

Crossroads

ECONOMIC TRENDS IN THE DESERT SOUTHWEST

U.S.–Mexico Manufacturing: Back in the Race?

by Roberto Coronado and Marycruz De León

ABSTRACT: After joining the World Trade Organization, China made great strides in global manufacturing. But in recent years, manufacturing has shifted back to North America, and in some sectors, Mexico has a clear advantage over China. North America's improved manufacturing outlook bodes well for the U.S.–Mexico border region.

Since the implementation of the North American Free Trade Agreement (NAFTA), trade between the U.S. and Mexico has seen tremendous growth, increasing from approximately \$160 billion in 1994 to currently over \$530 billion. For the U.S., Mexico has become its third most important trade partner (after Canada and China), and for Mexico, the U.S. is the top trade partner.

Due to NAFTA's reduction in tariffs and elimination of trade barriers, U.S.–Mexico intraindustry trade has also expanded notably. Currently, approximately 40 percent of content in U.S. imports from Mexico originated in the U.S., surpassing the U.S. content in imports from Canada (25 percent) and China (4 percent).¹ The increased bilateral trade and production sharing between the U.S. and Mexico resulted in stronger economic integration among the two countries and in a synchronization of the U.S. and Mexico business cycles, as depicted in Chart 1. It is clearly visible that in the post-NAFTA period, both U.S. and Mexico industrial production became quite synchronized (*Chart 1*).

As trade between both nations has

grown and as their business cycles move more in step, the border region has been at the core of this process. Not only is the border the point of entry and exit for goods, but manufacturing is also one of the main drivers of border economies. The Paso del Norte region, comprising El Paso, Ciudad Juárez and Las Cruces, boasts over 250,000 manufacturing employees, making the region one of the largest manufacturing hubs in North America.

China Joins the World Trade Organization (WTO)

After NAFTA, Mexico enjoyed a surge in manufacturing and exports to the U.S. However, once China joined the WTO in 2001, China's share of U.S. imports began to steadily rise, while Mexico's market share began to fall. With its entrance into the WTO, China became more integrated into the global economy, and with its abundant population, it provided cheap labor. Companies left North America to establish factories in China, and industry analysts expected China to rule global manufacturing.

Yet, data and recent studies show that has not completely occurred.² In

recent years, China has lost competitiveness due to rising labor and transportation costs, causing some manufacturers to “reshore” to North America. Meanwhile, manufacturing in the U.S. and Mexico has been boosted by lower energy costs, productivity gains and Mexico’s structural reforms. China’s share of U.S. imports has stagnated over the last five to six years, while Mexico has been gaining market share, reversing, to some extent, the trend that began in 2001 (Chart 2).

The outlook for manufacturing along the U.S.–Mexico border, due to its

importance to the region and the changes in the global landscape, was discussed at a Federal Reserve Bank of Dallas conference, “U.S.–Mexico Manufacturing: Back in the Race?” held in late 2015 in El Paso, Texas. The sessions provided updates on the current state of manufacturing in the U.S. and Mexico, an overview of automotive manufacturing, a look at emerging sectors and a view of manufacturing on the border. What emerged from the conference was a picture of a changing industry with growth opportunities not only for the U.S. and Mexico but for the border region as well.³

The Changing Face of U.S. Manufacturing

Marc Levinson, section research manager at the Congressional Research Service, discussed changes seen in U.S. manufacturing in recent years, especially regarding job creation.

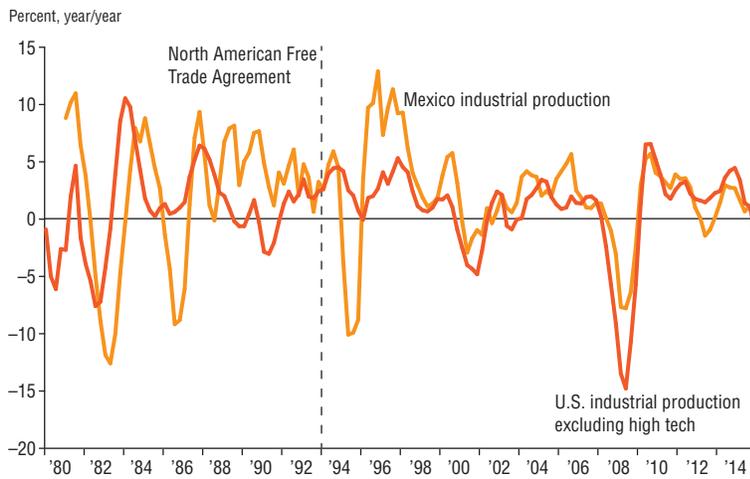
Due to rising productivity, U.S. manufacturing output has risen significantly over the past five years, but manufacturing employment has not. Levinson stated that this is a common trend among all high-income countries. Smaller proportions of manufacturing workers are involved in physical production, while larger shares are engaged in managerial and professional work. Most manufacturing jobs no longer involve physical transformation of goods, but instead, transportation, design, engineering and professional management services. These changes are reflected in increasing skill requirements for manufacturing workers and severely diminished opportunities for workers with only a high school education.

Levinson also pointed out the difficulties in adequately measuring the industry. For example, purchased services account for a rising share of gross value in auto, aircraft, apparel and textile production. However, these services are not included in manufacturing. Instead, they are accounted for in services, logistics or information sectors. Intellectual property is also not adequately captured. U.S. intellectual property exports are undercounted and cannot be linked to imported goods. For example, if the concept for a good originated in the U.S., but the good was manufactured in a foreign country, the good will have no U.S. value in the recorded trade statistics. However, the good stems from a design that was produced in the U.S. Thus, we have a misguided picture of the manufacturing industry and a trade deficit that appears much larger than it should be.

Mexico’s Global Value Chains

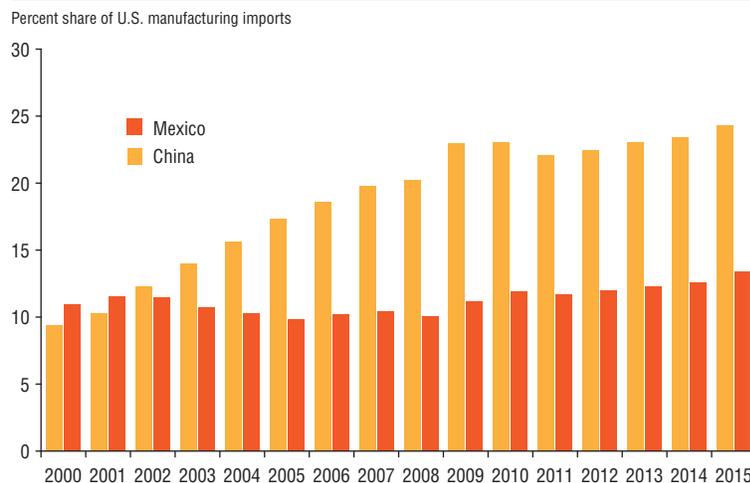
Technological improvement and trade liberalization have facilitated the breakdown of production processes, leading to increased levels of production sharing. Nowadays, a good is manufactured not in one country but in several countries. This increase in production sharing leads to an issue concerning the measurement of value added and contributions each coun-

Chart 1 U.S.–Mexico Business Cycle Synchronization



SOURCES: Federal Reserve Board; Instituto Nacional de Estadística Geografía e Informática (National Institute of Statistics and Geography).

Chart 2 U.S. Market Share—China vs. Mexico



SOURCES: “Mexico’s Manufacturing Trade Performance: A Global Value Chain Approach,” Daniel Chiquiar, Federal Reserve Bank of Dallas conference, “U.S.–Mexico Manufacturing: Back in the Race?” Oct. 9, 2015.

try makes to the production of goods.

Daniel Chiquiar with Banco de Mexico presented his research on the use of global value chains to measure the number of production stages that occur in Mexico and China, which allows trends in value added in each country to be calculated. He concentrated his analysis on the following sectors: automotive, nonautomotive maquiladora⁴ and nonautomotive nonmaquiladora.

His results show that in the automotive industry over the last 10 years, Mexico has significantly increased its value added by producing more domestic inputs. Mexico's comparative advantage in automotive manufacturing far exceeds that of China. In the nonautomotive maquiladora sector, Mexico is now contributing more to the later stages of production and is exporting a more finished good than it was 10 years ago. However, in this sector, China holds a comparative advantage. In the nonautomotive nonmaquiladora sector, China's production of inputs has skyrocketed, increasing its production stages.

Chiquiar concluded that Mexico continues to compete with China, but the countries are increasingly specializing in different sectors. In addition, Mexico has gained world market share and, therefore, reversed the negative pattern that was observed after China entered into the WTO.

Mexico's Bright Auto Future

In NAFTA, there were several key provisions that impacted Mexico's auto industry, making it one of the big beneficiaries of the agreement.⁵ Since 1994, Mexico's auto production has been on an upward trend. In 2008, Mexico displaced Canada as the second largest auto producer in North America, and by 2014, its light vehicle production reached over 3 million units. Approximately 75 percent of these vehicles are exported to North America (U.S. and Canada). Mexico is also a big player in auto parts. One-third of all auto parts imported to the U.S. come from Mexico, making Mexico the leading supplier to the U.S. In addition, a significant portion of auto parts are produced in maquiladoras along the U.S.-Mexico border.

Tom Klier from the Federal Reserve Bank of Chicago discussed the agglomeration of auto plants and suppliers. In 1985,

most major assembly plants were located in the Detroit area. But by 2013, manufacturing plants began to locate not only in the southern U.S. but also in Mexico. Since suppliers may sometimes serve several assembly plants, they tend to cluster near them. In addition, as the need for just-in-time inventory has grown, suppliers are more likely to be close to the plants they supply. As assembly plants have migrated to the southern U.S. and Mexico, so have suppliers.

Mexico's standout performance in auto manufacturing stems not only from its growing clusters and supply chain but from several other elements as well. According to Eduardo Solis, president of the Mexican Automotive Industry Association, Mexico's attractiveness is also attributed to its young and skilled workforce that is eager to learn. Solis also referred to the country's economic stability and its geographic location. Finally, Mexico's attractiveness also stems from the numerous trade agreements, which allow manufacturers to export duty-free to countries other than the U.S.

Mexico's auto industry is expected to have a strong future. Not only is Mexico an attractive country for investment, but also, vehicles tend to be produced in the region in which they are sold; thus, Mexico will continue to be a viable place to manufacture vehicles. As seen in Chart 3, by 2020, it

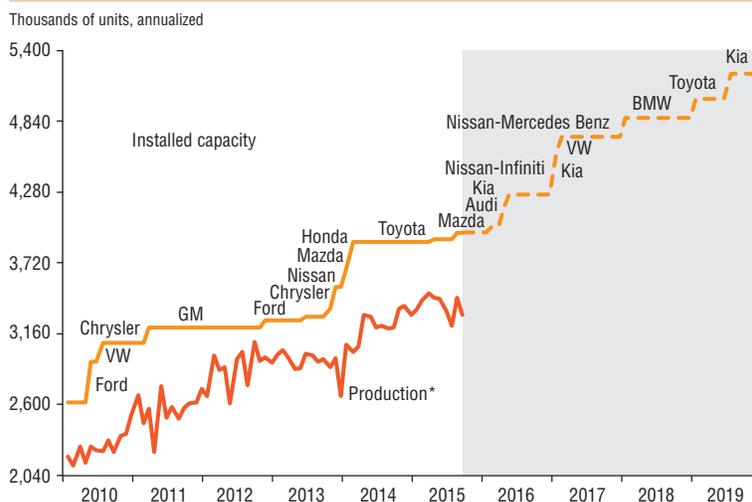
is expected that Mexico will have installed capacity to produce 5 million vehicles.

Emerging Sectors

Luis Lizzano from the Mexican Federation of Aerospace Industry (FEMIA), discussed Mexico's growing aerospace industry. The industry was essentially nonexistent until the early 2000s, but it has become one of the fastest growing industries in Mexico. Exports have boomed, with annual growth averaging 17 percent over the last 10 years. In 2014, exports totaled \$6.4 billion, placing it as the sixth largest supplying country to the U.S. Mexico currently has more than 300 production plants with presence in 18 states, and it employs over 43,000. Lizzano reported that there are five main regions in Mexico where the majority of aerospace activity is concentrated, with four of those five regions located on Mexico's northern border. The presence of these clusters in northern Mexico is good news for states like Texas as it leads to increased trade flows and border economic activity.

Prospects for the aerospace industry are very promising and the industry is expected to double within the next five years, Lizzano stated. By 2020, Mexico is projected to be ranked 10th among the aerospace countries, have exports of over \$12 billion, employ over 110,000 and account for over 50 percent of Mexican

Chart 3 Light Vehicles Production and Installed Capacity



*Seasonally adjusted data for production.

NOTE: Shaded area and dashed line represent forecasts.

SOURCES: "Overview of the Mexican Economy," Alejandrina Salcedo, Federal Reserve Bank of Dallas conference, "U.S.-Mexico Manufacturing: Back in the Race?" Oct. 9, 2015.

manufacturing value added. Lizcano also stated that the industry is currently driven by the commercial aerospace market. Mexico's aerospace industry has not even begun to tap into the defense industry, so large opportunity and new markets exist.

Mexico has made significant inroads into its emerging medical device manufacturing industry and has evolved to manufacture more Class III devices, which have the most stringent quality requirements. Mexican manufacturers of these devices follow the same rigorous regulatory guidelines as manufacturers throughout the world. Mexico's northern border states of Baja California and Chihuahua are leading the country's growth in the industry.

The growing strength of the medical device manufacturing industry in Mexico, particularly in Chihuahua and Juárez, is beneficial to the Paso del Norte region. Emma Wollschlager Schwartz, president of the Medical Center of the Americas in El Paso, discussed her work on establishing a biomedical cluster in the Paso del Norte region. The growing medical device industry in Juárez, and its high-quality, cost-effective and high-skilled manufacturing, is one of the many assets already in place for the cluster to be successful. In addition, the region boasts three medical schools, six institutions of higher education and various organizations dedicated to commercializing technology. Schwartz said there is much work and collaboration to be done for a biomedical cluster in the Paso del Norte region to be successful, but the components of the cluster are already in the region.

Where the Rubber Meets the Road

Manufacturing, particularly maquiladoras, is a very important driver of the Paso del Norte regional economy. Jerry Pacheco, president of Global Perspectives

Integrated Inc., moderated a panel on the challenges and benefits that being on the border offers manufacturers. The panel included Hector Gutiérrez, executive director of Delphi Mexico, Lance Kearbey, director of operations of Refrigeration & Fabric Care Electrolux North America and Alan Russell, president and CEO of Tecma Group.

All panelists mentioned that one of the biggest benefits to their operations is being strategically located on the border where they can manufacture at a cost-effective price but still be close to the U.S. market. They also mentioned the automotive and electronics clusters already in place in the region, which give them access to suppliers.

Challenges for border manufacturers include the Juárez image. Due to the violence that occurred in the city years ago, Juárez is still struggling to clean up its image. This is a hurdle to attracting more suppliers to the region. Infrastructure also remains one of the biggest challenges on the border. The lack of adequate infrastructure at the international ports of entry leads to long border wait times, hindering efficiency. A more current challenge is the labor shortage. Over the last year, maquiladoras have posted robust growth, creating a tight labor market. The panelists discussed the high turnover rates they are currently experiencing and the need to increase bonuses and benefits to attract and retain workers.

What's Next?

Over the last 20 years, there has been tremendous growth in manufacturing and in bilateral trade. Low energy prices, coupled with increased productivity, will continue to provide a cost-effective environment for manufacturing. In addition, the growing clusters in auto and aerospace will

continue to attract not just suppliers but also original equipment manufacturers.

Timothy Kehoe, professor of economics from the University of Minnesota, discussed that if Mexico is to move on to greater economic growth, however, it needs to eliminate barriers to productivity gains. He stated that barriers to growth and productivity in Mexico include poor financial institutions, lack of contract enforcement, problems in labor markets and problems with crime. Although Mexico has implemented reforms and has posted economic gains, there is still much work to be done to move to the next stage of economic growth.⁶

Coronado is assistant vice president in charge and senior economist and De León is a senior research analyst at the El Paso Branch of the Federal Reserve Bank of Dallas.

Notes

¹ See "Give Credit Where Credit is Due: Tracing Value Added in Global Production Chains," by Robert Koopman, William Powers, Zhi Wang and Shang-Jin Wei, National Bureau of Economic Research, NBER Working Paper no. 16426, December 2011.

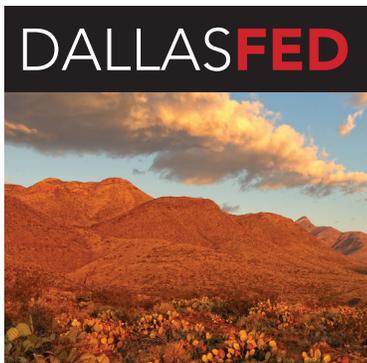
² See "The Shifting Economics of Global Manufacturing," by Harold Sirkin, Michael Zinser and Justin Rose, Boston Consulting Group, August 2014.

³ In this article, we provide a brief summary of the ideas and topics discussed at the conference. However, due to space limitations, we excluded some topics/presenters. The complete conference presentations and agenda can be viewed at www.dallasfed.org/research/events/2015/15us-mexico.cfm.

⁴ Maquiladoras are manufacturing operations in Mexico that assemble imported components into exportable products that are free of import and export duties.

⁵ See "The Growing Importance of Mexico in North America's Auto Production," by Thomas H. Klier and James M. Rubenstein, Federal Reserve Bank of Chicago *Fed Letter*, no. 310, May 2013.

⁶ See "Catch-up Growth Followed by Stagnation: Mexico, 1950–2010," by Timothy J. Kehoe and Felipe Meza, Federal Reserve Bank of Minneapolis, Working Paper no. 693, November 2012.



Crossroads

is published by the El Paso Branch of the Federal Reserve Bank of Dallas. The views expressed are those of the authors and should not be attributed to the Federal Reserve Bank of Dallas or the Federal Reserve System.

Articles may be reprinted on the condition that the source is credited and a copy is provided to the Research Department, El Paso Branch, Federal Reserve Bank of Dallas.

Crossroads is available on the Bank's website at www.dallasfed.org.

Roberto Coronado, Editor

Dianne Tunnell, Associate Editor

Ellah Piña, Graphic Designer

El Paso Branch
Federal Reserve Bank of Dallas
301 E. Main St.
El Paso, TX 79901-1326
915-521-5231