BBVA Research

Mexico Regional Sectoral Outlook

First half 2018

Mexico Unit

Creating Opportunities

Contents

Closing date: **31 May 2018**

1. Summary

The service sector contributed 92.3% to Mexico's GDP growth. The manufacturing industry regained its dynamism in the second half of 2017 (2H17) and has been a constant subject for debate with the renegotiation of NAFTA.

We present our analysis of the economic situation by sector, with emphasis on manufacturing industry and trade. Manufacturers have been subject to great pressure, generating uncertainty in the sector, including the renegotiation of NAFTA and the tariffs on steel (25%) and aluminium (10%) imposed by the US from June 2018. We think that this will have an effect, albeit limited, on exporters. Despite this, we expect manufacturing to pick up from the second quarter of 2018 (2Q18), achieving a full-year growth rate close to 3%, with the leading subsectors being those geared to exports. On the one hand, wholesale trade has evolved positively so far in 2018, and we expect this to continue, to reach growth of 4.3% for the year, a similar rate to that seen in 2017. On the other hand, retail trade grew by 5.5% YoY during the first quarter of 2018 (1Q18), reflecting the increase in private consumption, although its determinants – inflation, interest rates and the exchange rate – show deterioration. We estimate that GDP from retailing will grow by 3.4% in 2018. However, in a scenario of uncertainty and ongoing high inflation and interest, consumers may become cautious (especially as regards credit), and this may weaken retailing GDP.

Subsequently, an analysis of the economic situation across regions shows an increase in the disparities among them, with a high concentration of GDP in a small number of states, and with mining being the reason for the contraction in regions that are heavily dependent on it. Nevertheless, we expect 30 of the 32 states to exhibit positive growth rates in 2018, most of them higher than in 2017. Credit dynamics are also analysed, with most states having a healthy commercial portfolio. The dynamics of foreign direct investment (FDI) are parallel to those of development, presenting a high concentration and disparity among regions.

A special section in this issue of *Mexico Regional Sectoral Outlook* is dedicated to the automotive industry, which since 2017 has been influenced by news of assemblers' cancellations, postponements or changes of investment plans for Mexico. In addition, on 23 May the US Department of Commerce launched an investigation under section 232 to determine the effects on national security of the import of automobiles and parts, which, depending on the outcome, could lead to the imposition of a 25% tariff on imports of vehicles and auto parts. Higher prices of goods imported from Mexico would lead to a fall in demand for cars of at least 20% if the end consumer absorbed the entire impact, while in the case of auto parts such measures would disrupt global value chains. In 2018, sales of vehicles in Mexico will continue to be negatively affected by high fuel prices, dearer vehicles and relatively higher interest rates.

In a second special section, we analyse the transportation sector, which accounts for 6.1% of GDP, with a closer look at the railway subsector. We study the composition and development of the sector, with the stress on its relationships with trade and manufacturing. We then go on to describe the sectoral situation, affected directly by fuel inflation, an indispensable input for transportation services, following the liberalisation of fuel prices in 2017. Additionally, we study revenue, expenditure and international trade flows by subsector. As regards rail transportation, we present the results of a model for analysing the rail network and a way of determining the extent to which it meets the needs of the population and manufacturing industries by population centre. We also present the development of the lending portfolio (with growth rates of around 20%) and the dynamics of employment in the sector, for which we expect growth of 4.4% in 2018.

2. Sectoral and regional analysis

2.a Manufacturing and trade, the pillars of growth in 2018

In 2017, the manufacturing industry contributed 15.9% to GDP. This places it as the sector with the most weight in the composition of GDP, followed by real estate and rental services (11.1%), wholesale trade (9%), retail trade (8.3%) and construction (7.1%). Together, these sectors account for 51.4% of total GDP. Due to the dynamism of the past five years[1], the contribution to GDP has held steady for manufacturing and grown in the case of trade — both wholesale and retail — while real estate and rental services as well as construction have seen their shares decline. On this occasion, and given their substantial relative weight, we will focus our attention on recent trends in manufacturing and in the components of trade. Real estate and rental services and construction are addressed in our publication *Mexico Real Estate Outlook.*

In the first quarter of 2018, four out of the twenty sectors forming the economy posted declines: mining (-6.1%); corporate services (-2.7%); professional services (-1.6%); and other non-governmental (-1.4%). The sector heading the growth league in 1Q18 was wholesaling, which more than doubled its rate from 4Q17 (from 2.1% to 5.5%). It was followed by farming (agriculture and livestock) and retailing, with high growth rates of 5.2% and 5.1% respectively. Manufacturing saw low growth in 1Q18 (1%) compared with the average of the economy (2.3%). This modest growth in manufacturing GDP may be abnormal if we compare it with the YoY 9.3% growth of its exports in 1Q18.

Figure 2a.1 GDP by sector (% contribution)
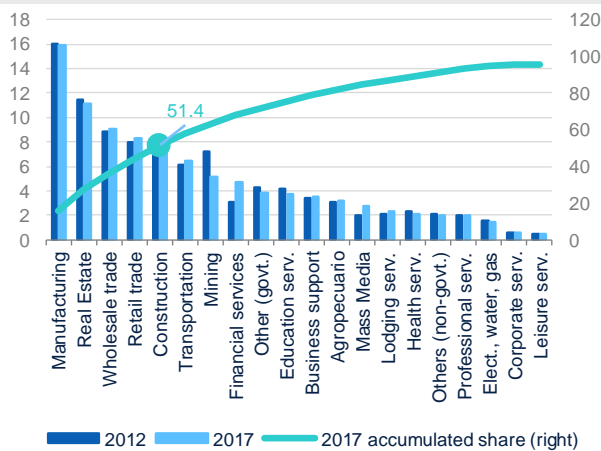
Source: BBVA Research based on INEGI (National Statistics Institute) data

Figure 2a.2 GDP by sector (YoY % change)
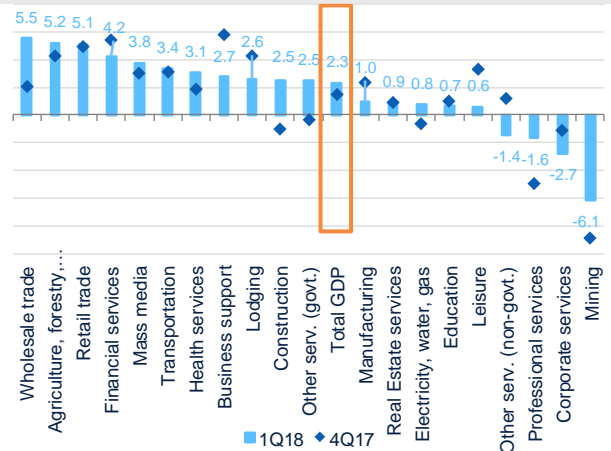
Source: BBVA Research based on INEGI data

1: In 2012, GDP of the majority of sectors had already regained the levels lost in the crisis of 2008-2009.

Following a brief dip, Mexican manufacturing will expand

Since November 2016, Mexico's manufacturing industry has been subjected to substantial pressures, generating uncertainty in the sector. From then until now, the most significant factor has been the process of renegotiation of the North American Free Trade Agreement: NAFTA 2.0. Nonetheless, the sector has shown notable resistance, largely underpinned by the expansion of the US economy, in particular, its manufacturing sector in view of the strong shared value chains.

Following a good 2017, the overall economic prospects for this year are positive. We estimate that the overall volume of trade will continue high as a reflection of the upturn in investment and manufacturing output. As for the US economy, its industrial output is estimated to grow by 3.7% in 2018, after growing by 1.6% in 2017 and falling by 1.0% and 1.9% in 2015 and 2016. In line with this, growth in external demand for Mexican products should be favourable. In 2017, manufactured exports grew by 8.5% YoY, following two years of stagnation. Given the high degree of correlation between manufacturing and exports, this was reflected in the recovery of production in 2017, which posted growth of 3.4%. In 1Q18, the positive trend in exports of manufactured goods (9.4% growth in 1Q18) was not reflected in production (which grew by just 1% SA), but we estimate that it soon will be. We are maintaining our manufacturing GDP growth outlook at around 3%, after the 3.4% posted in 2017.

Figure 2a.3 Production, Mexico – US
(YoY % change)
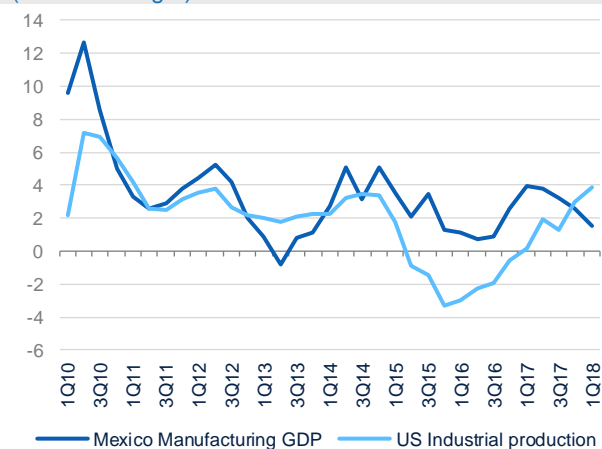
Source: BBVA Research with data from INEGI and FR Bank of St. Louis

Figure 2a.4 Manufacturing, Mexico: production and exports
(YoY % change)

Source: BBVA Research based on INEGI data

By components of manufacturing with the new 2013 base, we see some significant structural changes in the past five years, measured in real figures. The first and most striking is the 3.5 pp increase in the share of transportation equipment in manufacturing. It went from 16.2% in 2012 to 19.7% in 2017. Something similar happened with electronic equipment, which gained nearly 2 pp of contribution, going from 6.5% to 8.4% over the same period. These segments depend heavily on external demand, so the pace of investment has to keep increasing if competitiveness is not to be lost. In contrast, the basic chemicals and petroleum derivatives processing segments saw falls of 1.8 and 1.2 pp, in common with the mining sector. Processed foods contributed 1 pp less than last year.

Figure 2a.5 Manufacturing GDP by segment
(% contribution)
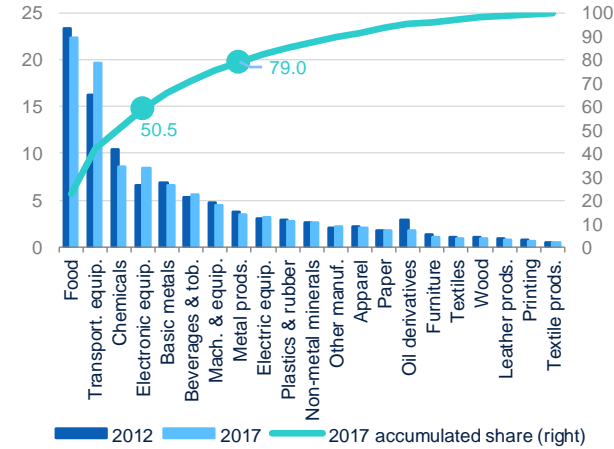
Source: BBVA Research based on INEGI data

Figure 2a.6 Manufacturing GDP
(YoY % change)
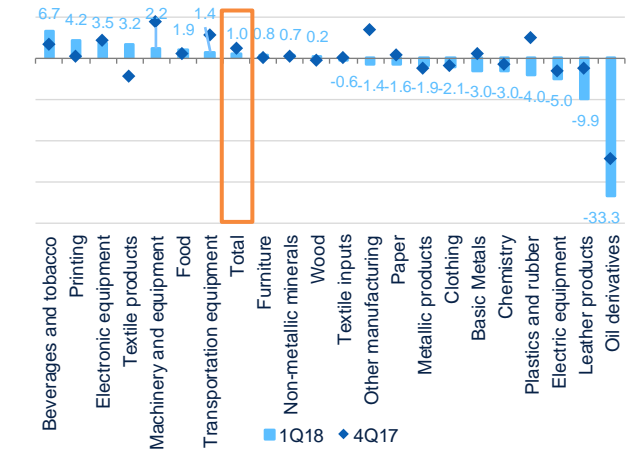
Source: BBVA Research based on INEGI data

In terms of dynamism in 1Q18, of 22 manufacturing segments, seven grew by more than the average. Prominent among them were segments producing non-durable consumer goods such as food and beverages and durable goods such as electronics, machinery and equipment and automotive. Another significant aspect is the continuous fall in the production of chemicals (especially basic chemicals) and the steepening fall in production of petroleum derivatives. In 1Q18, the slowdown among regions intensified, and in those related to the automotive industry, the rate of growth eased off.

The number of people in employment is closely correlated with production, so we also see a slowdown in the pace of increase in employment, albeit more moderate than that in production. This strengthens our perception that the slowdown is of a temporary nature. According to the Monthly Survey of Manufacturing Industry (EMIM), the total number of people employed was 3.8 million, 108,000 or 3% more than a year ago. Direct labourers accounted for 81% of the total, the remaining 19% being employees.

Figure 2a.7 Manufacturing employment (YoY % change)
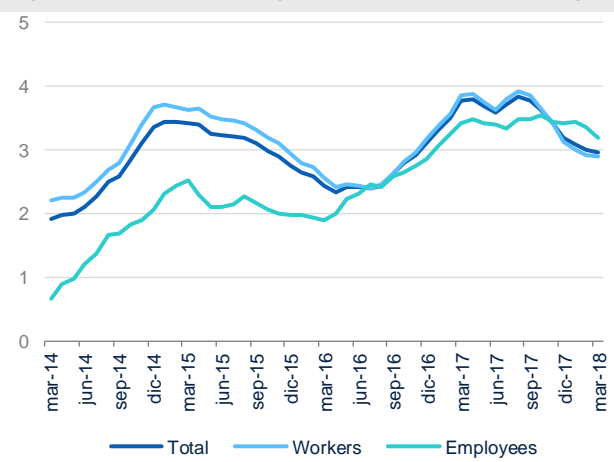
Note: Three-month moving average
Source: BBVA Research based on INEGI data

Figure 2a.8 Real wages in manufacturing (YoY % change)
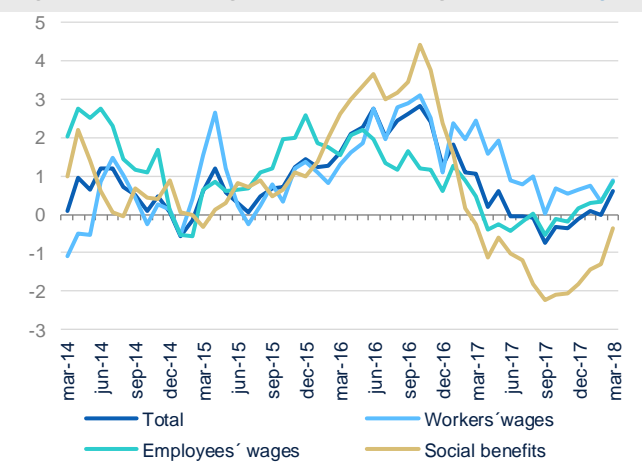
Source: BBVA Research based on INEGI data

As for wages, having shown a declining trend through nearly all of 2017, at the beginning of the year they show a recovering trend. Workers' wages remain in positive territory. Not so employees' salaries and social benefits, which depress total remuneration and consequently the quality of employment in manufacturing.

The growth in manufacturing output seen in 2017 and 1Q18 was underpinned by growing dynamism in lending to companies in the manufacturing sector. The total portfolio in 2017 increased by 10.1% in real annual terms, as against 5.6% in 2016. At the end of March 2018, the increase was 12.1% in real annual terms. The segments accounting for more than half the portfolio in manufacturing are: food (17.8% of the total), followed by basic metals (13.2%), which at the end of March were up by 14.6% and 6.5% respectively in real annual terms. Lending to the transportation equipment segment (11.9%) and non-metal minerals (11.1%) posted growth of 30.9% and 21.1% respectively in real annual terms. The increase is across the board except in six segments accounting for 14.5% of the total: clothing, furniture, plastics and rubber, textile inputs, beverages and tobacco.

Figure 2a.9 Total lending portfolio to manufacturing companies (YoY % change)

Note: Three-month moving average
Source: BBVA Research based on data from Banxico

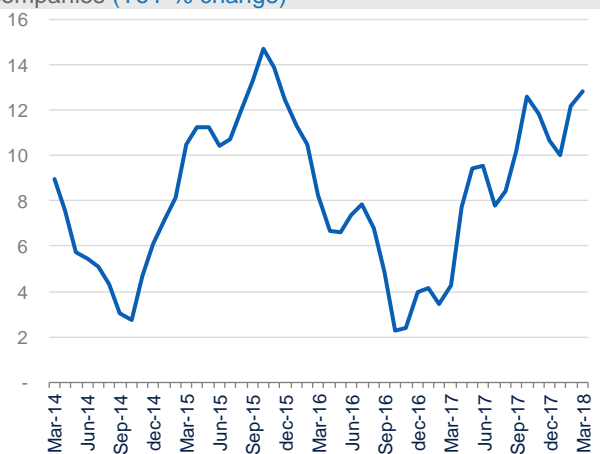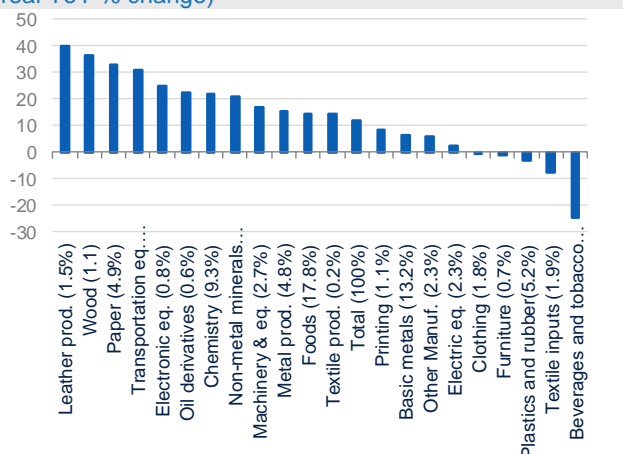Figure 2a.10 Total lending portfolio, March 2018 (real YoY % change)

Note: The figure in parentheses is the contribution relative to the total
Source: BBVA Research based on data from Banxico

The world's manufacturing industry faces tariffs on steel (25%) and aluminium (10%) recently imposed by the US on imports from 1 June 2018. Based on information from INEGI, in the case of steel, 71% of Mexico's production is intermediate demand. In other words, it is an input for some other industry, whereas 4% is final domestic demand. Thus 25% of the country's total steel production is for export, so in principle, only part of this 25% will be affected.[2] Steel contributed 2.6% of manufacturing GDP in 2017. Similarly, in the case of aluminium, total production affected would be 45% of production, which is the proportion exported, but with a much lower tariff. This type of manufacturing contributes 0.3%[3] to the sector's GDP. Therefore, the effect on manufacturing GDP is limited, although companies geared to exports will be badly affected. Additionally, the fact that some tariff codes for steel products were not included must be taken into account, for example steel profiles, so companies producing this type of product will not be affected by the tariff.

2: The effect could be greater if we consider second-order effects, such as the fact that other countries might divert exports to Mexico to offset low demand from the US market.
3: *Idem*

Thus, despite this, we think that growth in manufacturing in Mexico will recover its dynamism from 2Q18 to reach a full-year growth rate close to 3%. The leading segments in this growth will be, as always, those geared to export markets.

Figure 2a.11 Growth in manufacturing, 2018 (YoY % change)
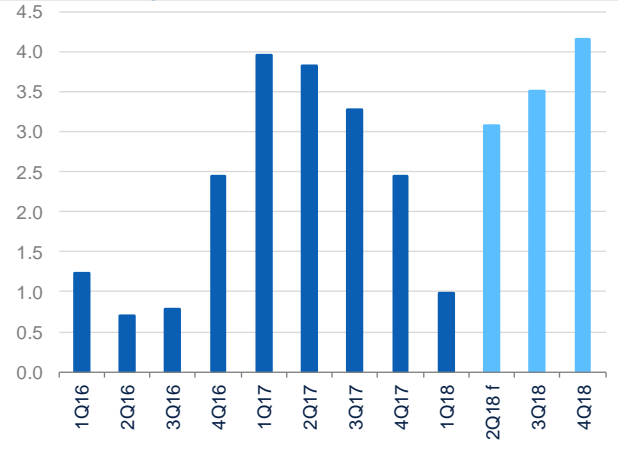
f: Forecast from that date
Source: BBVA Research based on INEGI data

Figure 2a.12 Fastest growing manufacturing segments in 2018 (YoY % change)

Segment	%
Electronics	6.4
Beverages and tobacco	5.3
Transportation equipment	5.2
Other manufacturing	5.1
Machinery & equipment	4.4
Paper	3.3
Plastic	2.9
Manufacturing	2.9
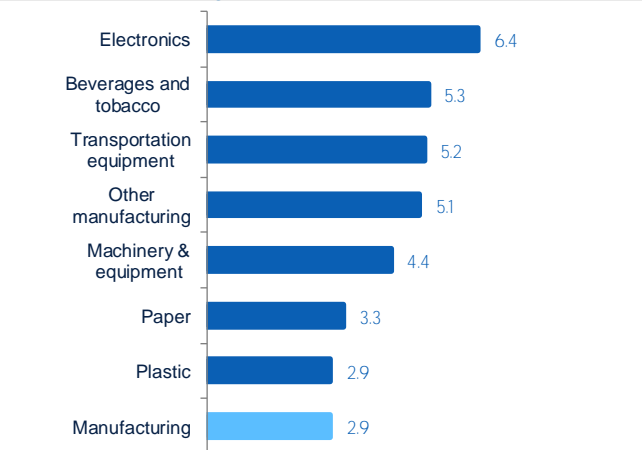
Source: BBVA Research based on INEGI data

Retail and wholesale trade expanding

With the new 2013 base, for the first time the GDP of trade is divided into wholesale and retail, the value of the commercial margin corresponding to each good being associated with its marketing channel. These activities contributed 8.3% and 9% respectively to GDP, making them the fourth and third biggest components of the economy after real estate services.[4] Since the series have been available, in general terms and with few exceptions both have grown at a faster rate than total GDP.

4: With the former 2008 base, trade was the sector contributing the most to GDP; but now, when disaggregated, the share is divided. Taken together, they are still the biggest contributor to the economy.

Figure 2a.13 GDP of wholesale and retail trade (YoY % change)
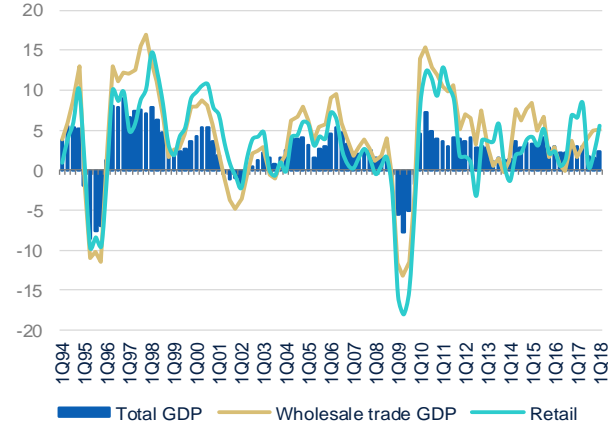
Source: BBVA Research based on INEGI SCNM (National Accounts System) data

Figure 2a.14 GDP: Manufacturing and wholesale trade (Correlation ratio)

$R^2=.92$
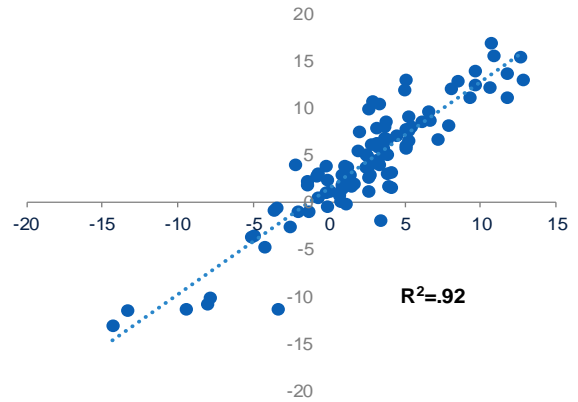
Source: BBVA Research based on INEGI SCNM data

The main determinants of wholesale sales are intermediate and final consumption of the manufacturing sector. During 2017, the GDP of wholesale trade grew by 3.4% on an annual basis, representing an improvement of 1.5 pp relative to the previous year. In 1Q18, the improvement was maintained relative to 4Q17 (5.1% compared with 4.9%). One way of approximating the development of its components, although with greatly reduced coverage since it takes account only of formal trade, is by means of the revenues shown in the Monthly Survey of Commercial Companies (EMEC). According to the EMEC, wholesale revenues started to decline in 4Q17 (-1.2%) and the trend steepened in 1Q18 (-3%).

Figure 2a.15 GDP of wholesale trade and manufacturing (YoY % change, SA)
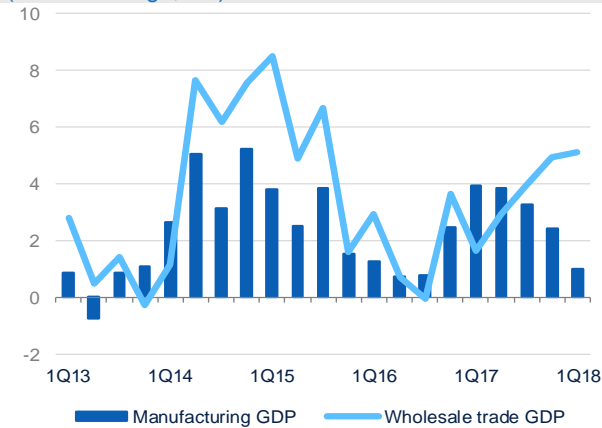
SA = seasonally adjusted
Source: BBVA Research based on INEGI SCNM data

Figure 2a.16 Revenues of wholesale commercial establishments (YoY % change)

Source: BBVA Research based on INEGI EMEC data

By components, revenues of wholesale commercial establishments dealing in commodities accounted for the bulk, with more than 49.7% of the total, followed by groceries, food, beverages, ice and tobacco (29.7%) and machinery, equipment and fittings for farming, industrial services, etc. (10%). In this group only the second one shows modest advances (of 1.6 and 0.5% for 4Q17 and 1Q18), but also slowing; these types of goods are the last to adjust in a contraction. Sales of machinery and equipment have been declining since the beginning of 2017, which is consistent

with the trend in gross fixed investment in the economy. Despite the declining trend in wholesale revenues, employment continues to grow, except in machinery and equipment, which suggests that companies see the slowdown in revenues as transitory and therefore are not trimming their workforces.

Figure 2a.17 Employment in wholesale trading establishments (YoY % change)
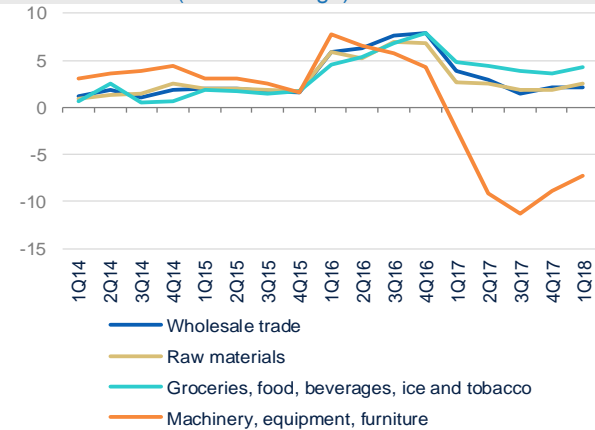
Source: BBVA Research based on INEGI data

Figure 2a.18 Total portfolio of lending to wholesale trading companies (YoY % change, 3MMA)
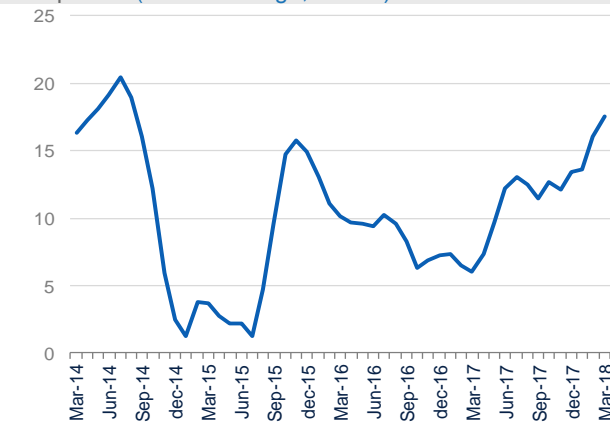
Source: BBVA Research based on data from Banxico

Lending to commercial wholesalers grew by 14.6% in real annual terms in 2017, a satisfactory figure when compared with the real 7.5% of 2016. Portfolio growth continues to accelerate; at the end of March 2018, it was up by 19% in real annual terms. The majority of the lending is concentrated in wholesalers specialising in commodities (24%); food, beverages, ice and tobacco (22%); trucks and parts and spares for cars, pick-ups and heavy trucks (17%): and machinery, equipment and fixtures and fittings for farming, industry, services, etc. (16%); which represent 80% of the total portfolio. It is important to stress that this trend is consistent with our perception of greater growth in manufacturing production in the coming quarters of 2018. We estimate that GDP of wholesale trade will grow by 4.3% in 2018, a similar rate to that seen in 2017.

Figure 2a.19 Total lending portfolio to wholesalers by main activity (real YoY % change, March 2018)
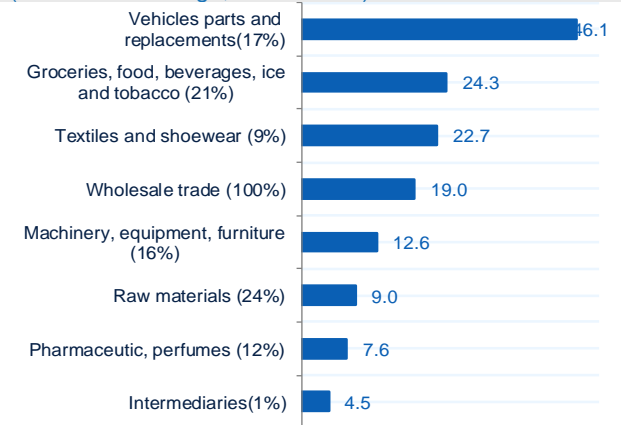
Source: BBVA Research based on data from Banxico

Figure 2a.20 GDP of retail trade and private consumption (Correlation ratio)

R^2=.86
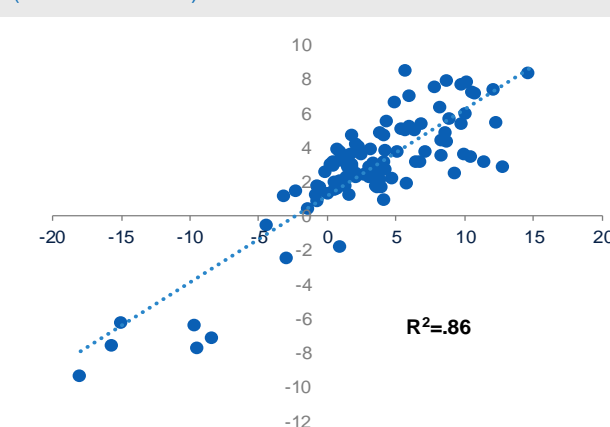
Source: BBVA Research based on data from INEGI, SCNM

As for GDP of retail trade, in 2017 it increased at an annual rate of 4.3% compared with 2.8% in 2016. In 1Q18, growth was 5.5%, which is high if compared with the YoY 0.5% and 2.1% rates in 3Q17 and 4Q17 respectively. This is a reflection of the continued increase in private consumption, despite its determinants showing significant deterioration, particularly inflation, interest rates and the MXN/USD exchange rate. One factor that has partly mitigated this effect is the positive trend in employment in the economy.

Figure 2a.21 GDP of retail trade and private consumption (YoY % change)
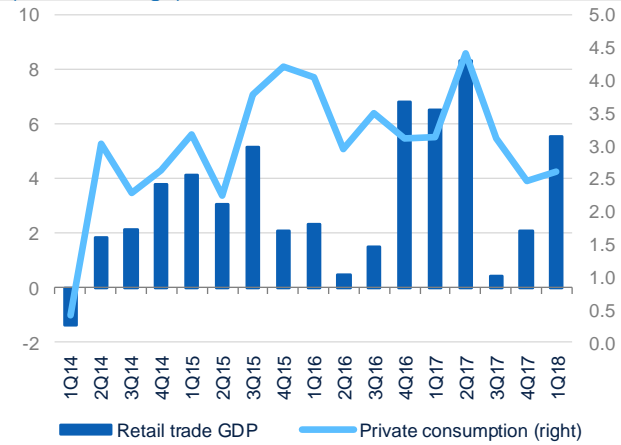
SA = seasonally adjusted
Source: BBVA Research based on INEGI SCNM data

Figure 2a.22 Revenues of retail commercial establishments (YoY % change)
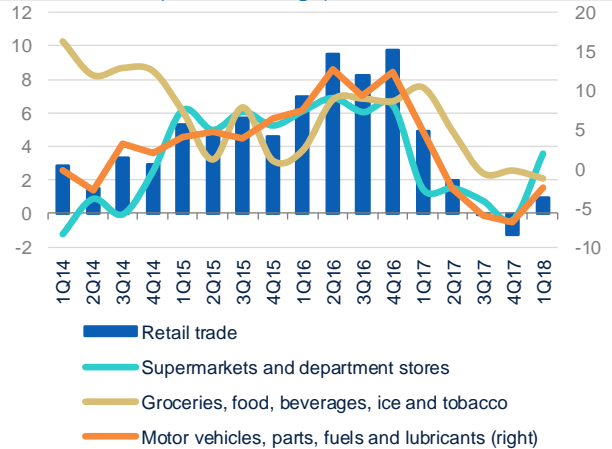
Source: BBVA Research based on INEGI EMEC data

Revenues of retail commercial companies in 2017 grew by 1.4%, considerably less than in 2016 (8.6%). The trend seen throughout the year was a declining one, with the lowest point being reached in 4Q17. In 1Q18, we see a change in trend, with a small increase of 1%. By components (based on the EMEC and bearing in mind that it covers only the formal part) we see that revenues were concentrated in three segments accounting for 72.3%: supermarkets and department stores (33.1%); motor vehicles, spare parts, fuels and lubricants (24.9%); and groceries, food, beverages, ice and tobacco (14.7%). The motor vehicles, spares, fuels and lubricants segment showed a change in trend in 1Q18, although still in negative territory. The downward trend of the segment covering groceries, food, etc. steepened, falling by 1.3%. Revenues of supermarkets and department stores quickened their pace of growth in 1Q18, advancing by 3.6% YoY. Employment in retail establishments showed an improvement in growth compared with that seen throughout 2017, to 1.8% YoY in 1Q18. Employment in the segments considered is growing, although in supermarkets and department stores the increase is modest.

Figure 2a.23 Employment at retail commercial establishments (YoY % change)

Retail trade
Groceries, food, beverages, ice and tobacco
Supermarkets and department stores
Motor vehicles, parts, fuels and lubricants (right)

Source: BBVA Research based on INEGI EMEC data

Figure 2a.24 Inflation, interest rates and peso to dollar exchange rate

Inflation
Funding
Pesos per dollar
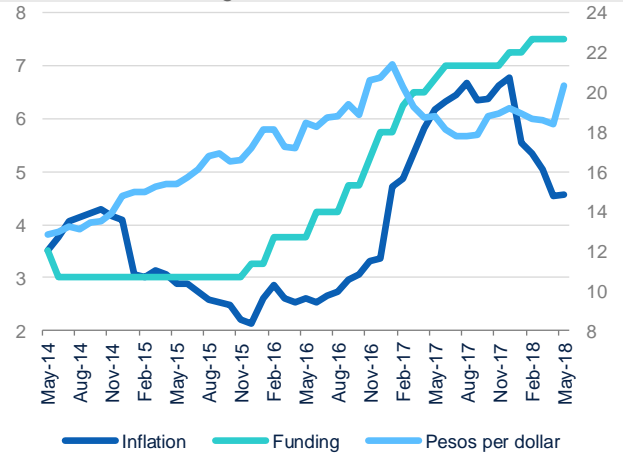
Source: BBVA Research based on data from INEGI and Banxico

To understand this trend, it is necessary to look more closely at the determinants of private consumption that have influenced it since the beginning of 2017. Among them, we could mention the increase in inflation (the highest in the past 17 years), depreciation of the peso and increase in interest rates, which have dented purchasing power and confidence. Despite these factors, the labour market shows positive results. The unemployment rate averaged 4.0% of the EAP in 2017 and in 1Q18, it held steady, this being the lowest rate for any year since the current survey began in 2005. If we consider the data from the ENOE (National Occupation and Employment Survey), in 2017 the employed population continued to increase (by 1.5% on average) although at a lower rate than in 2016 (1.9%). In 1Q18, it was 2%.

In addition, the number of people insured with the IMSS (Mexican social security system) continued to increase at a sustained rate, growing by 4.4% YoY in 1Q18l, compared with 4.4% for the whole of 2017. This means that the favourable employment conditions and the favourable development of remittances, (an important complement to household incomes), have allowed private consumption not to be much affected. We estimate that in 2018 private consumption will continue to grow (3.6%), at an even higher rate than that observed in 2017 (3.3%).

As regards the portfolio of loans granted to retail commercial firms, we see a gradual slowing since March 2016. During 2017, it grew by 3% in real terms, compared with 9.7% in 2016. At the end of March 2018, it already showed an annual real reduction of 1.8%. By main activity, four headings account for 83% of the total portfolio. Two of them are growing: vehicles and parts, 11.5%; and groceries and food, 9.1%. In contrast, supermarkets and department stores were down by -6.1%; and household appliances and computers -21.7%.

Figure 2a.25 Total lending portfolio to retail commercial firms (YoY % change, 3MMA)
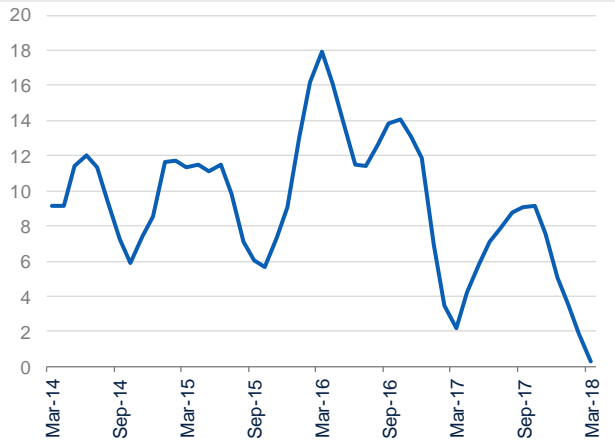
Source: BBVA Research based on data from Banxico

Figure 2a.26 Total lending portfolio to retail commercial companies by main activity (real YoY % change, March 2018)
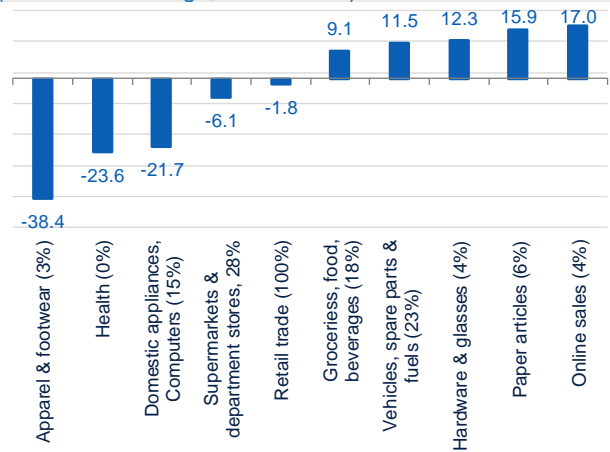
Note: The figure in parentheses is the relative contribution
Source: BBVA Research based on data from Banxico

We estimate that GDP from retailing could grow by 3.4% in 2018. However, in a scenario of high uncertainty, rising interest rates and still high inflation, consumers may become cautious about buying on credit, and this may weaken retailing GDP.

2.b Sector forecasts

Table 2b.1 Sector indicators and forecasts, Mexico. Sector production, base 2008 = 100, SA

												YoY % change
	2016	2017	2018	2019	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
Total GDP	2.6	2.3	2.6	2.0	3.0	3.0	1.7	1.6	2.3	2.6	3.0	2.5
Primary	3.5	3.3	5.5	-0.1	3.9	2.7	2.2	4.4	5.2	5.0	5.9	5.9
Secondary	0.2	-0.5	2.0	1.5	-0.3	-0.1	-0.6	-0.9	0.3	2.0	2.9	2.9
Mining	-4.3	-9.8	-2.8	-5.3	-11.5	-8.2	-10.7	-8.8	-6.1	-1.2	-1.0	-3.0
Electricity, water and gas	0.1	-0.1	1.9	3.7	0.3	0.2	-0.5	-0.5	0.8	1.2	2.7	2.9
Construction	1.9	-1.1	2.7	2.0	-0.8	-1.7	-1.0	-0.9	2.5	2.6	3.0	2.5
Manufacturing	1.3	3.4	2.9	2.3	4.0	3.8	3.3	2.4	1.0	3.1	3.5	4.2
Tertiary	3.6	3.3	2.7	2.3	4.0	4.1	2.5	2.4	2.9	2.8	2.9	2.1
Wholesale trade	1.8	3.4	4.3	3.0	1.6	2.9	3.9	4.9	5.1	3.5	4.7	3.8
Retail trade	2.8	4.3	3.4	1.2	6.5	8.3	0.5	2.1	5.5	3.4	2.6	1.9
Transp., mail & storage	2.6	3.8	4.5	1.8	4.6	4.6	2.8	3.1	3.4	5.0	6.7	3.0
Mass media information	19.2	6.2	3.4	6.1	8.7	7.8	5.7	3.1	3.8	3.9	2.3	3.5
Finance & insurance services	12.2	7.8	4.0	9.0	8.7	9.6	7.8	5.4	4.2	4.3	3.1	4.3
Real estate & rental services	2.0	2.0	1.7	1.9	3.5	2.0	1.5	1.0	0.9	1.2	2.2	2.6
Prof., scientific & tech. services	8.2	-0.5	1.4	-0.2	6.0	3.1	-5.5	-4.9	-1.6	2.1	3.4	1.8
Corporate & business mgt.	-0.2	1.1	-0.1	2.7	2.2	4.1	-0.8	-1.1	-2.7	-1.3	1.8	2.0
Business support services	4.2	5.6	1.1	2.5	4.5	3.6	8.5	5.8	2.7	2.3	0.0	-0.4
Educational services	1.1	0.2	1.1	0.8	1.3	0.4	-2.0	1.1	0.7	1.9	2.9	-0.9
Health and welfare	2.8	2.4	2.0	1.0	2.4	3.0	2.5	2.0	3.1	1.6	2.0	1.6
Leisure, culture & sport	4.5	3.2	0.9	1.7	3.5	4.4	1.5	3.3	0.6	0.6	0.8	1.8
Temp.accom. & prep.food & drink	3.6	4.3	4.5	2.4	1.2	6.6	5.3	4.3	2.6	6.5	5.6	3.4
Other services excl gvt.	2.2	1.1	0.2	0.5	2.1	-0.1	1.1	1.2	-1.4	1.1	0.5	0.5
Government activities	0.0	0.1	-0.3	-1.2	0.8	0.2	-0.2	-0.3	2.5	-0.2	-0.9	-2.4

	Structure %					Contribution to growth, pp				
	2016	2017	2018	2019		2016	2017	2018	2019	
Total GDP	100.0	100.0	100.0	100.0		2.6	2.3	2.6	2.0	
Primary	3.2	3.2	3.3	3.2		0.1	0.1	0.2	0.0	
Secondary	30.4	29.6	29.4	29.3		0.1	-0.1	0.6	0.4	
Mining	5.8	5.1	4.9	4.5		-0.3	-0.6	-0.1	-0.3	
Electricity, water and gas	1.5	1.5	1.5	1.5		0.0	0.0	0.0	0.1	
Construction	7.3	7.1	7.1	7.1		0.1	-0.1	0.2	0.1	
Manufacturing	15.7	15.9	16.0	16.0		0.2	0.5	0.5	0.4	
Tertiary	62.2	62.8	62.8	63.0		2.2	2.0	1.7	1.5	
Wholesale trade	8.2	8.3	8.4	8.5		0.1	0.3	0.4	0.3	
Retail trade	8.9	9.0	9.1	9.0		0.2	0.4	0.3	0.1	
Transportation, post and storage	6.3	6.4	6.5	6.5		0.2	0.2	0.3	0.1	
Mass media information	2.7	2.8	2.8	2.9		0.4	0.2	0.1	0.2	
Finance & insurance services	4.5	4.7	4.8	5.1		0.5	0.3	0.2	0.4	
Real estate and rental services	11.1	11.1	11.0	11.0		0.2	0.2	0.2	0.2	
Professional, scientific & technical services	2.0	2.0	1.9	1.9		0.2	0.0	0.0	0.0	
Corporate & business mgt.	0.6	0.6	0.5	0.6		0.0	0.0	0.0	0.0	
Business support services	3.4	3.5	3.5	3.5		0.1	0.2	0.0	0.1	
Educational services	3.8	3.7	3.7	3.6		0.0	0.0	0.0	0.0	
Health and welfare	2.1	2.1	2.1	2.1		0.1	0.1	0.0	0.0	
Leisure, culture & sport servs.	0.4	0.4	0.4	0.4		0.0	0.0	0.0	0.0	
Temp. accom. & prep. food & drink	2.2	2.3	2.3	2.3		0.1	0.1	0.1	0.1	
Other services excl. gvt. activities	2.0	2.0	2.0	1.9		0.0	0.0	0.0	0.0	
Government activities	3.9	3.9	3.8	3.6		0.0	0.0	0.0	0.0	

All figures are subject to revision by the Institute; SA: seasonally adjusted; pp: percentage points
Source: BBVA Research based on INEGI data

Table 2b.2 Sector indicators and forecasts, Mexico, Manufacturing production base 2008 = 100, SA

											YoY % change	
	2016	2017	2018	2019	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
Total	1.3	3.4	2.9	2.3	4.0	3.8	3.3	2.4	1.0	3.1	3.5	4.2
Food	3.1	1.6	2.1	1.8	2.4	0.5	2.3	1.2	1.9	2.4	2.0	2.0
Beverages and tobacco	7.5	2.4	5.3	3.5	2.5	1.6	2.0	3.4	6.7	6.5	4.5	3.5
Textile inputs	-0.6	0.3	0.1	-0.1	3.3	-0.4	-2.0	0.1	-0.6	-1.6	0.4	2.3
Manufacture of textile products	4.2	-11.8	2.8	3.6	-16.5	-15.5	-10.1	-4.4	3.2	3.9	4.5	-0.3
Clothing	-0.7	0.4	-2.6	-0.1	3.3	-0.3	0.5	-1.8	-2.1	-6.0	-2.0	-0.1
Leather products	-0.7	-3.1	-3.8	-2.4	-2.7	-9.4	2.6	-2.5	-9.9	1.5	-3.7	-2.7
Timber industry	-4.6	4.9	0.6	1.8	9.2	3.6	7.9	-0.7	0.2	-0.4	-1.9	4.8
Paper industry	4.2	2.1	3.3	3.0	3.0	1.6	2.9	0.9	-1.6	6.3	3.1	5.3
Printing and associated industries	0.1	-1.9	1.7	1.6	-2.3	-7.7	2.4	0.4	4.2	1.1	-1.5	3.1
Petroleum derivatives	-13.4	-18.5	-14.4	-0.7	-15.5	-14.1	-21.5	-24.3	-33.3	-19.6	-2.7	6.1
Chemicals	-2.8	-1.1	-1.2	-1.4	1.9	-1.9	-2.9	-1.4	-3.0	-2.2	-0.5	0.9
Plastic and rubber	-0.8	4.1	2.9	3.4	6.4	3.0	2.0	5.0	-4.0	5.5	7.0	3.5
Non-metal mineral products	2.3	-0.7	0.3	2.0	2.2	-3.7	-1.8	0.4	0.7	0.1	-0.2	0.4
Basic metals	1.9	2.1	2.1	2.8	6.0	0.6	1.0	1.0	-3.0	3.4	4.1	4.0
Metal products	1.1	0.3	2.8	2.9	5.1	-1.1	-0.1	-2.5	-1.9	3.3	4.8	5.3
Machinery and equipment	0.5	9.2	4.4	4.2	6.4	3.6	18.8	8.8	2.2	6.2	3.6	5.5
Computers and electronics	6.0	6.8	6.4	5.4	6.5	9.3	7.1	4.4	3.5	7.0	6.2	9.0
Electrical equipment	4.4	1.1	2.2	3.6	6.5	-0.1	1.2	-3.1	-5.0	3.3	4.2	6.7
Transportation equipment	0.7	8.7	5.2	3.2	11.7	8.1	9.5	5.5	1.4	6.0	6.4	6.9
Furniture and related	-3.7	-4.3	-1.5	-0.3	3.3	-12.4	-7.4	0.1	0.8	-0.4	-2.0	-4.7
Other manufacturing industries	3.9	5.8	5.1	5.5	6.9	2.6	6.7	6.8	-1.4	6.2	9.9	5.5

	Structure %					Contribution to growth, pp			
	2016	2017	2018	2019		2016	2017	2018	2019
Total	100.0	100.0	100.0	100.0		1.3	3.4	2.9	2.3
Food	22.8	22.4	22.2	22.1		0.7	0.4	0.5	0.4
Beverages and tobacco	5.7	5.6	5.7	5.8		0.4	0.1	0.3	0.2
Textile inputs	0.9	0.9	0.9	0.9		0.0	0.0	0.0	0.0
Manufacture of textile products	0.5	0.4	0.4	0.5		0.0	-0.1	0.0	0.0
Clothing	2.1	2.1	2.0	1.9		0.0	0.0	-0.1	0.0
Leather products	0.8	0.8	0.7	0.7		0.0	0.0	0.0	0.0
Timber industry	0.9	0.9	0.9	0.9		0.0	0.0	0.0	0.0
Paper industry	1.8	1.8	1.8	1.8		0.1	0.0	0.1	0.1
Printing and associated industries	0.7	0.6	0.6	0.6		0.0	0.0	0.0	0.0
Petroleum derivatives	2.1	1.7	1.4	1.4		-0.3	-0.4	-0.2	0.0
Chemicals	8.9	8.5	8.2	7.9		-0.3	-0.1	-0.1	-0.1
Plastic and rubber	2.7	2.7	2.7	2.8		0.0	0.1	0.1	0.1
Non-metal mineral products	2.7	2.5	2.5	2.5		0.1	0.0	0.0	0.1
Basic metals	6.7	6.6	6.6	6.6		0.1	0.1	0.1	0.2
Metal products	3.5	3.4	3.4	3.4		0.0	0.0	0.1	0.1
Machinery and equipment	4.2	4.5	4.5	4.6		0.0	0.4	0.2	0.2
Computers and electronics	8.1	8.4	8.7	9.0		0.5	0.6	0.5	0.5
Electrical equipment	3.2	3.1	3.1	3.1		0.1	0.0	0.1	0.1
Transportation equipment	18.7	19.6	20.0	20.2		0.1	1.6	1.0	0.6
Furniture and related	1.1	1.1	1.0	1.0		0.0	0.0	0.0	0.0
Other manufacturing industries	2.1	2.1	2.2	2.2		0.1	0.1	0.1	0.1

All figures are subject to revision by the Institute; SA: seasonally adjusted; pp: percentage points
Source: BBVA Research based on INEGI data

2.c International Trade as a determinant of state performance

On 19 July 2018, INEGI announced the final state GDP figures for 2016. It amounted to 17,021 billion pesos, which when added to the 764 billion pesos of tax give a total GDP of 17,785 billion pesos.[5] With effect from 2017, we calculate state GDP based on the Quarterly Indicator of State Economic Activity (ITAEE), also published by INEGI. Based on this indicator, we estimate that all the states as a whole will have grown by 1.9% in 2017 and that for 2018 they could together reach 3% growth.[6]

During 2017, Mexico's economy followed a process of growth driven by reactivation of external demand, despite a slowdown in the domestic market in 2H17. The recovery in external demand was reflected in an increase of 8.6% in non-oil exports following a negative growth rate of -0.7% in 2016. Domestic demand drove part of the growth in the first half of 2017 (1H17), subsequently deteriorating. Despite the growth in employment in the formal sector, real wages declined due to inflation in the year, which averaged 6%[7]. Consequently, lending slowed and presented a real growth rate of 10.1%, compared with 13% in 2016. On the other hand, remittances grew by 6.6%, mitigating the effect of real wages on private consumption. Additionally, the earthquakes in the third quarter of 2017 (3Q17) dented the growth trend seen in 1H17, mainly affecting Oaxaca and Chiapas, which presented negative growth rates in 3Q17[8], especially in the construction industry. As well as closing the year with national growth of just 2%, the disparities were accentuated during the year; also, it seems that this trend is continuing, with cases such as the Bajío region, with expected growth of 4.8%, whereas the GDP of the Southeast region will continue to contract, at an expected rate of -0.5% for 2018.

The final State GDP figures for 2016 continue to show Mexico City as the country's biggest state economy, followed by the State of Mexico, Nuevo León, Jalisco and Veracruz in that order. The high degree of concentration of economic activity persists, with just seven states accounting for slightly over half of state GDP. Fewer than half, just 14 states, account for nearly 75% of GDP. Campeche keeps its place in the top seven economies despite the impact of the reduced oil activity. Still bringing up the rear are the states of Colima and Tlaxcala. In terms of growth, Aguascalientes took first place, with an annual rate of 9.8%, followed by Quintana Roo with 7.3%. Both states have shown sustained progress in recent years. The two states with the lowest performance were Campeche and Tabasco, whose common characteristic is that their economies are based on oil extraction. The former ended 2016 down by 5.4% and the latter by 5.9%.

State GDP during 2017 is calculated based on the Quarterly Indicator of State Economic Activity (ITAEE). In this way, Baja California Sur headed growth at national level during 2017 with an annual increase of 12.3%, a rate that has been surpassed in the past five years only by that same state, with 14.1% in 2015. Construction is the sector that drove this result, especially private sector works, which practically doubled in 2017. In addition, Puebla continues to perform well, underpinned by the dynamism of manufacturing, and especially of the automotive industry, with various automakers opening production lines. At the close of 2017, Puebla's economy had grown by 6.8% for the year. In third place, Guanajuato clocked an annual growth rate of 5%. These last two states have manufacturing for export as one of the main activities in their economies. In last place once again are Campeche and Tabasco, which have so far reported declines of 8.2% and 8.4% respectively. As in the previous year, the reduced level of oil activity is a characteristic of the low-return states, in contrast with those that have a greater share of manufacturing industry such as automotive.

5: The difference relative to national GDP is due to taxes, which cannot be allocated specifically among the states.
6: This 3% is not comparable with the 2.6% GDP growth we estimate for 2018, because as in the previous case, the sum of the states gives the national aggregate from which we obtain the national GDP by adding taxes.
7: Average monthly YoY CPI inflation.
8: According to ITAEE data, observed up to 2016; forecasts prepared for 2017 and 2018.

Because of the already sustained negative performance of Campeche, at the end of 2017, it became the tenth state economy, yielding the seventh place to Coahuila, followed by Puebla. These two states made more sustained progress based on trade and manufacturing.

Figure 2c.1 State GDP 2016
(billions of pesos and cumulative % share)

74.8

52.5

State GDP ▬▬ Accumulated share (right)
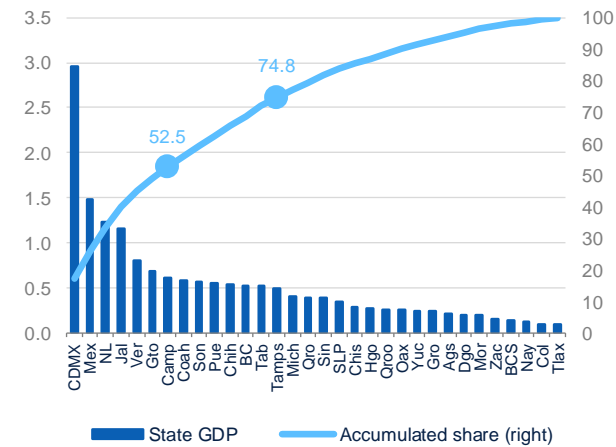
Source: BBVA Research based on data from the INEGI

Figure 2c.2 State GDP 2017
(billions of pesos and YoY % change)

■ Estimated state GDP ● 2017 estimated growth (right)
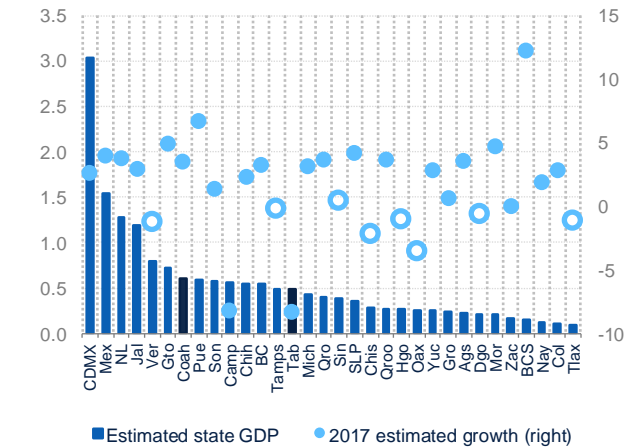
Source: BBVA Research based on data from the INEGI

The employment outlook is prepared using figures from INEGI's National Occupation and Employment Survey (ENOE). This with the intention of obtaining an outlook for total employment, not just formal private employment as might result from using only IMSS figures. When comparing the ENOE figures with the IMSS employment data, we see that, at national level, the result of the programmes to formalise employment is positive, with the number of insured workers growing by 4.4%, while the ENOE employment rate shows growth of 1.4%. Tabasco and Campeche were the only states showing negative growth rates in the number of workers insured, the effect of both states' dependence on oil activities and the negative growth in these activities. As regards the number of people in employment, the states with the biggest declines are Oaxaca and Chiapas, which may be due to the effects of the earthquakes of September 2017, which heavily affected the development of both states' economic activities. Seven states posted negative growth rates as regards the number of people in employment: Durango, Mexico City, Hidalgo, Michoacán, Tabasco, Oaxaca and Chiapas.

Figure 2c.3 Trends in employment (total employed according to the ENOE) in the states
(YoY % change)
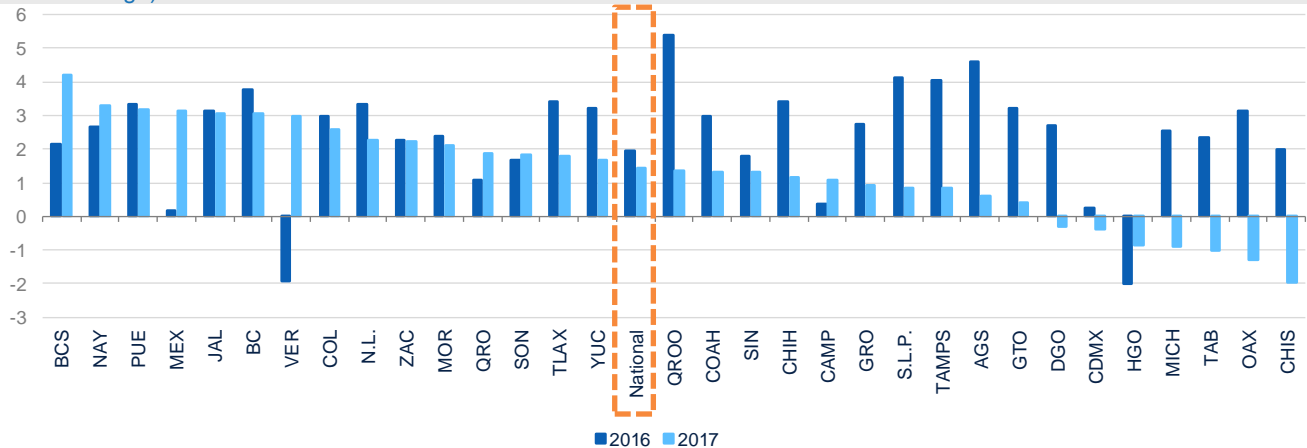
Source: BBVA Research based on data from INEGI, ENOE

In addition, we expect the outcome of the NAFTA renegotiation in 2019 to affect regional growth patterns. A clear example of this is the growth expected for states and regions that depend heavily on manufacturing for exports and the associated local value chains, as is the case of the north-west of the country and, to a greater extent, the Bajío region. However, exporting regions like the Bajío and the north of the country are under a cloud of uncertainty as to the outcome of this negotiation. The tariffs already imposed on steel and aluminium, and the possible imposition of tariffs on cars, would have a significant negative effect on these economies. The states with a large agricultural component in their GDP, such as Michoacán and Sinaloa, could also continue on the current path of growth in exports of agricultural and livestock products. This will largely depend on the level of the exchange rate.

The opening of Mexico to international trade, based on the diversity of international treaties, makes the country attractive for foreign direct investment (FDI). In particular, NAFTA is what makes it most attractive, as can be seen from the fact that more than half of all FDI came from North America during 2017.[9] The industrial sector amassed US$19 billion in FDI in the same period, followed by the services sector with US$11 billion. Therefore, the states with industrial economies focused on the external market[10] and services can be expected to capture the lion's share of FDI. At the end of 2017, Mexico City remained in first place, followed by Guanajuato, Coahuila, Nuevo León and Chihuahua. These last four all have a clear industrial and export manufacturing focus. The concentration of FDI is even more marked than in the case of GDP, as just six states obtain more than half of these resources and 12, barely a third of the total number, obtain nearly 80% of total FDI. In the future, the dynamic of FDI will be affected by the outcome of the NAFTA renegotiation.

9: Mexico captured US$16.6 billion of FDI from North America, followed by the European Union with US$8.6 billion.
10: Within the industrial sector, manufacturing took in 70% of FDI.

Figure 2c.4 Foreign Direct Investment
(billions of dollars and % share, cumulative)

FDI 2017   Accumulated share (right)
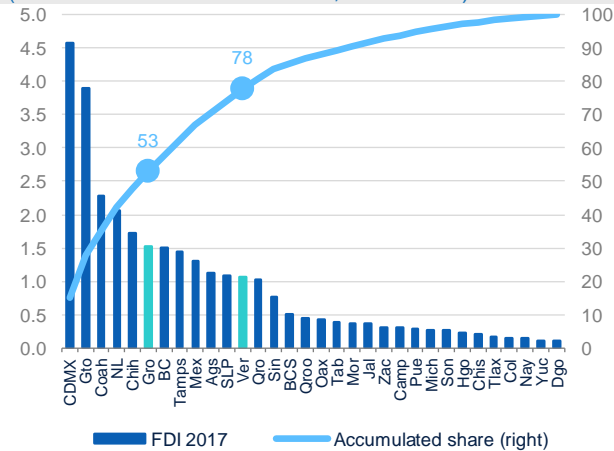
Source: BBVA Research based on INEGI data

Figure 2c.5 Balance of lending by commercial banks by state (billions of constant pesos and NPL ratios)

Performing   Non-performing   NPL ratio (right)
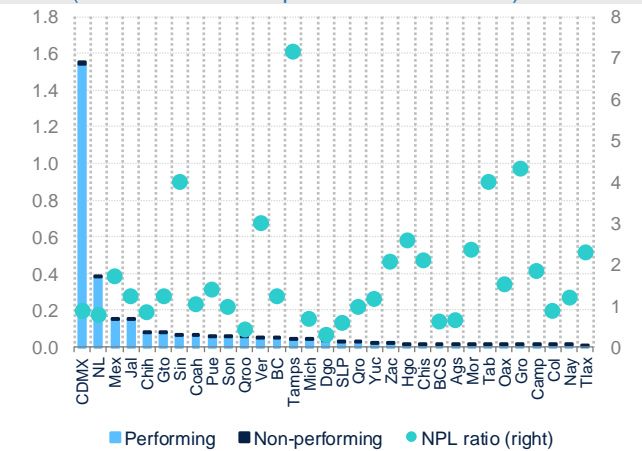
Source: BBVA Research based on data from Banxico

The balance of the commercial banks' lending portfolio is more closely correlated with the size of the state economies than with the economic sectors on which they focus. Mexico City ended 2017 with a portfolio of nearly 1.6 trillion pesos and non-performing loans (NPL) of less than 1%. In terms of value of the lending portfolio, it is followed by Nuevo León, Mexico State, Jalisco and Chihuahua, although none of them had even a quarter of the balance of Mexico City. The majority of the states have low NPL ratios, less than 3%; 31 of the 32 have less than 5% and only Tamaulipas exceeds this, but even there, a 7.2% figure is not a major concern.

Figure 2c.6 Estimate of State GDP 2017 and 2018
(YoY % change)

State GDP 2017   State GDP 2018   National GDP 2018
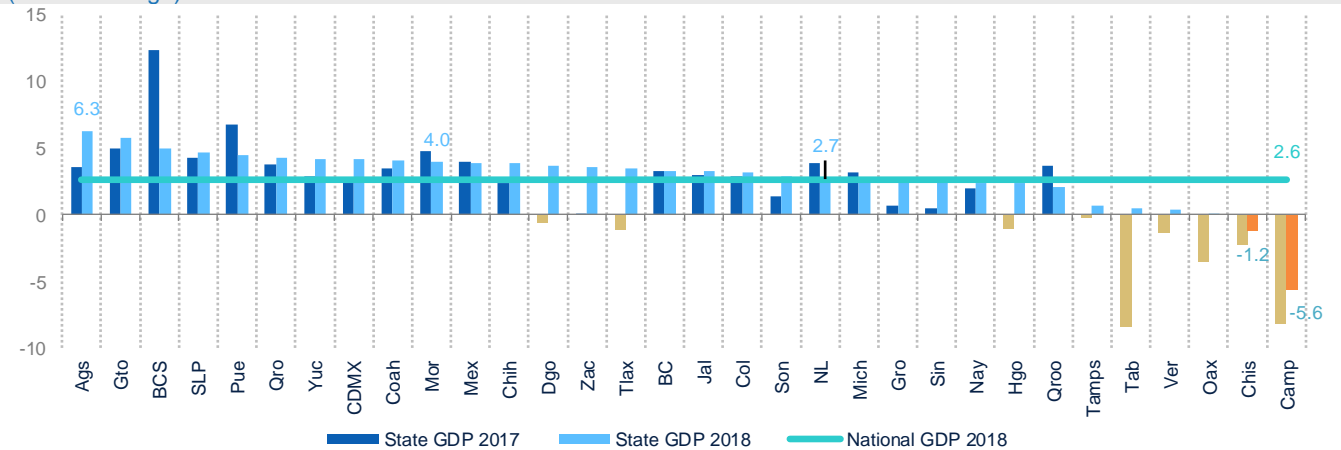
Source: BBVA Research based on INEGI data

As we mentioned before, we estimate state GDP for 2017 based on the ITAEE already published by INEGI. We carry out the estimate for 2018 with our own models, which shows only Chiapas and Campeche not growing in 2018. Campeche is clearly affected by the reduced oil-related activity. While a similar situation might be expected for Tabasco, an incipient acceleration of the primary sector and local trade could lead the state to a slight recovery. At the

other end of the spectrum, Aguascalientes and Guanajuato will be the states with the most growth in 2018, both of them having a focus on industrial and export manufacturing, particularly automotive, for which reason they are also under the shadow of uncertainty cast by the NAFTA renegotiation. In third place, we see Baja California Sur, whose growth should be underpinned by its focus on tourism and now also by a more dynamic construction sector. The next three states also have a manufacturing and trade focus at a local level. San Luis Potosí, Puebla and Querétaro will base their growth on export manufacturing if the scenario remains positive for the continuation of NAFTA. Querétaro has the advantage of having diversified its economy based on services.

Figure 2c.7 State GDP forecasts 2018
(YoY % change)

from 4.0% to 6.7%
from 2.6% to 3.9%
from 0.1% to 2.5%
from -5.6% to -1.2%
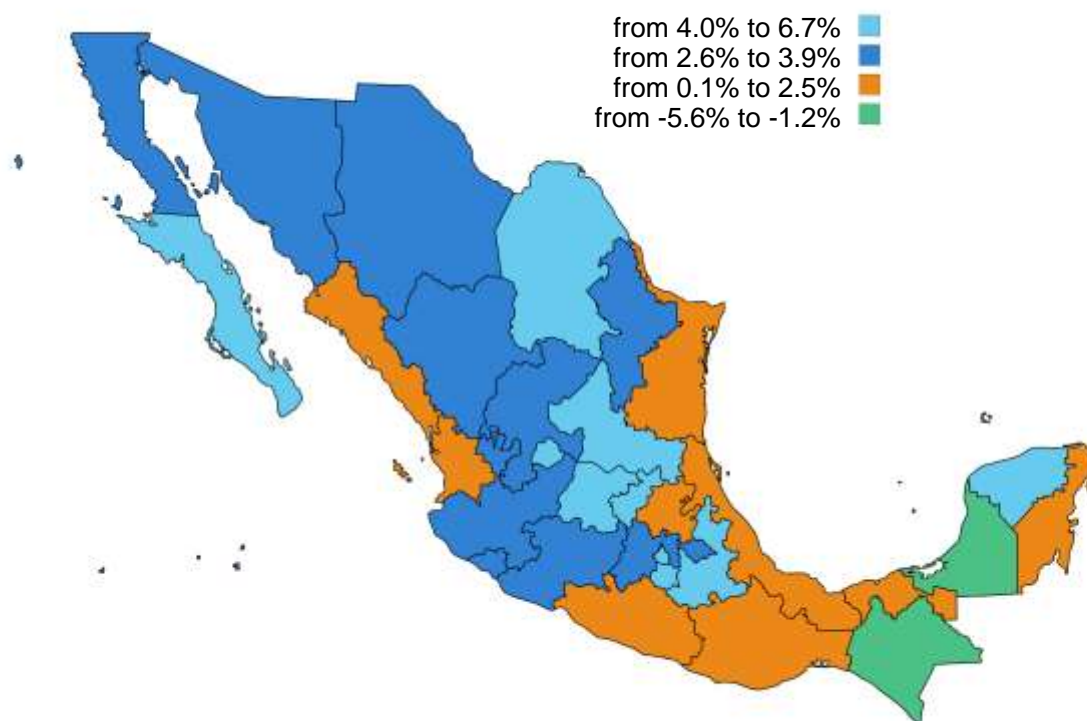
Source: BBVA Research based on INEGI data

Although the scenario is positive for the majority of the states in 2018, with only two states failing to grow according to our estimates, what we do see is the southern states performing below the average in general. The exception is Yucatán, and in previous years, Quintana Roo. The central and northern regions of the country will continue to present the best growth prospects.

3. Subjects for analysis

3.a The automotive industry in Mexico, between heaven and a continuous uncertainty

Introduction

The automotive industry plays an important role in Mexico's economy. In 2017, it contributed 3.1% to GDP; it provided an average of 870,000 direct jobs in the first four months of 2018 and took in US$31.2 billion of FDI from 2012 to 2017. The political changes in the US at the end of 2016 have created an atmosphere of uncertainty regarding possible changes in tariffs and trade relations with the other NAFTA members. Today, the sector's future depends largely on NAFTA's renegotiation.

In this context, this paper addresses the situation of the industry from the point of view of supply and demand. It also includes a section on what is on the table in the automotive negotiations and another that looks at the possible impact of a 25% tariff on the industry's production.

Mexico's position in the world in vehicle production

In 2017, the world automotive industry produced 97.3 million vehicles including heavy trucks as well as cars, light trucks, vans, etc. This figure represents an increase of 2.4%, albeit less than that estimated by the International Organisation of Motor Vehicle Manufacturers (OICA) at the beginning of the same year. Mexico held its place as the seventh biggest auto assembler in the world in 2017, a position it has held since 2014. It also achieved the second highest growth rate of the top ten auto producers, at 13%, well above the 2.3% for the industry as a whole. Last year Mexico produced 50,000 units fewer than South Korea.

Table 3a.1 World's main vehicle producers
(billions of dollars)

	2011	2012	2013	2014	2015	2016	2017
1	China	China	China	China	China	China	China
2	USA	USA	USA	USA	USA	USA	USA
3	Japan	Japan	Japan	Japan	Japan	Japan	Japan
4	Germany	Germany	Germany	Germany	Germany	Germany	Germany
5	S. Korea	S. Korea	S. Korea	S. Korea	S. Korea	India	India
6	India	India	India	India	India	S. Korea	S. Korea
7	Brazil	Brazil	Brazil	Mexico	Mexico	Mexico	Mexico
8	Mexico	Mexico	Mexico	Brazil	Spain	Spain	Spain
9	Spain	Canada	Canada	Spain	Brazil	Canada	Brazil
10	France	Russia	Russia	Canada	Canada	Brazil	France

Source: BBVA Research based on OICA data

Figure 3a.1 World's main vehicle producers
(% change YoY)
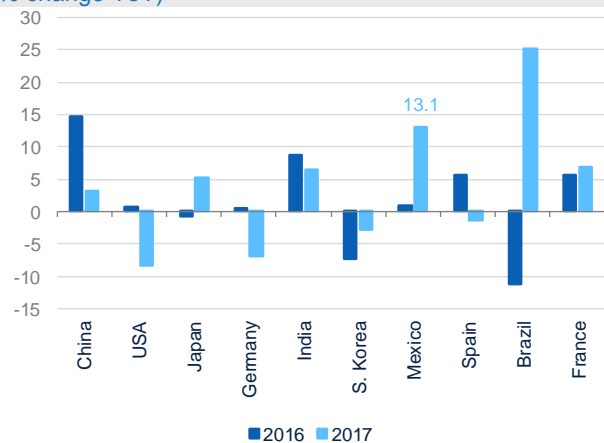
Source: BBVA Research based on OICA data

In 2018, it is possible that Mexico will climb to sixth place if South Korea's declining trend continues along with the dynamism of Mexico's production due to the incorporation of new players (Kia, Audi, Infiniti and VW's SUV line). China continues to lead world vehicle production, with 29 million, followed at some distance in descending order by the US (11.2 million), Japan (9.7 million), Germany (5.6 million), India (4.8 million), South Korea (4.1 million) and Mexico (4.0 million).

Recent investments in Mexico have led to a more varied range of exports

FDI in Mexico's automotive industry from 2012 to 2017 amounted to US$31.2 billion. This has allowed the country to boost its production capacity for light vehicles by approximately 1.63 million units a year. Which means a total capacity of around 4.5 million units a year to 2017.

It is estimated that annual production capacity will reach approximately 5 million units once the Nissan-Mercedes Benz plant in Aguascalientes, producing up to 230,000 units a year, and BMW's 150,000 unit-a-year plant will commence operations in 2018 and 2019 respectively.[11] Although construction has already started on Toyota's new plant, start of operations has been postponed to 2020. Another automaker expected to set up a plant in Mexico is Beijing Automotive Industry Corporation (BAIC) at a location yet to be determined.[12] BAIC currently assembles its models in Veracruz at a plant owned by Mexico's AT Motors, producing vehicles for distribution in Mexico.

Figure 3a.2 FDI into Mexico in the automotive sector (US$ billions)
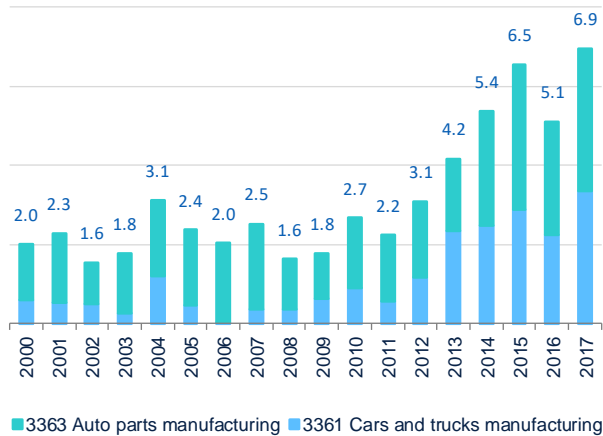
Source: BBVA Research based on AMIA and INEGI data

Table 3a.2 Investments in the automotive industry

Assembler	Total invest. (mUSD)	Start of operations	Plant Capacity (thousands of cars)	Models	Origin	State	Plant type
Mazda	1,600	2014	230	Mazda2 y Mazda3, sedán y hatchback, Yaris-R (Toyota)	Japan	Gto	Nueva
Honda	800	2014	200	Fit, HR-V	Japan	Gto	Nueva
Kia	3,000	sep-16	400	Forte, Rio, Accent (Hyundai)	S. Korea	NL	Nueva
Audi	1,300	dec-16	150	Q5	Germany	Pue	Nueva
VW	1,000	may-17	183	Tiguan	Germany	Pue	Ampl.
VW	658	mar-18		Jetta A7	Germany	Pue	Adeq.
BMW	1,000	1Q19	150	Serie 3	Germany	SLP	Nueva
Renault-Nissan-Daimler (COMPAS)	1,000	2018 & 2019	230	QX50 2019 (Infiniti) y Mercedes Benz	Japan	Ags	Nueva
Toyota	700	2020	200	Tacoma Pick up mediana	Japan	Gto	Nueva
BAIC	2,000				China		Nueva

Source: BBVA Research based on press and online sources

11: Production capacity estimated from newspaper reports.
12: https://www.baicmexico.com.mx/2018/06/la-automotriz-china-baic-prepara-2000-mdd-para-su-primera-planta-en-mexico/

Vehicle production slowed in the first four months of 2018, but will improve in the remainder of the year

YTD April[13] 2018 light vehicle production numbered 1,254,000 units, representing a fall of 0.2% YoY. In 2017, production amounted to 3.9 million, an annual increase of 13.5%, compared with a rate of 2% in 2016. The figures for 2017 and 2018 are still not final and changes may still occur, since Audi has still not officially disclosed its production volumes and the AMIA (Mexican Automotive Industry Association) estimates them. The low growth in 2018 is due in part to the base effect of last year's high figures. We expect production to resume growth in the next few quarters to end 2018 with a 5% increase on last year.

Figure 3a.3 Production of light vehicles in Mexico (millions of units)
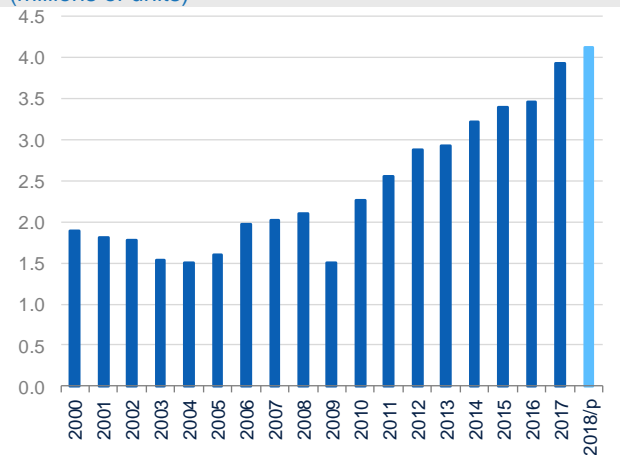
(p) projected
Source: BBVA Research based on AMIA data

Figure 3a.4 Production of light vehicles in Mexico (thousands of units per month and YoY change)
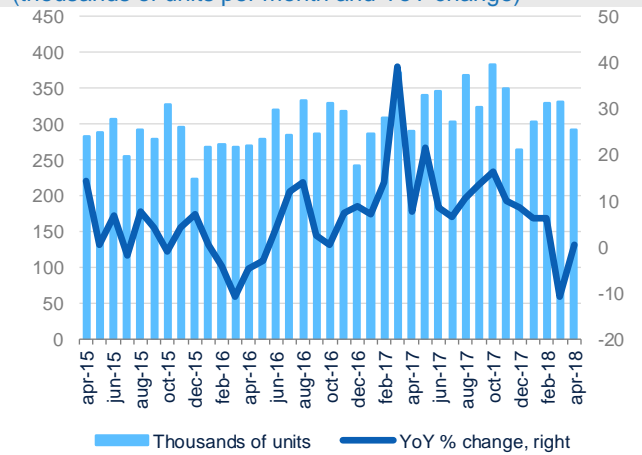
Source: BBVA Research based on AMIA data

In 1Q18, the majority of production was of light trucks[14] (61.3%), and the remaining 38.7% cars[15], in accordance with US demand. Barely a year ago, the shares were the other way around, trucks 45.6% and cars 57.5%. This reflects the flexibility of the plants set up in Mexico. By company, FCA, GM, Audi, Honda, Toyota and VW mainly produce light trucks. At the other end of the spectrum, Nissan, Ford, Kia and Mazda specialise in cars.

13: Also, the figures for May have been delayed because from May on manufacturers and distributors of vehicles in Mexico report their data to Banxico, which will process them and pass them on to AMIA and AMDA (Mexican Automotive Distributors Association) for publication.
14: Includes SUVs, minivans and pick-ups
15: Includes subcompacts, compacts, deluxe and sports models

Figure 3a.5 Production of light vehicles by company in Mexico, 1Q18 (thousands of units)
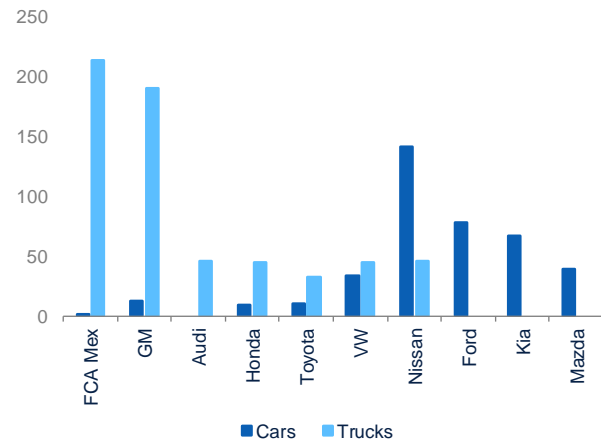
Source: BBVA Research based on AMIA data

Figure 3a.6 Exports
(as a % of the production of light vehicles)
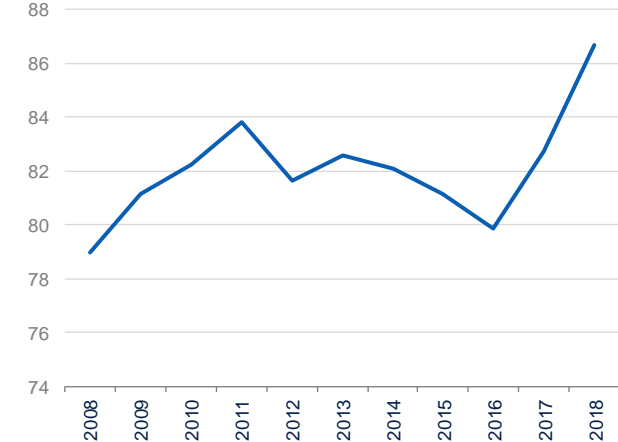
Source: BBVA Research based on INEGI data 2018 Jan-March

87.3% of total production was for export. This proportion increased in 2017 and YTD April 2018. Exports of light vehicles in 2017 grew by 17.5% after growing by 0.3% in 2016; in 1Q18, they grew by 8.1% YoY. In 1Q18 the majority of markets were recovering, even showing greater dynamism; except for North America which grew by 4.1%, less than in 2017 (9.3%). The increase in investment in recent years has involved the arrival not just of new brands in the country but also of the premium segment — Audi (2017), BMW (2019), Mercedes Benz and Infiniti (2018) — raising the average unit value of vehicles exported by Mexico.

In 1Q18, the main export destination for light vehicles was North America, which accounted for 80% of the total, followed far behind by Europe and South America with 8.2% and 7.8% respectively. In terms of value, 75% went to North America.

Table 3a.3 Exports by destination region
(thousands of units)

	2017	Yoy % change	% share	1Q18	Yoy % change	% share
N. America	2,602	9.3%	83.9	660	4.1%	79.0
Europe	168	45.2%	5.4	68	78.7%	8.2
S. America	197	16.3%	6.4	65	47.5%	7.8
Asia	39	38.1%	1.3	12	86.5%	1.4
C. America & Caribbean	43	32.3%	1.4	10	-0.8%	1.2
Africa	2	492.8%	0.1	2	596.0%	0.2
Other	50	21.0%	1.6	18	-53.9%	2.2
Total*	3,103	12.1%	100.0	835	8.1%	100.0

*Not including Audi exports in 2017
Source: BBVA Research based on AMIA data

Figure 3a.7 Automotive exports: light vehicles, heavy vehicles & auto parts (US$ millions)
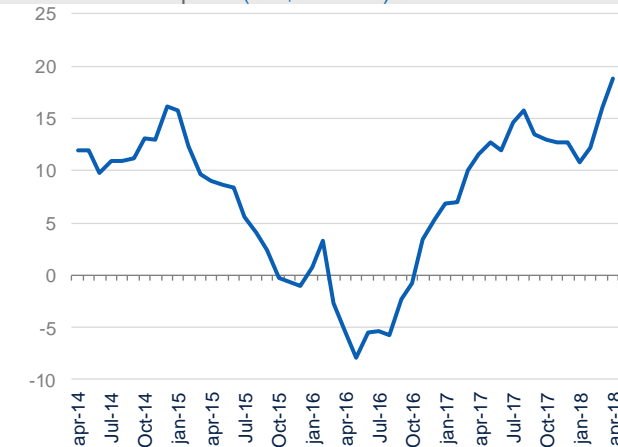
Source: BBVA Research based on INEGI data

Since the beginning of 2017, automotive exports (light vehicles, heavy trucks and auto parts) have been on a rising trend, accelerating in the first four months of 2018. In 2017, growth was 12% YoY, whereas YTD April 2018 it was 15.8%. In the revised figures for 1Q18, this will have to be reflected both in unit production and in GDP of transportation equipment.

Employment in the automotive industry remains dynamic, reflecting the positive performance of production and the investments made. In 2017, the total workforce averaged 824,000, representing an increase of more than 250,000 compared with 2012. In 2017, the number of workers in the automotive industry grew by 7.5%, compared with 3.6% in manufacturing industry as a whole. YTD April 2018 growth remained dynamic at 7.5% compared with 3% for manufacturing as a whole.

Figure 3a.8 Employment in the automotive industry (base 2013 = 100)
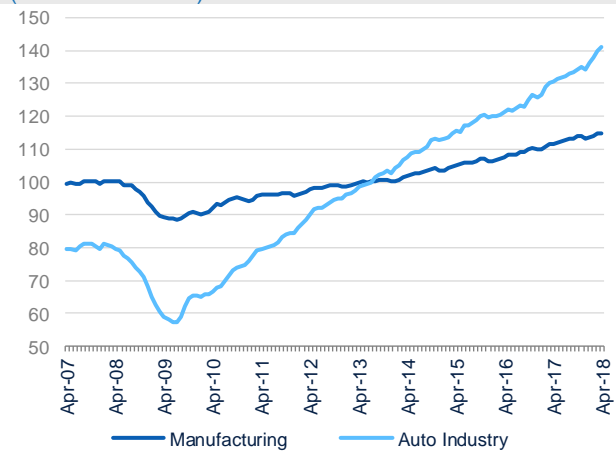
Source: BBVA Research based on INEGI and EMIM data

Figure 3a.9 Employment in the automotive industry (% change YoY)
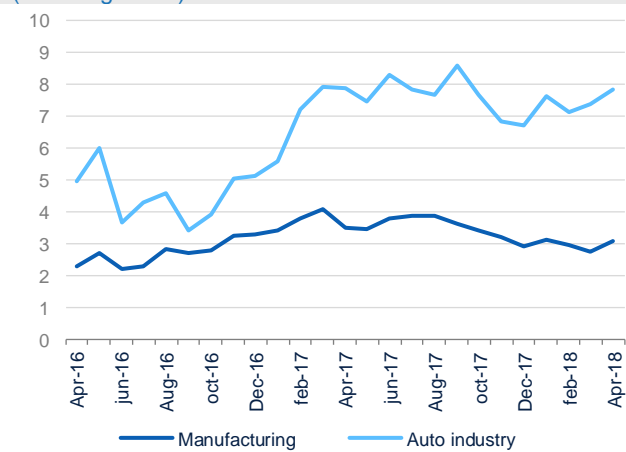
Source: BBVA Research based on INEGI and EMIM data

The renegotiation of NAFTA and the automotive industry

Since the start of the renegotiation of NAFTA, there have been seven rounds of formal talks and two ministerial meetings among NAFTA partners to lay the foundations of a NAFTA 2.0. So far, US proposals involve significant changes to the rules of origin. The Canadian and Mexican negotiators have not yet accepted the proposals. The changes proposed by the US concern three headings: regional value content, steel and aluminium content; and wage thresholds.

NAFTA regional content value lowered from the 85% proposed initially to 75%. This level of 75% would have to be reached within three years, from an initial level of 65%, with progress of 5% each year. A reduction from five to three in the number of categories of auto parts for purposes of establishing the regional content percentage has also been presented. In the first category, core parts would have to reach 75%, in the second, primary auto parts would have to reach 70% and in the third category, secondary auto parts would have to be at least 65% regional content. These are the US counter-proposals to Mexico and Canada's rejection of the initial US proposal that NAFTA vehicles should have 50% US content.

Elimination of the existing tracing list[16], replacing it with one that includes 100% of the parts, as well as eliminating the concept of "deemed originating"[17] which allows automakers to include the value of unlisted parts in the regional content value of the component or system to which they belong. This implies the use of a net cost method for obtaining the regional origin content. Importing components from other regions and considering them indirectly as North American would no longer be allowed. Steel and aluminium are not on the existing tracing list. The US proposal requires at least 70% of the steel and aluminium for core parts to be of North American origin.

In the current NAFTA, there are parallel agreements on labour standards but no minimum labour value content. **The US proposal requires 40% of the content of light vehicles and 45% of that of pick-ups** to come from a country where the average wage is greater than the average observed in North America for auto manufacture (between 15 and 16 dollars an hour). In the US, average hourly wages in 1Q18 were US$29.40 and US$20.70 an hour for the assembly and auto parts industry respectively, according to the BLS[18]; in Mexico, for light vehicles and auto parts they were US$7.80 and US$3.40 an hour average in 1Q18 respectively, according to the EMIM.[19]

Tariffs on automotive exports would have a serious impact

The world automotive industry could be affected if the US carries out its threat to impose new tariffs of 25% on light vehicles and parts. In 2017, Mexico and Canada were the main suppliers of light vehicles to the US, with 46% of the total in terms of value and 51.6% in unit terms. In heavy vehicles, Mexico is the main supplier to the US, with 75% of the market in value terms and 76.7% in volume. In auto parts, Mexico is the main supplier with US$53.1 billion, equivalent to 37% of the total imported by the US under that heading. Total US imports from Mexico amount to US$110 billion.

On 23 May 2018, the US Department of Commerce launched an investigation[20] to determine the effects on national security of the import of automobiles and parts. This type of investigation is known as Section 232 and is very similar to that used to impose tariffs in imports of steel and aluminium at the beginning of this year.

Vehicles exported from Europe to the US currently face import duties of less than 2.5%. Meanwhile, cars produced in the US face a 10% tariff when exported to the European Union.[21] China recently announced a reduction in import duties from 25% to 15% on imports of vehicles from the US with effect from 1 July 2018.[22]

If the tariffs were to be applied, the impact would be very significant. Production of light vehicles in 2017 totalled 3.8 million units. Of these, 3.1 million were exported and only 670,000 sold domestically. With a tariff of 25%, based on estimated price elasticity of demand for the US market,[23] national production could fall by just over 740,000 units. So total production would be 3 million units. In this way, the minimum first-order impact would be 20%. This in turn would have secondary effects on the production chain supplying the automotive industry and associated employment.

16: The list can be found in Annex 401 to the NAFTA in chapter 87, Vehicles other than Railway or Tramway Rolling-Stock, and Parts and Accessories thereof http://www.sice.oas.org/Trade/NAFTA/anx401f1.asp
17: Written questionnaire to verify the origin of the imported good, provided in Article 506 1 a) of the NAFTA. Understood as an effective verification procedure, it includes the power to require copies of the relevant documentation.
18: *U.S. Bureau of Labor Statistics*
19: Monthly Manufacturing Industry Survey, INEGI
20: https://www.commerce.gov/news/press-releases/2018/05/us-department-commerce-initiates-section-232-investigation-auto-imports
21: Trump's car tariffs highlight threat of retaliatory trade war. Washington, 24 May 2018. https://www.ft.com/content/b69a92f2-5f6c-11e8-9334-2218e7146b04
22: China reduces import duties on cars following agreement with the EU. 22 May 2018. El Financiero. http://www.elfinanciero.com.mx/economia/china-reduce-aranceles-a-autos-importados-tras-acuerdo-con-eu
23: Xiaonan Qin Estimating Demand for Automobile Industry in the U.S. Market: 2010-2013 page 21

Additionally, in the case of auto parts, the supply chain would be completely broken, leading to supply shortages in the US. These tariffs would put an end to imports of small vehicles such as subcompacts and compacts produced abroad. The majority of companies have specialised in producing SUVs and the more popular and profitable pick-ups in the US. It will therefore be difficult to produce small vehicles in the US and thereby generate employment.

Table 3a.4 Origin of US imports: light vehicles, 2017

	millions of USD	% share	Accum. % share	Thous. of units	% share	Accum. % share
World	**191,731**	**100.0**		**8,271.1**	**100.0**	
Mexico	46,919	24.5	24.5	2,444.7	29.6	29.6
Canada	42,510	22.2	46.6	1,826.0	22.1	51.6
Japan	39,781	20.7	67.4	1,725.7	20.9	72.5
Germany	20,180	10.5	77.9	491.6	5.9	78.4
S. Korea	15,732	8.2	86.1	929.4	11.2	89.7
UK	8,583	4.5	90.6	213.3	2.6	92.3
Italy	4,769	2.5	93.1	156.9	1.9	94.2
Sweden	2,024	1.1	94.1	58.3	0.7	94.9
Slovakia	1,996	1.0	95.2	42.6	0.5	95.4
China	1,455	0.8	95.9	58.4	0.7	96.1
Other	7,782	4.1	100.0	324.1	3.9	100.0

Source: BBVA Research based on USITC (U.S. International Trade Commission) data

Figure 3a.10 Origin of US imports: auto parts (US$ billions)
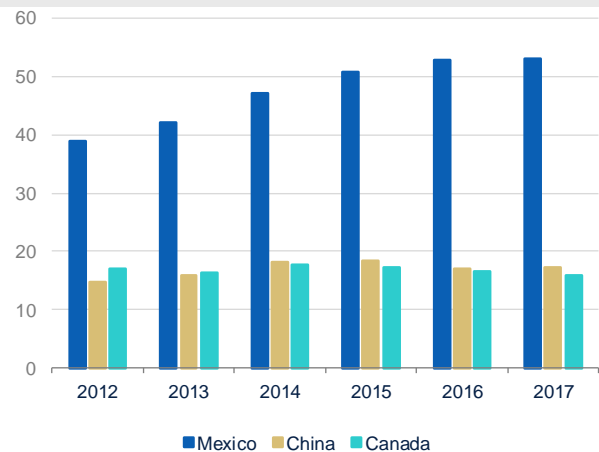
Source: BBVA Research based on USITC data

Domestic demand for vehicles, affected by explosive mixture

From June 2017 to April 2018, light vehicle units sold in Mexico declined every month. Furthermore, they continue to fall, albeit less so than before. The results of the first part of 2017 were not enough to offset the 3.5% fall for the year, equivalent to 1.5 million units. This compares with the gains of 19% and 18.6% posted in 2015 and 2016 respectively. In the first four months of 2018, far from improving, the decline has steepened (-9.2%).

Figure 3a.11 Domestic sales of light vehicles in Mexico (millions of units and YoY % change)
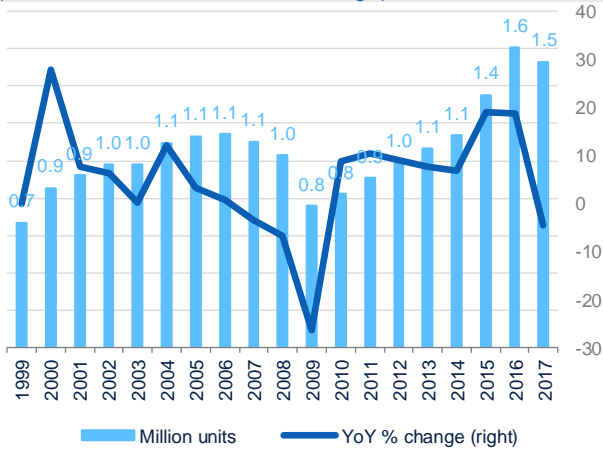
Source: BBVA Research based on AMIA data

Figure 3a.12 Domestic sales of light vehicles in Mexico (thousands of units per month and YoY % change)
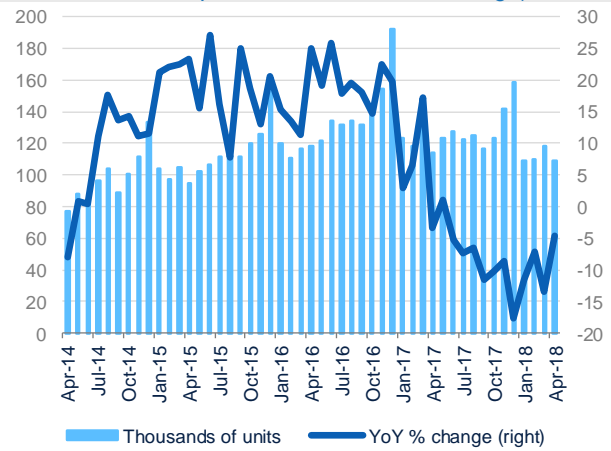
Source: BBVA Research based on AMIA data

Four factors have influenced this trend. Firstly, the continuing recovery of the market following the crisis of 2009 was crowned with an exceptional increase in 2015 and 2016, which would have been difficult to maintain. Secondly, the increase in the price of petrol (gasoline) in January 2017 and its liberalisation from 18 February this year in line with international reference prices. In 2017, the average increase in petrol prices was 17.7%, and from January to April 2018, it was 12% YoY. Thirdly, the depreciation of the currency affected all segments as regards the electronic components, while the minimum safety requirements increased the cost of vehicles in the sub-compact segment sold domestically. In 2017, average prices increased by 6.9%, while in the first four months of 2018 they rose by 3.5%. Fourthly, the brands' captive finance companies and banks in general had to adjust their interest rates after the TIIE interbank rate went from 4% to 7% in 2017 and to 7.5% in May 2018.

Figure 3a.13 Prices of vehicles and petrol and domestic sales of light vehicles in Mexico (YoY % change, 3MMA)
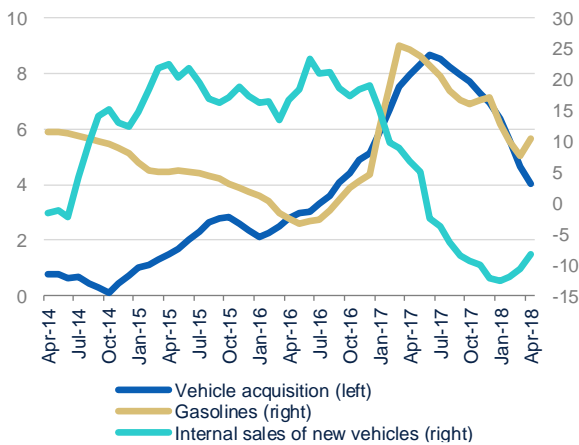
3MMA: three month moving average
Source: BBVA Research based on AMIA and INEGI data

Figure 3a.14 Inflation, interest rate and domestic sales of light vehicles in Mexico (YoY % change, 3MMA)
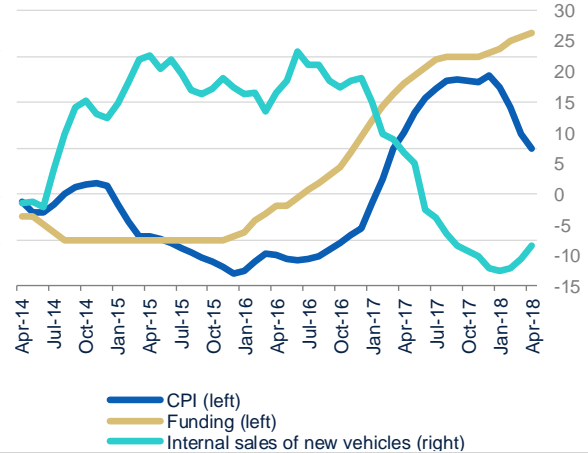
3MMA: three month moving average
Source: BBVA Research based on data from AMIA, INEGI and Banxico

YTD March 2018, 72.2% of domestic sales of light vehicles were on credit, compared with 68% in full-year 2017. This proportion has been growing over the past few years because of a varied offering of credit for buying vehicles both from the brand finance companies and from banks, favoured by the positive trend in formal employment. Financing terms have lengthened, with deals at 36, 48 and 60 months representing 66.7% of the total in March, up on the 63.8% seen one year earlier.

New lending by financial institutions fell by 9.4% in YTD March 2018, more than the fall seen for the full year 2017 and consistent with the trend in domestic sales. By type of institution, the brand finance companies accounted for 70.1% of new automotive financing YTD March 2018, down from the 71.5% figure for the year 2017. The lower share was due to a fall of 10.2% in new lending YTD March 2018. As regards the banks, they formed the only category to increase its share, from 24.6% for 2017 to 26.6% of the total to March 2018, but despite this new lending fell by 3.6%. Lastly, P2P or crowdfunding-type companies had a 3.4% share of the market in 1Q18 as against 3.8% for 2017.

Figure 3a.15 Employment and Auto financing (YoY % change and % of domestic sales of light vehicles, 3MMA)

Financing as a % of sales — Employment (insured)
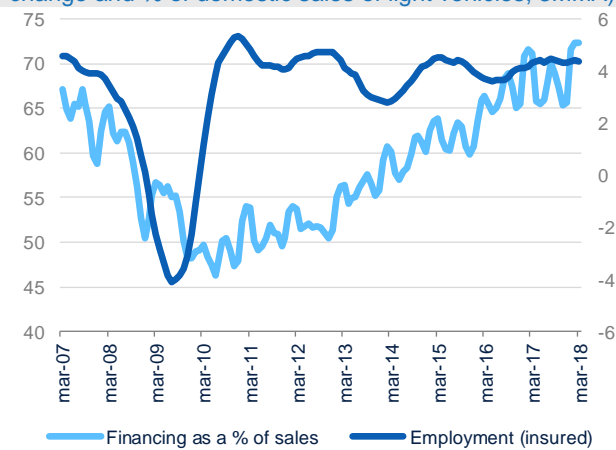
3MMA: three month moving average
Source: BBVA Research based on AMDA and INEGI data

Table 3a.5 Vehicles financed on credit

Institution	as of December 2017			as of March 2018		
	Thousands of units	% share	YoY % change	Thousands of units	% share	YoY % change
Brand financing companies	743	71.5	-2.7	171	70.1	-10.2
Banks	256	24.6	-1.1	65	26.6	-3.6
Auto-financing	40	3.8	-9.0	8	3.4	-30.1
Total	**1,039**	**100.0**	**-2.6**	**244**	**100.0**	**-9.4**

Source: BBVA Research based on AMDA data

Conclusion

The industry has been good for Mexico, in terms of economic growth, exports and development of skills. However, since 2017, Mexico's automotive industry has been hit by news of cancellations, postponements or changes of automakers' investment plans. For example, at the beginning of 2017 Ford officially announced the cancellation of its San Luis Potosí plant, which was already 20%, built. In October 2017, Toyota changed its investment plan, reducing it from US$1 billion to US$0.7 billion and decided to produce the Tacoma pick-up instead of the Corolla sedan, entailing a change in the design of the Mexican plant; the Corolla will now be produced in the US.

In addition, the US launched an investigation under section 232 to determine the effects on national security of the import of automobiles and parts, which, depending on the outcome, could lead to the imposition of a 25% tariff on imports of vehicles and auto parts. The increased price of imports from Mexico would lead to a reduction in demand for cars of at least 20%, assuming that the end consumer absorbed the entire impact. In the case of auto parts, it would lead to the disruption of the global value chains.

Furthermore, the world automotive industry is facing new challenges, such as the revolution and disruption entailed by many of the advances that are emerging in the areas of mobility, and the sale of hybrid and electric vehicles. For Mexico, this involves transforming itself to make other components and adapting to the new business and technology models, which requires a national strategy to drive the transition towards new global value chains.

Finally, the multiple benefits that the industry has brought to Mexico, and its exceptional results, make it a bright star in the sky, while the tortuous renegotiation of NAFTA and the possibility of tariffs put its future development at risk, overclouding it in uncertainty.

References:

Xiaonan Qin, Estimating Demand for Automobile Industry in the U.S.   2010-2013 The Department of Economics, Northeastern University, Boston, Massachusetts, December 2014.

Francois, J., Baughman, L.M., and Anthony, D. An Accident Waiting to Happen? The Estimated Impacts of Tariffs on Motor Vehicles and Parts. Trade Partnership Worldwide, LLC/ The Trade Partnership, 29 May 2018.

Promexico. Industria Automotriz Mexicana Situation Actual, Retos y Oportunidades. 2016

3.b Railway efficiency and investment: tracks towards higher growth

The transportation sector in Mexico has accounted for 6.1% of GDP on average over the past few decades, a percentage that has not changed significantly over the period, fluctuating between 5.7% and 6.4% in 1996 and 2017 respectively. The main subsectors forming it are road haulage and passenger transportation. The air, maritime, and rail transportation subsectors, although having a smaller share in the sector, are a constant subject of debate from the economic point of view because of their potential for development in Mexico and for promotion of efficiency in the mobilisation of national production and employment. Transportation services have a symbiotic relationship with the biggest sectors in the economy, manufacturing and trade. The national transportation networks also largely reflect regional development patterns in the country, since they constitute the channels through which the value of the intermediate and final products of trade and manufacturing flow, as can be seen in Figure 3.

In this edition of *Mexico Regional Sectoral Outlook*, we will present the structure of the sector, as well as the main determinants of supply of and demand for transportation services. Similarly, we carry out a general analysis of the performance of the main subsectors and their prospects, with emphasis on the rail transportation subsector. In particular, we will present an analysis of rail transportation based on a study already carried out on the national road and air route networks, with two approaches. The first approach, which is descriptive, analyses the characteristics of the railway network in a context of graph theory and presenting results on network architecture. The second approach, which is comparative, defines the ideal railway network and the discrepancy between it and the current railway network.

As background, the sector outperformed the national economy in 2017, growing by 3.2%, despite a fall in real wages[24] and largely due to the acceleration of manufacturing in 2017.[25] The composition of the sector remained relatively static, as has been the case over the past few decades. Public and private investment affect the sector indirectly, with capital flows appearing in the GDP of the corresponding construction subsectors.[26] From a regional perspective, the disparities in sector GDP are clear, with more than 50% of the sector concentrated in five states (Mexico City 21.3%, Nuevo León 10.0%, Mexico State 8.1%, Veracruz 5.7% and Jalisco 5.1%), due in part to the concentration of productive activities and the centres of distribution or sale at national level.[27]

The connection between these areas and the country's entry and exit points – airports, ports and land borders – determine the transportation routes in Mexico. The volume of goods transported from and to foreign countries has increased in the past few years and is divided among transportation by air (7.1%), road (55.3%), sea (26.2%) and rail (10.4%)[28], as can be seen in Figure 7. Given that the sector's performance is also directly associated with international trade, the current renegotiation of NAFTA will large dictate the future of those of its branches dedicated to trade in the North American region.

24: Real employee benefits (and wages as a component of them) influence demand for passenger transportation, an activity accounting for a major share of the sector. In 2017, the daily wage associated with workers insured with the IMSS showed an average contraction of 1.2%.
25: Manufacturing grew by 2.9% in 2017, as against 1.5% in 2016 based on the original series.
26: As is the case with infrastructure, in the public works subsector of construction.
27: The place where companies have their registered office may exaggerate the concentration of sector GDP.
28: Average shares in 2017.

The transportation sector contributed 10% of GDP growth in 2017

The transportation sector grew by 3.2% in 2017, above the forecasted rates and above the rate of GDP growth, which was 2.0%. In relation to tertiary activities, the transportation sector contributed 10.9% (contributing 0.33 out of 3.02 percentage points) of growth in 2017, as shown in Figure 1. At the same time, tertiary activities contributed 92.3% of GDP growth, implying that 10.1% of the economy's growth in 2017 is the result of the performance of the transportation sector.

Figure 3b.1 Average contribution to the real growth rate of tertiary activities in 2017 (%)
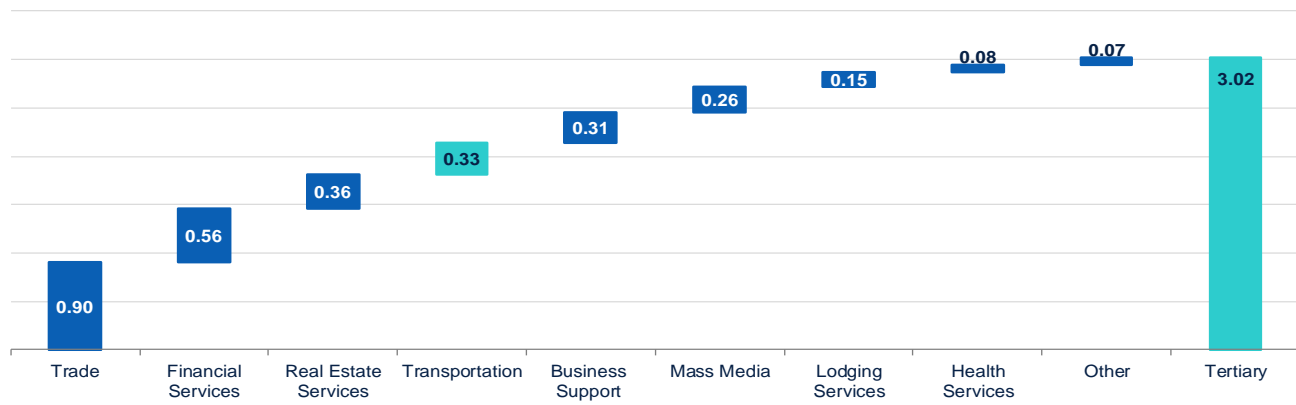
Source: BBVA Research based on INEGI data

Manufacturing production, one of the main components of demand for transportation, and therefore a determinant of the sector's revenues, has regained its growth rates, with growth of 2.9% in 2017, after a rate of 1.5% in 2016, as can be seen in Figure 3. Moreover, in 2017 we saw a reactivation of manufacturing activity, due mainly to the revival of the manufacturing sector in the US, following two years of stagnation. Apart from this, trading activity in the domestic market, another important component of demand for transportation, exhibited a growth rate of 3.3%. In the case of international trade, we saw exports pick up – along with an increase in the total volume of international trade – and therefore greater demand for transportation services, mainly road haulage.

Figure 3b.2 Transportation GDP and Total GDP (billions of pesos and YoY % change)
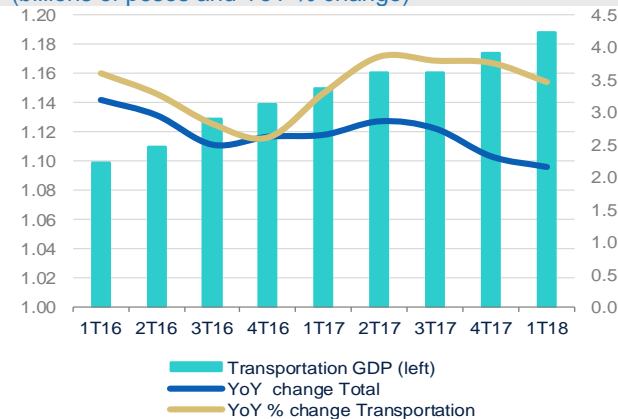
Note: seasonally adjusted series, three-month moving average
Source: BBVA Research based on INEGI data

Figure 3b.3 Manufacturing, trade and transportation GDP (YoY % change, SA)
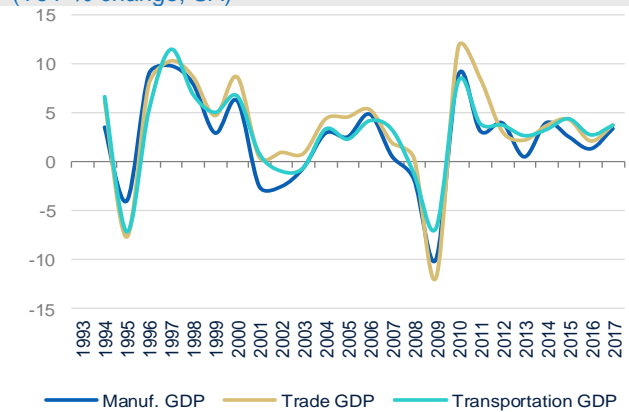
Source: BBVA Research based on INEGI data

The transportation sector suffered an average annual inflation rate of 11.9% in 2017, the highest among the components of Mexico's CPI (INPC) on the expenses side[29], as can be seen in Figure 5. This was partly due to the liberalisation of petrol and diesel prices, which was reflected in an increase in the producer price index (INPP) for transportation services. Consequently, consumer prices increased, to an even greater extent than producer prices, as can be seen in Figure 4.

Figure 3b.4 Transportation: producer and consumer prices (YoY % change)
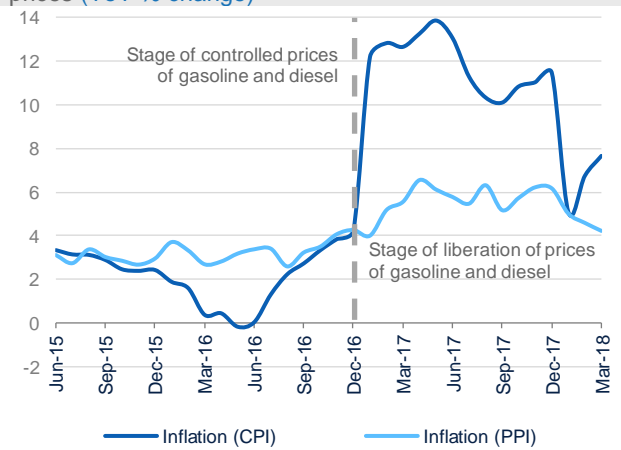
Source: BBVA Research based on INEGI data

Figure 3b.5 Consumer prices by expenditure item (YoY % change)
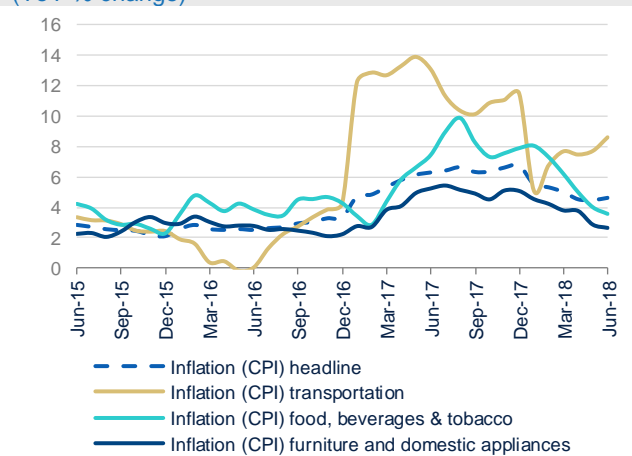
Source: BBVA Research based on INEGI data

To explain this phenomenon, we need to analyse both markets involved: fuel and transportation services. In the fuel market, transportation services companies constitute the demand side, which according to economic theory must be relatively inelastic due to the essential nature of this production input. This characteristic is mainly observed in the road haulage and land transportation of passengers subsectors.

Consequently, in the market for transportation services, an increase in input prices implies a contraction in their supply. Therefore, the greater inflation in transportation services to the consumer compared with inflation of inputs leads us to infer a relatively inelastic demand for transportation services. This inference comes from the fact that the more inelastic demand is, the greater the upward pressure on equilibrium prices exerted by a contraction in supply.

Analysing the land transportation of passengers subsector, the deterioration in real wages as a result of the general inflation experienced during 2017 may have affected its performance. However, this phenomenon was offset by the reactivation of manufacturing and trade, which had a favourable effect on the haulage subsector, leading to growth of the sector overall. The shares of the subsectors within transportation services have held relatively steady over the past few years.

Despite the relatively good performance of the sector in terms of growth, its potential (taking account of the demand for transportation services and the costs of supplying them) has not been fully exploited;[30] this phenomenon is even more obvious in the case of rail transportation.

29: Average annual CPI inflation was 6.0%.
30: The lack of development and maintenance of the railway and port infrastructure partly explains this phenomenon.

Rail transportation is the most efficient form of land transportation in terms of cost per mile per ton transported; however, Mexico's railway infrastructure does not have the levels of network development needed to meet the potential demand for transportation, as will be demonstrated in more detail in the article. Nevertheless, trade with the US has seen a slight increase in the share of rail transportation in the past few years, as can be seen in Figure 7.

A similar situation applies to port infrastructure, which still does not match the levels of development and interconnectivity in the national transportation network to allow for an optimal flow of goods. In this subsector, we also see a slight increase in the transportation of goods to and from the US. Additionally, trade with other regions such as Europe and Asia-Pacific is more dependent on the port infrastructure, its efficiency and interconnectivity, making the ports a key mechanism of trade diversification and integration with other overseas regions.

Figure 3b.6 GDP of transportation by subsector (YoY % change)

Legend:
- Warehousing
- Pipeline, touristic & related serv.
- Road Haulage
- Railway
- Sector total
- Post, courier and packaging
- Land passenger
- Water
- Air
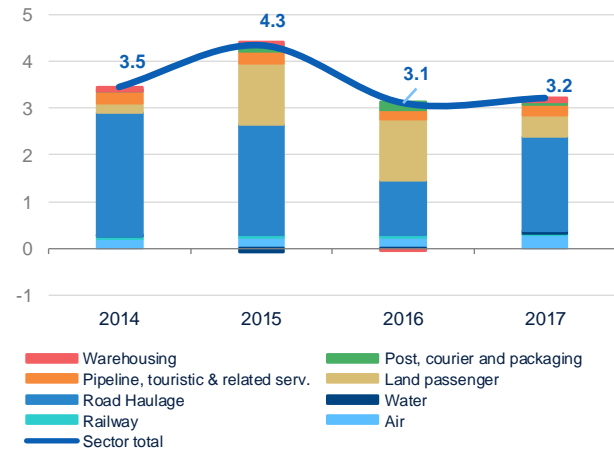
Source: BBVA Research based on INEGI data

Figure 3b.7 Trade with the US by subsector (share %)

Legend:
- Road haulage
- Air Transportation
- Maritime Transportation
- Other
- Railway Transportation
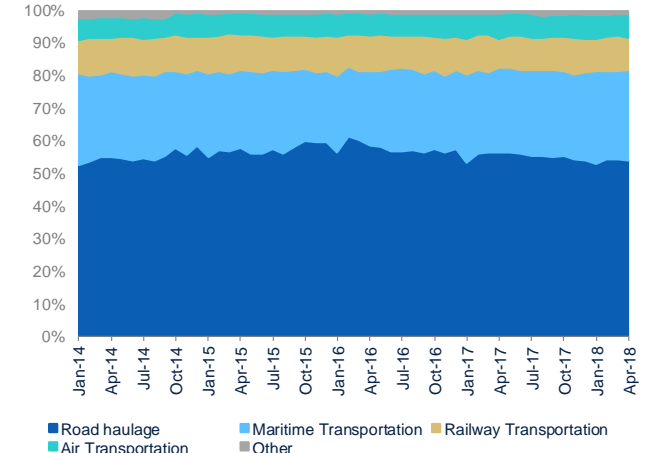
Source: BBVA Research based on INEGI data

Rail and sea transportation's lower costs per ton transported compared with road haulage,[31] constitute a potential reduction of costs for manufacturing in the movement of their goods if a developed and efficient port and rail infrastructure can be brought about. Considering international flows of goods, in addition to Mexico's strategic location, this development could drive Mexico's positioning as a logistics platform in North America and as an essential hub in the international trade network.

The share of the transportation sector in GDP is gradually increasing

Transportation has held its percentage share in the Mexican economy relatively constant, and currently occupies the fifth place in terms of share of GDP. However, there have been signals in the past few years that this share is tending to increase, considering the growth rates observed. This dynamism of the sector could be being driven especially by the road haulage and passenger transportation subsectors, which are those with the biggest shares in transportation GDP. As for rail transportation, Mexico occupies the thirteenth place in the world in terms of the total length of its railway network, with just 6.7% of the length of the US rail network, transporting 78.77 billion metric ton-kilometres in

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31: According to data of the Secretariat of Communications and Transportation, in 2016 the cost of transporting an automobile weighing 1.2 metric tons was 5,114.3 pesos by road and 2,760 pesos by rail.

goods, whereas the US transports 2.5 trillion metric ton-kilometres. This big difference remains when we standardise relative to the manufacturing production of both economies.[32]

Passenger transportation shows a stable growth trend, while road haulage is the main force behind the deviations seen in the sector dynamics of the past few years. In fact, in terms of employment, we see greater growth in employment in the warehousing and road haulage subsectors, which is expected to continue in 2018, even at greater rates of performance than in 2017.

Mexico's trade relations with other countries have been analysed in previous editions of **Mexico Regional Sectoral Outlook**. On this occasion, we will review the possible effects of international trade policies on the sector, referring mainly to the subsectors that depend on trade with other countries and the existence of common productive chains. A favourable outcome to the NAFTA renegotiation would result in a greater volume of exports and international trade, benefiting the growth rates of the transportation sector, maintaining the current growth trends. However, a failed outcome could affect growth rates, due to the significant portion accounted for by trade and manufacturing in demand for transportation services. Currently, the automotive segment of manufacturing accounts for the strongest demand for rail transportation, with approximately 20% of rail freight transportation.[33]

Air transportation and warehousing lead the sector's growth

In the transportation sector in 2017, we can identify two segments that together constitute 83.2% of the sector's GDP, namely road haulage (50.7%) and land transportation of passengers (32.5%). Air transportation and warehousing services, although representing just 3.1% and 1.3% of the sector, showed growth rates in 2017 of 10.4% and 7.3% respectively, as shown in Figure 6. The growth in the air transportation subsector may be a consequence of the open skies agreement between Mexico and the US, increasing the market share in which Mexican airlines can participate in the US market.[34]

One of the current debates within the sector is the construction of the New Mexico City International Airport (NAICM), in response to the growing demand for air transportation services. This case is particularly illustrative, as it shows the complementarities in production existing in the sector, as well as the way in which operating capacity defined by infrastructure influences demand for other factors of production, in particular labour. In addition, we note that cancellation of the project would take US$20 billion off GDP by 2035.[35]

The biggest variation in the growth path of transportation is in road haulage, due to its dependence on the manufacturing cycle and on the performance of trade activities, as can be seen in Figure 3. The land transportation of passengers subsector for its part presents less dispersion, perhaps due to the population's patterns of movement, since it represents a necessary service for the population's performance of work and this produces rigidities in adjustments of quantity demanded.[36] The main explanation of this phenomenon according to economic theory derives from rigidities in the income of the actors constituting the demand for the service (in this case, rigidities in wage adjustments) compared with the speed of adjustment of manufacturing or trade revenues which, as mentioned above, would constitute a boost in demand for freight transportation.

32: With World Bank data for 2014, the aggregate values of manufacturing in Mexico and the US were US$209 trillion and US$2,085 trillion respectively. This implies 376.89 metric ton-kilometres for every billion dollars for Mexico and 1,199.04 for the US.
33: 18.1% of wagons loaded according to the Statistical Railway Yearbook, SCT (Secretariat of Communications and Transportation) 2017.
34: According to an article entitled "Acuerdo aéreo México-EU dinamizará a la industria" ("US-Mexico air accord to boost the industry") in *El Economista*.
35: Notimex (official Mexican news agency), according to declarations of IATA, the International Air Transport Association (IATA).
36: As is evident in the Origin and Destination Survey for the Metropolitan Zone of Valle de México.

Therefore, the low volatility of wages compared with that of manufacturing and trade revenues would imply less variability in the quantity demanded for passenger transportation, relative to road haulage.[37] In the case of rail transportation, the growth rates reflect a volatility that depends partly on automotive manufacturing, its main customer.[38]

As for revenues by subsector, we see that 54.3% of revenues come from road haulage (31.3%) and land transportation of passengers (23.0%, divided into 9.0% for urban public transportation and 13.9% intercity). Additionally, warehousing is the subsector with the highest growth rates, and we see an even bigger increase in the fourth quarter of 2017 (4Q17), following a relative slowdown in the third quarter. This increase may be mainly due to the build-up of local inventories by large retailers with an international presence who have expanded their capacity following a run-down of stocks in the first half of 2017 (1H17) in anticipation of inflation and exchange risks.

On the expenditure side, the outlook is similar; however, looking at the growth rates it is clear that rail transportation companies' operating margins have widened as their costs have decreased, while the subsector's revenues have increased. In the case of warehousing, margins have also increased as revenues have grown on average faster than expenditure.

Figure 3b.8 Revenues of the transportation sector (YoY % change)

Air Transportation — Railway Transportation — Road Haulage
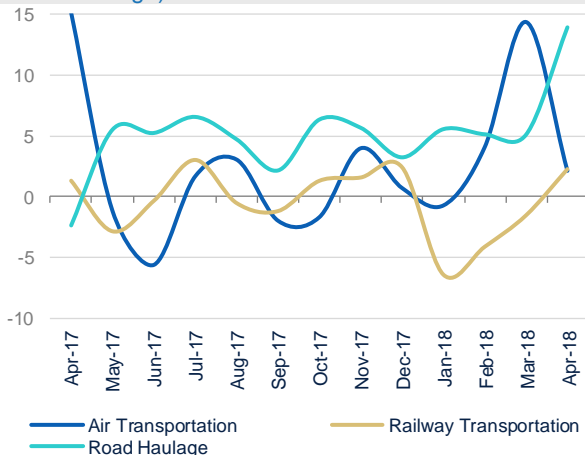
Source: BBVA Research based on INEGI data

Figure 3b.9 Expenditures of the transportation sector (YoY % change)

Air Transportation — Raiway Transportation — Road Haulage
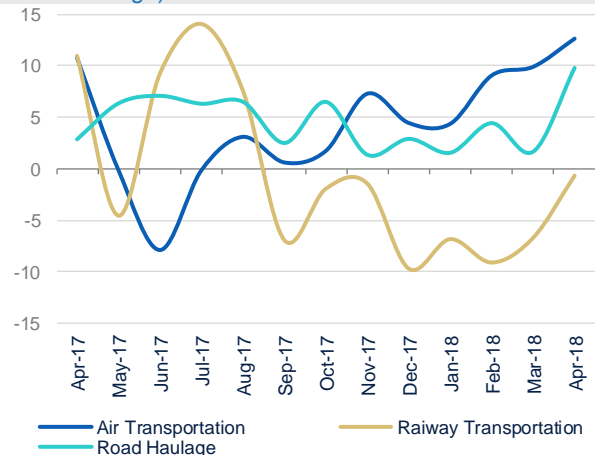
Source: BBVA Research based on INEGI data

Railway network does not meet the needs of the national economy

Mexico's backwardness in terms of railway infrastructure is all too obvious and has been widely discussed in analyses of regional development.[39] In fact, resolving it constituted one of the proposals of the National Development Plan for 2013-2018, which has not been carried out. Nor has the opening of interurban lines been completed, a case in point being the Mexico-Toluca railway, which has seen substantial cost overruns relative to the initial project presented.[40]

37: The range of variability of land passenger transportation services is 13.5 points, as against 42.9 for road haulage.
38: In terms of value, calculated based on GDP at constant prices.
39: As in López Castro, M. (2004)
40: According to a report of the Mexican Institute for Competitiveness (IMCO).

The Mexican railway network can be studied by analysing transportation networks, using the concepts of network centrality and coherence. The former defines a measure of a network to identify the relative centrality of a node (in this case a population centre); the latter defines how far the current network is from the ideal network according to the transmission of value in it.[41] The analysis is based on an article written by De la Peña (2012), which analyses Mexico's air and road networks.[42] As regards the railway network, two types of analysis are needed.

With respect to the number of passengers in each population centre, the result is analogous to the study carried out for the national highway network, and we carried out the exercise of duplicating the corresponding metrics. Additionally, since manufacturing is the main source of demand for railway transportation services, we conducted a study with the volume of production by geographical areas – metropolitan zones, ports and border cities – and an analogous analysis to assess the centrality of the nodes in production and the ideal network for current manufacturing production.

The analysis is carried out for the national railway network and interconnectivity within Mexico, but does not cover the international transportation of goods, so the connectivity of ports and border cities must be interpreted with caution. A port might appear over-connected in an analysis of national connectivity, whereas its connections would appear nearer to the ideal if the flow of goods to and/or from abroad were taken into account; a clear example of this is the port of Topolobampo, Sinaloa. The same is true of some border cities such as Ojinaga, Chihuahua.

The results of the exercise are summarised in the following tables:

Table 3b.1 Centrality and coherence vis-à-vis population in the railway network

Locality	Population (millions)	Comparative centrality
Valle de México	20.1	0.0019
Guadalajara	4.8	0.0122
Monterrey	4.4	0.4689
Puebla - Tlaxcala	2.6	0.0024
León	1.9	0.0975
La Laguna	1.2	2.6182
Aguascalientes	0.9	1.7402
Tijuana	1.8	0.0009
Nuevo Laredo	0.4	1.2732
Ojinaga	0.0	23.2941
Tapachula	0.3	0.0000
Topolobampo	0.4	4.1690
Lázaro Cárdenas	0.2	0.0017
Salina Cruz	0.1	0.0000
Tampico	0.9	1.5459
Coherence of the railway network		**0.24**

Source: BBVA Research based on data from Banxico

Table 3b.2 Centrality and coherence vis-à-vis manufacturing production in the railway network

Locality	Manufacturing production (millions of pesos)	Comparative centrality
Valle de México	856.1	0.0006
Guadalajara	329.5	0.0022
Monterrey	734.8	0.0347
Puebla - Tlaxcala	297.1	0.0003
León	194.3	0.0120
La Laguna	154.1	0.2529
Aguascalientes	134.6	0.1476
Tijuana	101.2	0.0002
Nuevo Laredo	10.6	0.5637
Ojinaga	1.6	4.7443
Tapachula	3.0	0.0000
Topolobampo	7.8	2.7357
Lázaro Cárdenas	46.0	0.0001
Salina Cruz	213.7	0.0000
Tampico	177.2	0.0918
Coherence of the railway network		**0.16**

Source: BBVA Research based on data from Banxico

41: As in the article "Transportation Systems in Mexico: an analysis of theoretical centrality of networks" by José Antonio de la Peña, EMALCA Team
42: The centrality and coherence metrics in a network are the result of the calculation of the values and vectors proper to the adjacency matrix of the network, as well as the discrepancy between the ideal degrees of connectivity – by node and overall – relative to a vector of local parameters (in this case, population or manufacturing production).

It can be seen that in general the degree of connectivity of the nodes in the railway network is below the ideal[43]; in other words, given the population or the manufacturing production in the places studied, the railway network is not sufficient to meet the potential demand at these nodes. Additionally, we see cases where a locality is under-connected with respect to manufacturing production but over-connected regarding population, as is the case of La Laguna region, Tampico, Aguascalientes, Chihuahua and Saltillo. In these localities, the development of the railway network is more than sufficient for the needs of the population but not enough for the connectivity requirements of the manufacturing industry.

As regards investments in the sector, we can say that in the under-connected localities, there is a potential demand for rail transportation services that is not covered by the current network. Similarly, in cases of over-connection, we conclude that there is sufficient railway infrastructure to meet greater demand from either the population or the manufacturing industry. Accordingly, the classification and ranking resulting from the analysis may serve as a basis for evaluating and prioritising investment and local development projects.

The general coherence measure, which shows how far the railway network is from the ideal network, is much lower when the analysis is carried out with respect to manufacturing production than when it is done with respect to population. This may be a direct consequence of the history of railways in Mexico and their construction at the end of the nineteenth century, as a way of transporting workers as well as minerals. Nevertheless, currently it is inefficient for the existing network to meet the needs of the population to a greater extent than those of manufacturing industry, its main source of demand.

Employment in transportation is growing, although at more moderate rates

As a result of the growth in the transportation sector, and of the campaigns to bring more employees into the formal economy, the number of workers employed in the sector (in comparison with the figures of one year earlier), has seen a constant increase in the past few years. The underemployed population[44] shows growth rates below those of the employed population, according to data of the ENOE,[45] reflecting a reduction in the percentage of the population in that situation. Apart from this, the number of employed workers maintains constant annual growth rates of around 5% in the sector, as can be seen in Figure 10.

43: Coherence is a measure of network quality that takes values between zero and one, with zero representing a complete lack of coherence and one representing a situation in which the structure of the network efficiently covers the needs of the population, in other words a perfectly coherent or ideal network.
44: The underemployed population is the employed population that has the need and availability to offer more labour time than their current occupation allows them.
45: National Survey of Occupation and Employment

Figure 3b.10 Employment in the transportation sector
(millions and YoY % change)

Total Employed (right)
Underemployment YoY % change
Employment YoY % change
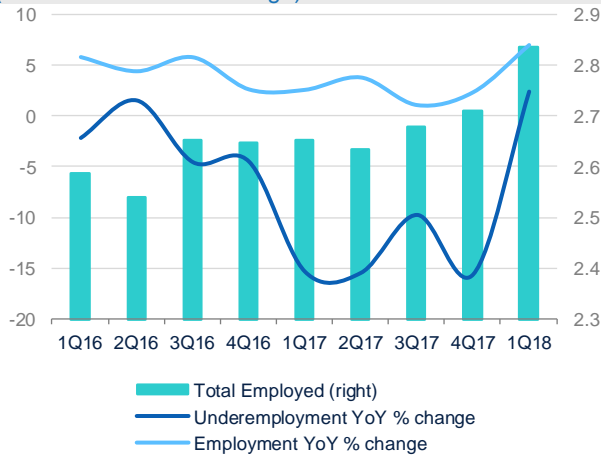
Source: BBVA Research based on data from INEGI, ENOE

Figure 3b.11 Transportation: employment by subsector
(YoY % change)

General Index   Air
Railway   Coastal maritime
Road Haulage   Deep sea maritime
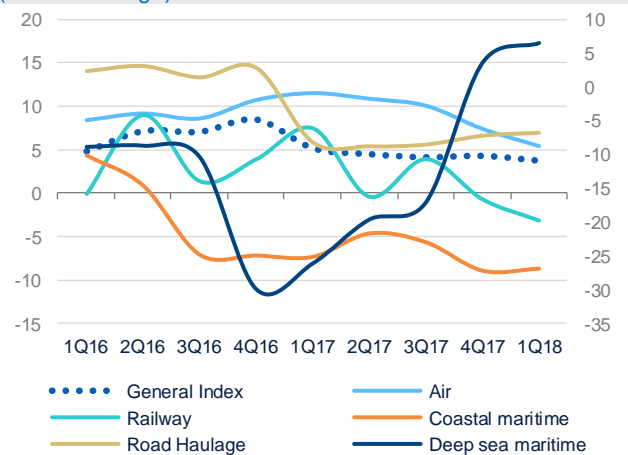
Source: BBVA Research based on data from EMS, INEGI

Analysing employment by subsector, we see that the maritime transportation subsectors (both deep sea and coastal) saw negative growth during the second half of 2016 (2H16) and until 3Q17. This trend reversed from 4Q17 in the case of deep sea maritime transportation. The remodelling and adaptation of several ports, such as Manzanillo, Lázaro Cárdenas and Altamira, may explain this fall in employment, and it may be that some workers were reclassified to sectors such as construction of port infrastructure. As expected, the warehousing and air transportation segments showed higher growth rates of employment, in line with the growth of revenue and expenditure in these subsectors. At the end of 2017, we see a fall of employment in railway transportation.

Within the transportation sector, the main inputs are infrastructure, machinery and labour. Infrastructure represents a fixed cost that defines the capacity to provide transportation services in a given period and is specific to each subsector – airports, seaports, roads and bridges are examples of this. The degree of substitution among factors of production is less when there are strong complementarities and therefore, infrastructure and machinery largely define the required labour in each subsector.

A current clear example is the projected job creation of the New Mexico City International Airport (NAICM), which is estimated at 1.4 million jobs – direct and indirect[46] – for 2024, in line with the new operating capacity, according to the National Chamber of Air Transportation (Canaero). Of these jobs, 400,000 would be generated directly by the NAICM.[47] If we compare these figures with those of the Secretariat of Communications and Transportation (SCT), we see that the SCT presents a figure of 500,000 jobs generated by the NAICM, from the design phase through to the operational phase.[48]

46: Based on projections of fleet orders, the increase in operating capacity, growth of the other airports and jobs generated indirectly by tourism.
47: Posada García, 2018.
48: González (2017), according to declarations of the SCT.

Lending reflects opportunities in the railway subsector

Lending by commercial banks to transportation companies has increased in real terms in the past few years. The road haulage, air transportation and maritime transportation subsectors showed positive growth rates. In the case of maritime transportation, this implies a recovery, following the contraction of lending in 2H16. In the railway subsector, following exceptional growth in lending in 2016, during 2017 we saw more modest growth rates, although still reaching an annual average above 100%.

In the past five years, and especially since 2015, lending to the transportation sector by commercial banks has shown a low and stable NPL ratio in comparison with that seen in the decade from 2004 to 2013. The NPL ratio exceeded 5 points only in 1Q11.

In the last two years, we have seen an increase in lending to rail transportation companies, which could entail a reactivation of the subsector. However, it is still much too early to analyse the final effect of the credit granted and its translation into a more dynamic and efficient rail transportation segment.

Figure 3b.12 Transportation: lending by subsectors (YoY % change)
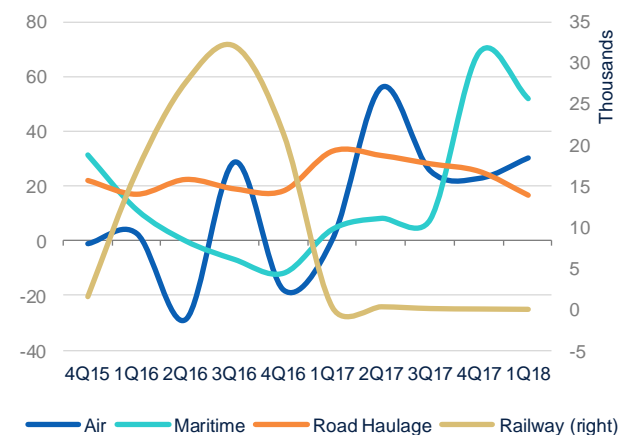
Source: BBVA Research based on data from Banxico

Figure 3b.13 Banking loans to transportation firms (millions of pesos and YoY % change)
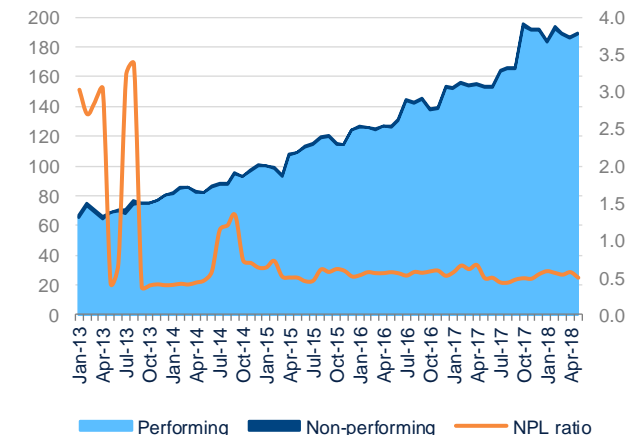
Source: BBVA Research based on data from Banxico

For 2018, in accordance with the growth of the sector and the development of the lending portfolio in the past few years, we expect lending to transportation companies to continue to grow at an average annual rate of close to 20%.

The transportation sector will grow by 4.4% in 2018

Additionally, we estimate that the transportation sector will grow by 4.4% in 2018, a higher rate than that estimated for growth of the economy as a whole, because of which the share of transportation in GDP will increase again, while holding a relatively steady participation in the mix of tertiary activities. However, the result of the NAFTA negotiations is an essential point for defining the trajectory of trade and manufacturing and therefore, of the transportation sector in the short and medium term.

Concerning export manufacturing, we expect to see continued growth in automotive trade, which has been one of the main drivers of the transportation sector. Moreover, regional links in manufacturing production, both automotive and

other, are a crucial point for the transportation sector, given the need to move intermediate goods across borders and along the value chain. Within the international trade network, the transportation infrastructure is fundamental for consolidating Mexico as a logistics platform and a global hub.

The outcome of the NAFTA negotiations and additional trade agreements will shape part of this objective and largely dictate the flows of goods and investment in transportation infrastructure. A more efficient rail and port network – meaning one that meets the needs of the economy – would position Mexico as a logistics platform in international trade. Additionally, it would boost the growth of the manufacturing industry and raise the level of competitiveness of the country's production.

With respect to lending to transportation companies, we expect a growth rate similar to those of the past few years for 2018, of around 20% annual average. This is consistent with the sector's expected growth and that of the sectors conforming the demand for transportation services. Additionally, projects such as the NAICM, other infrastructure works and investment in new transportation-related technologies[49] point to this forecast being consolidated.

There is also evidence of the resilience of the domestic market to external shocks and pressures deriving from the global economic and financial environment. During 2018, transportation GDP will grow by 4.4%, continuing its moderate but constant increase in the share of total GDP.

References

Agencia Reguladora del Transporte Ferroviario (2017). Anuario Estadístico Ferroviario 2017. Secretaría de Comunicaciones y Transportes, p. 37.

Clemente, Anabel (2018). Costo del Tren Interurbano México-Toluca aumentó 55%: IMCO, El Financiero, 14 March 2018.

De la Peña, José A, EMALCA Team (2012). Sistemas de transporte en México: un análisis de centralidad en teoría de redes, Realidad, Datos y Espacio: Revista Internacional de Estadística y Geografía, pp. 72-91.

El Economista (Redacción) (2016). Acuerdo aéreo México-EU dinamizará a la industria, https://www.eleconomista.com.mx/empresas/Acuerdo-aereo-Mexico-EU-dinamizara-a-la-industria-20160726-0084.html

González, Luis M. (2017). NAICM generará más empleo que nadie en AL, 17 de mayo de 2017, https://www.eleconomista.com.mx/empresas/NAICM-generara-mas-empleo-que-nadie-en-AL-20170518-0065.html

INEGI (2014). Censos económicos 2014.

INEGI (2018). Encuesta de Origen Destino en Hogares de la ZMVM (EOD), 19 February 2018.

International Union of Railways (2014). Railway Statistics 2014: synopsis. Paris: pp.2.

López Castro, M. et. al. (2004). Evaluación Económica de las Actuales Condiciones de Competencia y Complementariedad entre el Ferrocarril y el Autotransporte. Querétaro: Secretariat of Communications and Transportation: 90 pp.

Martínez, Everardo (2016). 'Acelera' transporte de autos por tren; triplica crecimiento de carga ferroviaria general, *El Financiero*, 3 August 2016.

NOTIMEX (2018). IATA advierte impacto de 20,000 mdd al PIB si se cancela el NAIM, https://www.amda.mx/images/stories/estadisticas/dialogos/Dialogos01-12-16.pdf

Jackson, Matthew O. (2008). Social and Economic Networks. Princeton: Princeton University Press, 504 pp.

Perron, Oskar (1907). Zur Theorie der Matrices, *Mathematische Annalen*, 64(2): 248-263.

Posada García, Miriam (2018). Con NAICM se crearían 1.4 millones de empleos para 2014: Canaero, en *La Jornada*, 2 May 2018.

Secretaría de Comunicaciones y Transportes (2013). Infraestructura de Transporte 2013 -2018, http://www.sct.gob.mx/uploads/media/Presentacion_RMC_Infraestructura_de_Transporte_2013-2018_01.pdf

Secretaría de Gobernación (2013). Plan Nacional de Desarrollo 2013-2018, *Diario Oficial de la Federación*, 20 de mayo de 2013.

49: For example, investment in technologies that reduce dependence on petrol (gasoline) and diesel.

4. Statistical annex

4.a State economic performance indicators

Table 4a.1 Selected indicators

	Real GDP[1] 2017	Population[2]	Real GDP 2017 USD[3]	Real GDP per capita 2017[4]	AAGR[5], % 2003-2017			Place in the National					
					Real GDP	Population	Real GDP per capita	Real GDP 2017[6]	Real GDP per capita 2017[7]	FDI 2017[8]	Employment 2017[9]	Part. Fed.- 2017[10]	Public Debt 2017[11]
National	**18,162.0**	**123.5**	**960.6**	**7.8**	**2.4**	**2.2**	**0.2**						
Aguascalientes	225.3	1.3	11.9	9.0	6.1	1.6	4.6	25	9	22	17	27	23
Baja California	545.1	3.6	28.8	8.0	3.7	1.8	1.8	12	11	6	7	12	8
Baja California Sur	150.4	0.8	8.0	9.8	5.3	3.3	1.9	29	8	17	19	31	19
Campeche	554.5	0.9	29.3	31.4	-4.9	1.7	-6.6	10	**1**	32	31	30	30
Chiapas	283.5	5.4	15.0	2.8	-0.1	1.5	-1.5	19	32	29	29	8	15
Chihuahua	551.7	3.8	29.2	7.7	3.7	1.3	2.5	11	13	8	12	11	2
Mexico City	3,036.8	8.8	160.6	18.2	2.9	-0.1	3.0	**1**	2	**1**	**1**	2	7
Coahuila	602.6	3.0	31.9	10.5	1.9	1.3	0.5	7	5	5	15	16	4
Colima	103.9	0.7	5.5	7.3	2.8	1.9	0.9	31	14	31	21	32	13
Durango	201.5	1.8	10.7	5.9	2.0	1.1	0.8	26	20	24	23	25	14
Guanajuato	723.9	5.9	38.3	6.5	4.9	0.9	4.0	6	18	4	5	7	29
Guerrero	238.4	3.6	12.6	3.5	1.8	0.7	1.1	24	30	28	27	19	25
Hidalgo	261.2	2.9	13.8	4.7	3.3	1.3	1.9	21	28	19	22	20	21
Jalisco	1,193.8	8.1	63.1	7.8	3.7	1.3	2.4	4	12	11	2	3	18
Mexico	1,540.0	17.4	81.5	4.7	2.8	1.7	1.1	2	27	3	4	**1**	20
Michoacán	420.5	4.7	22.2	4.8	3.6	0.7	2.9	15	26	18	13	10	9
Morelos	201.4	2.0	10.7	5.4	2.8	1.3	1.5	27	21	26	28	23	16
Nayarit	121.5	1.3	6.4	5.1	3.8	1.9	1.9	30	24	30	26	28	11
Nuevo León	1,278.1	5.2	67.6	12.9	2.8	1.6	1.2	3	3	2	3	5	3
Oaxaca	249.1	4.1	13.2	3.2	0.8	0.6	0.2	23	31	21	24	15	10
Puebla	595.1	6.3	31.5	5.0	2.6	1.1	1.5	8	25	13	9	6	27
Querétaro	400.4	2.1	21.2	10.3	4.7	1.7	3.1	16	6	9	6	21	31
Quintana Roo	273.1	1.7	14.4	8.7	4.8	3.3	1.5	20	10	23	8	26	**1**
San Luis Potosí	358.3	2.8	19.0	6.8	3.8	1.0	2.8	18	16	15	10	18	26
Sinaloa	384.1	3.0	20.3	6.7	3.1	1.0	2.1	17	17	16	16	17	22
Sonora	577.3	3.0	30.5	10.1	3.1	1.6	1.5	9	7	7	14	14	5
Tabasco	481.8	2.4	25.5	10.5	-3.0	1.2	-4.2	13	4	14	32	13	28
Tamaulipas	489.2	3.6	25.9	7.1	1.0	1.4	-0.5	14	15	10	11	9	17
Tlaxcala	96.9	1.3	5.1	3.9	1.6	1.5	0.0	32	29	20	20	29	32
Veracruz	798.8	8.2	42.2	5.2	0.5	0.8	-0.3	5	23	12	30	4	6
Yucatán	248.8	2.2	13.2	6.1	3.0	1.4	1.6	22	19	27	18	22	24
Zacatecas	157.3	1.6	8.3	5.2	1.2	0.8	0.4	28	22	25	25	24	12

1: Estimates. Figures in billions of 2013 pesos The sum of state GDPs is not equal to national GDP, because the latter includes taxes net of subsidies in addition to the gross aggregate value.
2: Estimates and projections of the population by state. 2010-2030. Conapo. Figures in millions of people
3: US$ billions (average exchange rate for 2017)
4: US$ thousands (average exchange rate for 2017)
5: Average annual growth rate (%)
6: Position based on real GDP 2017
7: Position based on real GDP per capita 2017
8: Position based on FDI captured by the entity in 2017
9: Position based on the change in the number of workers insured with the IMSS in 2017
10: Position based on the federal government contributions shown in branch 28 of the State Budget (PEF) in 2017
11: Pos. based solely on fin. obligations registered with the SHCP (Sec. of Finance & Public Credit) as belonging to the fed. contrib. budgeted for each state at Dec. 2017
Source: BBVA Research based on INEGI, Conapo, Banxico, IMSS, SE and SHCP data

4.b Indicators by state

Table 4b.2 Economic indicators

	Aguascalientes						Baja California				
	2016	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**	**2016**	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**
Economic Activity (ITAEE**)	9.8	3.7	11.8	0.9	2.8	-0.8	4.3	2.5	3.9	3.2	1.4	1.6
Primary Sector	3.8	6.3	6.7	-2.2	7.7	13.1	-5.4	3.7	-0.9	-3.9	7.2	12.2
Secondary Sector	8.0	1.0	8.8	-0.8	0.3	-4.2	4.1	2.3	3.8	2.1	0.8	2.4
Tertiary Sector	11.6	5.5	14.5	2.4	4.2	0.8	5.0	2.7	4.2	4.3	1.6	0.6
Industrial Activity	7.8	1.4	7.2	1.4	0.9	-4.0	4.2	2.3	3.0	3.0	0.7	2.4
Manufacturing Production	5.9	3.6	3.3	9.5	6.8	-5.4	5.7	3.3	4.4	6.2	1.9	0.7
Construction	35.2	-3.4	29.6	-27.5	-18.4	2.6	-2.8	0.5	-18.2	-2.7	14.9	8.1
Private Sector Works	23.1	3.9	33.2	-18.3	-8.7	9.5	34.4	20.8	8.0	15.0	20.8	39.6
Public Works	105.8	-19.0	29.0	-58.8	-34.4	-11.8	-23.9	-22.4	-41.2	-18.9	4.2	-33.5
Retail sales	16.9	1.4	3.5	1.6	0.1	0.3	23.3	3.5	9.1	4.4	1.1	-0.7
Wholesale sales	49.9	14.2	56.1	0.1	4.5	-4.0	13.2	-1.3	5.3	1.2	-5.1	-6.5
Pop. in employment (ENOE***)[1]	4.6	0.6	2.1	1.1	-1.2	0.4	3.8	3.0	2.5	5.1	2.5	2.0
Insured workers (IMSS)	7.3	5.3	5.9	5.2	5.0	5.1	4.7	5.0	5.8	5.3	4.9	4.2
Permanent	6.8	6.3	6.3	6.2	6.2	6.4	4.8	5.3	5.9	5.6	5.2	4.5
Casual labour, urban	11.4	-4.3	2.2	-4.8	-6.4	-8.2	5.7	2.6	4.5	1.7	2.2	1.9
Federal contributions (Branch 28)	8.1	-0.5	11.9	-4.5	-2.3	-7.2	12.2	10.6	45.5	11.7	-5.2	-9.7
FDI (US$ millions)	486	1.132	570	233	-115	444	1.501	1.440	540	588	146	167

Table 4b.2 Economic indicators (cont.)

	Baja California Sur						Campeche					
	2016	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**	**2016**	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**
Economic Activity (ITAEE**)	3.0	12.4	5.2	11.7	19.1	13.6	-5.4	-9.9	-9.7	-7.6	-13.7	-8.7
Primary Sector	9.4	3.9	22.0	9.4	-9.7	-5.9	9.0	1.3	-2.5	-0.1	0.6	7.3
Secondary Sector	-5.1	28.6	-0.9	23.2	51.7	40.2	-5.7	-11.5	-11.0	-8.7	-15.8	-10.4
Tertiary Sector	6.4	6.2	6.7	7.4	6.7	4.3	-4.4	-0.2	-0.8	-0.9	0.0	1.0
Industrial Activity	-2.2	29.4	0.6	24.0	51.8	41.2	-6.0	-11.2	-9.9	-8.6	-16.0	-10.3
Manufacturing Production	-0.1	0.3	1.6	2.4	0.0	-2.8	-5.5	-6.6	-6.1	-6.2	-6.5	-7.4
Construction	-4.4	58.7	2.7	90.6	106.4	34.9	-21.4	-35.2	-51.9	-50.2	-29.7	-8.8
Private Sector Works	33.7	94.7	39.5	135.7	141.9	61.6	-40.6	16.0	-37.0	34.7	81.1	-14.9
Public Works	-19.0	2.6	-21.0	29.5	17.0	-14.9	-19.1	-35.6	-52.3	-52.7	-31.9	-5.4
Retail sales	29.1	10.5	21.5	8.9	6.7	4.8	0.7	-7.2	-11.7	-8.3	-4.6	-4.2
Wholesale sales	4.1	0.9	5.2	1.1	-1.5	-1.3	-3.6	-4.0	5.6	-2.1	-11.8	-7.8
Pop. in employment (ENOE***)[1]	2.1	4.2	5.2	5.0	4.7	2.1	0.4	1.1	-0.3	1.7	1.2	1.7
Insured workers (IMSS)	7.4	9.3	10.0	9.0	9.5	8.5	-12.4	-5.1	-11.6	-5.5	-2.5	-0.7
Permanent	5.8	6.9	7.8	6.9	6.7	6.3	-8.3	-5.0	-9.4	-5.0	-3.4	-2.0
Casual labour, urban	12.1	20.8	22.6	21.1	21.7	17.7	-27.3	-4.6	-20.1	-7.4	2.6	6.5
Federal contributions (Branch 28)	5.0	14.3	30.1	17.6	7.5	2.0	-8.5	-14.6	0.1	-31.4	-13.0	-14.0
FDI (US$ millions)	462	502	144	141	138	79	217	312	102	40	106	63

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed pop. (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Chiapas						Chihuahua					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE**)	-0.2	-2.2	-0.9	-3.1	-2.6	-2.0	4.6	2.4	4.3	3.0	1.7	0.6
Primary Sector	4.3	1.4	4.0	5.5	-6.9	2.8	-12.5	6.3	5.1	-2.0	2.5	19.7
Secondary Sector	-8.8	-11.8	-13.6	-10.7	-15.3	-7.4	7.3	0.7	5.6	2.0	-0.1	-4.6
Tertiary Sector	2.9	0.8	3.0	-1.3	2.2	-0.8	4.2	2.9	3.3	4.2	3.0	1.3
Industrial Activity	-8.8	-11.8	-14.0	-11.0	-14.7	-7.4	7.0	1.0	5.1	3.6	-0.1	-4.5
Manufacturing Production	-3.9	-10.4	-12.1	-15.7	-5.3	-8.4	8.4	3.7	7.4	7.2	2.0	-1.7
Construction	11.2	-7.4	41.4	23.1	-50.6	-43.5	5.3	-16.3	-7.4	-10.0	-18.7	-29.1
Private Sector Works	116.9	8.5	150.8	19.3	-69.8	-66.5	5.8	-16.0	-6.0	-10.4	-16.6	-31.2
Public Works	-27.2	0.6	9.1	25.6	-24.5	-7.8	7.7	-15.2	-8.2	-9.4	-22.0	-21.1
Retail sales	47.5	2.1	12.8	0.5	-2.3	-2.7	19.3	0.9	3.0	2.7	0.8	-2.9
Wholesale sales	-1.8	2.6	4.6	0.4	3.9	1.5	17.4	-1.7	3.3	-0.7	-3.8	-5.5
Pop. in employment (ENOE***)[1]	2.0	-1.9	1.0	-2.1	-4.0	-2.7	3.4	1.2	3.6	2.8	-1.4	-0.2
Insured workers (IMSS)	1.2	-0.1	0.3	0.2	-0.7	-0.1	5.4	3.3	4.3	3.8	2.8	2.2
Permanent	1.7	-0.2	0.0	0.2	-0.6	-0.6	5.6	3.2	4.0	3.6	2.8	2.5
Casual labour, urban	-2.0	1.0	2.2	-1.1	-1.4	4.2	3.4	4.8	7.3	7.0	4.2	0.6
Federal contributions (Branch 28)	7.5	4.8	10.8	-6.5	-2.4	17.4	5.3	8.8	27.1	8.4	2.0	-2.4
FDI (US$ millions)	134	204	147	21	-1	37	1.960	1.723	524	487	469	243

Table 4b.2 Economic indicators (cont.)

	Mexico City						Coahuila					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE**)	4.3	2.6	5.8	2.7	1.2	0.8	1.5	4.2	4.1	7.1	4.1	1.6
Primary Sector	1.2	0.3	8.8	2.6	4.6	-14.9	-6.8	2.8	2.1	6.9	-1.6	3.7
Secondary Sector	3.5	-0.1	8.8	-3.1	-4.3	-1.8	0.5	6.1	5.1	10.8	7.5	0.9
Tertiary Sector	4.3	2.9	5.5	3.3	1.8	1.1	3.2	2.3	2.9	3.0	0.8	2.3
Industrial Activity	3.6	-0.1	6.8	-1.6	-3.9	-1.7	0.6	6.1	3.1	12.7	8.1	0.6
Manufacturing Production	-1.9	-0.3	4.3	-1.2	-0.9	-3.4	-1.6	3.5	-0.8	7.4	5.3	2.3
Construction	19.4	14.1	15.6	8.1	1.0	31.7	1.7	52.4	48.9	90.3	64.4	6.0
Private Sector Works	19.1	26.2	43.5	35.0	7.2	18.9	-6.1	35.0	23.8	50.1	46.9	19.1
Public Works	28.1	-1.7	-19.1	-36.4	-8.5	57.2	42.3	118.7	128.7	243.3	123.4	-20.4
Retail sales	22.6	0.2	4.5	0.8	0.3	-4.7	14.3	7.1	11.8	7.1	5.4	4.0
Wholesale sales	10.0	2.3	15.6	3.2	-3.8	-5.9	11.2	0.0	8.7	-1.5	-6.5	-0.8
Pop. in employment (ENOE***)[1]	0.3	-0.4	0.1	-0.8	-0.3	-0.6	3.0	1.4	3.8	3.8	-1.3	-0.9
Insured workers (IMSS)	3.6	3.4	4.2	3.7	3.1	2.4	3.4	3.5	3.3	3.3	3.4	4.1
Permanent	3.6	3.5	4.5	4.1	3.3	2.3	3.8	4.0	4.1	3.9	3.7	4.1
Casual labour, urban	3.8	2.2	2.3	1.2	2.1	3.3	0.5	0.3	-2.2	-1.1	0.9	3.6
Federal contributions (Branch 28)	8.2	1.5	14.8	-3.7	5.4	-10.6	12.2	5.1	17.3	-3.1	1.8	4.4
FDI (US$ millions)	5.953	4.574	2.486	800	846	442	1.308	2.262	402	327	305	1.227

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Colima						Durango					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	5.9	3.0	1.8	2.2	3.5	4.7	4.0	-0.2	4.7	0.1	-0.8	-5.0
Primary Sector	5.3	2.2	-6.9	13.6	-8.7	10.9	6.0	8.3	11.1	7.5	6.4	8.0
Secondary Sector	0.9	-5.5	-8.7	-8.5	-0.8	-3.9	1.8	-0.1	10.5	-1.5	1.4	-10.9
Tertiary Sector	8.0	6.1	6.2	5.6	5.6	7.1	4.7	-1.7	1.0	-0.2	-3.2	-4.4
Industrial Activity	1.1	-5.4	-10.4	-6.0	-1.2	-4.0	1.9	-0.1	8.9	0.0	1.4	-10.7
Manufacturing Production	-1.1	-1.7	-2.0	-5.0	3.2	-3.1	-1.0	3.0	7.2	-0.5	5.7	-0.5
Construction	22.3	10.0	-3.4	22.2	0.5	20.8	24.0	-16.2	11.4	-11.2	-12.8	-52.2
Private Sector Works	49.7	26.0	16.5	33.0	12.3	42.3	26.1	-27.8	-22.8	-46.2	-18.6	-23.7
Public Works	-8.1	-8.0	-33.9	14.7	-19.8	7.1	23.9	-2.6	46.5	16.6	-9.7	-63.7
Retail sales	23.4	21.5	28.0	41.9	9.3	6.9	35.9	2.0	7.6	-0.1	1.8	-1.2
Wholesale sales	39.4	7.4	18.6	-4.7	5.7	10.1	10.8	-21.0	-2.5	-16.7	-32.9	-31.8
Pop. in employment (ENOE*)[1]**	3.0	2.6	3.7	2.1	0.6	4.0	2.8	-0.3	-1.6	-1.4	2.2	-0.5
Insured workers (IMSS)	1.8	5.2	4.6	5.2	5.7	5.4	3.7	2.6	3.4	2.7	2.3	1.8
Permanent	3.1	5.3	4.6	5.3	6.1	5.3	4.7	3.1	4.4	3.1	2.6	2.0
Casual labour, urban	-5.5	4.6	3.1	5.1	3.1	7.0	-3.3	-1.8	-5.4	-1.2	-0.9	0.1
Federal contributions (Branch 28)	13.1	2.3	31.8	5.4	-18.2	-9.6	5.6	8.4	19.4	3.8	13.2	-3.0
FDI (US$ millions)	-28	137	54	26	22	36	266	71	18	5	27	21

Table 4b.2 Economic indicators (cont.)

	State of Mexico						Guanajuato					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	2.9	4.5	5.2	3.0	3.3	6.5	4.2	5.4	8.3	5.5	4.3	3.3
Primary Sector	7.1	0.4	4.6	-0.5	1.4	-4.1	2.7	4.9	8.7	1.4	8.9	0.6
Secondary Sector	0.3	7.8	6.4	1.2	8.7	14.9	4.3	5.0	11.5	5.1	3.0	0.5
Tertiary Sector	3.8	3.5	4.8	3.7	1.4	3.9	4.3	5.6	6.1	6.0	4.9	5.3
Industrial Activity	0.1	8.0	5.0	3.0	9.6	14.3	4.1	5.3	11.1	6.1	3.6	0.5
Manufacturing Production	-2.3	6.0	4.9	5.3	5.5	8.2	3.9	3.1	7.4	2.6	2.6	-0.2
Construction	27.6	59.4	49.4	21.1	71.8	95.5	-8.4	2.4	21.9	4.6	-7.6	-9.3
Private Sector Works	37.5	23.9	34.6	24.6	20.7	15.7	2.3	-6.0	19.1	-8.5	-17.0	-17.8
Public Works	21.5	95.9	63.0	20.9	117.1	182.6	-29.6	31.1	33.2	46.2	27.7	17.4
Retail sales	21.8	2.3	6.4	2.6	0.3	-0.2	31.8	3.9	10.3	4.7	1.1	-0.4
Wholesale sales	19.5	2.2	10.8	-3.3	-1.4	2.6	12.5	9.8	11.3	-0.5	14.2	14.0
Pop. in employment (ENOE*)[1]**	0.2	3.1	2.3	2.9	3.1	4.3	3.3	0.4	0.2	-1.4	0.6	2.3
Insured workers (IMSS)	4.0	4.5	4.1	4.1	4.8	5.2	5.5	6.2	5.8	6.0	6.2	6.8
Permanent	4.0	4.4	3.8	4.0	4.8	5.0	5.0	7.0	6.3	7.0	7.5	7.4
Casual labour, urban	3.8	5.1	5.5	4.3	4.7	5.8	7.7	0.4	3.3	-0.8	-3.0	2.0
Federal contributions (Branch 28)	5.2	9.1	22.7	8.3	10.2	-5.0	9.0	5.1	19.1	0.8	8.4	-7.8
FDI (US$ millions)	2.365	3.905	1.165	727	1.414	599	1.301	1.511	719	378	376	39

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

	Guerrero						Hidalgo					
	2016	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**	**2016**	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**
Economic Activity (ITAEE**)	2.1	0.5	-3.7	0.2	0.7	4.8	4.3	-0.2	-2.4	-1.4	0.7	2.2
Primary Sector	14.1	2.7	1.7	12.5	-6.0	2.8	0.3	3.8	7.0	-4.4	18.8	-6.3
Secondary Sector	3.7	-5.0	-4.7	-11.4	-1.6	-2.1	4.0	-4.7	-13.5	-6.0	-0.9	1.5
Tertiary Sector	1.0	1.8	-3.9	2.6	1.8	6.5	4.7	2.2	3.4	1.4	0.6	3.4
Industrial Activity	3.9	-4.9	-4.8	-11.8	-1.8	-1.3	4.2	-4.6	-14.3	-5.4	0.0	1.4
Manufacturing Production	2.5	-3.9	-9.0	-6.0	-2.9	2.1	2.8	4.7	-2.7	6.9	8.1	6.7
Construction	-5.0	-38.2	-26.0	-26.4	-45.0	-55.5	-2.4	-35.2	-52.3	-41.1	-24.0	-23.6
Private Sector Works	71.5	-11.9	45.5	-10.8	-17.6	-64.8	-6.7	-21.3	-29.6	-24.2	-8.0	-23.5
Public Works	-28.3	-49.0	-52.8	-34.5	-63.2	-45.5	1.0	-40.3	-60.4	-47.0	-30.5	-23.3
Retail sales	9.3	-1.9	-3.5	-0.2	-3.0	-0.8	31.6	-5.2	-4.9	-7.5	-5.1	-3.3
Wholesale sales	11.4	-3.6	-3.0	-17.2	0.2	5.5	9.6	6.9	26.5	4.4	-0.7	-2.5
Pop. in employment (ENOE***)[1]	2.8	1.0	0.8	-0.3	-2.0	5.4	-2.0	-0.9	-1.9	-0.7	-1.6	0.7
Insured workers (IMSS)	0.9	2.6	2.3	3.9	2.6	1.7	3.7	2.8	3.3	2.3	2.6	3.1
Permanent	1.5	3.6	3.9	5.1	3.4	2.2	5.5	3.7	4.4	2.7	3.3	4.5
Casual labour, urban	-1.3	-0.9	-3.4	0.5	-0.5	-0.3	-1.9	-0.2	-0.4	1.1	0.1	-1.7
Federal contributions (Branch 28)	4.0	0.9	17.0	-5.9	2.8	-10.2	10.0	6.0	28.3	-0.7	2.8	-6.4
FDI (US$ millions)	177	231	45	161	38	-13	435	357	92	120	54	91

	Jalisco						Michoacán					
	2016	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**	**2016**	**2017**	**1Q17**	**2Q17**	**3Q17**	**4Q17**
Economic Activity (ITAEE**)	4.7	3.2	3.3	1.4	4.1	4.0	4.1	3.0	5.1	-0.6	2.5	5.0
Primary Sector	3.7	5.2	10.7	2.8	3.9	3.2	15.1	5.7	16.5	-8.5	0.9	14.0
Secondary Sector	1.8	2.9	2.7	0.2	4.6	4.0	-0.8	-3.0	0.7	-10.7	-2.1	-0.1
Tertiary Sector	6.4	3.2	3.0	1.9	3.8	4.0	3.8	4.0	4.5	3.5	3.8	4.4
Industrial Activity	1.7	2.9	1.5	1.2	4.7	4.4	-0.5	-3.0	0.8	-10.7	-2.1	-0.1
Manufacturing Production	1.3	3.6	1.9	1.8	4.8	5.9	1.3	1.3	8.8	-0.5	-0.5	-2.7
Construction	-2.7	5.2	4.5	13.3	-3.3	6.4	8.1	-23.7	-35.5	-49.8	-13.3	3.9
Private Sector Works	-5.5	10.0	-5.4	20.9	5.9	18.5	44.5	-0.6	-4.5	-41.4	-2.5	45.9
Public Works	7.8	-3.8	33.6	-5.9	-23.8	-19.2	8.9	-41.3	-59.3	-57.5	-23.3	-24.9
Retail sales	21.7	3.8	11.8	5.6	-0.1	-2.1	23.3	-0.8	-7.3	2.0	1.5	0.4
Wholesale sales	15.7	-1.7	-5.9	-5.9	1.5	3.6	14.5	12.6	13.0	12.1	17.8	7.7
Pop. in employment (ENOE***)[1]	3.2	3.1	4.2	2.8	3.2	2.1	2.6	-0.9	-0.5	-1.6	-1.4	0.0
Insured workers (IMSS)	5.4	6.1	6.2	6.0	6.2	5.9	5.0	6.9	6.2	6.9	7.0	7.7
Permanent	4.7	5.2	5.4	5.2	5.1	5.0	5.4	6.8	6.2	7.2	6.9	7.0
Casual labour, urban	10.0	10.8	9.7	9.8	11.7	11.9	-2.0	4.8	3.9	3.8	4.7	6.7
Federal contributions (Branch 28)	9.9	6.9	23.2	7.1	5.8	-8.4	9.2	2.0	18.4	-6.0	0.4	-4.8
FDI (US$ millions)	2.007	1.303	530	145	253	374	172	256	129	34	-15	107

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Morelos						Nayarit					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	3.1	4.9	12.1	3.9	-0.7	4.1	3.8	2.4	3.9	-0.6	2.3	3.9
Primary Sector	10.5	4.0	-9.2	4.1	8.2	12.7	14.5	0.6	7.5	3.6	-5.1	-3.4
Secondary Sector	4.0	11.4	30.2	6.9	-1.8	10.1	3.1	-6.2	0.2	-12.8	-3.9	-8.3
Tertiary Sector	2.6	2.0	5.1	2.5	-0.5	1.1	3.4	5.1	4.5	3.1	4.6	8.0
Industrial Activity	4.4	11.2	25.9	9.4	-0.2	9.9	3.9	-5.9	0.8	-13.4	-3.0	-7.9
Manufacturing Production	2.6	-1.7	2.7	-1.2	-2.7	-5.6	0.0	-1.2	-3.7	-8.4	4.6	2.6
Construction	-25.0	78.0	160.0	63.8	27.7	60.7	5.0	0.2	16.8	-22.1	17.7	-11.4
Private Sector Works	-24.2	33.7	29.2	40.8	25.7	39.2	32.6	23.2	49.1	12.7	1.1	30.0
Public Works	25.0	241.6	645.1	127.2	43.8	150.1	-0.7	-13.8	-10.7	-48.0	51.8	-48.1
Retail sales	8.7	2.0	14.5	-2.0	-4.3	-0.2	14.9	5.0	4.4	9.1	5.4	1.2
Wholesale sales	9.8	2.3	1.9	-2.7	5.6	4.5	9.0	9.0	15.5	-2.7	16.8	6.3
Pop. in employment (ENOE*)[1]**	2.4	2.1	3.6	2.5	-0.8	3.2	2.7	3.3	4.4	1.6	3.4	3.9
Insured workers (IMSS)	1.7	0.7	1.2	1.1	0.2	0.2	3.7	3.3	4.7	3.5	3.0	1.9
Permanent	1.7	0.7	1.3	0.9	0.3	0.1	4.1	1.9	3.8	2.6	0.8	0.6
Casual labour, urban	2.3	1.0	1.6	2.1	-0.1	0.4	2.0	9.5	8.6	9.8	11.2	8.5
Federal contributions (Branch 28)	1.3	8.0	23.1	11.1	2.5	-4.7	7.5	6.6	31.2	0.8	8.3	-13.8
FDI (US$ millions)	188	367	183	152	-15	46	87	138	51	24	37	25

Table 4b.2 Economic indicators (cont.)

	Nuevo León						Oaxaca					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	1.0	2.6	2.2	2.5	3.4	2.1	-0.9	-3.9	0.2	-5.9	-6.2	-3.5
Primary Sector	-3.9	1.2	0.5	-4.8	17.5	-8.5	3.3	0.4	0.8	2.1	1.9	-3.4
Secondary Sector	-4.2	-0.3	-2.6	-2.6	4.2	-0.2	-6.7	-15.8	-4.9	-20.0	-23.1	-15.3
Tertiary Sector	4.1	4.2	5.0	5.3	2.9	3.4	1.2	0.4	2.1	-1.0	0.0	0.7
Industrial Activity	-4.4	0.0	-3.3	-0.9	4.7	-0.4	-6.6	-15.8	-6.6	-18.9	-22.9	-14.9
Manufacturing Production	-2.5	1.3	0.7	1.3	3.8	-0.8	5.9	-16.8	3.3	-9.0	-32.0	-29.3
Construction	-21.5	1.2	-16.6	7.7	7.0	6.5	-29.1	-36.5	-47.1	-62.8	-43.7	7.7
Private Sector Works	-2.1	1.4	-7.3	13.2	4.3	-4.8	62.5	29.0	-9.6	66.0	-19.3	78.7
Public Works	-57.5	13.1	-47.1	-13.8	25.6	87.7	-35.6	-51.0	-57.9	-80.0	-55.8	-10.4
Retail sales	17.6	1.1	3.0	3.2	-0.3	-1.5	9.5	0.0	1.3	0.3	-2.0	0.5
Wholesale sales	0.9	-0.9	0.9	-0.1	-3.6	-0.9	9.4	0.6	3.1	-5.6	1.0	3.9
Pop. in employment (ENOE*)[1]**	3.3	2.3	5.0	2.1	1.0	1.0	3.1	-1.3	-1.3	-1.8	-1.0	-1.2
Insured workers (IMSS)	4.3	4.7	4.8	4.5	5.0	4.5	1.2	2.9	1.7	2.0	2.9	5.1
Permanent	5.5	4.9	5.4	4.7	4.9	4.4	3.5	3.1	3.0	2.8	2.4	4.3
Casual labour, urban	-5.7	3.0	-0.7	2.4	5.0	5.6	-13.3	1.9	-7.6	-2.5	6.6	11.1
Federal contributions (Branch 28)	13.2	1.6	13.7	-3.8	3.5	-7.2	6.7	3.8	17.4	-2.1	3.0	-3.1
FDI (US$ millions)	2.866	1.875	964	69	255	586	192	356	161	12	80	102

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Puebla						Querétaro					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	3.3	6.8	8.3	6.3	8.3	4.4	7.3	4.2	4.9	3.4	3.4	5.0
Primary Sector	-0.9	2.7	-4.3	5.7	10.1	-0.8	-1.5	8.6	9.4	5.2	6.9	12.7
Secondary Sector	4.6	13.9	18.6	13.6	17.3	6.1	6.0	7.5	20.0	6.3	6.4	-2.8
Tertiary Sector	2.9	3.4	3.8	2.5	3.4	3.9	3.6	2.0	2.4	0.0	2.9	2.9
Industrial Activity	4.3	14.3	16.8	16.6	18.2	5.8	6.1	7.5	17.8	7.7	7.0	-2.5
Manufacturing Production	4.0	26.4	28.2	29.4	32.5	15.6	9.1	7.8	10.9	5.4	11.9	3.0
Construction	9.4	-35.9	-21.8	-32.1	-41.1	-48.7	1.5	0.5	39.2	4.2	-11.9	-29.5
Private Sector Works	6.9	-5.3	2.1	18.1	-19.5	-21.8	3.4	-13.6	30.3	-20.6	-24.8	-39.1
Public Works	22.6	-65.2	-44.9	-74.0	-66.6	-75.2	0.6	37.5	53.3	75.1	30.5	-8.7
Retail sales	17.3	1.8	4.3	2.5	-0.3	0.6	29.0	-0.2	7.6	0.2	-3.9	-4.5
Wholesale sales	4.6	2.6	6.7	1.2	1.2	1.1	1.9	-6.8	0.0	-10.3	-6.9	-10.2
Pop. in employment (ENOE*)[1]**	3.3	3.2	5.6	5.2	-0.4	2.5	1.2	1.9	2.0	-0.6	2.3	3.8
Insured workers (IMSS)	4.1	5.7	5.4	5.6	6.2	5.4	7.5	8.3	8.0	8.4	8.4	8.5
Permanent	4.4	4.6	3.9	3.9	5.2	5.3	7.5	8.6	8.3	8.9	8.5	8.7
Casual labour, urban	2.5	11.4	13.2	14.9	11.4	5.9	7.9	7.5	6.7	6.6	8.5	8.3
Federal contributions (Branch 28)	5.8	7.6	22.6	7.0	4.9	-4.2	10.5	4.6	12.4	3.2	6.5	-3.5
FDI (US$ millions)	1.239	193	323	-60	-135	65	992	997	630	52	254	60

Table 4b.2 Economic indicators (cont.)

	Quintana Roo						San Luis Potosí					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	4.4	4.3	9.3	2.6	4.4	0.9	4.1	5.0	6.4	3.5	4.6	5.6
Primary Sector	0.4	7.9	14.8	-14.3	4.4	26.9	3.6	12.8	13.2	9.0	16.8	12.1
Secondary Sector	24.1	-15.0	0.4	-21.9	-27.8	-10.6	4.0	7.3	7.8	4.4	6.7	10.3
Tertiary Sector	5.3	7.1	5.4	7.3	8.6	7.0	4.3	3.1	5.1	2.5	2.5	2.1
Industrial Activity	24.4	-14.5	0.7	-20.6	-27.7	-10.4	4.1	7.4	5.6	6.1	7.2	10.6
Manufacturing Production	7.2	13.1	11.1	9.9	17.4	14.1	6.1	12.0	10.2	5.7	11.7	20.6
Construction	66.4	-21.8	34.3	-38.9	-52.8	-30.0	-0.1	-1.4	0.8	28.2	-3.8	-30.8
Private Sector Works	70.1	-35.7	11.4	-55.5	-64.5	-34.0	36.7	17.7	48.4	49.9	1.6	-29.0
Public Works	54.9	42.9	137.3	60.2	-9.5	-16.5	-35.0	-25.6	-58.7	-5.4	-8.0	-30.4
Retail sales	21.2	8.0	14.7	7.0	7.0	3.2	28.6	6.1	12.9	3.9	4.3	3.2
Wholesale sales	14.7	7.2	9.9	2.4	10.7	5.8	9.8	8.3	14.2	12.9	10.2	-4.2
Pop. in employment (ENOE*)[1]**	5.4	1.4	1.6	1.4	0.0	2.5	4.1	0.9	2.2	-0.7	0.1	2.0
Insured workers (IMSS)	10.1	10.3	9.9	9.8	11.0	10.7	4.6	7.1	5.7	7.5	7.8	7.5
Permanent	7.3	8.9	6.8	8.1	10.4	10.3	4.0	5.9	5.0	6.3	6.4	6.0
Casual labour, urban	18.5	14.6	18.8	14.8	12.7	11.9	8.0	12.9	9.9	13.6	14.1	14.1
Federal contributions (Branch 28)	4.9	8.4	21.4	2.9	4.7	4.8	12.2	16.7	39.5	13.2	7.1	7.1
FDI (US$ millions)	270	442	144	62	171	66	892	1.046	454	183	235	174

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Sinaloa						Sonora				
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	5.8	0.3	-1.3	0.6	1.5	0.3	5.9	1.0	4.0	1.6	-1.2	-0.5
Primary Sector	5.1	-7.3	-13.8	-1.1	-10.8	-3.5	4.6	6.7	16.2	13.8	-3.5	0.2
Secondary Sector	5.8	-4.7	-4.2	-11.3	-2.5	-1.0	9.0	-0.8	2.2	1.0	-3.4	-3.0
Tertiary Sector	5.8	3.0	2.3	4.7	3.5	1.5	3.3	1.9	4.5	-0.1	1.3	1.9
Industrial Activity	5.4	-4.2	-3.3	-11.4	-1.5	-0.7	8.9	-0.6	1.0	2.9	-3.1	-3.2
Manufacturing Production	2.2	4.3	11.8	-0.3	3.6	2.2	1.5	-4.2	-8.8	-1.5	-6.4	0.0
Construction	23.9	-32.2	-38.4	-32.5	-25.0	-32.7	17.1	11.8	31.4	34.9	0.5	-19.8
Private Sector Works	15.8	-14.4	-5.8	-0.2	-15.0	-36.5	10.0	-3.9	-0.3	12.4	-21.4	-6.2
Public Works	38.4	-47.9	-59.5	-62.7	-41.9	-27.3	31.8	50.2	118.9	78.5	39.3	-35.7
Retail sales	26.0	4.8	16.5	1.6	1.3	-0.3	19.4	2.5	9.1	3.7	-1.2	-1.4
Wholesale sales	17.0	-0.5	0.4	-1.2	-2.4	1.2	16.2	-0.8	11.8	-1.9	-5.3	-7.9
Pop. in employment (ENOE*)[1]**	1.8	1.3	0.9	4.4	0.7	-0.7	1.7	1.9	4.3	1.1	0.6	1.3
Insured workers (IMSS)	6.3	4.2	3.9	4.8	4.3	3.9	3.3	4.6	5.0	4.5	4.6	4.4
Permanent	5.5	4.6	4.7	4.9	4.8	3.9	3.0	4.4	4.0	4.3	4.6	4.5
Casual labour, urban	11.2	-0.7	3.1	0.0	-3.1	-2.9	3.6	4.4	3.7	3.3	4.9	5.6
Federal contributions (Branch 28)	4.5	7.5	18.6	2.7	8.1	0.7	1.7	8.4	19.5	10.3	4.4	-0.6
FDI (US$ millions)	428	747	119	161	202	266	515	253	326	332	-135	-270

Table 4b.2 Economic indicators (cont.)

	Tabasco						Tamaulipas				
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	-5.9	-6.3	-10.4	-5.1	-3.2	-6.4	0.0	-0.5	-0.9	-0.9	-1.1	0.9
Primary Sector	2.5	3.8	14.1	-3.5	-2.1	6.6	8.3	-1.5	-8.9	-0.7	-0.5	4.2
Secondary Sector	-8.1	-10.0	-15.9	-8.9	-5.8	-9.2	-2.0	-3.9	-5.8	-5.9	-4.2	0.2
Tertiary Sector	-1.5	1.0	1.5	2.5	1.9	-1.9	1.0	1.9	3.2	2.4	0.8	1.2
Industrial Activity	-8.4	-9.7	-15.1	-8.9	-5.7	-8.9	-2.3	-3.6	-5.8	-5.1	-4.1	0.6
Manufacturing Production	-4.3	1.9	10.5	3.6	-1.7	-4.9	-1.0	-0.7	-3.4	-1.0	-0.8	2.6
Construction	-42.5	-14.7	-60.2	-26.0	8.9	18.5	0.0	-13.8	-5.9	-14.6	-23.5	-11.0
Private Sector Works	-31.7	-15.9	-20.4	-18.4	-26.8	2.0	-0.8	-14.5	-18.6	-27.3	-12.9	0.7
Public Works	-39.0	-6.2	-74.7	-27.9	49.3	28.7	5.4	-7.7	15.4	3.1	-28.0	-21.4
Retail sales	-1.7	-8.5	-7.2	-9.6	-9.1	-8.1	10.4	0.7	5.4	0.7	-1.8	-1.6
Wholesale sales	5.3	-7.1	-4.2	-4.5	-8.9	-10.7	4.3	6.3	27.2	2.3	-1.6	-2.8
Pop. in employment (ENOE*)[1]**	2.4	-1.0	-0.4	-3.8	3.2	-2.7	4.1	0.8	1.2	1.3	-0.2	1.0
Insured workers (IMSS)	-8.6	-4.6	-6.9	-5.3	-3.5	-2.8	1.9	4.5	3.5	4.3	4.8	5.4
Permanent	-5.2	-4.5	-5.6	-5.1	-3.7	-3.5	2.5	4.4	3.8	4.2	4.7	4.8
Casual labour, urban	-26.4	-6.6	-15.7	-6.6	-3.8	-0.3	-3.1	6.1	1.3	5.6	6.3	11.0
Federal contributions (Branch 28)	3.4	-8.3	-6.1	-13.3	-8.4	-5.5	6.3	2.9	18.8	-2.6	4.1	-8.7
FDI (US$ millions)	249	385	193	62	41	89	1.179	1.326	453	381	266	226

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

Table 4b.2 Economic indicators (cont.)

	Tlaxcala						Veracruz					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	1.5	-1.4	-4.0	0.7	-2.4	-0.1	0.7	-1.3	-0.4	-0.5	-1.2	-3.2
Primary Sector	-2.0	-2.4	-7.5	-2.0	2.2	-2.1	-2.9	4.3	5.0	5.3	1.4	5.6
Secondary Sector	0.0	-7.7	-18.9	-0.7	-10.0	-1.2	0.5	-9.2	-5.7	-8.7	-8.8	-13.7
Tertiary Sector	2.8	2.3	5.2	1.6	1.8	0.7	1.1	2.4	2.1	3.4	2.6	1.7
Industrial Activity	1.0	-7.2	-17.2	-0.6	-9.7	-1.3	0.0	-8.8	-5.9	-7.5	-8.4	-13.4
Manufacturing Production	3.6	-0.4	0.5	1.4	-3.4	0.0	1.8	-6.9	-3.4	-9.3	-6.7	-8.0
Construction	-23.0	-32.0	-50.4	-7.7	-38.7	-31.0	-3.3	-31.0	-27.2	-27.7	-35.0	-33.9
Private Sector Works	-23.1	-13.1	22.2	-8.4	-31.7	-34.4	-35.3	-8.4	-49.7	-2.8	20.8	-1.8
Public Works	-9.4	-39.7	-79.8	-3.6	-45.9	-29.4	17.1	-33.5	-7.7	-34.7	-49.9	-41.6
Retail sales	22.0	-0.1	8.2	-2.3	-2.8	-3.3	13.2	-3.9	-7.2	-4.8	-2.9	-0.8
Wholesale sales	20.8	10.5	24.1	7.1	11.5	-0.8	10.1	0.6	7.4	-0.2	-3.6	-1.3
Pop. in employment (ENOE*)[1]**	3.4	1.8	3.7	0.9	2.1	0.7	-1.9	3.0	3.2	3.9	2.9	1.9
Insured workers (IMSS)	5.9	8.1	9.7	9.1	6.6	6.8	-2.4	-0.1	-1.5	-0.3	0.2	1.4
Permanent	4.7	8.8	10.0	10.1	8.3	6.8	0.2	0.0	-0.5	-0.3	0.1	0.7
Casual labour, urban	10.2	5.6	8.7	5.2	2.0	6.3	-15.3	-1.8	-8.6	-3.3	0.3	4.6
Federal contributions (Branch 28)	6.9	3.9	17.2	3.3	2.5	-7.6	4.9	10.3	20.4	10.9	10.3	-0.6
FDI (US$ millions)	213	159	66	25	63	5	1.076	1.068	501	84	199	284

Table 4b.2 Economic indicators (cont.)

	Yucatán						Zacatecas					
	2016	2017	1Q17	2Q17	3Q17	4Q17	2016	2017	1Q17	2Q17	3Q17	4Q17
Economic Activity (ITAEE)**	4.1	2.8	6.8	-0.2	3.4	1.3	-1.3	0.1	1.8	1.0	-1.7	-0.9
Primary Sector	2.6	5.9	16.2	-0.4	5.6	2.1	18.5	1.9	10.3	4.4	-5.4	-1.7
Secondary Sector	8.5	3.7	12.2	-0.7	2.1	1.0	-8.6	-3.9	-5.4	-2.4	-1.2	-6.7
Tertiary Sector	2.6	2.4	4.4	-0.1	3.8	1.4	1.6	2.8	6.2	3.0	-1.1	3.2
Industrial Activity	8.6	3.8	10.9	0.8	2.0	1.4	-8.7	-3.6	-5.2	-1.3	-1.1	-6.7
Manufacturing Production	14.6	5.7	10.6	7.2	4.3	0.7	-2.0	-5.2	-11.1	-3.6	-2.7	-3.5
Construction	20.7	-2.6	16.3	-23.6	-11.3	8.3	70.2	23.4	58.5	0.3	23.0	11.7
Private Sector Works	18.9	4.9	26.7	-10.7	-0.4	4.2	135.0	47.1	118.3	8.3	47.0	15.0
Public Works	30.9	-19.1	-15.1	-46.9	-40.3	26.0	-7.7	-24.5	-37.1	-20.4	-37.5	-3.2
Retail sales	13.8	-1.0	-2.0	-1.8	-0.1	0.0	21.8	0.4	9.7	2.3	-5.7	-4.9
Wholesale sales	6.5	-3.8	7.0	-8.3	-9.6	-4.4	4.9	12.1	20.1	6.3	8.9	13.0
Pop. in employment (ENOE*)[1]**	3.2	1.7	4.7	2.2	0.6	-0.6	2.3	2.3	2.4	5.6	-0.4	1.4
Insured workers (IMSS)	4.4	4.3	4.6	4.1	4.4	4.1	3.6	3.2	2.7	2.6	3.2	4.3
Permanent	3.8	4.1	4.0	3.8	4.3	4.2	4.3	3.1	3.4	3.1	2.7	3.3
Casual labour, urban	10.5	6.2	11.0	6.4	5.0	2.5	-1.6	3.8	-1.1	0.0	6.0	10.2
Federal contributions (Branch 28)	4.7	7.6	21.6	3.0	2.9	2.9	13.8	3.1	18.5	-6.3	2.4	-2.2
FDI (US$ millions)	122	110	99	21	6	-15	531	313	146	-7	-65	239

* All indicators except those of FDI are shown in percentage annual changes of real quantities
** Quarterly Indicator of State Economic Activity
*** National Occupation and Employment Survey
1: The employed population (over 15 years of age) includes as a sub-group workers insured with the IMSS and it is a more representative indicator of national employment
Source: INEGI, STPS (Secretariat of Labour and Social Welfare), SHCP (Finance Ministry) and SE (Secretariat for the Economy)

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Greater integration between Mexico and the US

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BBVA Research

This report has been produced by the regional sector unit of Mexico

Chief Economist Mexico
Carlos Serrano
carlos.serrano@bbva.com

Samuel Vázquez
samuel.vazquez@bbva.com

Alma Martínez
ag.martinez2@bbva.com

Gerónimo Ugarte
franciscogeronimo.ugarte@bbva.com

BBVA Research

Chief Economist BBVA Group
Jorge Sicilia Serrano

Macroeconomic Analysis
Rafael Doménech
r.domenech@bbva.com

  Digital Economy
  Alejandro Neut
  robertoalejandro.neut@bbva.com

  Global Macroeconomic
  Scenarios
  Miguel Jiménez
  mjimenezg@bbva.com

  Global Financial Markets
  Sonsoles Castillo
  s.castillo@bbva.com

  Long-Term Global Modelling and
  Analysis
  Julián Cubero
  juan.cubero@bbva.com

Innovation and Processes
Oscar de las Peñas
oscar.delaspenas@bbva.com

Financial Systems and
Regulation
Santiago Fernández de Lis
sfernandezdelis@bbva.com

  Digital Regulation and Trends
  Álvaro Martín
  alvaro.martin@bbva.com

  Regulation
  Ana Rubio
  arubiog@bbva.com

  Financial Systems
  Olga Cerqueira
  olga.gouveia@bbva.com

Spain and Portugal
Miguel Cardoso
miguel.cardoso@bbva.com

United States
Nathaniel Karp
nathaniel.Karp@bbva.com

Mexico
Carlos Serrano
carlos.serranoh@bbva.com

Middle East, Asia and
Big Data
Álvaro Ortiz
alvaro.ortiz@bbva.com

  Turkey
  Álvaro Ortiz
  alvaro.ortiz@bbva.com

  Asia
  Le Xia
  le.xia@bbva.com

South America
Juan Manuel Ruiz
juan.ruiz@bbva.com

  Argentina
  Gloria Sorensen
  gsorensen@bbva.com

  Colombia
  Juana Téllez
  juana.tellez@bbva.com

  Peru
  Francisco Grippa
  fgrippa@bbva.com

  Venezuela
  Julio Pineda
  juliocesar.pineda@bbva.com