrial policies as a whole were very successful as growth rates were strong and manufacturing increased as a share of GDP. However, Moreno-Brid (2005) also argues that this strategy underestimated the obstacles to development such as the unequal distribution of benefits, the failure to implement fiscal reform to strengthen tax revenues, and there were few policies in place to efficiently promote exports aside from the maquiladoras and a handful of specific sectors.

Beginning the 1980s, Mexico began to liberalize by reducing tariffs, eliminating export subsidies, removing local content requirements and reducing restrictions on foreign direct investment. In conjunction, Mexico also shifted its industrial policy significantly from sector specific programs to horizontal policies that were not supposed to target particular sectors. It created PRONAMICE, which established horizontal policies applied across all sectors to compensate for market flaws and maximize
comparative advantages.

In the late 1980s, Jaime Serra Puche, as the Secretary of Industry and Commerce under Salinas, coined the phrase, “Mexico’s industrial policy is no industrial policy.” Since that time, Mexico’s industrial policies have been phased out and replaced by softer state government inventions because the policy arena has been very restrictive since the government decided to liberalize and join GATT and NAFTA. As a result, some argue that Mexico is in a state of deindustrialization (Tello, personal communication, 2009).

Nevertheless, when the government phased out industrial policies in the 1980s, it selected to protect certain industries: auto, textiles, electronics like computers and televisions, footwear, appliances, steel, petrochemicals, and canned foodstuff production. For instance, the government put quotas in place for apparel from China. In addition, there were restrictions on imports for computers. In the auto industry, one could not import used cars from the US. In addition, there were quotas on cars from China. In combination with these programs, in 1996, the Mexican government created the Program for Industrial Policy and Foreign Trade (PROPICE). It was developed to counteract some of the negative effects of liberalization such as the delinking of production chains in the Mexican industry. In addition, the government supported programs like SIMPLEX, which informed the business community of opportunities in Mexico. However, the government did not support major subsidies and other protective barriers beyond tax rebates on imported inputs (Moreno-Brid, 2005).
Beginning with Fox in 2001, the Mexican government developed the National Development Plan that stated its objectives were to increase the creation of domestic value added and generate stronger linkages among local productive chains. In addition, it argued that the state should take a leading role in promoting international competitiveness especially in the following industries: autos, electronics, software, aeronautical, textiles, agriculture, maquiladoras, chemical, leather and shoes, tourism, trade and construction. Programs in electronics, software, leather and shoes, and textiles have been completed and launched. However, due to insufficient resources and the lag time to implement these programs, it was unlikely that they would reach their full potential. Thus, the administration’s key instrument for industrial policy was allowing tax-free imported inputs to be assembled in Mexico and re-exported (Moreno-Brid, 2005).

Some would argue that the “protected” industries have fared much better than the “unprotected” industries in the economy. For instance, Casar argues that the industries that have been the most successful under the neoliberal regime were those that were protected with performance standards and government support such as the auto and chemical industries (Casar, personal communication, 2009). Moreno-Brid (2005) also argues that some of the most dynamic sectors were the product of import substitution and state-led industrialization. However, even in industries like the auto industry, most of these policies have been phased out and replaced by softer policies of training and investments of R&D (de Soto, personal communication, 2009).

The question remains, do these “softer” policies constitute industrial policies?
What is effective industrial policy? If a company sends its accountant to be trained on new software in Korea, then is that industrial policy? If not, is sending a group of engineers to Japan to be trained on new stamping processes industrial policy? What do industrial policies actually look like on the ground? With limited space for policy intervention, will the “softer” policies actually change the trajectory of the industry? According to some, industrial policy effectively changes the trajectory of a particular industry (de Soto, personal communication, 2009). De Soto defines the changing of trajectory as affecting the growth rate or increasing the rate of investment and thus, increasing the jobs and fixed capital available. It spurs growth in areas that would not have otherwise developed (Casar, personal communication, 2009). According to Jose Casar, industrial policy is a policy that changes the location of resources in the market. Unfortunately, government intervention currently only takes place when there is a market failure such as asymmetries of information or externalities. Oftentimes, the economy under invests in training and R&D according to Casar.

*Industrial policies in the auto industry*

In the 1960s, 1970s, and early 1980s, the federal government introduced the auto decrees which established the rules for investing in the automotive sector such as local content requirements, performance standards, and production requirements. For instance, a company may only be able to produce a certain number of models (i.e. GM can only produce four types of trucks). Industrial policy in the 1970s and 1980s did play an
important role in developing a domestic base for manufacturing. For example, Mauricio de Maria y Campos (personal communication, 2009) states that in 1982, there were many restrictions on the auto industry. For instance, there could not be more than 40% foreign ownership in the auto industry. However, it was mostly big government helping big business. With the debt crisis of the 1980s and the creation of the General Agreement on Trade and Tariffs and NAFTA, there was pressure to open the market to international investments and remove restrictions on FDI. In the 1980s, the government began to phase out the auto decrees and remove the restrictions on foreign investment. For instance, the Salinas administration created the opportunity for 100% foreign ownership policy in Hermosillo, where Ford is located. Unfortunately, many of the policies that remained left very few incentives Mexican firms to invest in Mexico. For instance, Mexican firms were left out of the contract negotiations for PEMEX. In addition, it was difficult for Mexican firms to acquire access to credit, which made it difficult to switch from production of shoes to more advanced manufacturing like auto parts production. Similarly, because there was not a lot of national ownership of the companies, there was limited development of national skills and innovations (Flores-Quiroga, personal communication, 2009).

Until a few years ago, there were still industrial policy programs in the auto industry. They were phased out much more slowly in the auto industry as compared to other industries (de Maria y Campos, personal communication, 2009). The government still supports the auto industry to some extent, but it mostly supports large international
firms, which are not Mexican owned. In exchange for the government support of the national and international firms, there are very few production and performance requirements (Flores-Quiroga, personal communication, 2009). Others agree that there have been very few or no targets and performance standards with regards to price, quality control, and national content. Most of the performance standards are set by the individual companies.

*Industrial policies in the state of Coahuila*

Fortunately, the state of Coahuila has implemented some policies to help support the auto industry. For instance, companies can apply to get credit for up to 2 million pesos. This is particularly important because although firms might not have to put down collateral when they apply for a loan with a private bank, they might have to meet a restriction like having an account for four years at that bank before they can apply for a loan, which makes it very difficult for firms to apply for a loan. There are few restrictions for applying for this credit from the state. Some of the restrictions feature companies cannot be operating at a loss and they must have been in business for at least two years. In addition, the state government provides funding for worker training (Ramos, personal communication, 2009).

The state also gives what is equivalent to 85% of minimum wage for training workers.

In addition, companies like GM and Chrysler can apply for subsidies for
innovation through the National Council for Science and Technology (Gomez, personal communication, 2009). They can get an additional tax cut if they can demonstrate that they achieved results (Gomez).

Additionally, the state government meets with companies in the auto industry to discuss ways in which the government can aid the firms (Ramos and Gomez, personal communication, 2009).

Similarly, the state helps by eliminating the 2% payroll tax. The government often provides companies with a break on the payroll tax for the first three months that they are in the state according to Covarrubias. In the city of Saltillo, a three month break on the payroll tax is one of the most widely used incentives to attract firms (Davila, personal communication, 2008) Although the tax breaks for companies hurt revenues, the government compensates for these losses through taxes from additional workers (Gomez, personal communication, 2009).

The state government has also started a program called CIDIAC, which was created to foster collaboration between the private sector and the public sector in the auto industry and develop local knowledge of technologies and innovations. This program was created six years ago to improve relations within the auto industry and increase knowledge and innovation within Mexico. It is managed by COACYT and funded by the companies and the state and federal governments. Unfortunately, it only exists on paper right now because the funding is not available. This example makes the case for why states need additional financial support especially if it is going to try to implement
industrial policies like creating an organization like CIDIAC.

Unfortunately, these programs are very new and there has not been an evaluation of them yet. In general, there has been little evaluation of the government programs. This is mostly due to lack of capacity and funding (Medina, personal communication, 2009). The lack of evaluation of industrial policy programs makes it very difficult to measure the impact of these projects, so governments do not have the feedback necessary to make adjustments.

In addition, the government’s efforts have focused on maintaining and trying to expand the current industries (primarily the auto industry). There is little indication that this will change in the future. However, this is very problematic as Chrysler continues to idle its plants and GM is threatening to lay off another 400 workers (in addition to the 600 workers that the company has already laid off). Chrysler will likely lay off an additional few thousand workers for the next couple months (Vanguardia, 2009).

Similarly, the state government has not created a lot of opportunities to develop innovation and tacit knowledge despite the presence of research centers and universities (Davila, personal communication, 2009).
Chapter Three

What are some of the greatest challenges to implementing industrial policies? How can Mexico and Saltillo overcome these challenges?

This chapter will outline some of the major challenges to implementing industrial policy in Mexico and Saltillo. It will then address some of these challenges as they relate to current and future industrial policies.

First, it is apparent and important to note that industrial policy has been occurring in Mexico. Although it has not manifested itself in traditional industrial policies of tariffs, local content requirements, and quotas, softer forms of industrial policies have been implemented more recently. Governments (especially at the subnational level) have been investing in training for workers, some R&D, and coordination of the public and private sectors to increase opportunities for learning. So far, it is apparent that these policies are not sufficient as Mexico and Saltillo continue to fall behind.

If the government were to implement additional industrial policies, what challenges would it face? According to information gathered through interviews with economists, there are many challenges to implementing industrial policy in Mexico including current ideology, lack of shared vision for planning, few opportunities to secure credit, and lack of capacity and resources to fund these programs. Even despite these challenges, industrial policy is being implemented.
Challenges for industrial policy in Mexico

To some extent, industrial policy has been largely absent from the policy arena in Mexico during the last two and half decades. However, Mexico’s economy has not fared very well during this time. The sectors of the economy that have been successful had very strong industrial policies in the 1970s and 1980s. Nevertheless, many of those programs and policies have been phased out during the last two decades. With that being said, there are many prominent economists (de Maria y Campos, de Soto, Clavijo, Cordera, Casar, Tello, persona communication, 2009) from Mexico that are arguing to put industrial policy back on the agenda because Mexico needs to be more strategic about its investments. However, it is not going to be easy. There are several challenges to implementing effective industrial policy in Mexico. Here are a few of the challenges that the national and state governments face when trying to put industrial policy back into practice.

One of the greatest challenges to implementing industrial policy in Mexico is the current ideology and approach to industrial policy. After all, for the last couple decades, the industrial policy in Mexico has been no industrial policy. The focus has been on neoliberal policies of reducing trade barriers and opening the market further. Many of the “hard” industrial policies have been phased out. For instance, performance standards such as output or quality control in exchange for government tax credits or support for training have been removed (Flores-Quiroga, personal communication, 2009). According
to Casar (personal communication, 2009), the greatest challenge to implementing successful industrial policy is also changing the mind of policy makers. In addition, Cordera (personal communication, 2009) also agrees that one of the largest challenges to effective industrial policy is ideology as the current ideology stresses limited government intervention. Similarly, de Soto (personal communication, 2009) argues that it will be difficult to change the ideology of the government because Mexico is tied to the policies of NAFTA, the GATT and the WTO. After signing on to these organizations and their free trade policies, Mexico has little leverage to advocate for government interventionist policies despite the fact that countries like the US do not practices completely free trade practices. For instance, the US provides heavy agricultural subsidies to their farmers, which has been a major concern especially for developing countries that export agricultural products.

In addition, one of the other great challenges to implementing effective industrial policy is a lack of shared vision and strategic approach to planning. Casar (personal communication, 2009) argues that the federal government does not have a shared vision for Mexico’s economic development. De Soto (personal communication, 2009) agrees that one of the greatest challenges for implementing effective industrial policy in Mexico is a lack of vision in the central government. Clavijo (personal communication, 2009) also notes that Mexico needs to know where it wants to go. He thinks that Mexico must understand its preferences given its constraints. He argues that industrial policy is necessary. Right now, Mexico accepts many of its investments without asking for
anything in return. 82.2% of Mexico’s exports go to the US. Mexico is dependent on its endowment of resources and the US market. Without a shared vision, Mexico cannot be strategic about its economic planning. Many times, without some sort of vision, Mexican governments end up being reactive rather than proactive. For instance, it was not until GM said that it was interested in settling in Ramos Arizpe that the government made an offer of land. In addition, the government did not know that GM was interested until the GIS notified the government (de la Pena, personal communication, 2008). If the government had been more proactive and strategic, it might have been able to make more demands on GM in exchange for the land and other amenities that the officials offered.

So, why is there a lack of vision in Mexico? It’s likely that the political system in Mexico has an impact on the lack of vision. First, Mexican officials cannot be re-elected. As a result, many officials are trying to attract as many investments as possible during their terms, so that they appear to be good public representatives and will be elected to higher level positions after they complete their terms. For instance, according to some, the governor of Coahuila, Humberto Moreira Valdés, is aspiring to become the next president of Mexico. As a result, he is trying to attract as many companies to the region as possible and build as many overpasses as he can (Flores Dewey, personal communication, 2009). Although attracting investments can be good for the city because new investments usually means new jobs, many of the economic development projects have been ad hoc and not part of a larger strategic plan. Even if the governor is strategic about his economic development programs, each time the governor changes, then the
staff changes as well, which means that knowledge is lost and programs lose ground. In
addition, even if someone is appointed to the position of the secretary of economic
development, there is no guarantee that she/he will remain in that position through the
end of the governor’s term. This makes it very difficult to create long term strategic
investments in the region.

In addition to a lack of vision, there are concerns that the banks may not lend to
the firms, which could limit opportunities to take advantage of industrial policies.
Especially with the current credit crisis, there are reasons to believe that banks may not
allow firms to take out loans that could allow them to push the envelope in terms of
training techniques and opportunities for innovation (Flores-Quiroga, personal
communication, 2009). Ruiz Durán (personal communication, 2009) agrees that
financing in Mexico is very restrictive. Companies must meet very strict guarantees in
order to take out a loan and many companies cannot meet these guarantees. Others argue
that the development banks need to be revived in order to implement effective industrial
policies. In addition, many of the banks in Mexico are owned by foreigners such as
Santander, which is owned by people in Spain (Tello, personal communication, 2009),
which makes it more difficult for the government to take over the bank if necessary.

Another great challenge to implementing successful industrial policy in Mexico is
the lack of tax revenues. The lack of revenues from taxes complicates the situation.
Mexico’s tax revenue as a percentage of GDP represents 10%, which is much lower than
Chile, Brazil, and the OECD countries at 17%, 21%, and 27%, respectively. In addition,
Pemex indicated that its loss in the third quarter increased to $1.04 million and that oil production fell by 9.8% to 2.755 million barrels a day. This has major ramifications for tax revenue as 36% of the total income for the government originates from oil taxes (Ornelas, 2008). In addition to revenues from oil taxes, the Mexican government generates revenues from the income tax and the value-added tax (Lajous, personal communication, 2009). Without the resources, it will be difficult to implement effective industrial policies as the government needs resources to pay for expensive investments like R&D. One of the reasons why governments and not private companies provide the resources for R&D is because it is so expensive. When companies do invest in R&D, they often need patents to protect their products or processes on which they spent a great deal of time and money. In addition, R&D often benefits society as a whole, so governments are more likely to pay for it. However, if Mexico has limited resources to fund programs for R&D, it will make it more difficult to implement this industrial policy and have an effect on the industry.

Many of these challenges have played themselves out in the past. For instance, in the mid 1980s, the government tried to establish PRONAFICE, which was created with the idea that selective import substitution of capital goods would restart the slowing economy. However, this program was never implemented due to lack of financial support and the anti-government intervention sentiment in Mexico (Moreno-Brid, 2005).

Similarly, the program that was established in place of PRONAFICE, PRONAMICE, which focused on horizontal policies, was not very successful due to
insufficient resources. With inadequate funding and other forms of support, this program did not make significant gains in ameliorating some of Mexico’s deep-seeded problems such as technological gaps, weaknesses of national innovation system, lack of long-term financial resources, and inadequate investment to modernize machinery and equipment (Moreno-Brid, 2005). Many people concluded that the programs failed to develop Mexico’s potential to become a leader in exporting manufactures, beyond its assembly activities of importing tax-free goods that would be assembled and re-exported.

Even more recently, many of programs outlined in the National Development Plan 2001-2006 will not have the chance to have significant positive outcomes due to inadequacy of funds and the long delay of putting the programs in place (Moreno-Brid, 2009). These examples demonstrate that many of the challenges that face Mexico today have affected the country for some time.

Although the challenges listed above affect the implementation of industrial policies on the national and subnational government levels, for the last couple decades, the state has been promoting many of industrial policy projects (Clavijo, personal communication, 2009). If there is not a lot of industrial policy at the federal level, then is there room for industrial policy at the subnational level? Many of the large decisions have already been made on the federal level and the states have very little money and leverage. Unfortunately, local governments in Mexico do not have a lot of space to implement fiscal policy (Tello and Flores-Quiroga, personal communication 2009). They also have limited opportunities to raise revenues. For instance, only 25% of the state
revenues are self-generated through a yearly tax imposed on the use of cars and the payroll tax. Most of the states’ resources come from transfers from the federal government (Lajous, personal communication, 2009). In terms of incentives, local governments can offer tax breaks, free land, and training for workers, but they cannot set tariffs, subsidies, etc. (Flores-Quiroga, personal communication, 2009). However, industrial policies have been decentralized and the local governments are now more responsible for implementing policies, which is difficult with the fiscal limitations and inadequate space for policy interventions (de Soto, personal communication, 2009). Subnational governments have to be particularly careful when implementing policies like tax breaks because this could create a tax war between the states or cities and decrease the revenues available to fund public goods projects (Tello, personal communication, 2009).

If industrial policies are actually going to reside with the state governments, then the federal government should give additional power and funding to the states according to Clavijo (personal communication, 2009). Right now, 75% of the fiscal expenditures come from the federal government. Only 25% reside with the states. Unfortunately, the states do not currently have the capacity to take on additional programs and policies. For instance, the CIDIC program in the state of Coahuila has the potential to build up internal knowledge and spur innovation. However, it is not continuing right now because there are insufficient funds. In addition, there currently is not enough capacity or funding to pay for evaluation of the government programs. If there is actually going to be
devolution of responsibilities to the states, then this must be met with control and resources to ensure that the states have the capacity to implement the programs.

Similarly, in the state of Coahuila, one of the greatest challenges to effective industrial policy is the politics that are involved in the decision making process. Many times, the governor has the final say in policy implementation. If he/she does not agree with a program, then it will be difficult to get approval. In addition, as the paper discussed earlier, because elected officials cannot be re-elected to that position, many public officials are looking to promote themselves and move on to the next position. Although this means that governors usually try to attract many investment opportunities, this also means that they typically do not have a long-term vision for the state (Gonzalez, personal communication, 2009). This is case with the current governor of Coahuila.

Finally, although no one in the state or national governments discussed evaluation as a challenge, it is a critical concern because without evaluation, there are no feedback mechanisms to tell the government how to adjust or change its programs. Although it is apparent that the protected industries in Mexico like the electronics and auto industries have fared better than the unprotected sectors, there has been very little evaluation of the specific programs and policies. It seems that evaluation of programs at the state and national levels would provide government officials with useful information about how to reallocation resources. Without this feedback, they will continue to reinforce the status quo, which is not good enough for places like Saltillo.
How can Mexico and Saltillo overcome the challenges to implementing industrial policy?

After two decades of no or limited industrial policy, it will be difficult to implement effective industrial policies. So, under what conditions could Mexico create effective industrial policies? Where there are industrial policies, how can the conditions be improved to make them more effective?

First, it’s useful to start with current industrial policies. To some extent, the government has been acting as a coordinator as are the cases in Cancun and the CIDIAC program in Coahuila. If the government acts as a coordinator, then what challenges might it face and how might it overcome those challenges? For instance, in the case of CIDIAC, the program is not currently going on right now because there are insufficient funds and a lack of capacity to continue this project. If the state government is going to take on the role of coordinator, then this responsibility must be met with resources for projects and increases in capacity, whether that means hiring another government worker or training existing workers to run these programs. This may mean that Mexico has to increase its taxes and that the central government may have to give states more opportunities to generate their own revenues. In addition, this means that governments will also have to evaluate their capacity to implement these programs. There is a lot that can be gained from a program like CIDIAC such as tacit knowledge and opportunities for innovation. For instance, Agusto (personal communication, 2009) at
Delphi (a GM auto parts supplier) said that there have been no connections established between Delphi and the government for technology and knowledge transfer. Delphi receives its technology from a plant in El Paso, TX. If CIDIAC were running, then Delphi might be able to take advantage of some of the innovations created under CIDIAC in exchange for transferring knowledge to CIDIAC. By building up institutional knowledge, this will in turn give Mexico and Saltillo an opportunity to think more strategically about its investments rather than being reactive. It may also give Mexico and Saltillo the opportunity to make more demands on companies that locate the region because it has more skilled workers and knows more about the technologies and innovations that the company uses.

In addition, if the Saltillo wants to be more strategic about its long-term investments and industrial policies, then it will have to ensure that someone is thinking strategically about economic development projects. It is unlikely that this will occur with the current political system as governors are elected every six years and cannot be re-elected. It may be possible to elect or appoint a planner who could serve for a term longer than the governor who could think more strategically about the investments in Saltillo. It might also be possible to elect or appoint a team that could transfer institutional knowledge to the next group once the governor changes. However, putting a planner or team of planners in charge becomes very difficult because in most states, the governor has the final say on economic development projects. This might mean that Mexico has to change its laws to allow for the opportunity for re-election. Regardless of
how it occurs, Mexico and Saltillo need to create a shared vision and think more strategically about investments in economic development projects. So far, a lack of shared vision has been a challenge to implementing industrial policy.

Another barrier to effective industrial policy is lack of credit. Creating mechanisms to give companies access to credit, so that they can take advantage of industrial policy program will be critical. Coahuila has demonstrated that the state can provide credit if the private banks won’t do it. With that being said, Coahuila demands very little in exchange for credit. Companies can use the money for whatever they need as long as they repay the money. Because states have few incentives that they can offer to companies, one thing that they could put forward would be credit. However, in exchange for the credit, the states could require that companies invest a certain amount of money in innovation. There is a program at the national level which rewards companies if they produce an innovation. CONACYT works to promote innovation. From CONACYT, companies receive subsidies to develop new technologies. If they do develop new innovations, then the firms will receive a tax break of up to 30% (Gomez, personal communication, 2009). It may be possible to couple this with a program that ensures that companies transfer knowledge and skills to build up institutional knowledge within Mexico which has been lacking according to Flores-Quiroga (personal communication, 2009).

Although many of these programs and recommendations are applicable to state level policies, according to some, Mexico actually needs a national framework with a lot
of flexibility for local action (Cordera, personal communication 2009). Clavijo (personal communication, 2009) argues that state policies should be framed within a national framework. Guiding this framework would be organizations like NAFINSA, CONACYT, the Ministry of the Economy, and SEMARMAT to make sure that the policies can be changed quickly. These policies have to come from the national government, but the government could also create councils at the state level to oversee industrial policies according to Casar (personal communication, 2009). In addition, the national government could also adopt an industrial policy council that would be chaired by someone in the cabinet according to Casar. Support from the national government will make it easier to secure resources, create a shared vision and experiment with industrial policies. According to de Soto (personal communication, 2009), past industrial policies worked because they were supported with money, regulation, power, and political backing. However, creating a national framework is going to be difficult because one of the greatest challenges to implementing industrial policy in Mexico is the ideology. Changing from a neoliberal philosophy to a more interventionist ideology is not going to be easy. However, with current state of the economy, pro-free trade countries like the United States are intervening in their economies more. If there is an ideological shift worldwide toward a more interventionist state and if Mexico continues to grow at a very slow rate, then there may be an opportunity to examine and try out more aggressive industrial policies.

Another way in which one might change the current view of industrial policy is
by proving that it is effective. If a government (state or national) can implement a program and demonstrate that it has had a positive impact on the industry, then it can demonstrate that industrial policy works. History has shown that most of the successful industries in Latin America have been the product of industrial policy, but evaluation of these programs would make their successes more legitimate. In addition, evaluation can provide very useful feedback information, so that governments can change and adjust programs and policies. Some initiatives are going to fail, but with feedback loops in place, the governments can learn from these mistakes. Thus, evaluation is critical to prove that industrial policy works and that policy makers can adjust the programs when there are feedback mechanisms in place. This will ensure that the industrial policy programs are more effective.

If Mexico can create a national framework despite the current ideology, many argue that flexibility will be necessary. Casar and Cordera (personal communication, 2009) both agree that there must be flexibility and opportunities for action at the local level. Obviously, states, cities, and even companies vary significantly in terms of their needs. As a result, although a national framework is necessary to ensure that the resources are available, states and cities need to have the flexibility to implement their own policies. This means that they will need the resources and capacity to carry out these policies. In addition, as Casar argues, failure is possible. The policies and mechanisms need to be flexible enough to adjust to changing times. Similarly, the state needs to be more flexible about its institutional arrangements. This means focusing on
the means rather than the ends of industrial policies.

If Mexico and Saltillo can overcome the challenges of implementing industrial policy, what will the policies look like?

Although overcoming the challenges of implementing industrial policy is going to be a challenging task, to some extent, it is necessary because Mexico is growing at a very slowly, poverty has increased, and jobs in manufacturing have declined. What industrial policies make sense for Mexico?

Some would argue that there should be better incentives and reward companies for human capital development and innovations (Flores-Quiroga, personal communication, 2009). This is because there has been limited support to develop the skills and encourage innovations. In addition, some argue that Mexico needs increase the productivity of its workers. This has been successful to some extent in the auto industry. The auto sector pays the highest wages in Mexico because the workers are more productive (Flores-Quiroga, personal communication, 2009). In addition, others argue that the government should invest in technical training (Cordera and Ruiz Durán, personal communication, 2009). Others mentioned that one of the greatest challenges in Mexico is the lack of training and capacity. Many people are very hard working, but they do not have the capacity to move beyond skills for basic manufacturing in food, textiles, and auto parts (Ruiz Durán, personal communication, 2009). De Soto also argues that the capacities of the individual workers vary significantly and that workers could benefit
from additional investments in skills. Moreno-Brid (2005) also argues that the special
programs to support particular industries should be met with financial and human
resources.

De Soto (former General Director of Planning and Evaluation of the Ministry of
Economic Development, personal communication, 2009) argues that Mexico could put a
lot of money into R&D, education, and the creation of design centers. It could also build
scientific cities as was done in places like Korea and Taiwan. Although states like
Coahuila are working to create IT parks based on models in Korea, the development of
these parks has been slow. Moreno-Brid (2005) also argues that policies to promote
technological innovation in manufacturing are also important.

In addition, some argue for more traditional industrial policy interventions such as
more credits for local content requirements (Flores-Quiroga, personal communication,
2009). Others also argue for local and national content requirements because Mexico
needs to develop its local knowledge and supply base (Cordera, personal communication,
2009). Although Moreno-Brid (2005) does not explicitly argue for local content
requirements, he does state that new policies to favor linkages with local suppliers are
necessary. This is particularly important for Saltillo, as the city will have to innovate and
develop other skills, so that it will not remain so dependent on the failing auto industry.

Others argue that the government needs to help the economy explore ways to
innovate and send resources toward more productive resources. This may mean that it is
necessary to provide a stimulus to more than one activity (Casar, personal
Regardless of the policies that governments implement, the policies should be consistent and comprehensive. This means that programs should not target just one subsection of an industry. Industrial policy should be coordinated to ensure that it will have an impact on the trajectory of an industry. As was the case in Cancun, the government developed a program to coordinate the hotels, discotechs, etc. to ensure that the program would have a positive impact on the tourism industry (de Soto and Flores-Quiroga, personal communication, 2009).
Conclusion

In the end, implementing industrial policy in Mexico is not going to be easy. However, governments are executing industrial policies in Mexico especially at the state level. With that being said, there are opportunities to improve the climate under which governments implement these policies such increasing funding and capacity especially at the subnational level and working toward a shared vision of planning, which will require an adjustment in the current ideology.

There are several areas of research that one could examine in the future. For instance, it would be useful to document successful cases of industrial policy programs in Mexico in a more in depth manner, so as to learn from best practices within Mexico. Although examples from outside of Mexico are very helpful for lessons learned, cases from Mexico would be much more helpful as the policy framework within the country is very restrictive for industrial policy programs.

In addition, it would be interesting to evaluate the effectiveness of the current industrial policy programs such as investments in training and R&D. Are they actually changing the trajectory of the industry or generating new activities? De Soto argues that the current policies are not comprehensive enough and have not had a significant impact on particular industries. However, this is very difficult to evaluate because governments have not had the time and resources to monitor and assess these programs. Although it is difficult to do this with limited resources, money and energy could be spent much more efficiently if the government evaluated the programs. Assessment would also provide...
insights into whether the government should continue with the current “softer” industrial policy programs or it should advocate for more aggressive policies such as local content requirements or performance standards.
Works Cited


