A HIGH-TECH, LOW EMPLOYMENT FUTURE IN THE MANUFACTURING SECTOR- A CORRECT CONCLUSION?

A paper contributed by the
Mexican National Strategy Team

Introduction
Mexico has undergone dramatic changes in its economic structure in the last decades: from being one of the most closed economies to being one of the most open ones in the world.

An import substitution model had been implemented in the 40s, even though its viability had subsided in the 70s, giving way to a more outward-oriented export model. This paradigm shift was intended to provide the Mexican economy with a more competitive framework and to create more competition among firms to the benefit of efficiency and consumer satisfaction.

The purpose of this paper is to present how Mexico has coped with an export-oriented manufacturing industry, while maintaining its labor platform active.

1. The In-Bond Industries and the Manufacturing in Mexico

In Mexico, a unique concept was developed in the 60 s, as a response to the increasingly higher cost of labor force in two main economies: Japan and the United States of America.

Since World War II, the manufacturing industry dramatically evolved from a single production plant to a more sophisticated network of production plants away from one another. This paradigm change was developed along with a production process specialization: some factories specialized in the manufacture of intermediate goods while others did it in finished products.

As an answer to growing unemployment in Mexico -mostly in the northern states of the country- in 1965 the Government decided to implement –by means of a Law- a Northern Border Industrialization Programme, which represented the initial steps to develop a “Maquiladora” or “In-Bond Industry Programme”. At the outset, this law required export “maquiladora” companies to establish within the northern border.

Two features were essential to the development of the “Maquiladora” Industry: On one hand, the low cost of labor force, and on the other, the elimination of a Temporary Workers Programme in 1964 causing many Mexican workers become redundant, creating a serious unemployment situation. In addition, strong international competition in the 60s forced many U.S. firms to relocate their facilities to Mexican territory, in order to reduce operational costs and to remain competitive.

As of 1972, this law allowed for companies to set up nationwide, not only in the northern border.

This initiative was intended to have Mexico benefit from its geographic proximity to the largest market in the world, as well as a flexibility in the United States’ customs practices.

In 1973, a milestone occurred, as 100 % foreign – owned “maquiladora” companies was allowed.

2. Relationship among Employment, Manufacturing and Export Activity

The second half of the 20th century was marked by a dramatic increase in world trade.

Between 1970 and 2000, world trade increased more than 370 percent.

Production sharing has played a key role in the growth of world trade in recent decades.
Firms have turned to production sharing to stay competitive.

Production sharing, or trade in intermediate goods, represents more than $800 billion in trade annually.

Maquiladora-led U.S.–Mexico trade is primarily intra-industry trade (or production sharing).

About 80 percent of U.S. trade with Mexico is intra-industry.

After the initial phase, maquiladora industry employment growth falls into three periods:
--high growth (80's),
--consolidation and post–NAFTA growth (90s)
--and what I call the transition period starting in 2000

The high-growth era started with the 1982 peso devaluation. Because most maquiladoras have dollar-denominated budgets but pay costs in pesos, the 1982 devaluation substantially reduced peso-denominated operating costs.

In addition, in 1986, Mexico also joined GATT currently known as WTO, abandoning 42 years of protectionism and antitrade sentiment. Over the 80's maquiladora employment averaged 16 percent annual growth.

The consolidation era was characterized by a strong peso and continuing economic openness. Mexico's December 1994 peso devaluation and NAFTA gave a second boost to the maquiladora industry. The peso depreciation of over 60 percent encouraged maquiladoras to again expand operations.

Maquiladora employment grew 11 percent per year, on average, from 1990 to 1999.

--A fall in global demand, increasing global competition combined with inefficient manufacturing processes were the main reasons for the employment declines observed in 2001, 2002, and 2003. Currently, the industry seems to be in a transition from low value added--high labor intensive to modern capital intensive manufacturing allowing the industry to gain back some of those jobs lost.

Industry Evolution
While jobs have grown, maquiladoras themselves have changed drastically since 1965. Maquiladoras can be classify into three generations based on the nature of their manufacturing operation

- First-generation maquilas are typical of the earliest plants: highly labor-intensive with limited technology and dependent on decision from parent company. Textile maquiladoras are a typical example.

- Second-generation plants are oriented less toward assembly and more reliant on manufacturing processes. Such firms use automated and semiautomated machines and robotics. In addition, they employ more technicians and engineers. Maquiladora plants that manufacture auto parts, television sets and electrical appliances are examples of second-generation plants.

- Third-generation maquilas are research oriented, with emphasis on design and development. They rely on highly skilled labor, such as specialized engineers and technicians. Delphi's Mexico Technical Center in Ciudad Juárez, where Mexican engineers develop products, such as oil sensor and brake systems for automobiles, is a good example of a third-generation maquiladora.

The importance of maquiladora industry to the Mexican economy:

--Maquiladora exports represent almost 50% of Mexico's total exports

--The industry employs 10% of formal employment

--and on average pays 20 % more than other manufacturing industries

The maquiladora industry is the second most important foreign exchange generator, only after oil revenues. In fact maquiladora industry was number one from 1998 to 2004. Given current energy prices, oil has taken the lead again.

The 2001 U.S. recession took a heavy toll on Mexico's maquiladora industry.

--From October 2000 to June 2002, the industry lost more than 260,000 jobs; about 76 percent in border states.

--From May 2001 to June 2002, about 420 plants closed.

The maquiladora industry has been highly cyclical since its inception, falling into its first recession in 1974 with an 11.5 percent decline in employment.

The cyclical nature of the maquiladora industry is not surprising, given its close ties to U.S. manufacturing.

Throughout the latest recession and slow recovery, manufacturing was the hardest hit part of the U.S. economy, and maquiladora output and employment generally followed the lead of U.S. industrial production.

In mid-2003, however, strong U.S. industrial growth finally returned, and maquiladora employment has returned to recovery as well.

Currently, maquiladora employment is at 1.2 million still 115,000 short of employment levels before the 2001 recession. About 80 percent of maquiladora employment is located in border states.

US and Mexico are connected through trade. Since NAFTA took effect, U.S. trade with Mexico has risen 250 percent with the maquiladora industry as the main vehicle.

Within the 15 largest U.S. exports to Mexico and the top 15 U.S. imports from Mexico in 2005, eleven categories appear on both exports and imports, indicating extensive intra-industry trade.

Electrical machinery and appliances, for example, were the top U.S. export to Mexico and also the third-largest import from Mexico. Road vehicles was the second largest U.S. export to Mexico but also the top U.S. import from Mexico.

This two-way exchange implies each country is sending the other the same product, just at different stages of production.

For example, in the computer and electronic products category, the United States may send Mexico chips and software, while Mexico sends assembled computers back to the United States. This is an example of U.S.–Mexico trade through the maquiladora industry.

Transportation, chemicals and machinery are doing quite good since January 2000, with more than 65,000 new jobs. Electronics is still 30 000 jobs short, while the Textile sector has lost 100,000 jobs.

The electronics sector is the largest employer with 32% of total maquiladora employment, followed by transportation with 23% and Textile is still the third with 14%.

The maquiladora industry is experiencing moderate growth. Last year, employment grew 5.7 percent. Even though, we have new maquiladoras opening in Mexico, such manufacturing operations are small, less labor intensive. As the plants move from labor to capital-intensive, we cannot expect a return to 16 percent annual job growth.

3. What lies ahead ? - The Impact of High Technologies on the Level of Employment: The Mexican Case

Experts talk about a new maquiladora model, essential to keep the industry as a world player with:

--Emphasis on attracting/retaining high-tech plants.

--With quick “Just in Time” (JIT) response for customers in volatile markets.

--Full-fledged efforts toward vertical integration of the industry and more value-added production.

--and maquiladoras having their own business model with engineering, R&D at maquiladora level.

Main competitive sectors for the future will be:

--Automotive parts and components
--Aerospace
--Electronics (high-end, i.e. large LCD flat screen TVs)
--Software
--Metal mechanics
--Medical/hospital instruments and supplies

To conclude, we should expect:

A return to annual growth rates of double-digit is extremely unlikely, at least in the near future.

As more capital-intensive manufacturing becomes the norm, employment growth will likely be slower than in the past, while wages should be higher.

Hence, there is a structural component to the past downturn, 4th generation maquiladora?

Low wage jobs are most at risk, most notably the apparel and some electronics sectors.

The maquiladora industry must focus on developing more efficient processes, since Managers can no longer rely on peso devaluations to absorb increasing labor costs.

Identify regional comparative advantages; work together to maximize benefit.

Output growth and productivity, rather than jobs, will measure the success of the next generation of maquiladoras.

On the other hand, technology has dramatically reduced the price of many products, which are now accessible to more market segments than before. This situation, has generated an increase in demand, and, consequently, more production and employment.