

# Economic Watch

## Mexico

May 5, 2014

Economic Analysis

Mexico

Arnulfo Rodríguez  
arnulfo.rodriguez@bbva.com

Alma Martínez  
ag.martinez2@bbva.com

## Mexican manufacturing exports gained competitiveness in 2002-2012\*

- During the 2002-2012 period, the share of total exports in GDP gained 6.8 percentage points.
- But most growth took place between 2007 and 2012. Out of those 6.8 percentage points, 5.7 were put on in the 2007-2012 period with non-basic manufactured goods as the main source of this increase.
- In regard to these manufactured goods, Mexico is the only country out of the most important ones in Latin America that shows an advantage (in relation to the world) in this type of production.
- In contrast to other important Latin American economies, international trade hard data suggest evident competitiveness gains for Mexican manufacturing between 2007 and 2012.
- In that five-year period, the factors that might help explain these gains are the following: a more depreciated real effective exchange rate compared to 2002-2007, the downward trend of unit labor costs and progress in manufacturing labor productivity.
- Nevertheless, achieving gains in competitiveness seems to have become more difficult since 2011, mainly due to a reduced momentum in manufacturing labor productivity and to other supply-side factors (labor and product markets).

### Among Latin America's most important economies, Mexico is the only one in which non-basic manufacturing exports predominate

In the 2002-12 period, the share of basic manufacturing<sup>1</sup> exports (the most intensive ones in primary resources) in GDP fell in some Latin American countries (Argentina, Brazil and Colombia) but increased in others (Chile, Mexico and Peru). As for exports of non-basic manufactured goods<sup>2</sup>, Mexico is the only country where these have increased their weight (see Figure 1). In terms of total manufacturing exports, their share in GDP has only increased in the case of Mexico, Peru and Chile.

---

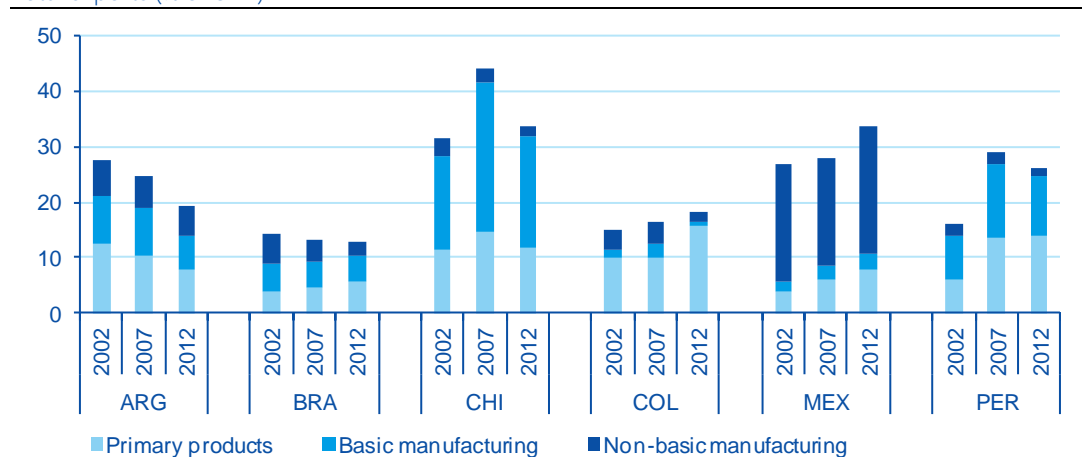
\* This document is based on the content of Working Paper N° 14/11, "Competitiveness in the Latin American manufacturing sector: trends and determinants," published in March 2014 by BBVA Research. Arnulfo Rodríguez is one of the authors of this competitiveness analysis.

<sup>1</sup> Basic manufactured goods refer to food and beverages, tobacco, wood, paper, iron, steel and other metals.

<sup>2</sup> Non-basic manufactured goods covers chemicals, plastic and rubber products, textiles, garments, leather, footwear, machinery, electronics, transport equipment and other industries.

It is worth mentioning that exports of primary products<sup>3</sup> from Mexico account for 57.6% of the 6.8 percentage points gain in the ratio of total exports to GDP over this decade. In such ten-year period, basic and non-basic manufactured goods exports contributed with 13.8% and 28.6% to that rise, respectively. As for the 2007-2012 period, this ratio went up by 5.7 percentage points. In contrast to what happened over the longer period, non-basic manufacturing exports made the biggest contribution, explaining a 62.1% of the respective gain.

Figure 1  
Total exports (% of GDP)



Source: BBVA Research with data from WITS

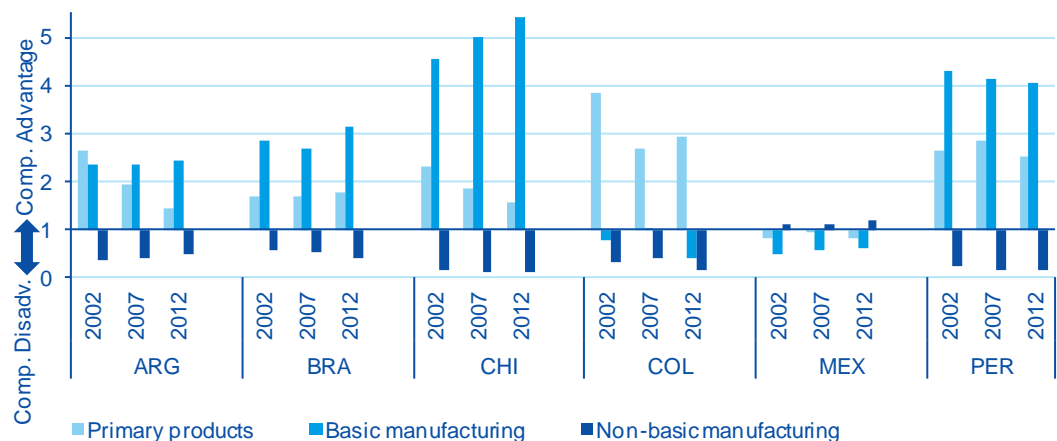
### Also within the most important Latin American economies, Mexico is the only one with a relative advantage in non-basic manufactured goods

International trade data enable us to measure the competitiveness of a country's exports by sector through the Revealed Comparative Advantage (RCA) indicator.<sup>4</sup> For the 2002-2012 period, Mexico and Argentina were the only economies in which this indicator went up for both basic and non-basic manufactured goods. Moreover, within the most important Latin American economies, Mexico is the only nation with a relative advantage in non-basic manufactured goods (see Figure 2). In contrast, Mexico has a relative disadvantage in the case of basic manufactured goods.

<sup>3</sup> Primary products include agriculture, meat and dairy products, fish and shellfish, mining, oil and gas. In the case of Mexico, oil exports are the most important of these product categories. Between 2002 and 2012, the value of oil exports rose by 249.9%. Nevertheless, the volume of these exports fell 26.4% over this same period.

<sup>4</sup> Revealed Comparative Advantage is calculated as the ratio between the share of a sector in a country's exports and the same sector's share in world exports. When this indicator is greater than one, then the country is said to have an advantage in this sector compared to the world average.

Figure 2  
Indicator of Revealed Comparative Advantage by products group

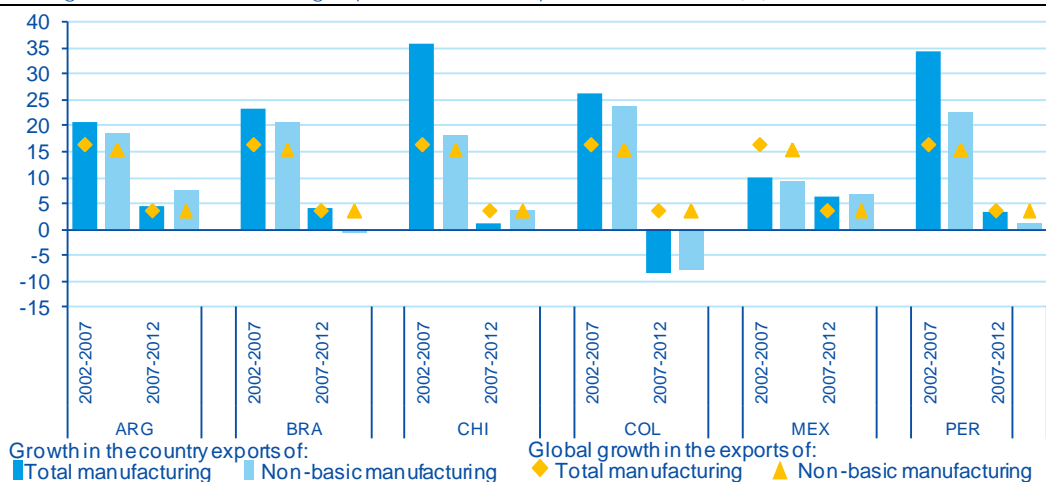


Source: BBVA Research with data from WITS

### Mexico is the only Latin American country with most evident competitiveness gains between 2007 and 2012

Most Latin American countries showed growth rates above the world average between 2002 and 2007, but below, or only slightly above, from 2007 to 2012. This suggests competitiveness gains in the first five-year period and a deterioration or stagnation in the second. An important exception to this pattern of behavior is Mexico, whose manufacturing exports grew less than the world average up to 2007 and more in the 2007-2012 period (see Figure 3).

Figure 3  
Annual growth in manufacturing exports: Latam compared to the world (%)

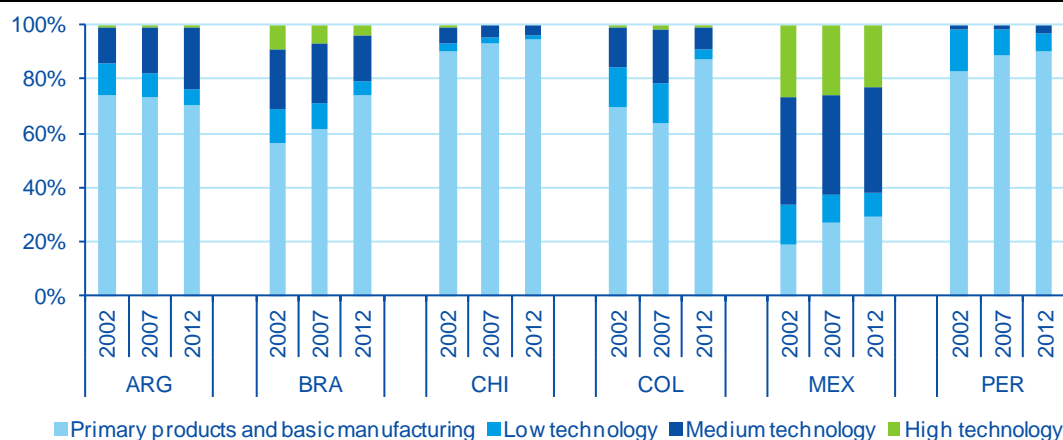


Source: BBVA Research with data from WITS

## Unlike other Latin American economies, Mexico stands out for its share of technologically sophisticated exports

The weight of the most sophisticated manufactured goods (medium- and high-tech) in total exports went down in most Latin American countries between 2002 and 2012 (see Figure 4). This was mainly due to a strong growth in the value of raw materials exports over the course of those ten years. In the case of Mexico, the weight of the most sophisticated manufactured goods went down to 62.0% from 66.3% over this period. Nevertheless, the share of these manufactured goods in Mexico compares very favourably with those of other Latin American economies.

Figure 4  
Exports by technological classification



Source: BBVA Research with data from WITS

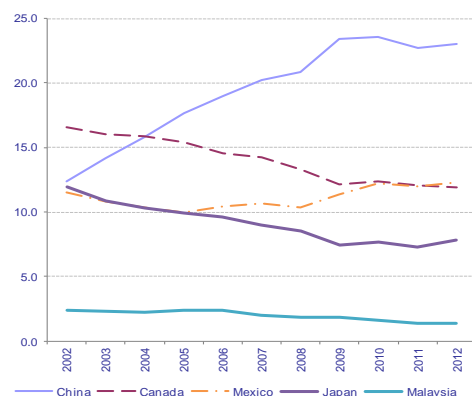
## Larger market share in US manufacturing imports

Mexico's manufacturing exports accounted for 12.3% of such imports into the US in 2012. This figure is an improvement over the posted shares of 2002 and 2007, which stood at 11.6% and 10.6%, respectively. This indicator of market share suggests that the competitiveness of Mexico's manufacturing exports improved between 2002 and 2012 and also from 2007 to 2012. Moreover, in both of these periods, all of Mexico's main manufacturing competitors -with the exception of China- experienced a decline in their share in US manufacturing imports (see Figure 5).

## Depreciation of the real effective exchange rate until 2010

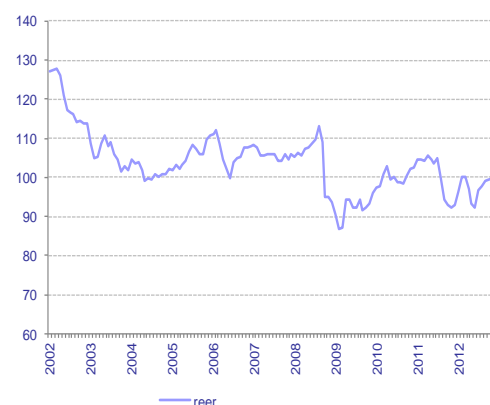
Although there has been a depreciation of the real effective exchange rate over the last decade, its behavior has been more erratic since 2010, without a clear continuation of the downward trend (see Figure 6). This has probably influenced the recent performance of manufacturing output, which has not benefited from such trend over the previous years. Without a path of further depreciation of the real effective exchange rate, the competitiveness of manufacturing production will be more determined by factors such as labor productivity and real wages.

Figure 5  
Share in US manufacturing imports (% of total value)



Source: BBVA Research with data from USITC

Figure 6  
Real effective exchange rate (Index 2010=100, based on consumer price indexes)



Source: BBVA Research with data from BIS

### A positive wealth effect of the terms of trade with a relatively more favorable impact on manufacturing over the period 2002-2012

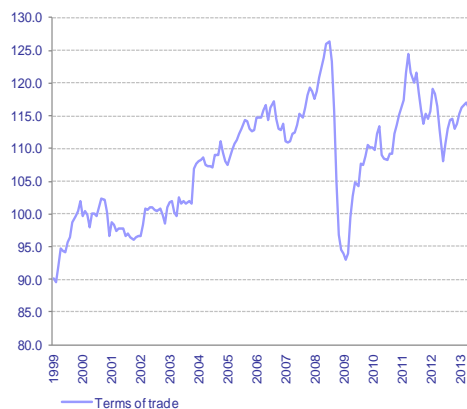
The terms of trade showed an accumulated increase of 12.7% from 2002 to 2012 (see Figure 7).<sup>5</sup> Given the relatively high contribution of oil to Mexico's fiscal revenues, this increase would necessarily have resulted in a positive wealth effect for the economy as a whole.<sup>6</sup> However, this effect might have been unevenly distributed across the manufacturing and tertiary sectors. This would have been reflected in an uneven performance by these sectors in terms of job creation and real wage increases. In order to determine whether this was the case, the perceptions of manufacturing producers about the behavior of real wages over that period were compared to those of service providers. This was done by adjusting the annual average wages of workers affiliated with IMSS (Mexico's Social Security Institute) according to the price indexes corresponding to tertiary and manufacturing production. In addition, consumer perceptions of wages' behavior were also assessed by using the national CPI as the price deflator.

As can be seen from Figure 8, between 2002 and 2012, both consumers and service providers perceived a real salary increase, while manufacturing producers perceived the opposite. The perception of a decrease in real wages by manufacturers might indicate that they benefited more than service suppliers from the wealth effect over this period. In other words, the relatively higher level of manufacturing prices enabled this sector to become more competitive by providing it with a larger room for maneuvering to offset cost pressures coming from the inputs market.

<sup>5</sup> It is worth mentioning that the terms of trade collapsed in the 2008-2009 global recession to levels not seen since 1999. This was due to sharp falls in the international trade of both durable goods and oil prices. Nevertheless, the recovery in global activity in subsequent years enabled the terms of trade to increase at a rate even higher than that between 2002 and 2012.

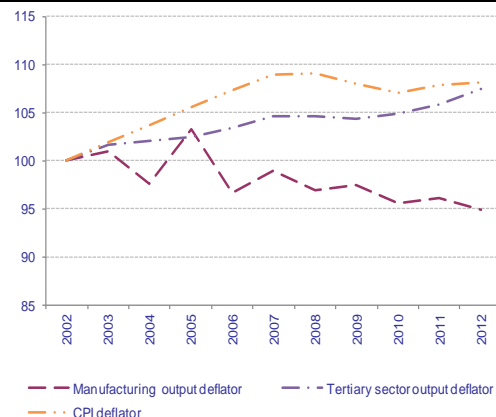
<sup>6</sup> From 2002 to 2012, Mexico's public-sector oil revenues averaged 34.3% of total fiscal revenues.

Figure 7  
Terms of trade (Index 2002=100)



Source: BBVA Research with data from Banxico

Figure 8  
Real average annual wage (Index 2002=100)

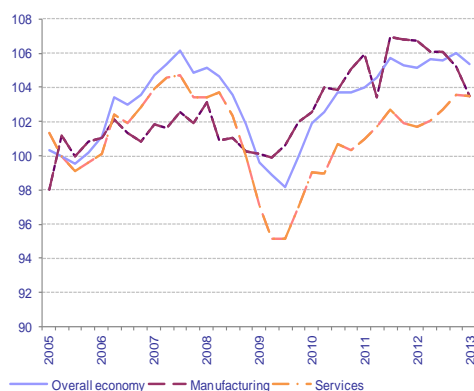


Source: BBVA Research with data from STPS and INEGI

## Manufacturing labor productivity increased from 2007 to 2012, but slowed down towards the end of the period

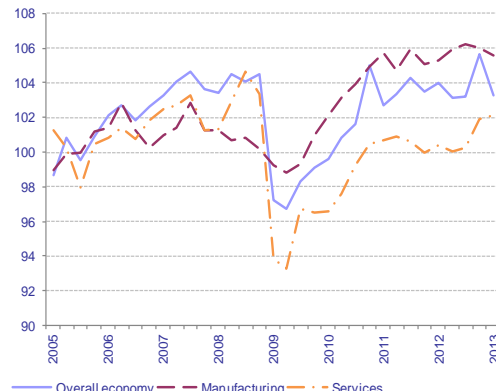
Manufacturing labor productivity indicators showed accumulated increases from 2007 to 2012. The indicator based on hours worked showed a 3.2% increase over this period, while the indicator based on occupied people was up 4.7%.<sup>7</sup> However, these increases were slowing down towards the end of the period (see Figures 9 and 10). In recent years, labor productivity in the service sector has been closing out the gap in relation to manufacturing labor productivity.

Figure 9  
Employment productivity (Index 2005=100, SA, based on hours worked)



Source: BBVA Research with data from INEGI

Figure 10  
Employment productivity (Index 2005=100, SA, based on occupied people)



Source: BBVA Research with data from INEGI

<sup>7</sup> The determining factors in labor productivity could be similar to those of total factor productivity (TFP). Salgado-Banda and Bernal-Verdugo (2007) explore the factors determining TFP and labor productivity in a study of Mexico's manufacturing sector. They found that the adoption of technology and human capital have a positive and significant effect on both types of productivity.

## Two factors favored manufacturing competitiveness between 2007 and 2012: falling unit labor costs and stagnant real wages

There was an accumulated fall in unit labor costs from 2007 to 2012. The most important contribution to this fall came during the period following the 2008-2009 global recession (see Figure 11). By relying on information up to the second quarter of 2012, these costs fell by an accumulated 4.4% from the fourth quarter of 2009. This positive effect on manufacturing output reinforced the positive impact of the wealth effect described in the previous section.

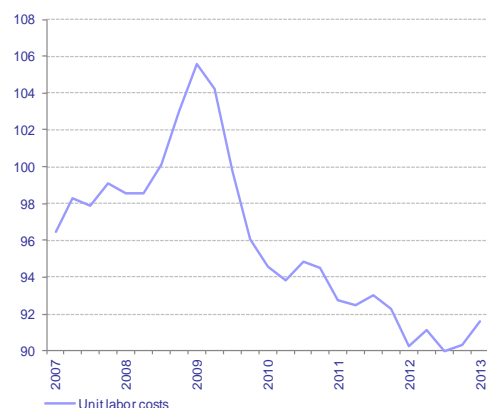
Despite higher labor productivity over the last three years, real average wages in the manufacturing industry have been stagnant. This seemingly contradictory situation is explained by the accounting identity relating real compensation for labor with labor productivity. This identity is given by:

$$\frac{Y_L}{P_C L} \equiv \frac{Y}{P_Y L} \frac{Y_L}{Y} \frac{P_Y}{P_C}$$

where  $Y_L$  is total nominal compensation to labor;  $P_C$  are consumer prices measured through the consumption deflator;  $L$  is hours worked;  $Y$  is nominal output; and  $P_Y$  is the production deflator. The three terms to the right of the identity sign correspond to labor productivity, the share of labor in output and the ratio of producer prices to consumer prices, respectively.<sup>8</sup>

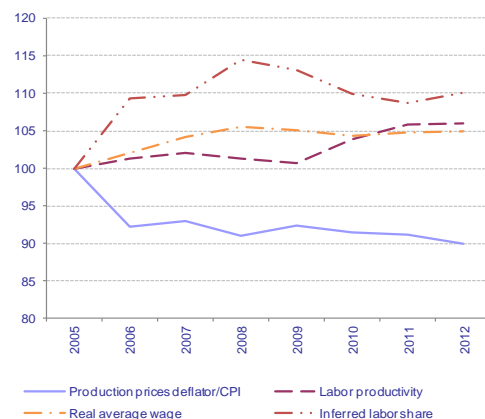
The results suggest that the participation of labor decreased by an accumulated 3.8% between 2008 and 2012 (see Figure 12). Given that relative prices of production to consumption remained relatively stable over this period, the lower participation of labor probably offset the positive effect of increased labor productivity on real wages. Although this conclusion should be treated with some caution, as wages are only a part of total labor compensation, higher labor productivity together with stable real annual wages would imply a more competitive manufacturing industry over the last three years.

Figure 11  
Unit labor costs in manufacturing (Index 2008=100, SA)



Source: BBVA Research with data from INEGI

Figure 12  
Real average annual wage in manufacturing (Index 2005=100)



Source: BBVA Research with data from STPS and INEGI

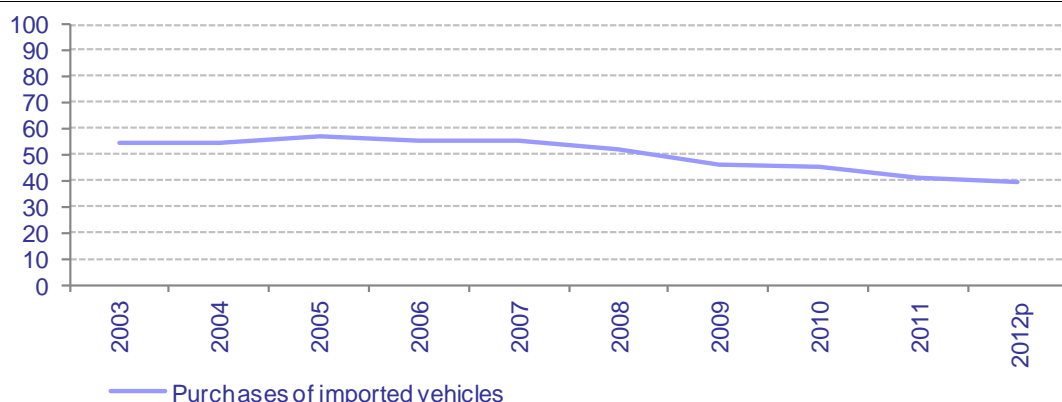
<sup>8</sup> Sharpe, Arsenault and Harrison (2008) discuss the importance of both the participation of labor in production and the ratio of production prices to consumer prices to understand the relationship between labor productivity and compensation to this factor of production. However, it is worth mentioning that wage data were used rather than total labor compensation when applying the accounting identity to the Mexican manufacturing industry.

### Gains in the automotive industry: key to the country's economic growth

The automotive industry has been the key to Mexico's economic growth over recent years. In particular, automobile output stands out, increasing from approximately 2 million units in 2007 to 2.9 million units in 2012. The importance of this industry to Mexico's economy is indisputable: it contributed with 2.6% and 15.4% to GDP and manufacturing output in 2012, respectively. The figures for 2008 were 2.0% and 11.9%, respectively. Automobile exports represented 29.3% of the country's manufacturing exports vs. 24.1% in 2008.

Although automobile exports have grown as a share of manufacturing exports, it would be interesting to analyze their imports to provide an alternative measurement of domestic competitiveness. In particular, the proportion of imported vehicles in total domestic automobile consumption has been on a downward trend since 2005, which became more evident with the restructuring of world automobile production following the 2008-2009 global recession (see Figure 13). This would suggest that this alternative measurement of competitiveness recorded gains in the periods 2003-2012 and 2007-2012.

Figure 13  
Share of imported automobiles in total domestic automobile consumption (%)



Source: BBVA Research with data from INEGI

### Marginal improvements in logistics and global competitiveness, although still lagging behind major manufacturing competitors

The World Bank's 2012 Logistics Performance Index placed Mexico in 47th place out of 155 countries, up three places from 2010. However, its main manufacturing competitors -such as Japan, Canada, China and Malaysia- were in 8th, 14th, 26th and 29th places, respectively.<sup>9</sup> A detailed analysis of the index shows that Mexico scores lower on all six of its components than the aforementioned competitors. In particular, it stands out the lower absolute and relative ratings of customs efficiency.

In its 2013-2014 Global Competitiveness Report, the World Economic Forum (WEF) mentions that trade facilitation and other measures to reduce transaction costs are the key factors to the location of production capacity in a vertically integrated global system. This puts Mexico at a disadvantage against most of its main competitors. For example, the cost of containers for delivering Mexican exports was \$1,450 USD in 2012, much higher than the costs in Japan, China and Malaysia (see Figure 14).

<sup>9</sup> The Logistics Performance Index reflects the perceptions of a country's logistics by taking into account the following factors: 1) the efficiency of customs clearance process; 2) the quality of trade- and transport-related infrastructure; 3) the ease of arrangement competitively priced shipments; 4) the quality of logistics services; 5) the ability to track and trace consignments; and 6) the frequency with which shipments arrive on time.

This Global Competitiveness Report also placed Mexico in 55th place out of 150 economies, compared to the 60th place it occupied in the 2008-2009 Report. One of the areas that helped improve Mexico's ranking in this index was innovation (see Table 1). However, competitors such as Japan, Canada, Malaysia and China were in 9th, 14th, 24th and 29th place, respectively.

By analyzing the performance of the index components for Mexico, labor market efficiency is singled out for its unfavorable position (see Table 1). Mexico was in 113th position on this component, a long way behind Canada, Japan, Malaysia and China, which occupied the 7th, 23rd, 25th and 34th positions, respectively. In our opinion, labor productivity increases will only be marginal until the efficiency in the allocation of workers among the different sectors of Mexico's economy improves and salary rigidities decrease.

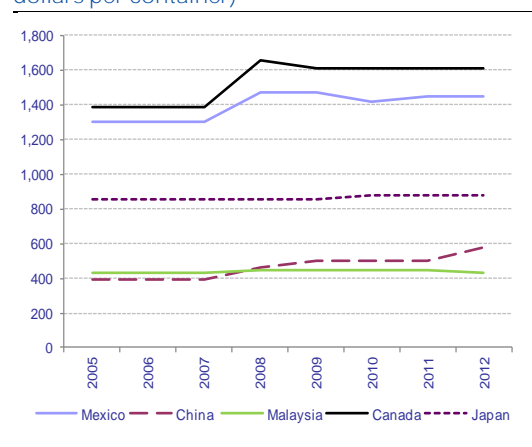
The efficiency of product markets is another component of the Global Competitiveness Index that must improve for Mexico. Mexico was in 83rd position on this measurement. The challenge is enormous given that this will only be improved by promoting increased domestic competition. This would imply more competitive prices for transactional services that support international trade, such as transportation and telecommunications.

Table 1  
Global ranking of Mexico in the Global Competitiveness Index by component

Components of the Global Competitiveness Index	Ranking 2008-2009	Ranking 2013-2014
Institutions	97	96
Infrastructure	68	64
Macroeconomic environment	48	49
Health and primary education	65	73
Higher education and training	74	85
Goods market efficiency	73	83
Labor market efficiency	110	113
Financial market development	66	59
Technological readiness	71	74
Market size	11	11
Business sophistication	58	55
Innovation	90	61

Source: BBVA Research with data from WEF

Figure 14  
Cost of a container's handling (cost of exports in dollars per container)



Source: BBVA Research with data from WB

## Conclusions

Mexican manufacturing exports gained competitiveness in the 2002-2012 period. In contrast to other important Latin American economies, international trade hard data suggest evident gains in manufacturing competitiveness during the 2007-2012 time span. Non-basic manufacturing stands out within Mexican total manufactured exports as it makes this country the only one in Latin America showing an advantage in relation to the world in such type of manufacturing. On the contrary, Mexico has a relative disadvantage in the case of basic manufacturing.

The economic information available for the period 2002-2012 helps explain increases in the competitiveness of manufacturing exports through two possible channels: the accumulated depreciation of the real effective exchange rate and more maneuvering room for the manufacturing industry vs. the tertiary sector regarding inputs acquisition from having benefited from a larger positive wealth effect from increases in the terms of trade. From 2007 to 2012, this gain can be conceived given the observed behavior of several economic variables, such as market share in US manufacturing imports, labor productivity, real wages and unit labor costs in the manufacturing industry. However, the weaker performance of manufacturing labor productivity and other supply-side factors (labor and product markets) seem to have made this type of gains more difficult towards the end of the period.

## References

Canuto, O., Cavallari, M. and Reis, J.G. (2013). "Brazilian Exports: Climbing Down a Competitiveness Cliff." Policy Research Working Paper 6302, The World Bank.

Logistics Performance Index, available at <http://lpi.survey.worldbank.org/international/global>, The World Bank.

Salgado-Banda, H. and Bernal-Verdugo, L. (2007). "Productividad Multifactorial y sus Determinantes: Un Análisis Empírico para el Sector Manufacturero Mexicano." Working paper No. 2007-09, Banco de México.

Sharpe, A., Arsenault, J.F. and Harrison, P. (2008). "The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries." CSLS Research Report 2008-8, Center for the Study of Living Standards.

The Global Competitiveness Report 2013-2014, World Economic Forum.

## Legal Notice

This document was prepared by the Economic Research Department of Banco Bilbao Vizcaya Argentaria BBVA and BBVA Bancomer S. A., Institución de Banca Múltiple, Grupo Financiero BBVA Bancomer, on behalf of itself and is provided for informational purposes only. The information, opinions, estimates and forecasts contained herein refer to their specific date and are subject to changes without notice due to market fluctuations. The information, opinions, estimates and forecasts contained in this document are based on publicly available information taken from sources considered reliable. However, this information has not been subject to independent verification by BBVA Bancomer, and therefore no guarantee, whether express or implicit, is offered in terms of its accuracy, completeness or correctness. This document is not an offer to sell or a solicitation to acquire or dispose of an interest in securities.