

BBVA | Research

BBVA Bancomer

Mexico Real Estate Outlook

1st Half 2017 | Mexico Unit

BBVA Bancomer

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Closing date: **February 24, 2017**

1. Summary

The slowdown in construction has continued with growth of 1.8%, closing 2016 with an increase of 4.2% in building and a decline of 9.4% in civil engineering. To explain the detail of the backlog in the civil engineering sub-sector, which represents a third of the GDP of construction, we have devoted a section to an in-depth look at the performance of infrastructure works. In view of the continuous adjustments to public expenditure, both the budgeted amounts and the number of projects carried out have decreased in this last decade. This trend could be altered by the implementation of the energy reform and the entry of private capital flows into the sub-sector, specifically through public-private partnerships.

In the mortgage market, the amount financed by banks increased by 1.7% in real terms at the end of the year, while the public institutes performed less placement in both real amounts and number of loans. Employment, the main explanatory variable for the demand for housing loans, grew at an annual rate of 4%, which was not enough to sustain the rate of mortgage generation in the face of lower wage growth and a loss of consumer confidence. On the other hand, the composition of the mortgage portfolio changed, with more loans in the middle-income and residential segments, as the credit limit was raised. Likewise, the lower budget for subsidies reduced the total amount granted and in parallel there was a contraction in the share of loans for social interest housing in the portfolio of public institutes.

The number of home construction projects declined compared to the previous two years. Inventories maintained the same trend, avoiding an accumulation of surpluses and producing only what the market could absorb. In addition, increases in the benchmark interest rate by the Bank of Mexico were transferred directly to interest rates on loans for residential construction. As a result, the bridging loan balance registered negative growth rates in the second half of the year, but the delinquency rate continued to fall to levels of between 7% and 8%.

In this area, we have devoted another section to a structural analysis of residential construction cycles, analysing the determining factors of housing supply, such as profit margins and the interest rate, as well as the impact of subsidies, which played a major role in recent years but are now returning to their long-term levels. Through an econometric estimation, we conclude that the margin between price and cost is the main driver of supply, as expected. By comparison, subsidies that should have had an effect only on the demand side had a positive influence on supply. This analysis complements the one conducted in previous issues of the *Mexico Real Estate Outlook*, characterising the sensitivity of housing demand with regard to its main determining factors.

Finally, the housing price index (SHF) reflected levels of appreciation of 8.4% in 2016 in the middle-income and residential segments and we expect that this increase will continue in 2017, but at a rate of around 6% per year. The mortgage market could grow less than the economy, or even remain stagnant for the first time in several years. However, the real estate sector is reacting efficiently to signals, allowing both the consumer and the investor to rethink their strategies and adjust to the new market conditions.

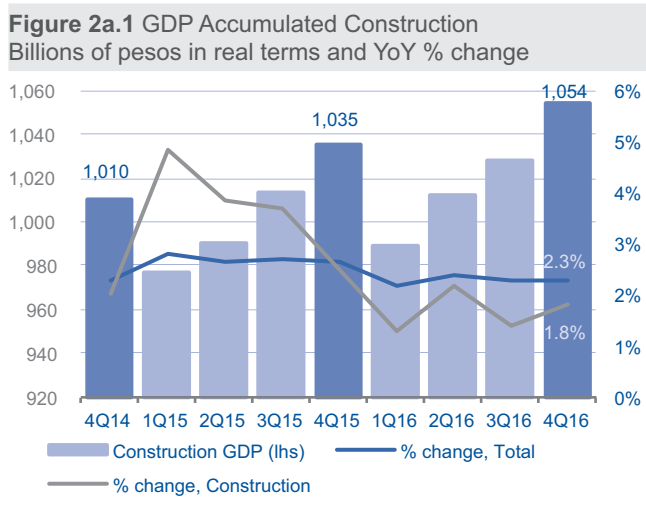
2. Situation

2.a Construction downstream

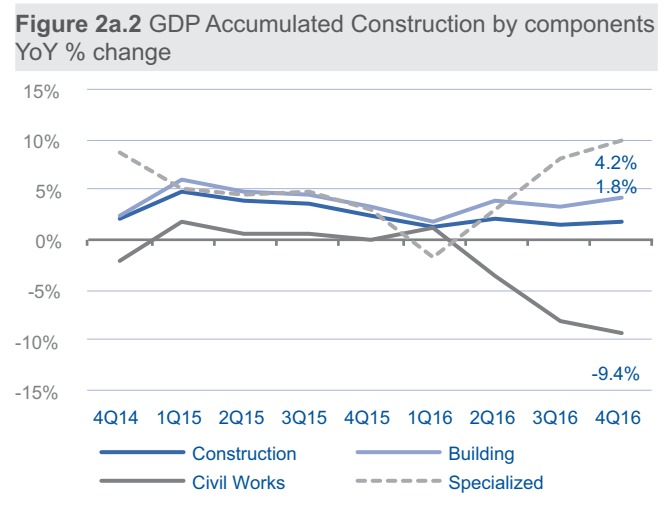
The downward side of the cycle is being delayed, but the sector is still pointing there

Construction increased by 1.8% in 2016

The construction sector ended the year with growth of 1.8%, slightly below the total economy. The start of the year pointed towards a slowdown that has been confirmed by the year-end figures. In the previous issue of *Mexico Real Estate Outlook* we pointed out that progress in the sector would slacken given civil engineering's inability to recover. Although building continues to increase its product, civil engineering is going down the opposite path. Part of the lower growth rate can be explained by an adjustment in the INEGI figures, which posted rates of 1.7% and 3.1% for the first two quarters of 2016. These figures were corrected down to 1.3% and 3.0% respectively, mainly in the building sub-sector. During the last two quarters of 2016, construction continued its positive trend, while civil engineering accentuated its decline during this period. The year therefore closed with a 4.2% increase for building and a 9.4% decline in civil engineering, which, together with specialised projects, accounts for the annual growth in the construction sector of 1.8%.



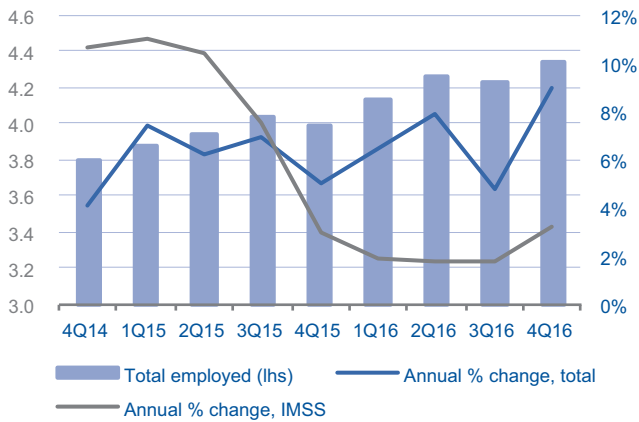
Source: BBVA Research based on data from SCNM, INEGI



Source: BBVA Research based on data from SCNM, INEGI

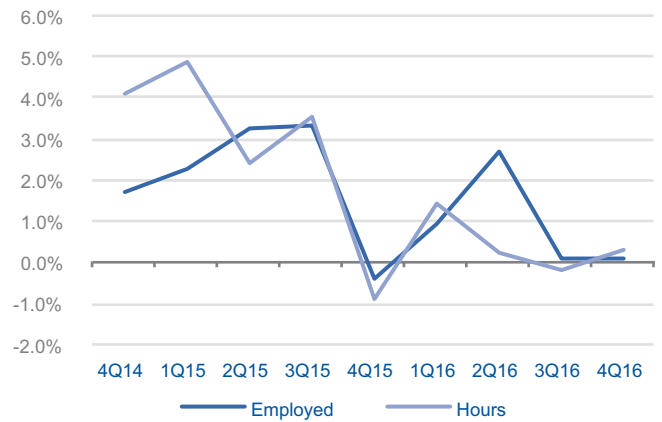
As construction activity increases, more inputs and a greater number of workers are needed to complete the work. For this reason, as the sector's GDP grows, it is normally observed that the number of workers follows the same trend. With the figures for the third and fourth quarters, total employment of the sector rose to above 8%, while the workers on the sector registered with the IMSS grew at a rate of just above 2%. The employment data recorded by the IMSS is consistent with the slowdown in the sector, while according to ENOE employment shows a much higher result. This could be due to the fact that the construction companies are hiring more workers than the increase in the work to be performed. In this regard, the productivity rates seem to coincide, as labour productivity stagnated in the last two quarters of 2016.

Figure 2a.3 People employed in the construction sector
Millions of workers and YoY % change



Source: BBVA Research based on data from ENOE, INEGI

Figure 2a.4 Productivity index in construction
YoY % change

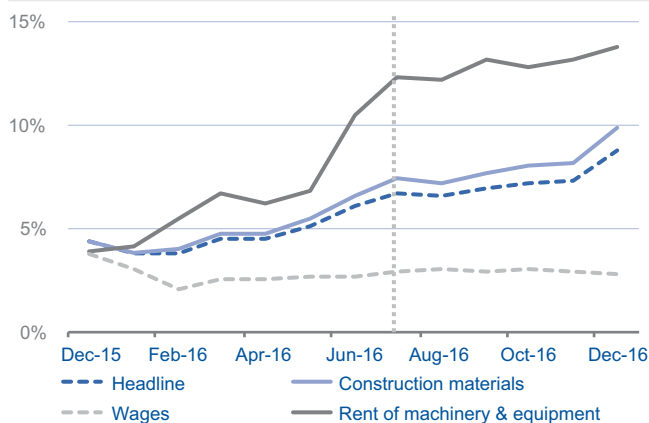


Source: BBVA Research based on data from the INEGI

Construction faces an increase of around 8% in its inputs

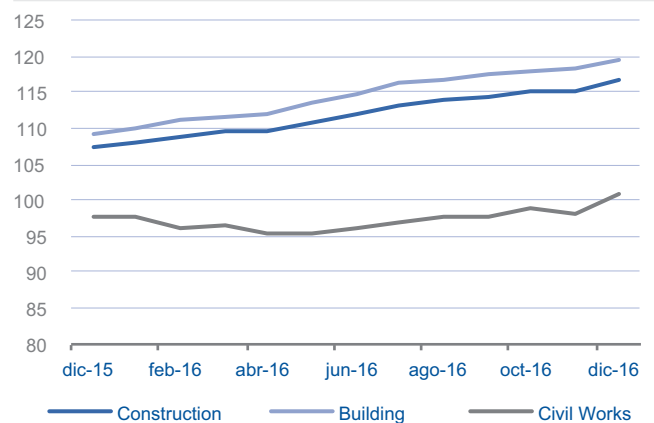
Consistent with lower labour productivity in the construction sector, it can be observed that wages are maintaining their constant growth rate, since they are the only factor of production that does not accelerate its costs. The rest of the components saw their price level rise considerably, in particular machinery and equipment rentals, which increased by more than 12% at an annual rate. The result is that at the end of 2016, the construction input price index grew by more than 8%, which is higher than the rate of inflation. From the perspective of the type of work, building underwent a higher increase in the prices of its inputs than did civil engineering. This result coincides with the increased activity of the former and the stagnation of the latter. As there is a greater demand for building inputs than for civil engineering, the former's prices are increasing faster.

Figure 2a.5 INPP Construction inputs
YoY % change



Source: BBVA Research based on data from the INEGI

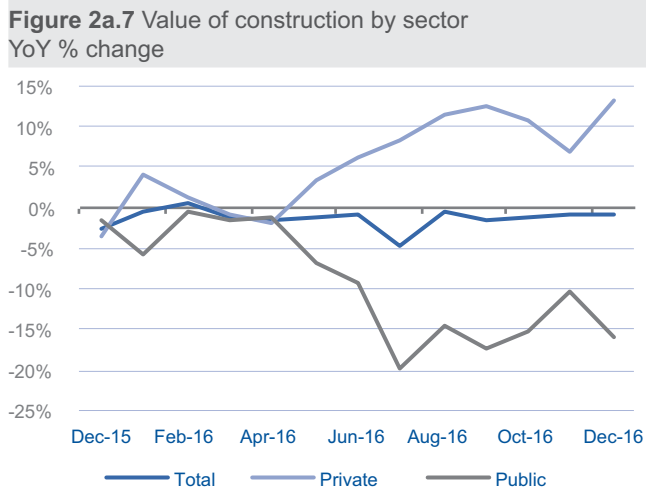
Figure 2a.6 National Producer Price Index
Base 2008 = 100



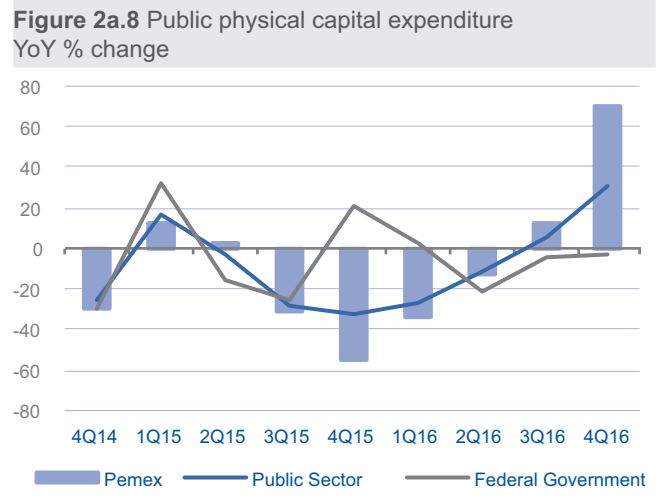
Source: BBVA Research based on data from the INEGI

The private sector tends to have a larger share of building works, while the public sector contributes more to infrastructure works, which are included in civil engineering. The higher value of construction by the private sector can be associated with the positive result for building. Conversely, civil engineering is falling as the public sector invests fewer

resources. As has been observed over the past four years, non-compliance with the National Infrastructure Programme and the ever-smaller budget for infrastructure projects are reflected in the lower level of activity. Along with the smaller budget, the lower expenditure allocated to investment in physical capital suggests that the trend will continue during 2017. Although at the end of 2016 there were increases in public sector spending, this is a base effect because of the very low levels seen in previous periods (public sector spending during 2016 was 744 billion pesos, while in 2015 it was 812 billion pesos in constant pesos).¹

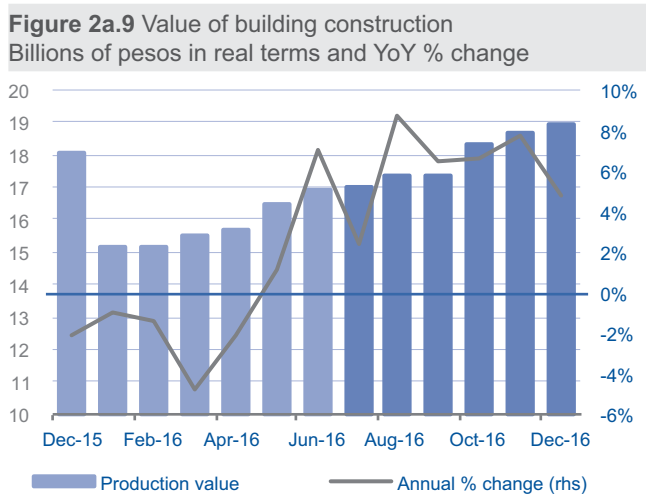


Source: BBVA Research based on data from the INEGI

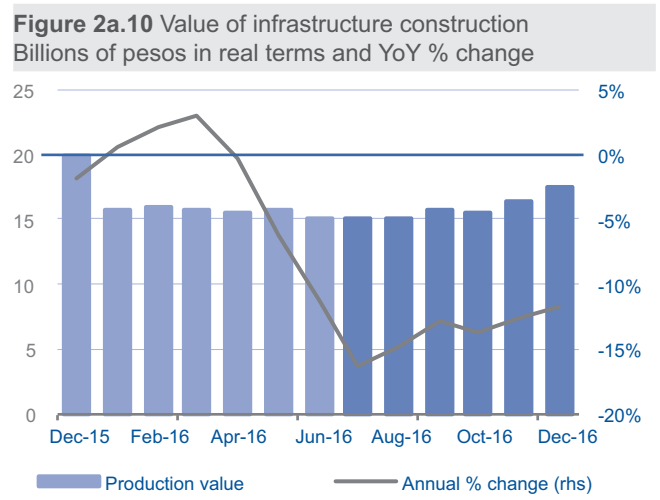


Source: BBVA Research based on data from the INEGI

According to the information reported by the construction companies, the value of projects associated with building has continued to rise since the beginning of 2016. This trend will continue during 2017, but at a slower pace due to the slowdown in the residential sector. In contrast, the value of infrastructure works has been in negative territory during the second half of the previous year, and we do not expect this to change in the first half of 2017 due to both the lower approved budget and inefficient spending.



Source: BBVA Research based on data from the INEGI



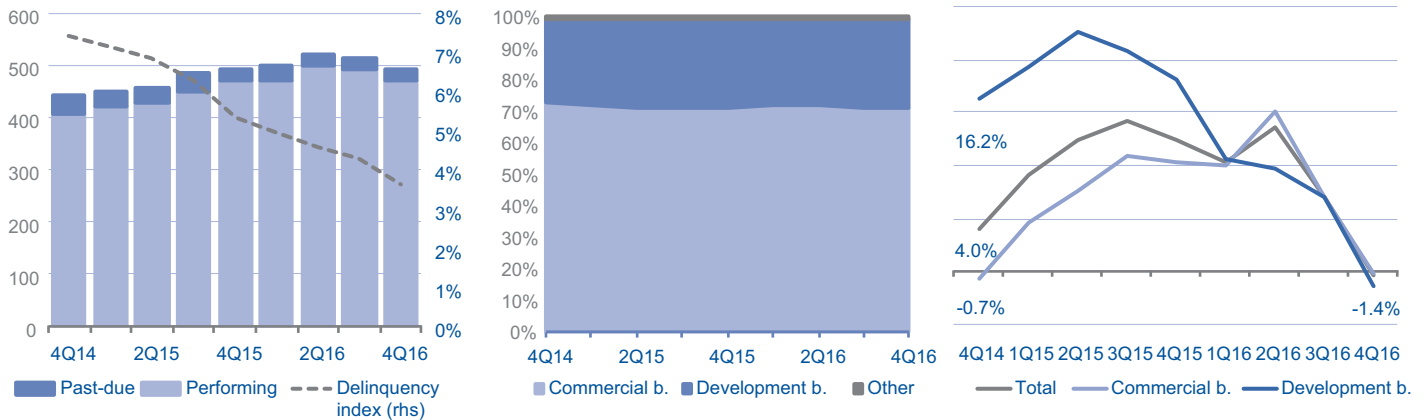
Source: BBVA Research based on data from the INEGI

1: Although not all expenditure on physical capital goes to public works or infrastructure projects, the greater part does, and this tends to explain changes in the civil engineering sub-sector.

Since the second half of the previous year, the balance of bank credit for construction decreased. This had not been observed steadily since the year 2014 when the loan portfolio for productive construction decreased. On this occasion, the development bank showed the biggest drop, with two billion pesos, while the balance for commercial banking decreased by 1 billion pesos. In the case of commercial banking, the net effect is due to an increase in credit portfolios for building, but a drop of almost 12 billion pesos in communication links infrastructure. This latter result was in line with the drop in activity in civil engineering. The good news is that the decrease in the delinquency rate is due to a fall in the level of non-performing loans and not only due to origination, which went from 26 billion pesos to 18 billion pesos, mainly in the credit portfolio for productive construction.

Figures 2a.11, 2a.12 y 2a.13 Total balance of lending to construction in real terms, % share and YoY % change

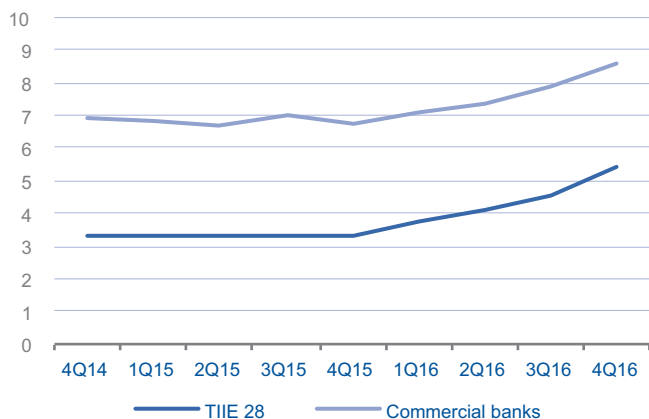
Billions of constant pesos and percentage



Source: BBVA Research based on Banco de Mexico data

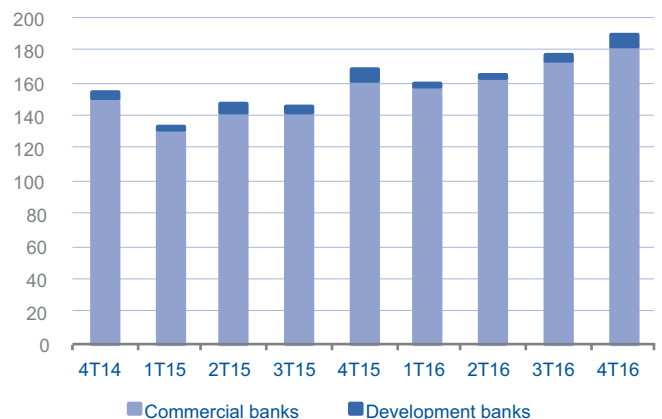
The tightening of monetary policy continues to have an effect on the interest rates charged for construction loans through the interbank equilibrium rate (TIIE). Commercial banks are continuing to increase their interest rates as the cost of funding rises due to the Bank of Mexico's monetary policy. Despite this, the origination of bank credit continues to flow, at an even faster rate than before. The demand for credit for the sector comes mainly from building, where the activity is greater. On average, 160 billion pesos were originated during the first half of 2016, but in the rest of the year the figure exceeded 180 billion pesos. We estimate that these resources will allow building work to continue in the short term.

Figure 2a.14 Rate of interest on lending for construction
Annual interest rate



Source: BBVA Research based on data from the CNBV

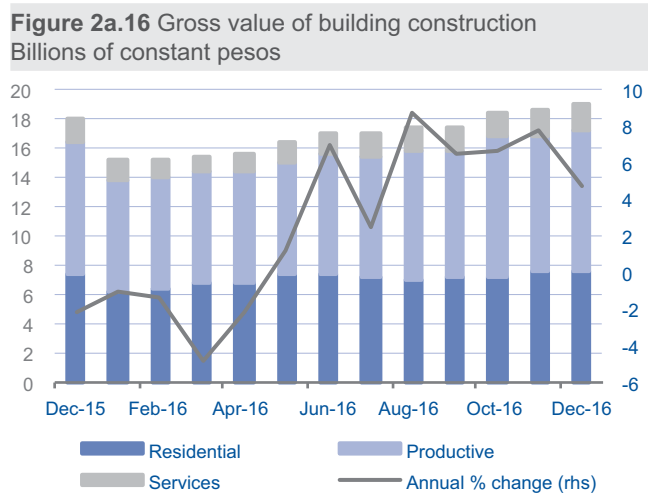
Figure 2a.15 Origination of lending for construction
Billions of pesos in real terms



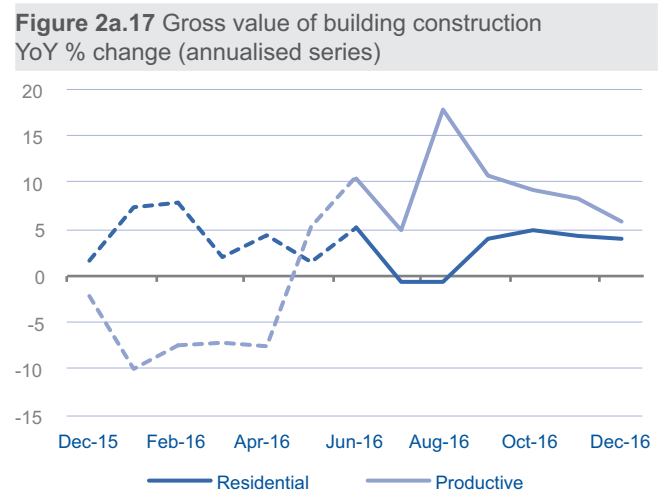
Note: annualised figures
Source: BBVA Research based on data from the CNBV

Building continues to support the sector, but its strength is declining

2016 was another year in building's track record as the backbone of the construction sector. Housing construction and productive construction showed positive rates during the second half of 2016. In terms of the value of construction, productive construction is already the main component of this sub-sector, followed by housing, and then by public service projects, such as schools and hospitals. Residential construction has lost ground to both types of construction, which is a sign that the housing sector is slowing down and the secondary market is beginning to take on greater importance as a counterweight to new housing. An example of the latter is the fact that the register of housing to be built in 2017 continues to decrease to almost 300,000 units, a figure that could continue to fall during the rest of the year. In a similar sense, the deceleration of productive construction could be accentuated as the market for shopping centres becomes saturated in some urban areas and industrial premises are less in demand if manufacturing activity slows down as a result, for example, of an adjustment in exports.



Source: BBVA Research based on data from ENEC (National Survey of Construction Companies), INEGI



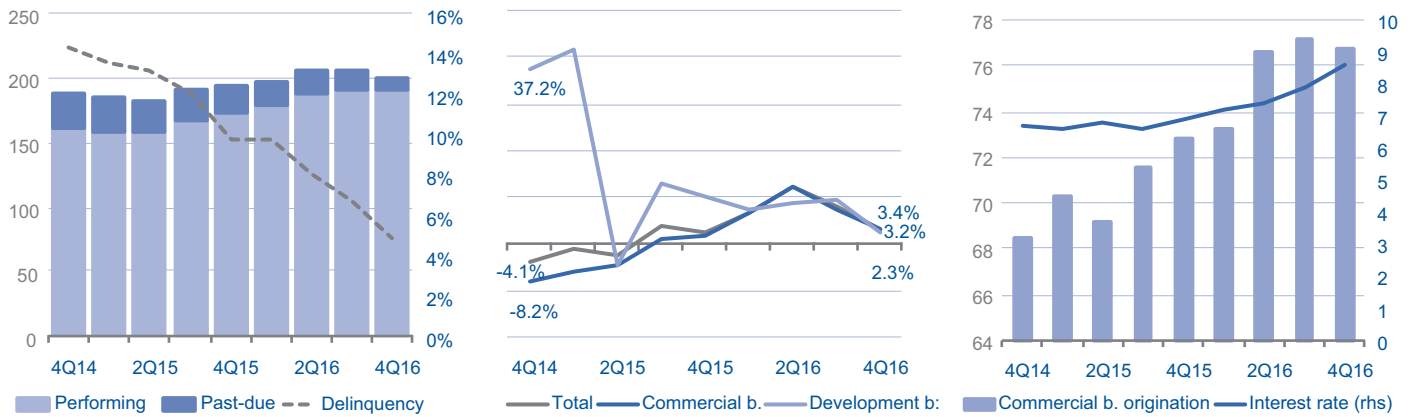
Source: BBVA Research based on data from ENEC (National Survey of Construction Companies), INEGI

The behaviour of the credit portfolio for building is not consistent with what is observed in its real part. However, in the annual rate, the total credit balance grew slightly, compared to what was observed during the first two quarters, when it decreased. The reason is that the overdue balance on this portfolio fell by almost 9 billion pesos as regards credit to productive construction. Also, for residential and other projects the overdue balance fell, but by a smaller amount. This is actually good news, as it improves the quality of the portfolio, as shown by the delinquency rate already falling below 5%.

In real terms, the balance of the credit portfolio for building grew during 2016 at a rate of 3.4%, as a result of a 3.2% increase by commercial banks and 2.3% by development banks. Other financial institutions, with a minimal share, grew by 16%. Throughout the year, the balance decelerated, which could be associated with higher interest rates on credit to this activity being driven by monetary policy.

The GDP of building is slowing down, but it is continuing to grow. This has led to a requirement of financial resources that is reflected in a growth in the origination of bank credit despite the increase in interest rates. The current rates at which banks originate credit have not fully reflected the higher financing cost, which, together with the activity of the sub-sector, may be allowing placement to grow. However, in the face of the slowdown in new housing, the flow of new credit could be quickly reduced in the second half of 2017.

Figures 2a.18, 2a.19 y 2a.20 Total real balance of building credit, YoY % change, origination (annualised) and interest rate, billions of constant pesos and %



Note: The growth rate of the total balance is a weighted average of its components, so it is expected to be in between the rates of each bank. This is not the case, because we have omitted the growth rate of other financial institutions, whose rate is 16%, because their share is minimal.

We have used the annualised origination series to reduce the seasonal effect of credit.

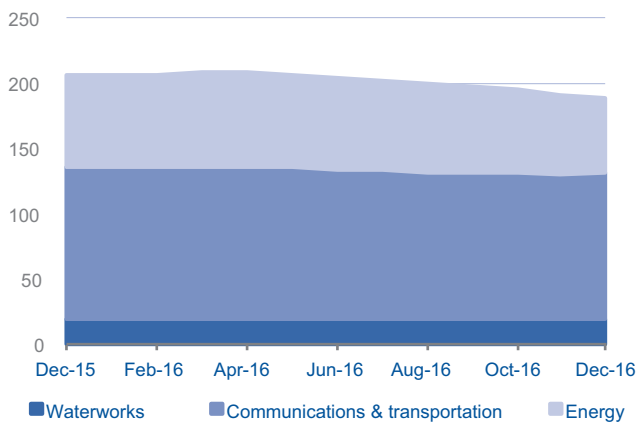
Source: BBVA Research based on data from Bank of Mexico and CNBV

A recovery in civil engineering is increasingly less likely

The GDP of civil engineering is down 10% at year-end 2016

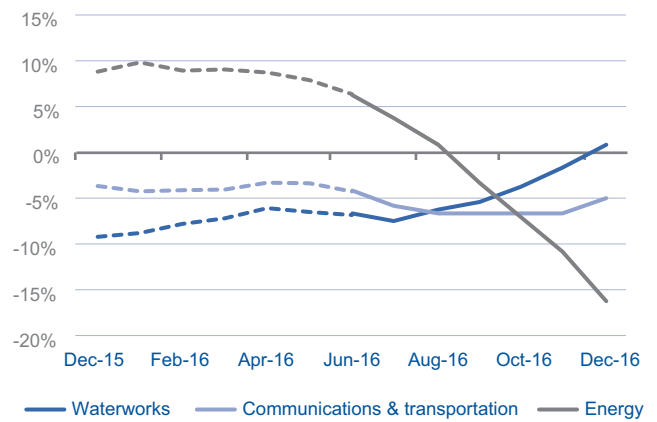
We have commented that sustained growth in the construction sector requires civil engineering to progress along with building. Infrastructure projects have an effect beyond the construction sector itself, since they influence the productive capacity of the economy, that is, the potential GDP for many other economic activities. For the past four years, the GDP of civil engineering has had a negative performance in general, with some exceptions that aim at a very austere level of progress. This result is confirmed by what was observed at the close of 2016 and unfortunately there are no indicators that point to a change in 2017.

Figure 2a.21 Gross value of infrastructure Billions of pesos in real terms (annualised)



Source: BBVA Research based on data from ENEC, INEGI

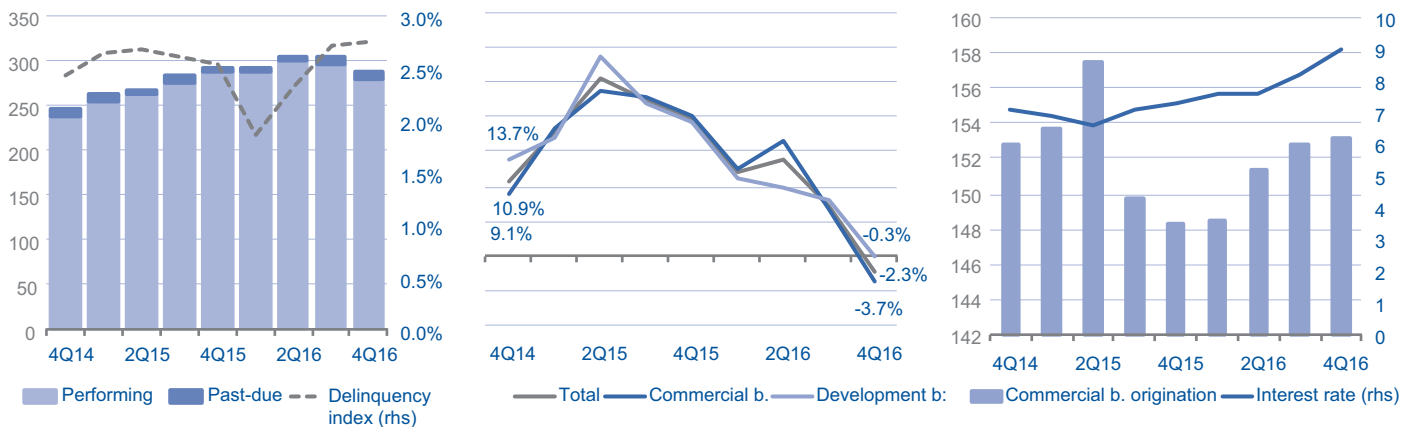
Figure 2a.22 Gross value of infrastructure YoY % change (annualised series)



Source: BBVA Research based on data from ENEC, INEGI

During the second half of 2016, the gross value of works associated with infrastructure fell for the first time below 200 billion pesos in annualised figures. The energy sector has absorbed most of this decline, followed by communications and transport. Only hydraulic works increased during this period. At the end of the year, energy works fell more than 15%, while the value of communications and transport infrastructure fell by around 5%. Both figures are consistent with what is observed in the GDP of civil engineering.

Figures 2a.23, 2a.24 y 2a.25 Total balance in real terms of lending for infrastructure, % share and YoY % change
Billions of pesos and %



Source: BBVA Research based on Banco de Mexico data

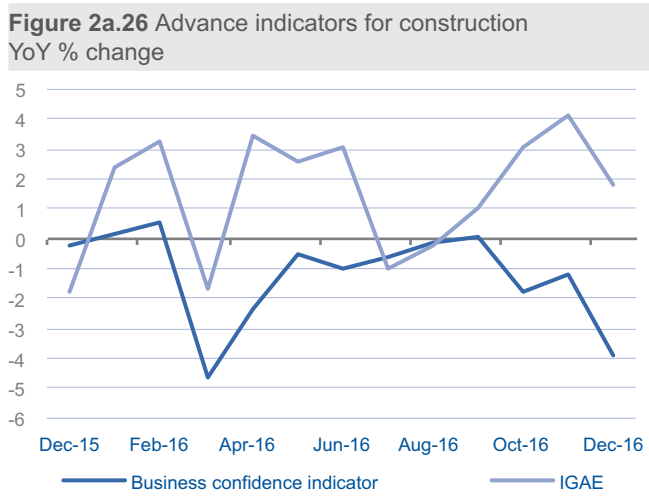
The banking credit market for this sub-sector presents similar results. The balance of the banking, commercial and development portfolio closed at 287 billion pesos, slightly below the 300 billion pesos that it had already exceeded during 2016. According to figures from the Bank of Mexico, the fall in the portfolio is due to the credit balance for communication links and stagnation in other engineering work. A lower demand for financing is to be expected, given that there are fewer infrastructure projects. This credit portfolio has been decelerating since 2015, but at the end of 2016 it entered negative territory for the first time.

The origination of credit has been affected by the combination of lower activity and higher interest rates. As was the case with building credit, the other types of projects also suffered from the tightening of monetary policy through higher interest rates. However, there was a negative impact on projects other than building, as the flow of credit stopped due to a fall in applications for financing.

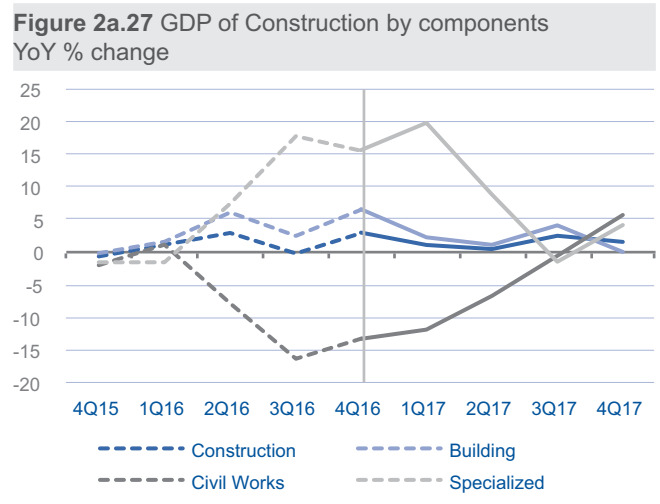
The budget for infrastructure projects in 2017 is almost 30% less than in 2016; coupled with the indebtedness of some federal entities, we estimate that the opportunity for more credit to flow to these works will decrease and the balances could continue to fall. The reason is the combined effect of a lower demand for credit in the face of budget cuts and higher interest rates.

GDP of Construction will show minimal progress in 2017

Even though it is not a new development, civil engineering continue to show a negative trend in its economic activity, which has been reflected in the placement of bank credit. Although the change in monetary policy has led to an increase in the cost of financing, it is the lower number of infrastructure projects that have impacted the demand for credit. In contrast, the GDP of building has continued to move forward and, despite the increase in the interest rate, credit is flowing into this sub-sector. The slowdown, mainly in the residential part, could nevertheless shut off some opportunities for placement. This is revealed by lower business confidence, as measured by the index published by the INEGI, and by a smaller number of plans to build housing as recorded by the National Housing Register. Both indicators point to a year with a lower rate.



Source: BBVA Research based on data from the INEGI



Source: BBVA Research based on data from the INEGI

For the last four years, building has driven construction. During the same period, civil engineering has been characterised by negative performance. The net effect is that the sector is growing less and less as building exhausts its spaces. Next year this trend will be even more marked. Civil engineering will not recover during 2017, as there is a lower budget for infrastructure and pressure on state public finances has led to the closing of the opportunity for more projects. Similarly, residential projects are below 300,000 units. The positive contribution will be based more on productive construction: the construction of industrial premises and shopping centres will keep pace during this year. We expect this to further increase the value of residential construction projects, sustaining growth in the construction sector of slightly above 1%.

2.b Mortgage market ends its cycle

Only banking grows, at a slower pace than expected

Bank mortgage lending up by 1.7% in real terms

Mortgage financing performed below our estimate. The slowdown was higher than expected in the second half of 2016. The amount financed by banks increased 1.7% in real terms at year-end, after a five-year period of placement at a faster rate than the economy as a whole. Employment, the main determining factor of effective housing demand, grew at an annual rate of 4%. It was a positive result, but not what was expected in order to maintain the pace of mortgage origination. In addition, a deterioration in consumer expectations due to less economic activity and the increase in interest rates in particular, had a significant short-term effect on the demand for mortgage credit, which will continue to be reflected during 2017.

Table 2b.1 Mortgage lending: number of loans and amounts of financing granted by institution
Thousands of loans and billions of 2016 pesos

Mortgage Origination	Number of loans (Thousand)			Loan amount (MXN bn)			Average sum (MXN thousand)		
	Dec-15	Dec-16	Annual % change	Dec-15	Dec-16	Real annual % change	Dec-15	Dec-16	Real annual % change
Public agencies	457.4	432.5	-5.4	173.8	160.0	-8.0	380	370	-2.7
Infonavit	393.0	369.1	-6.1	130.4	118.3	-9.3	332	321	-3.4
Fovissste	64.4	63.4	-1.5	43.4	41.7	-4.0	674	657	-2.5
Private intermediaries ¹	141.8	139.3	-1.7	149.6	152.1	1.7	1,055	1,092	3.5
Bank ²	141.8	139.3	-1.7	149.6	152.1	1.7	1,055	1,092	3.5
Subtotal	599.2	571.8	-4.6	323.4	312.1	-3.5	540	546	1.1
Co-financings ³ (-)	56.7	50.9	-10.3						
Total	542.5	521.0	-4.0	323.4	312.1	-3.5	596	599	0.5

1: While there are other private credit institutions (such as unregulated agents), not having reliable public information are not included.

2: Includes: credits for self-construction, re-structures, acquisition, credits for former employees of financial institutions and credits for payment of liabilities and liquidity.

3: Credits granted with Infonavit and Fovissste.

Note: It considers the housing price index of the Federal Mortgage Society (Sociedad Hipotecaria Federal) as deflator.

Source: BBVA Research with Infonavit, Fovissste ABM, Banco de México, CNBV and SHF data

Housing institutes, greater contraction in the amount

Both public housing institutes fell both in the number of mortgages and in their amount in real terms. Even with a looser credit limit, Infonavit's financing contracted by 9.3% in real terms, a proportionally greater decrease than the drop in the number of loans, which also depressed the average amount of credit. The average mortgage granted by the institute remained on the rise until 2015, but by 2016 housing prices exceeded the nominal placement. The increased granting of loans in the middle-income and residential segments, as well as the increases in the maximum financing limits, would have stimulated the higher amounts requested. Nevertheless, by eliminating the price effect, fewer resources were requested than during 2015. In addition to the foregoing, the lower budget for subsidies reduced the share of loans for social interest housing in the portfolio of both public institutes.

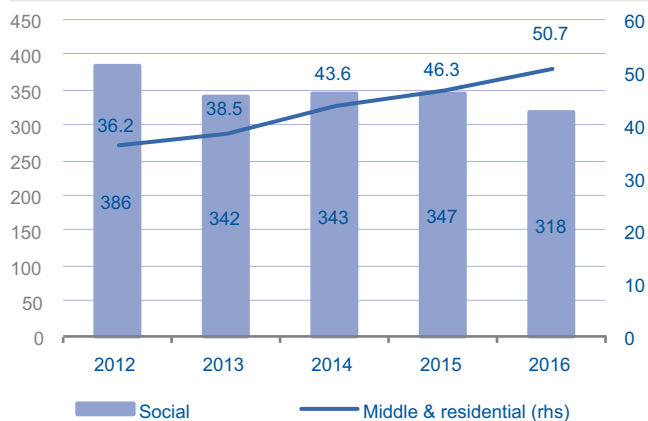
Table 2b.2 Infonavit: Annual Operational Programme (POA)
 Thousands of loans and millions of pesos

Type	Loans					Investment (billions of pesos)				
	Pro-grammed	Advance	Advance	% of compli-	YoY	Pro-grammed	Advance	Advance	% of compli-	YoY
	Dec-2016	December	December	ance Dec.		Dec-2016	December	December	ance Dec.	
		2016	2015	2016 vs goal				2016 vs goal		
Mortgage loans	350,000	372,983	396,226	106.6	-5.9	123,915	115,760	119,838	93.4	-3.4
New	227,800	236,810	261,129	104.0	-9.3	80,232	70,458	75,202	87.8	-6.3
Used	122,200	136,173	135,097	111.4	0.8	43,683	45,302	44,636	103.7	1.5
Improvements	165,000	79,224	293,824	48.0	-73.0	4,986	2,249	8,462	45.1	-73.4
Total	515,000	452,207	690,050	87.8	-34.5	128,901	118,009	128,300	91.6	-8.0

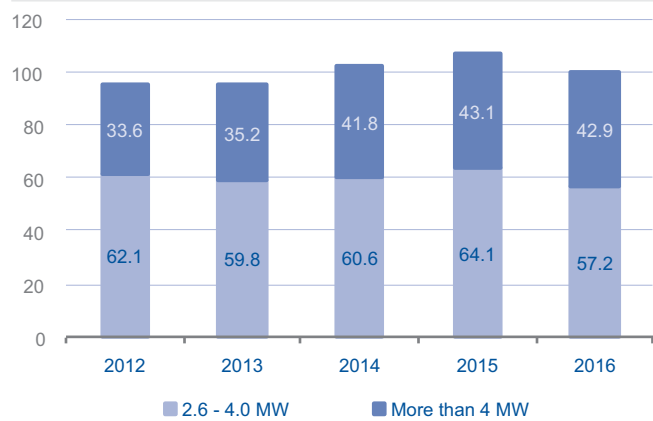
Note: Includes infonavit support, so the figures do not match table 2b.1
 Source: Infonavit. Report by the Director-General. January 2017

Infonavit suggested in its latest Financial Plan that the number of loans for purchase would remain unchanged for 2016. It therefore kept its annual mortgage loan programme at 350,000. Used housing had remained at 34% of the loans granted for purchase. However, in 2016, according to data from the Annual Operating Programme, this share increased to almost 37%, and even the amount of investment used to finance used homes exceeded what had been scheduled by almost 4%. On the other hand, the resources used on mortgages for new homes covered 87.8% of what was budgeted and the number of loans decreased by 9.3%. These results suggest that members of this institute increasingly prefer used housing to new housing, probably due to the better locations of the former.

The fact that the maximum credit limit established by the institute has already reached 1.6 million pesos has resulted in greater participation in the mid-end and residential segments. In addition, financing is increasingly being directed towards workers earning 4 times the minimum wage or more, while in the segment of workers who receive lower incomes and who require more support, the number of loans granted has fallen.

Figure 2b.1 Infonavit: mortgage loans by segment
 Thousands of loans


Source: BBVA Research based on data from Infonavit

Figure 2b.2 Infonavit: loans granted per salary level
 Thousands of loans


Source: BBVA Research based on data from CONAVI

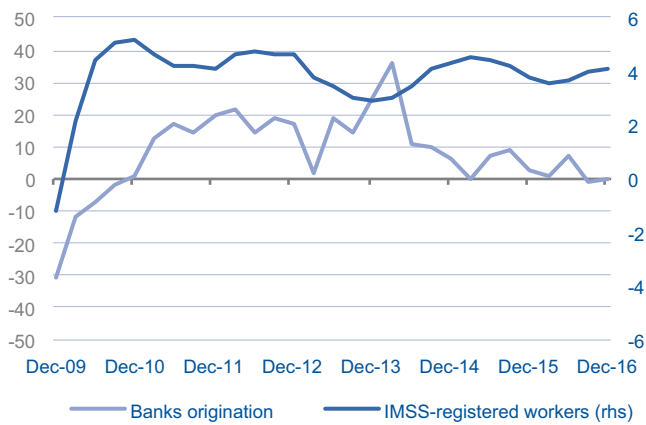
The same was true of loans for home improvements, which covered only 48% of that proposed in the AOP and fell by 73% compared to the previous year. This contraction is largely explained by the tightening of the institute’s oversight to confirm that these resources are in fact being used for this purpose and not for the purchase of other durable goods.

The Fovissste also recorded a lower level of activity in 2016, although the contraction was of a smaller magnitude. This is explained by the fact that the Fund has dedicated a greater proportion to serving the middle-income segments, with an average amount that remained above 650,000 pesos in 2016. Another important feature of Fovissste is that it diversified the destination of its products even further. Of the total of loans for purchase granted in 2016, 45% of the amount financed went to used homes. In turn, loans for refurbishment practically doubled from 2015 to 2016 and accounted for just over 35% of the total.

Lower employment growth and higher interest rates

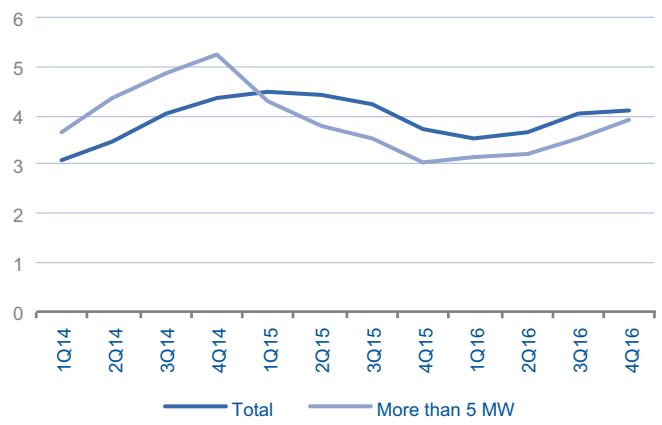
In our last issue of *Mexico Real Estate Outlook*, we emphasised the importance of the fact that employment would continue to grow steadily, while we did not expect significant increases in the mortgage interest rate. The first condition was partially fulfilled, since, although employment grew in 2016, it did so to a lesser extent, mainly in the segment of paid workers earning 5 times the minimum salary or more.

Figure 2b.3 Mortgage credit by banks and IMSS employment YoY % change



Source: BBVA Research based on CNBV and IMSS data

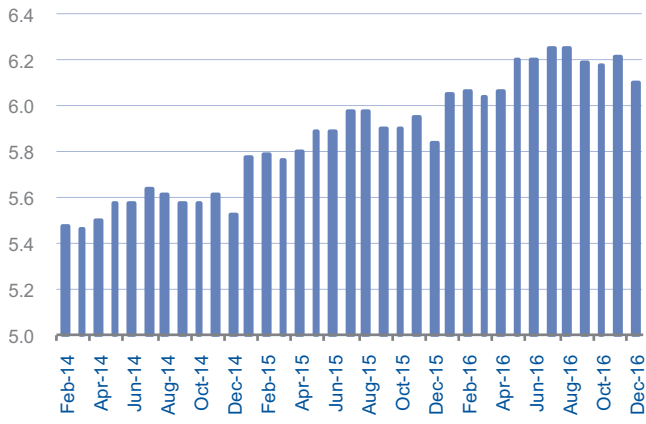
Figure 2b.4 IMSS employment by salary level YoY % change



Source: BBVA Research based on data from the IMSS

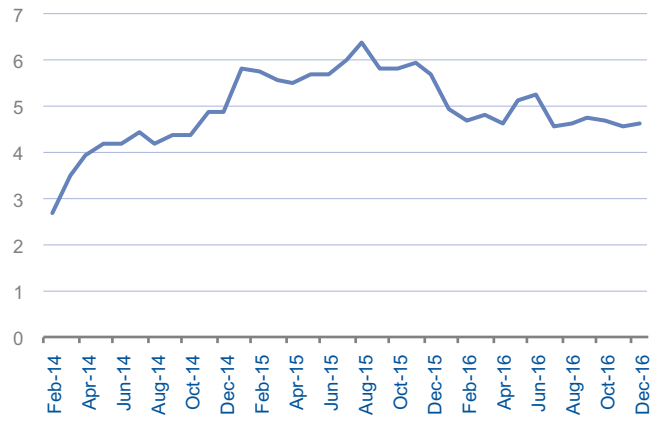
In line with the number of workers, the wage bill also contributed positively to the decision to buy homes throughout the year. However, after reaching its highest growth, above 6% in real terms during 2015, this was below the rate of progress. So, during 2016 it increased at rates of 4.5% on average, in line with the rise in inflation, and is expected to continue accordingly in 2017.

Figure 2b.5 Real IMSS wage bill
Billions of constant pesos



Source: BBVA Research based on IMSS and INEGI data

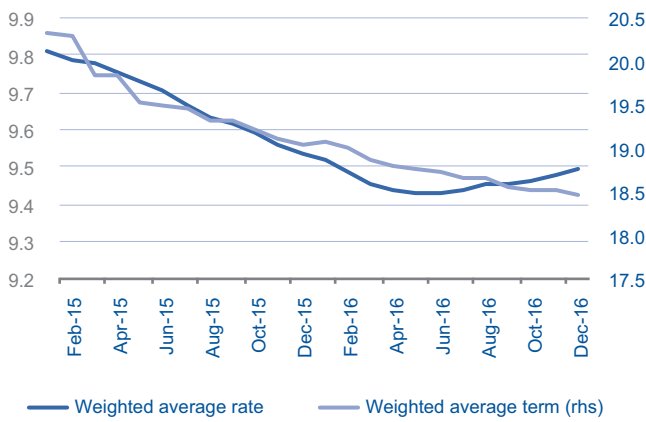
Figure 2b.6 Real wage bill
YoY % change



Source: BBVA Research based on IMSS and INEGI data

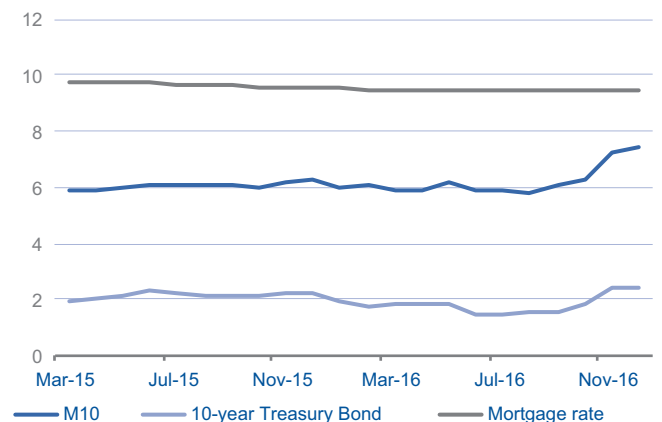
In the case of mortgage interest rates, not only did they stop falling but slight increases were observed in the latter part of the year. These increases had a prudential effect on consumers, since the market had already spent just over two years with a downward trend in mortgage rates. The Bank of Mexico reference rate added increases totalling 250 basis points throughout 2016. However, 200 points, that is, 80% of the increases, occurred in the second half of the year. Although we have shown that the monetary transfer to the mortgage market is limited, as it has been so far, families could generate high expectations of an increase in the cost of credit even though they have not in fact occurred. The consumer's response to housing was to suspend or delay the decision to buy and this even lessened the seasonal effect at the end of each year, a period in which there is a greater demand for mortgage loans compared to other months.¹

Figure 2b.7 Weighted Average Interest Rate and Mortgage Term (Nominal Interest Rate and Years)



Source: BBVA Research based on data from ENOE, INEGI

Figure 2b.8 Mortgage interest rate and long-term interest rate, Percentage



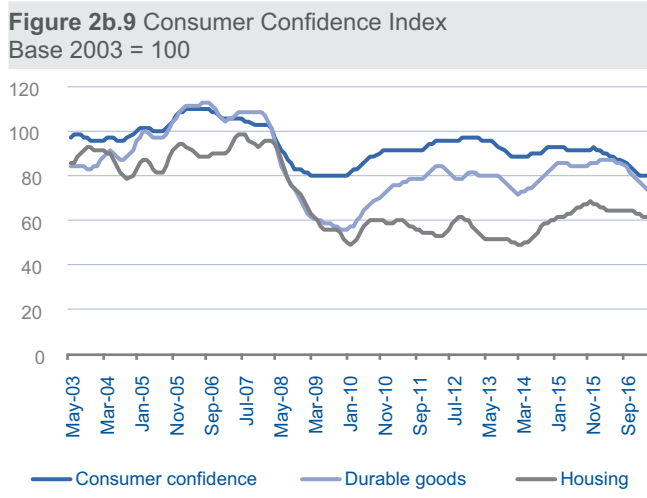
Source: BBVA Research based on data from the INEGI

1: While the November to December rate was 30% on average over the past two years, at year-end 2016 the acceleration was only 22%.

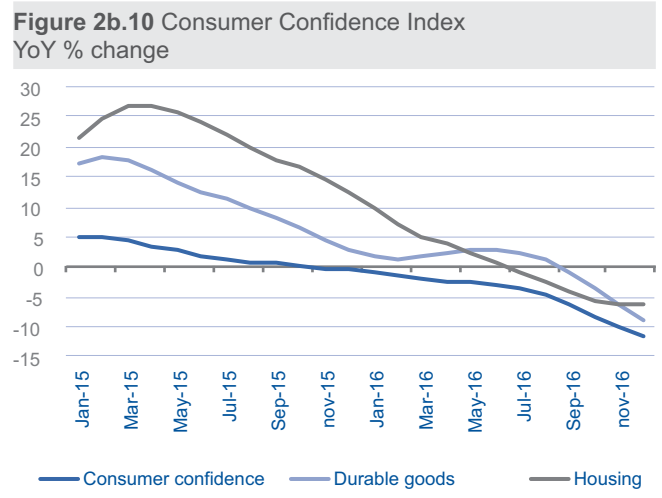
On the other hand, long-term interest rates, which have greater transmission to the mortgage market, also began to rise, after several months of stability. This sum of factors depressed the demand for mortgages during the second half, a situation which could continue in 2017. In spite of all this, the average mortgage rate only registered an increase of 45 basis points, remaining at considerably lower levels and much lower than those experienced in short-term rates.

Consumer confidence in negative territory

Consistent with lower employment growth and an expectation of higher long-term interest rates, consumer housing confidence deteriorated markedly during the second half of 2016. Although this is not a tangible indicator of activity in the sector, it has shown itself to be useful for anticipating periods of deceleration.



Source: BBVA Research based on INEGI data



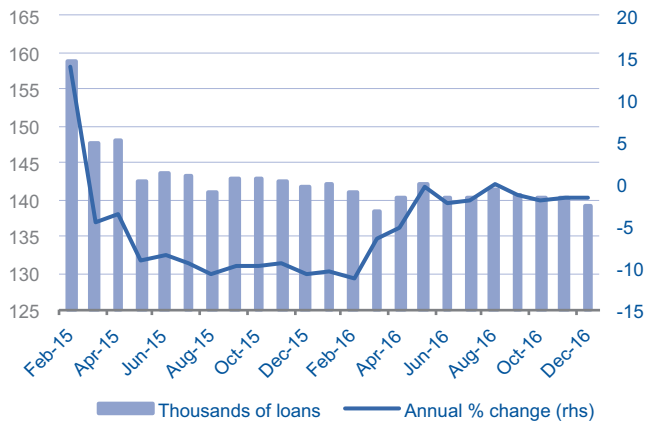
Source: BBVA Research based on INEGI data

In Figure 2b.10 we can see that since the end of 2015 the consumer confidence index has not risen. Meanwhile, the expectations of families regarding their incursion into the housing market continued to improve during the first half of 2016, but in the second half they declined, indicating a lower probability of demands for housing and, therefore, for mortgage credit.

Banks maintained their growth in terms of amounts in 2016

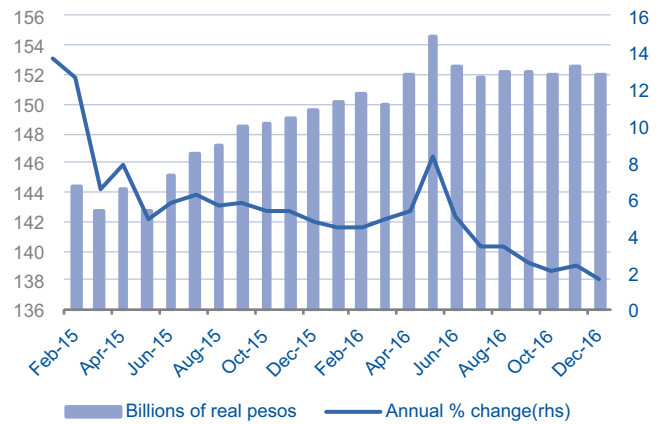
Bank performance remained in positive territory in 2016 in terms of the amount, in contrast to the housing institutes, although, of course, they have not avoided the process of deterioration in the determining demand factors. In line with the market trend of purchasing more expensive homes, the growth in the amount financed was combined with a contraction in the number of loans (less than the housing institutes), resulting in an average mortgage amount 3.5% higher in real terms than in the previous year.

Figure 2b.11 Origination of bank credit for housing
Thousands of annualised loans and YoY % change



Source: BBVA Research based on data from the CNBV

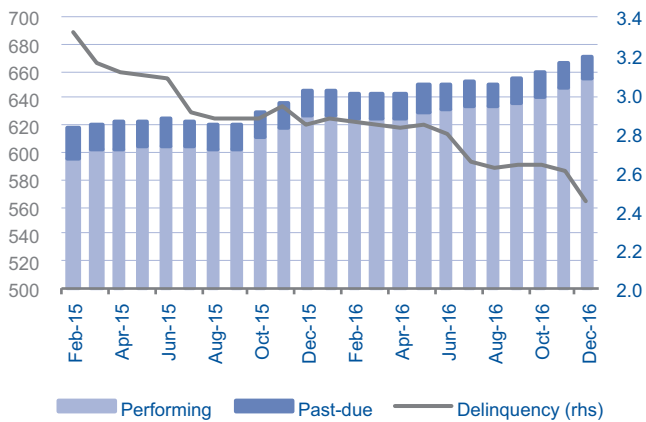
Figure 2b.12 Origination of bank credit for housing
Billions of real annualised pesos and YoY % change



Source: BBVA Research based on data from the CNBV

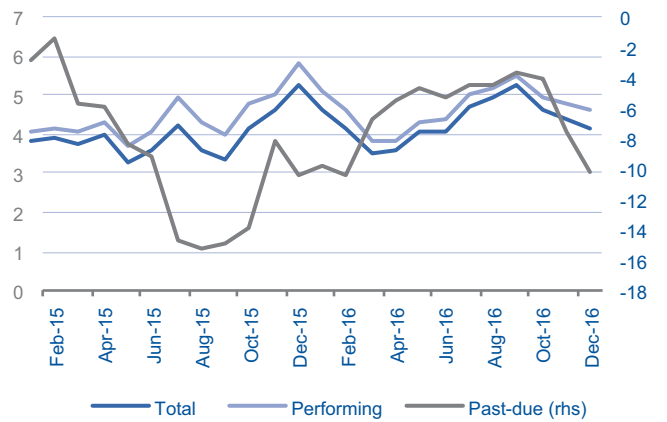
The balance of the mortgage loan portfolio continued to grow during the second half of the year, at rates close to 5% on average between January and June, driven mainly by the current balance, which increased at similar rates. In contrast, the non-performing loan portfolio remained in negative territory throughout 2016, which has allowed the NPL ratio to maintain its downward trend, reaching a minimum level of 2.4% in December.

Figure 2b.13 Balance of bank credit to housing
Billions of constant pesos and delinquency (%)



Source: BBVA Research based on data from Banco de Mexico

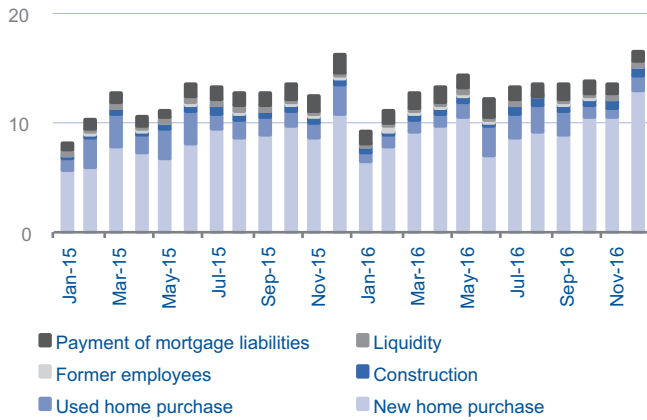
Figure 2b.14 Balance of bank credit to housing
YoY % change



Source: BBVA Research based on data from Banco de Mexico

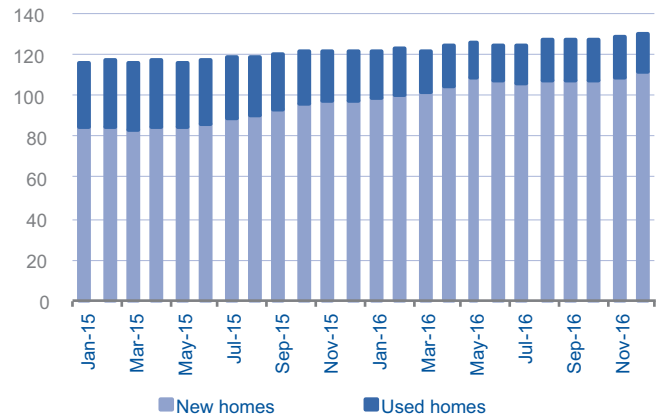
New housing remained the main mortgage loan product placed in 2016 by the banks, and even gained ground over used housing. On the other hand, other products, such as loans for liabilities and liquidity, which registered a boom in recent years, are beginning to lose momentum. This is largely due to the slowdown in interest rates, which has increased competition among banks when offering this product and also by lower expectations of economic growth, which have slowed down requests for financing for liquidity, whose purpose could be related to pursuing another type of business with a mortgage guarantee.

Figure 2b.15 Origination of mortgage loans for housing
Billions of pesos in real terms



Source: BBVA Research based on data from the CNBV

Figure 2b.16 Origination of mortgage loans for housing
Billions of constant pesos annualised by condition of use



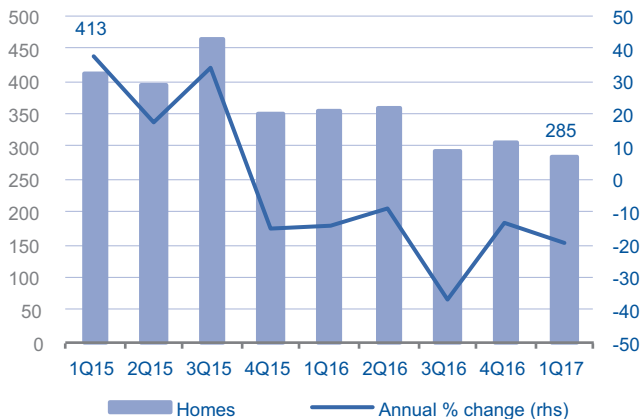
Source: BBVA Research based on data from the CNBV

Housing construction faces major adjustments

The housing supply has been largely in line with the allocation of subsidies for the purchase of a home, since practically all the aid has been allocated to the purchase of new units. Although in 2016 the trend in the number of home construction projects continued to decline, this should not be a cause for concern, as much of this decrease is explained by a base effect compared to the previous two years, which received the largest amount of subsidies since 2007 in real terms.

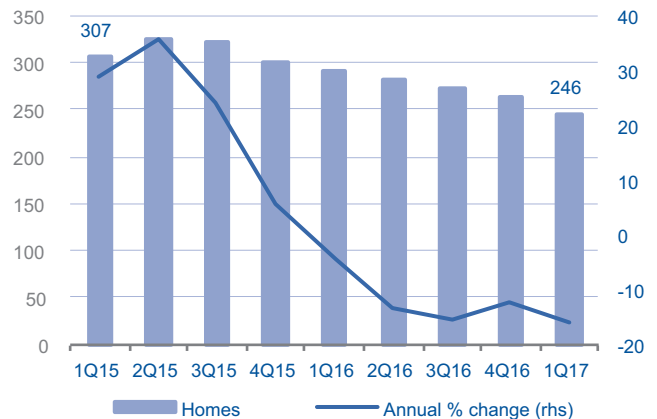
In addition, inventories have maintained the same trend, avoiding the accumulation of surpluses by producing only what the market can absorb. At the end of December, the number of projects in the National Housing Register (RUV from its initials in Spanish) contracted 13.1% in annualised figures compared to 2015 and stood at 305,000 projects, while inventories were reduced by 12.5%, also in annual figures, and totalled 264,000 homes completed.²

Figure 2b.17 Registration of housing units with the RUV
Thousands in annualised figures and YoY % change



Source: BBVA Research based on data from the RUV

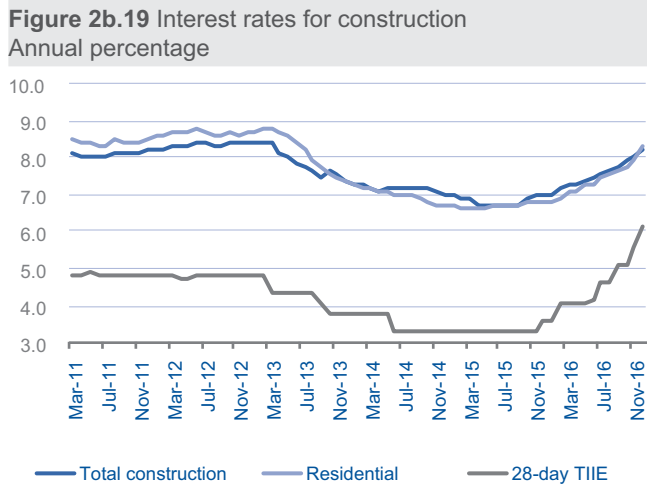
Figure 2b.18 Housing inventory in the RUV
Thousands in annualised figures and YoY % change



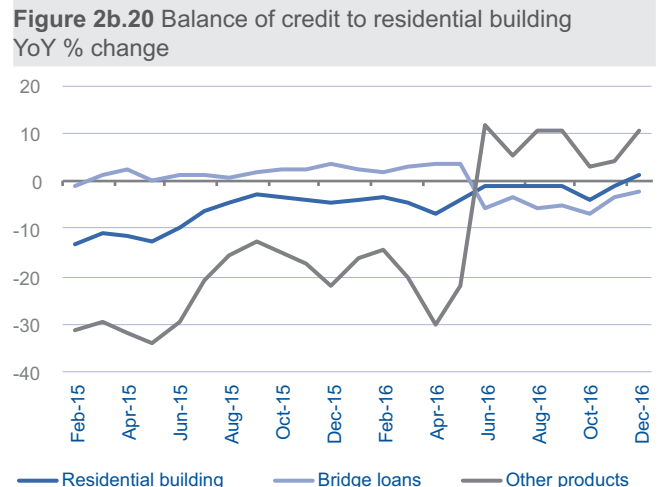
Source: BBVA Research based on data from the RUV

2: A dwelling is considered completed or habitable when 100% of the construction has been finished and it also has water, light and drainage services.

Another factor that undoubtedly had the greatest impact on the decision by builders to reduce the number of projects is explained by the increases in the benchmark interest rate by the Bank of Mexico. Although we have mentioned that there is little correlation between monetary policy and the individual mortgage market, in the case of the construction credit market the transmission is practically immediate through the TIIE at 28 days, but the level has not reached the peak of March 2013.

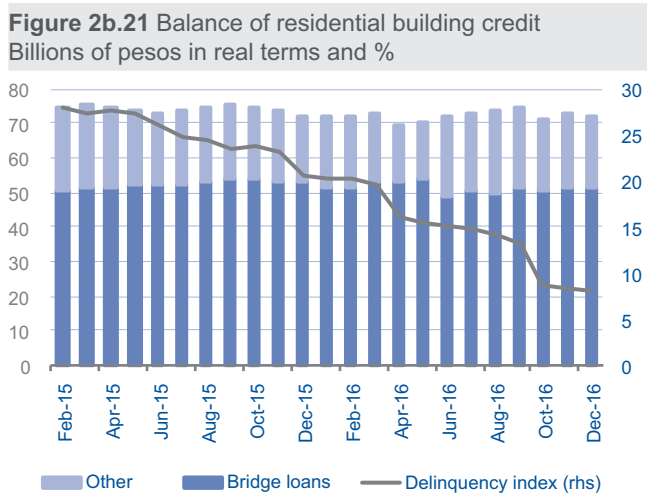


Source: BBVA Research based on data from the CNBV and Banco de Mexico

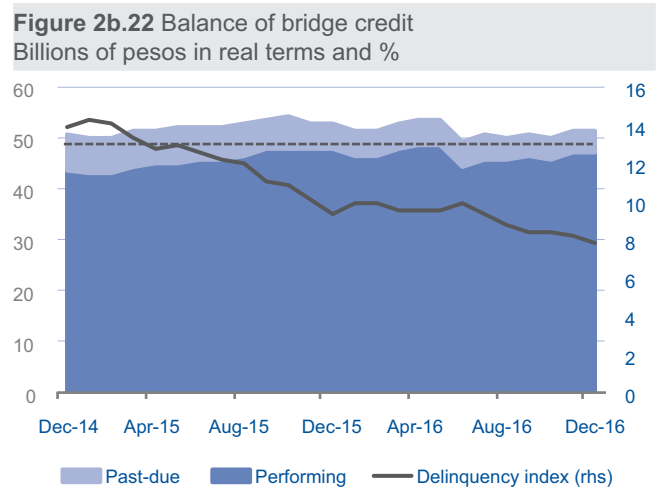


Source: BBVA Research based on data from the CNBV

The succession of increases in the benchmark interest rate during the second half of 2016, which amounted to more than 200 basis points, were directly transmitted to commercial bank interest rates on loans for residential construction, as can be seen in Figure 2b.19. As a result, the balance of bridge credit registered negative growth rates from the announcement of an increase in the benchmark rate in June and remained in that territory for the rest of the year. In any case, the new interest rates on housing construction are still below what was observed during 2011 and 2012 when the RUV reported more than 400,000 and little more than 300,000 projects respectively, figures which are higher than those observed at the close of 2016.



Source: BBVA Research based on data from the CNBV

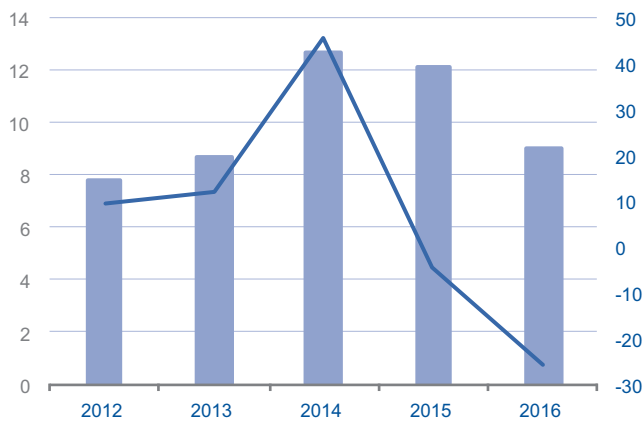


Source: BBVA Research based on data from the CNBV

However, although bridging loans were the main financing product because of their limited level of risk compared to other products; other loans registered increases of around 10%. Among these were unsecured loans, although until now these do not represent a cause of concern that could jeopardise the quality of the portfolio.

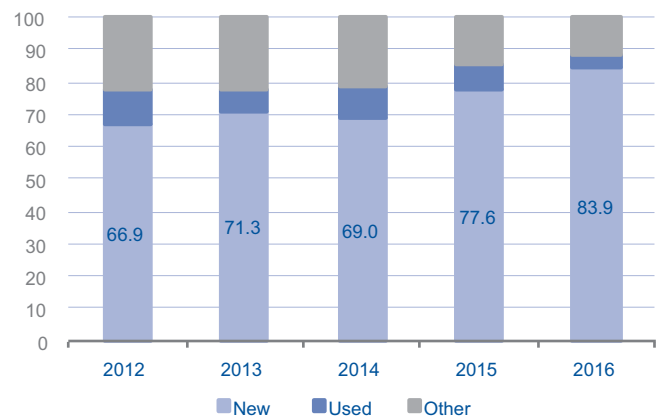
At the close of 2016, the balance of bridging loans stood at just under 50 billion pesos, but the delinquency rate has continued to fall and stands between 7% and 8%. This shows that the lower demand for credit is not a cause for concern, because builders are maintaining a balance between what they produce and what the market can absorb. In addition, it would also reflect the base effect of the reduction in federal government subsidies, which departed from the historical average in 2015, so that the 25% reduction in 2016 should be seen as a return to its long-term trend.

Figure 2b.23 Amount of subsidies for housing
Billions of pesos and YoY % change



Source: BBVA Research based on data from CONAVI

Figure 2b.24 Amount of housing subsidies
% share per housing solution



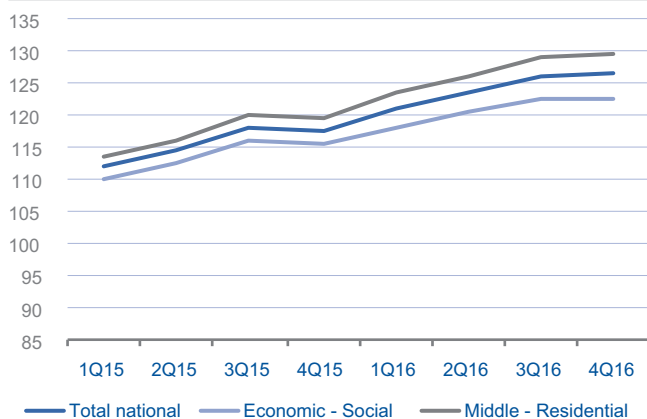
Source: BBVA Research based on data from CONAVI

Housing prices grew 7.4% in 2016

are maintaining their downward trend.

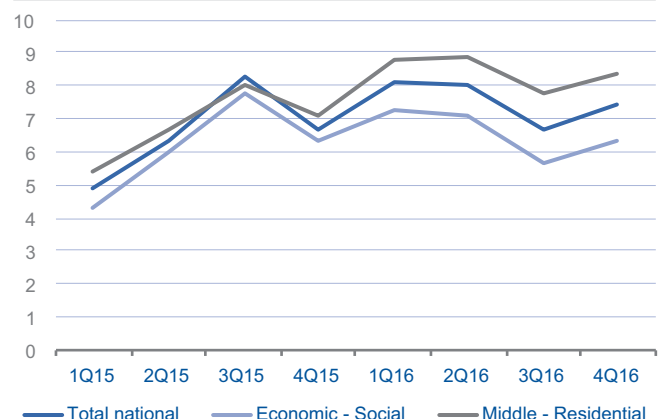
The housing price index continues to reflect appreciation levels above headline inflation, considering the adjustment in demand for lower employment generation and the uptick in rates. These items have explained most of the value cycles of real estate, since on the supply side there is no saturation and, as we have seen, inventories

Figure 2b.25 SHF House Price Index
Base 2012 = 100



Source: BBVA Research based on data from the SHF

Figure 2b.26 SHF House Price Index
YoY % change



Source: BBVA Research based on data from the SHF

The index for the middle-income and residential segments remains at levels above the aggregate and grew 5.9% at year-end 2016. Meanwhile, the index corresponding to the social interest segments increased by 4.3% in the same period. Our expectation for 2017 is that the pace of appreciation will continue, although at rates closer to those that will be registered by inflation, which could be around 6% per year.

The mortgage market is likely to have a slight advance in 2017

In our previous issue, we mentioned that the combination of job growth and favourable financing conditions were essential for sustaining the growth of the sector. The change in the trend shown by interest rates, which remain at very competitive levels, has been combined with a slower rate of job creation, which is the main determining factor of the demand for housing. It is true that employment is continuing to rise at positive rates, which is encouraging. However, that of the segments earning 5 times the minimum salary or more, the market served by the banks, is already beginning to slow down. At the same time, long-term interest rates recorded upticks at year-end 2016, after several months of stability, which is likely to be passed on to individual credit. If these factors are maintained in 2017, the mortgage market could register a lower growth rate than the economy or even remain stagnant for the first time in several years.

On the supply side, conditions have been adjusted further downwards. However, this reflects responsible behaviour on the part of builders, who are maintaining their inventories at stable levels in line with market capacity and the lower level of subsidies.

These facts confirm that we are getting closer to the bottom of the mortgage market cycle. But it is also true that the sector is reacting increasingly efficiently to market signals, which is positive, since it allows both consumers and investors to relocate to the most convenient segment.

3. Special topics

3.a The determining factors of the housing supply in Mexico

Introduction

In the issue for the First Half of 2015 of *Mexico Real Estate Outlook* we mentioned the importance that construction costs have had for the amplitude of house price cycles. This feature is also explained by the fact that in the short term the housing supply tends to be rigid, so that the adjustment in its value would be affected to a greater extent by costs or demand shocks.

In Mexico, the most appropriate indicator for monitoring housing projects is the National Housing Register, better known as the RUV, which began issuing information in late 2006. However, studies related to the supply cycles have been scarce. That is why, in this issue of *Mexico Real Estate Outlook*, we conduct an analysis to ascertain its economic determining factors, taking as a reference expected prices and construction costs. In other words, profit margins and the interest rate as a fundamental part of the real estate business cycle.

First, we explore the supply cycle in its most important stages. Subsequently, we present empirical evidence of the main factors according to economic theory and some benchmark studies. In this area, we also consider the amount of housing subsidies issued by the federal government as a distorting element in market expectations.

Finally, we present a sensitivity analysis of housing supply with respect to profit margins and the interest rate, elements recognised by economic theory, and also the impact of subsidies in recent years and the ensuing conclusions.

Recent cycles of housing construction

The National Housing Register was set up in 2006 and was created with the purpose of accounting for the number of new homes that were being channelled through some type of financing from Infonavit. Subsequently, the homes that were placed through Fovissste were included and, since 2016, the RUV has allowed the incorporation of housing construction projects that are financed through commercial banking. Unlike building projects offered through public institutes, those financed by commercial banking are not required to be registered. However, since its creation and to date, it has been established as a benchmark, since it includes around 80% of all new homes that have been placed on the market.

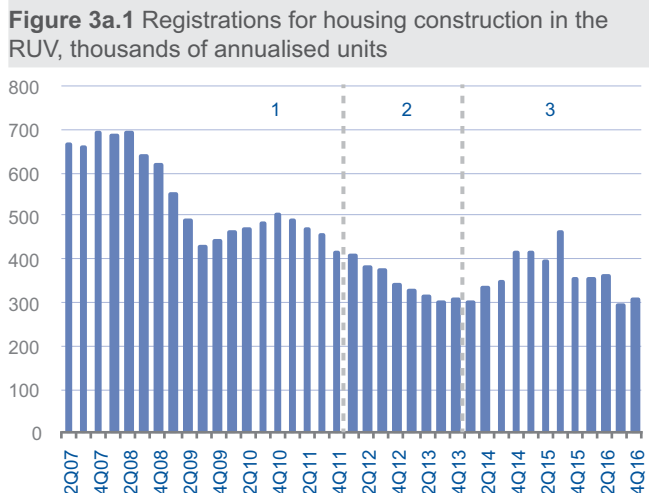
In terms of the volume of construction projects registered, we could divide production into three cycles. The first was between 2007 and 2011, when building levels reflected more clearly the real estate boom prior to the crisis of 2008. In those years, about 700,000 homes were built, while in the post-crisis period some 500,000 were built per year.

Subsequently, between 2011 and 2013, there was a downward supply trend, as the market matured, other types of housing solutions were required (remodelling, enlargement and purchase of used homes) and new housing started losing ground. It was not until the third cycle, from 2014-2016, when levels close to those registered at the end of 2010 were reached, with 450,000 annualised projects. However, as we have also mentioned in previous numbers, in the current construction model a stable level of projects has oscillated around 350,000 houses in annual terms.

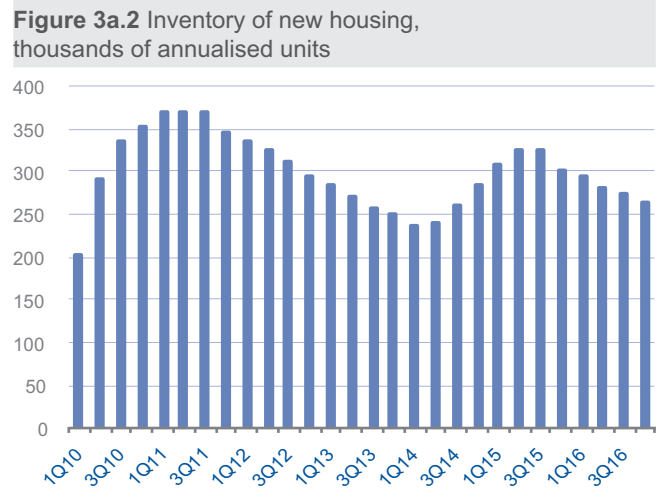
Given the above, the extraordinary uptick in supply observed between 2014 and 2015 could be explained more by supply-side incentives, through purchase subsidies. Although recently the cycle of employment growth at rates above those of the economy explained higher sales of new homes, especially with mortgages, the economic slowdown visible

since last year would explain the fall in plans by builders, as we are seeing at year-end 2016, although the reduction of more than 30% in subsidies would also explain the contraction in supply.¹

Another indicator that also reflected the increase in production in recent years is the inventory, which consists of the number of houses on which construction has been completed and also have basic services (water, electricity and drainage). Although this indicator uses information since mid-2009, it reflects a trend similar to the number of registrations, showing a considerable increase during 2015 and then a downward trend in 2016, so that there are no signs of over-supply in the market with respect to what it can absorb.



Source: BBVA Research based on data from the RUV



Source: BBVA Research based on data from the RUV

The determining factors of the housing supply

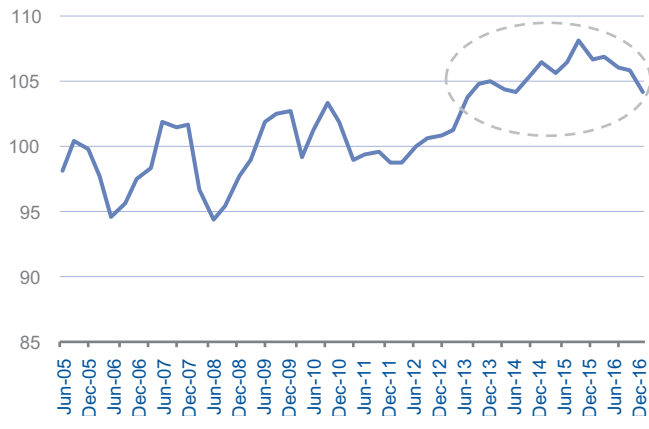
According to economic theory, the decision to invest in housing construction is largely determined by the costs incurred by the builders and those which directly modify the profit margins. The relationship between the SHF housing price index and the producer price index is this indicator, as suggested by numerous studies on the factors that influence the housing supply. Therefore, in the long-run equilibrium, the relationship between house prices and construction costs should be close to 100. This is consistent with the fact that under competitive conditions the decision to build additional housing should not be determined by the increase/decrease of either of these two factors.

Grimes and Aitken (2006) found that profit margins and interest rates determine construction investment decisions, depending on price expectations, since, in the face of demand shocks, the housing supply does not react overall, as the quantities are restricted by the amount of land and the search costs faced by builders. This behaviour is typical of urban areas where the supply of land for construction is limited. On the other hand, Gattini and Ganoulis (2012) agree that, in a competitive market, the long-term housing supply would not be far from being perfectly elastic and would be determined by construction costs. Meanwhile, Wang and Chan (2012) estimate supply as a positive function of margins and a negative function of interest rates.

1: See Housing situation. First Half 2017..

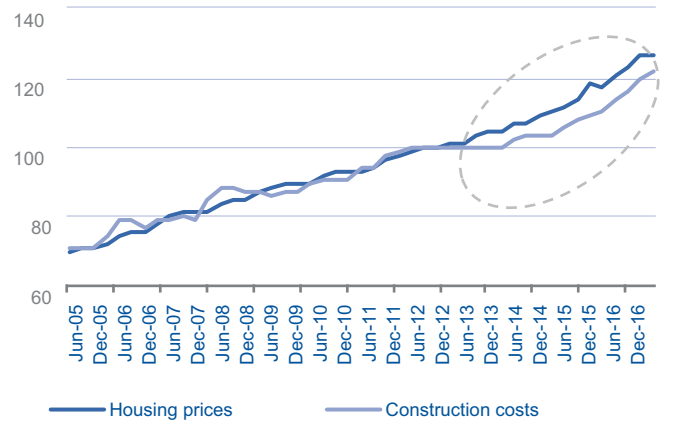
In Figure 3a.3, we can see that the profit margin ratio hovered around 100 between 2005 and 2010. Between 2011 and 2013, when the change in consumer preferences and the over-bidding episode occurred, the index remained stable, as we saw in the previous section, and a slowdown in the growth of the value of real estate also suggested a slowing down of residential construction costs. However, from the end of 2013 until the close of 2016, the profit index was above the average for previous years.

Figure 3a.3 Index of the profit margin of builders, Index 2012 = 100



Source: BBVA Research based on data from INEGI and the SHF

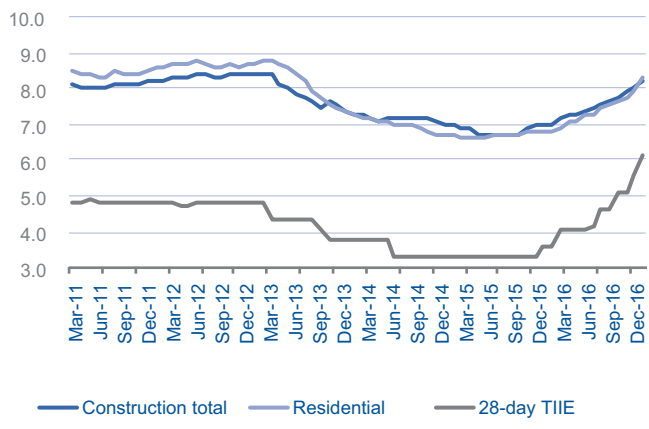
Figure 3a.4 Housing prices and construction costs, Index 2012 = 100



Source: BBVA Research based on data from INEGI and the SHF

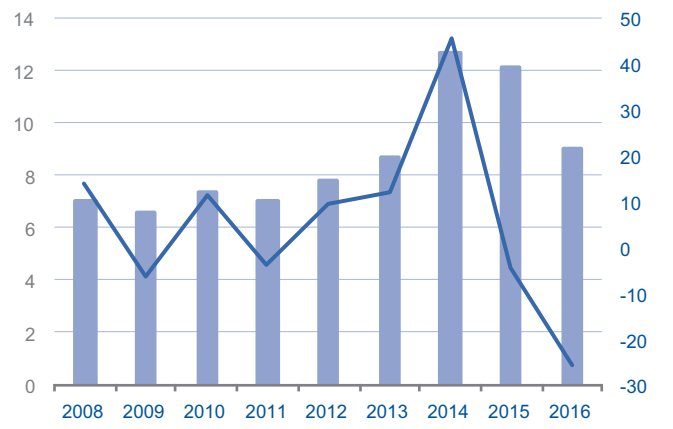
Another way to appreciate the imbalance in the margins is to directly analyse the trends in the indices involved. Figure 3a.4 shows that between 2005 and 2012 the SHF housing price index and the producer price index for residential construction showed similar behaviour. It was in mid-2013 when a gap opened, which was marked by a sustained increase in the value of houses compared to the costs for materials, as well as machinery and equipment rentals, which, as we saw in the previous section, had stalled in previous years.

Figure 3a.5 Short-term and construction interest rates, Annual percentage



Source: BBVA Research based on data from INEGI and the SHF

Figure 3a.6 Amount of subsidies for housing Billions of constant pesos and YoY % change



Source: BBVA Research based on data from CONAVI

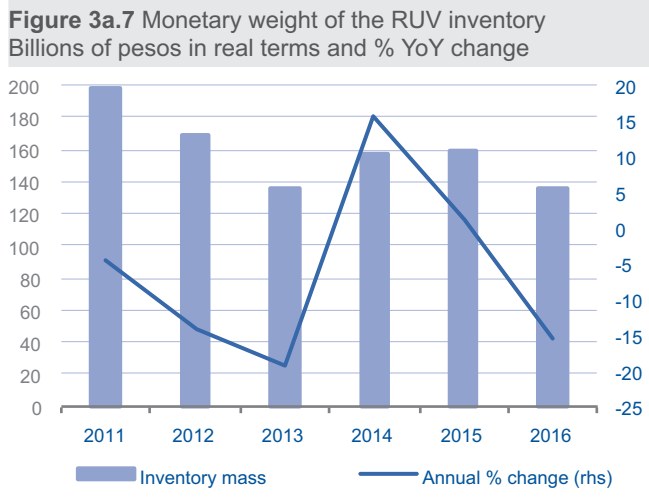
This could be explained by the fact that as of 2013, the benchmark rate of the Bank of Mexico began to decline after maintaining an upward trend for several years. As we mentioned in the *Mexico Real Estate Outlook* issue for the second half of 2014, money transfer to construction loans is immediate, which also explains the greater demand for this type of financing, especially bridging loans. (See the article entitled Market Conditions in this issue.)

In addition, a fall in the short-term interest rate accompanied an extraordinary increase in the housing subsidies granted by the federal government through the National Housing Commission (Conavi). While it is true that the aid was intended to cover a much wider range of housing solutions, we have commented that about 90% of the amount has been earmarked for the purchase of new housing.

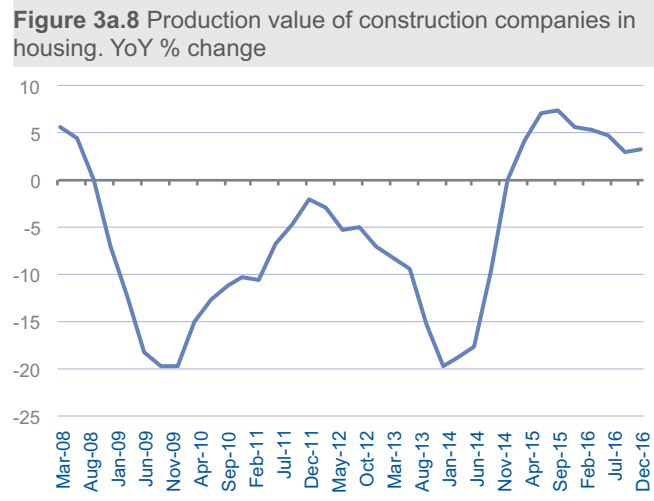
In 2013 the subsidies increased by 12% in real terms compared to 2012, although the most significant increases occurred in 2014 and 2015, when the amount was double the average between 2007 and 2012, 5.4 billion pesos, as can be seen in Figure 3a.6. It was not until 2016 that the subsidies returned to a volume similar to the historical average, although this has not yet been reflected in a clear decrease in profit margins.

The impact of these subsidies on the recovery of construction can be seen in the annual evolution of the mass of value created by the housing inventory, particularly in 2014, when the amount of aid grew 45% in real terms. Figure 3a.7 shows that, between 2011 and 2013, this inventory showed a downward trend, with negative rates that were accentuated with magnitudes of -14.5% and -15.7% in 2012 and 2013 respectively.

The situation was also reflected in the value generated by the construction companies, which were affected not only by the change in consumer preferences, but by a process in which the market was reconfigured to fill the gap left by the exit of big companies. The impact of subsidies on the recovery of the industry was so significant that, in the same year that it grew more than 15% in real terms, the value of housing production grew, after almost four years of being mired in negative territory.



Source: BBVA Research based on data from the RUV and SHF

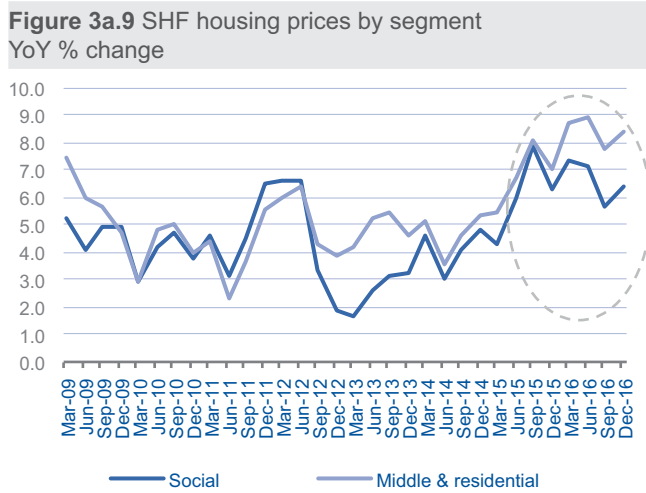


Source: Source: BBVA Research based on data from the ENEC. INEGI

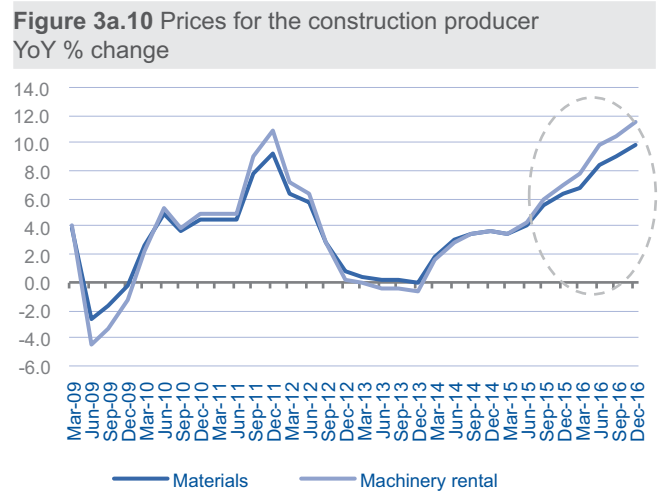
With the above, the expectation of greater profits would encourage builders to raise house prices. This was reflected more clearly in 2015, once the demand for housing in the previous year consolidated. The increase in prices even held for the middle-income and residential segments, where they increased almost 9% in the second quarter of 2016.

The other element on the supply side that responded positively to the increase in subsidies were costs, since the expectation of a consolidated demand also meant a greater need for inputs. This explains why, starting in 2015, one year after the reactivation of the mass of value for inventory, the costs of materials and machinery rentals went from a rate of 4% in annual terms in December 2014 to 8% at the end of 2015.

The fact that housing production reflected the distortion in prices and costs more clearly after 2015 than in 2014 is explained by the fact that the expectations of builders changed once most of the subsidies were in fact used for the purchase of new homes, shutting out the other housing solutions (construction, remodelling and extensions).



Source: BBVA Research based on data from the INEGI



Source: BBVA Research based on data from the INEGI

It is true that the amount of subsidies showed a downward trend during 2016 after the highs of 2014 and 2015 and inventories are already reflecting this slowdown. Despite this, price growth at the end of 2016 still maintained high margins to offset the high costs. So, we can say that the distortion generated by the subsidies affected the entire housing production chain.

We can therefore conclude that after the industry's long period of stagnation, the combination of lower interest rates and the extraordinary injection of subsidies led to a wide gap between housing prices and construction costs, from 2013 to the present day.

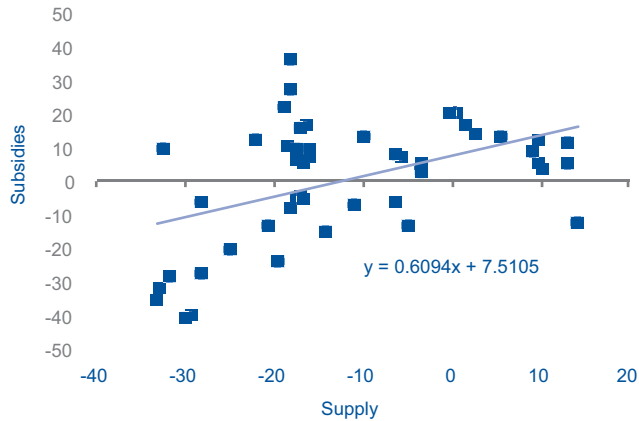
Construction of the model and sensitivity analysis

In the previous section we performed an empirical analysis of the role played by builders' profit margins, interest rates and subsidies in the decisions by builders to increase or decrease housing construction.

In order to confirm the economic relationship between the housing supply and the rest of the variables suggested by economic theory, in this section we will calculate the degree of sensitivity of the former to each of the previously explored elements. The data used in the construction of the model include the number of housing construction registrations in the National Housing Register (RUV), the SHF housing price indexes, the producer's price index for residential construction, the short-term interbank interest rate (28 days) and the amount of subsidies granted through Conavi.²

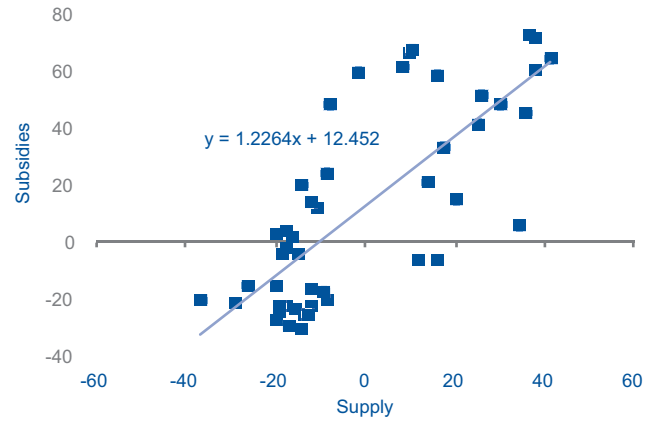
As suggested in other studies, we have estimated the economic relationship that captures the long-term equilibrium of the housing supply, based on RUV data, as a function of the margin (relationship between house price indices and housing costs). Construction) and the 28-day interest rate. We then calculated the short-term magnitudes to confirm that the economic relationship has been conserved and we also captured the significance of the amount of the subsidies, mainly in the years 2014 and 2015.

Figure 3a.11 Housing supply and amount of subsidies 2009-2012, YoY % change in scatter diagram



Source: BBVA Research

Figure 3a.12 Housing supply and amount of subsidies 2013-2016, YoY % change in scatter diagram



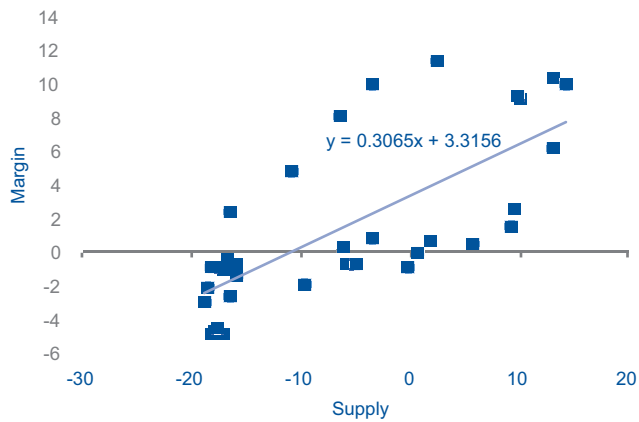
Source: BBVA Research

Figure 3a.11 shows that there is a positive relationship between the housing supply and the amount of subsidies allocated during the study period. However, if we separate the relationship into two samples, it is even more evident that starting in 2013 the slope of the regression line goes from 0.60 to 1.22, confirming the relevance of the subsidies in the distortion that can be seen in profit margins.

Similarly, in Figures 3a.13 and 3a.14 it can be seen that although the positive relationship between the builders' profit margin and the housing supply continued, it lost importance starting in 2013, when the amount of subsidies began to increase. The slope of the regression line goes from 0.30 in the period 2009-2012 to only 0.04 in the period 2013-2016. This confirms that although the significance of the expectation of profits is valid for the entire period, in the later years the effect lessened due to the influence of the subsidies.

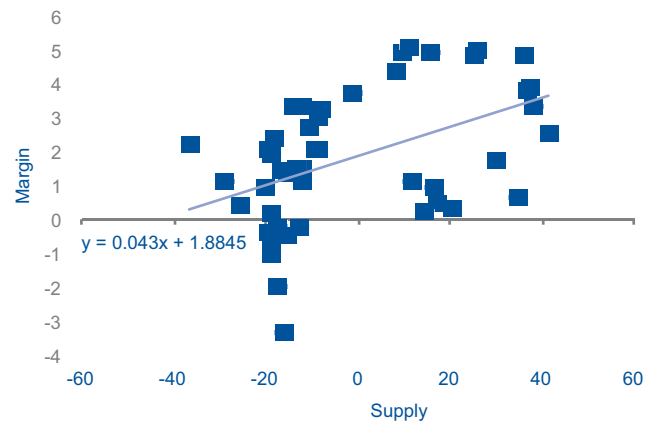
² The 28-day TIIE is used because it is closely correlated with the interest rate for construction loans, which we have omitted from this analysis because no data are available for the entire study period.

Figure 3a.13 Housing supply and profit margin 2009-2012, YoY % change in scatter diagram



Source: BBVA Research

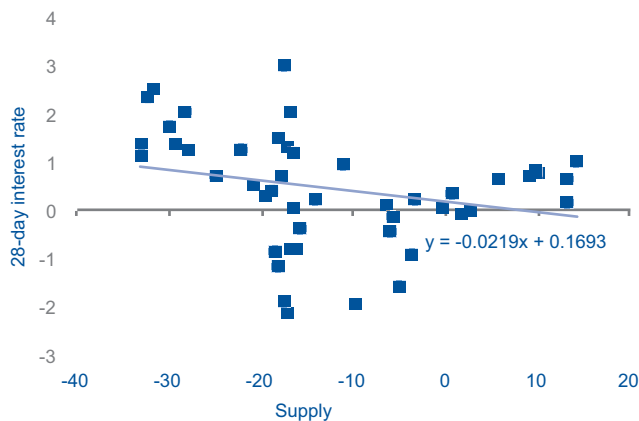
Figure 3a.14 Housing supply and profit margin 2013-2016, YoY % change in scatter diagram



Source: BBVA Research

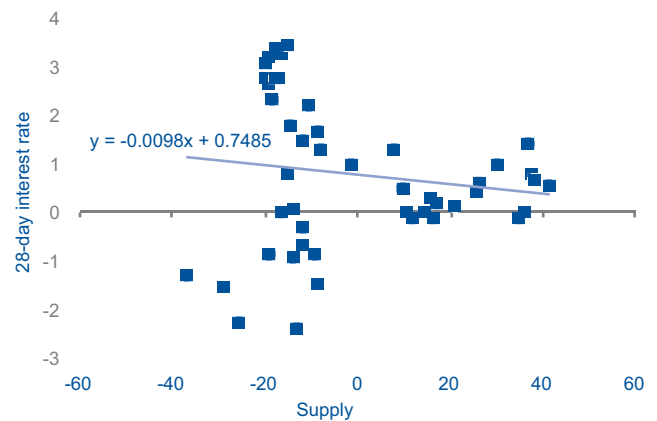
In the case of interest rates, their economic relationship with the housing supply is confirmed as being negative, as economic theory suggests. However, unlike the role of the margin and subsidies, for which there was a confirmed change in the pattern as of 2013, the effect of the short-term interest rate using the TIIE seems to be much more stable in the two periods. This tells us that the increase in subsidies from 2013 to 2016 did not significantly change the multiplier effect of the financing costs.

Figure 3a.15 Housing supply and interest rate 2009-2012, YoY % change in scatter diagram



Source: BBVA Research

Figure 3a.16 Housing supply and interest rate 2013-2016, YoY % change in scatter diagram



Source: BBVA Research

While the scatter diagrams in Figures 3a.11 to 3a.16 have been useful in determining the key moments when the structural change caused by the subsidies changed the expectations of the investors, this is not a measure that quantifies in percentage terms the sensitivity of each of these indicators to the short- and long-term momentum.

As economic theory suggests, in the short term the housing supply remains relatively fixed in the face of demand shocks, since it takes some time for them to be reflected in prices and/or costs. That is why up until 2013, the trajectories of housing price indices and costs were similar, as the amount of subsidies remained stable for several years and did not generate a radical change in expectations.

Nevertheless, once this structural change is taken into consideration, the economic relationship was not only maintained in terms of margins and the 28-day interbank interest rate, but it was also confirmed that the effect of the subsidies was positive, both in the short and the long term. The results of the sensitivity analysis are presented in the following table.

Table 3a.1 Sensitivity of housing supply

Determining factors	Response of supply in percentage points for each unit of change in determining factors	
	Short term	Long term
Margin	1.37	1.91
28-day interest rate (TIIE)	-1.31	-0.95
Subsidies	0.15	0.27

Source: BBVA Research

Conclusions

The results in Table 3a.1 show the percentage change in the housing supply for each percentage point of increase/decrease in the explanatory variables. As in studies conducted for other countries, we found that housing development projects are highly sensitive to profit margins. In the short term, home construction projects increase by 1.37% for each percentage point increase in the builders' margin, while in the long term the response rate is almost 2%.

In the case of the interest rate, the short-term effect is of a magnitude similar to that of the margin, but in the opposite direction, as suggested by economic theory. For every percentage point of increase in the cost of financing, the housing supply contracts by 1.31% in the short term. In the long term, the sensitivity decreases, but is still close to 1%. This would suggest that, although the impact is highly elastic, as time goes by it decreases, as neoclassical theory suggests in terms of the neutrality of money.

Finally, we find that subsidies have a positive effect, although it is of a smaller magnitude than the other variables. In this case, for each percentage point increase in subsidies, supply increases by 0.15% in the short term, while in the long term the magnitude of the effect increases to 0.27% for each percentage point.

While it is true that the effect of the subsidies was less than that of the margin and interest rate, it was enough to generate a distortion in the market. When combined with a decline in the cost of financing that had been visible since 2013, the expectations of a consolidated demand by builders because they had a priori information on the amounts earmarked as aid for the purchase of new houses was enough to keep the margins at higher levels during the period analysed.

This increase in margins will decrease during 2017 as demand for housing decreases, in line with economic growth and employment, which, although positive, will be more moderate, while the amount of subsidies has shrunk by more than 30%. This should not be a cause for concern, as inventories have remained stable and the growth of the SHF price index could converge at levels similar to those of inflation.

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Grimes & Aitken (2006). **Housing supply and price adjustment**. Motu Working Paper 06-01. Motu Economic and Public Policy Research.

Gattini & Ganoulis (2012). **House price responsiveness of housing investments across major European economies**. WP Series. No. 1461. European Central Bank.

Wang & Chan (2012). **The estimation and determinants of the price elasticity of housing supply: evidence from china**.

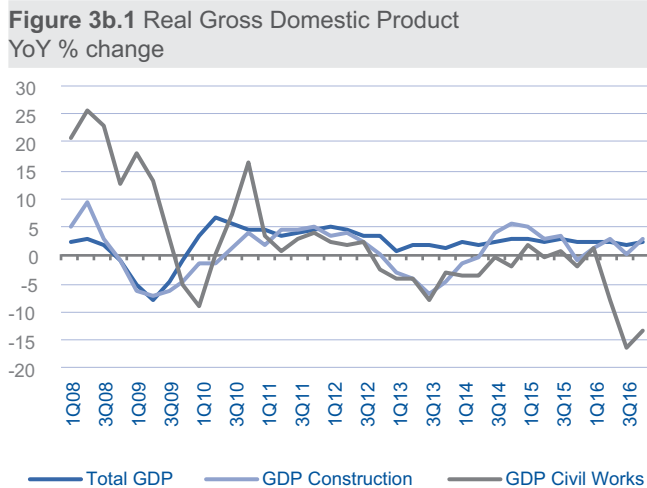
3.b Infrastructure still awaits reform effect

GDP of Civil Works down 9% during 2016

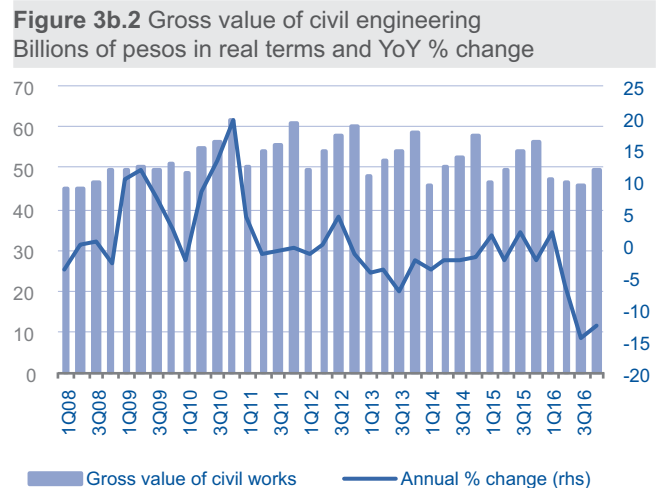
It is commonly known that construction is one of the most procyclical sectors in the economy. Through this activity, the authorities usually enact countercyclical policies to stimulate the economy, mainly through investment in infrastructure. In addition, these types of projects have a positive impact on potential GDP, by increasing productive capacity. Nevertheless, in the last five-year period the performance of civil engineering in the Mexican economy has been very modest. This component of construction includes infrastructure projects, which have not had a great impact despite the fact that the most ambitious national infrastructure programme of the last 20 years was announced in 2014. For this reason, in this section of *Mexico Real Estate Outlook* we conduct a review of the performance of these types of projects so far this decade.

Civil engineering, the component in which infrastructure is found, collaborates with about 30% of the construction sector, which in turn contributes just over 7% to the economy as a whole. So far this decade, this sub-sector has not grown and has had an average fall of 1.2%. By comparison, during 2008 and 2009, years within the economic crisis, civil engineering grew at an average rate of 13.9%. This was due to the growth trend observed since the turn of the millennium, but the fact that it came particularly during a time of economic crisis was the result of a countercyclical policy that helped the entire construction sector to recover faster after the economic stagnation of 2009.

In terms of the gross value reported by construction companies for civil engineering projects, no drop was observed until 2016. In line with GDP, the gross value of civil engineering projects grew faster during 2008 and 2009, while from 2010 it slowed down until it reached negative territory in the year just ended.



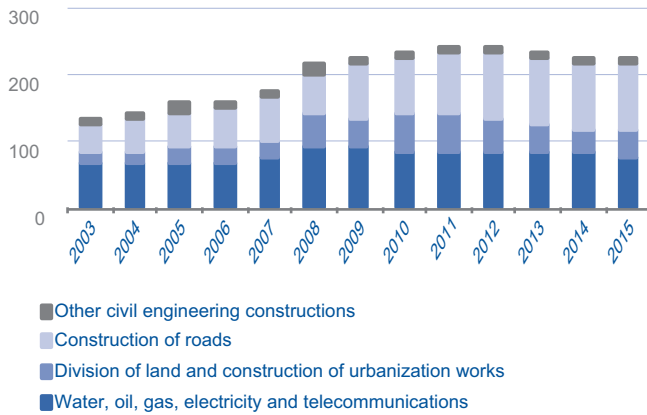
Source: BBVA Research based on data from SCNM (National Accounts System) and INEGI



Source: BBVA Research based on data from ENEC, INEGI

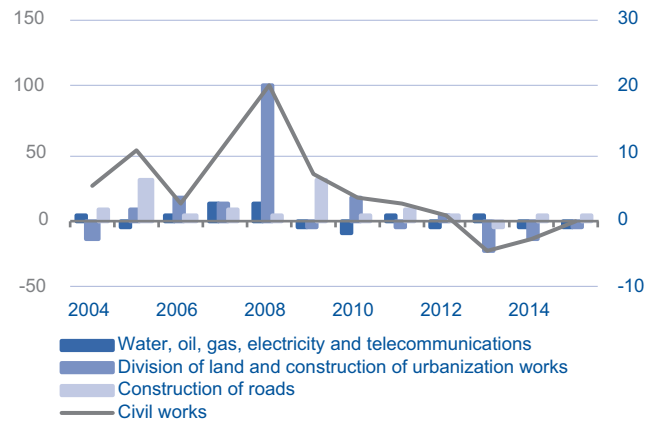
Within the GDP of Civil Engineering, it is energy infrastructure and communication links that have had the greatest share. It can be seen from the following graphs that these two types of infrastructure, plus urban planning projects, grew markedly after 2008, but at the beginning of the 2010s they fell and at best maintained the same level of added value. Energy infrastructure and communication links begin to lose their impact on the performance of the GDP of Civil Engineering, to such an extent that the variations in the latter are more influenced by the progress of urban planning projects. This is because while the two main types of infrastructure remain stagnant, only the land and urban planning division grew until 2010; once this trend was abandoned, the GDP of the sub-sector began to fall.

Figure 3b.3 GDP of Civil Engineering by Components
Billions of constant pesos



Source: BBVA Research based on data from SCNM, INEGI

Figure 3b.4 GDP of Civil Engineering by Components
YoY % change



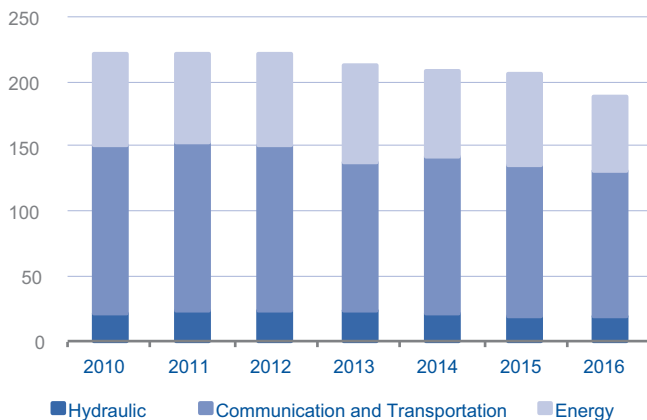
Source: BBVA Research based on data from SCNM, INEGI

Communication links and energy: the infrastructure that sustains the sector

The downward trend in infrastructure in recent years is confirmed by observing the development of the value reported by construction companies. Gross value exceeded 220 billion pesos between 2010 and 2012 before beginning to fall the following year. By type of project, communication links and transport had the largest share, followed by those associated with energy. In the first case, less activity was reported after 2012, while the value of energy-related projects began to decline from 2014.

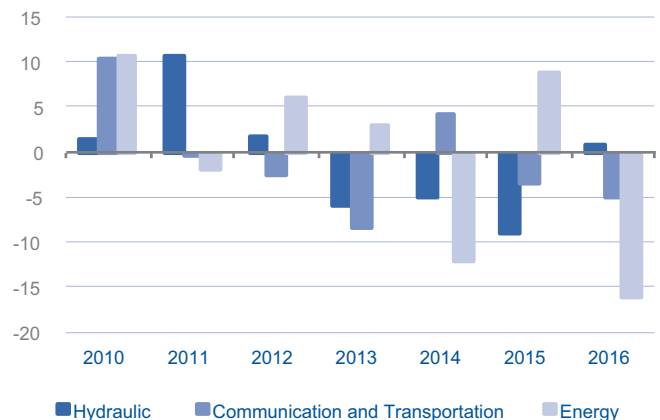
Although in the latter case there have been years with positive growth rates, the trend in the last four years has been negative, going from 74 billion pesos in real terms to 59 billion pesos. This could be explained in part by the fall in oil production and oil prices that led to lower revenues for the main company demanding these kinds of projects. This situation intensified from 2014 onwards when production, which had averaged just over 2,900 barrels a day between 2010 and 2013, fell even more until in the ensuing years it stood just above the figure of 2,600.¹

Figure 3b.5 Gross value of civil engineering projects
Billions of constant pesos



Source: BBVA Research based on data from the INEGI

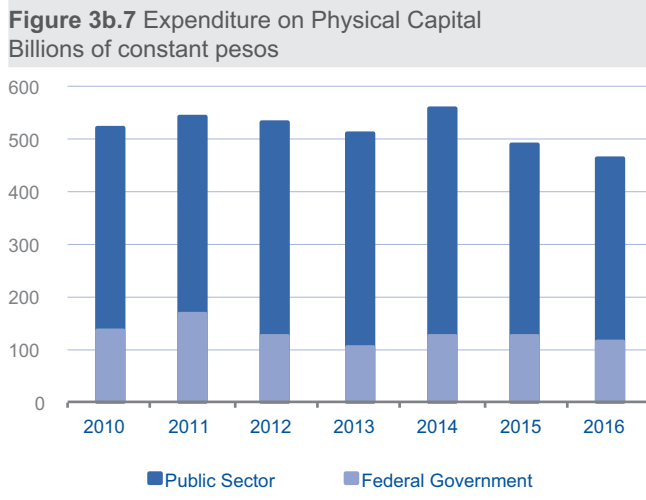
Figure 3b.6 Gross value of civil engineering projects
YoY % change



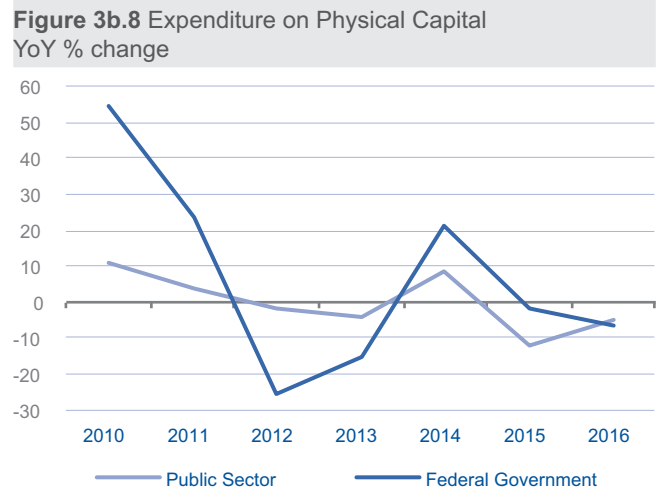
Source: BBVA Research based on data from the INEGI

1: Production of liquid hydrocarbons at www.inegi.org.mx/sistemas/bie

The lower rate of activity in infrastructure can be explained by the lower amount of public sector investment. One indicator of this investment is expenditure on physical capital by the entire public sector and the Federal Government in particular.² Between 2010 and 2014, the amount allocated to physical capital in the entire public sector exceeded 500 billion pesos in real terms. The maximum amount of the Federal Government was 166 billion pesos in 2011. During 2015 and 2016, for the first time in the decade, the total amount allocated to this type of capital was less than 500 billion pesos. With the exception of 2014, as of 2011 the variations in these resources have been negative in the case of the Federal Government and the entire public sector.



Source: BBVA Research based on data from the INEGI



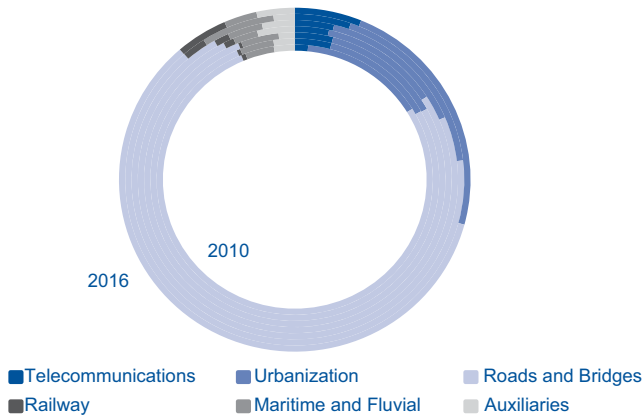
Source: BBVA Research based on data from the INEGI

Communication links on a downward path

Within communications and transport infrastructure, roads and bridges cover a greater proportion of the constructed value, at least 60% during the period analysed. In second place are urban planning projects and in third place telecommunications. In the first case, public intervention is paramount: although more projects are carried out by the private sector, the public sector is the main source of demand for this infrastructure. In the case of urban planning, local governments can also be associated as a key factor in the implementation of this infrastructure, but the private sector also has an influence, for example, through residential developments, which need to have urban services. Finally, in the case of telecommunications infrastructure, although there are projects led by the public sector, most of these projects are likely to be requested by the companies that provide these services, although the weight of telecommunications is less than 6% on average.

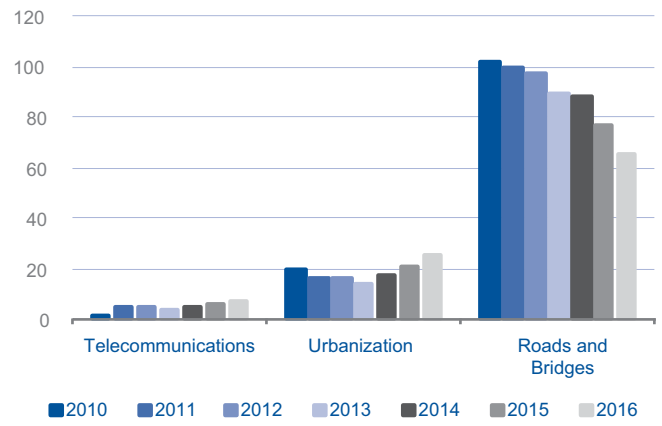
² Although not all expenditure on physical capital goes to public works or infrastructure projects, the greater part does, and this tends to explain changes in the civil engineering sub-sector.

Figure 3b.9 Gross infrastructure value in communication links, % share



Source: BBVA Research based on data from ENEC, INEGI

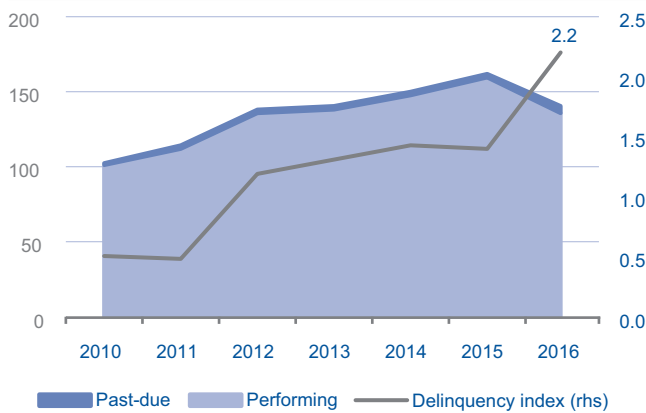
Figure 3b.10 Gross infrastructure value in communication links, Billions of constant pesos



Source: BBVA Research based on data from ENEC, INEGI

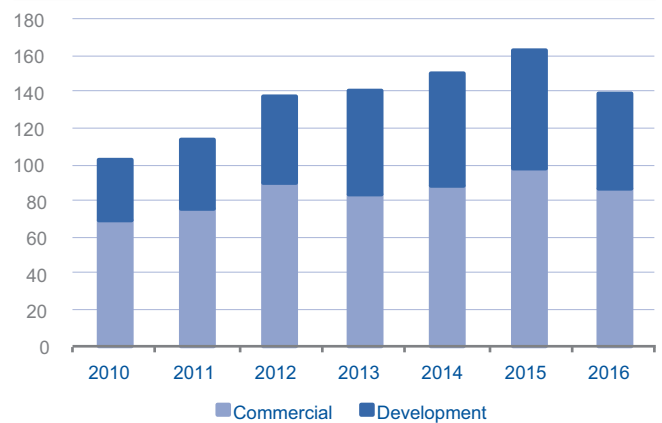
The construction of roads and bridges had an impact of 60% to 77% of the total gross value of infrastructure for communications and transport. As it is the infrastructure with the greatest weight, it is clear that less activity in it has a direct influence on the negative performance of civil engineering, and in other markets, such as bank credit. Although the credit portfolio continued to rise until 2015, after 2016 it started to decline and after having surpassed 160 billion pesos, at the end of 2016 it stood at 140 billion pesos. This credit dynamic is common to both commercial and development banks. In both cases the amount of the portfolios with which these projects are financed has decreased.

Figure 3b.11 Balance of bank credit to communication links Billions of constant pesos and %



Source: BBVA Research based on Banco de Mexico data

Figure 3b.12 Balance of bank credit to communication links Billions of constant pesos



Source: BBVA Research based on Banco de Mexico data

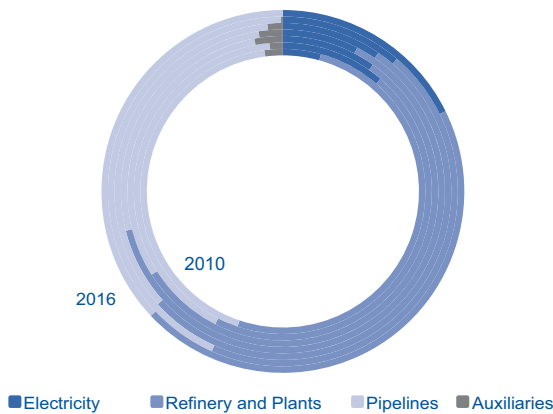
Energy infrastructure loses power

Investment in energy infrastructure fell more than 5% at year-end 2016

downwards.

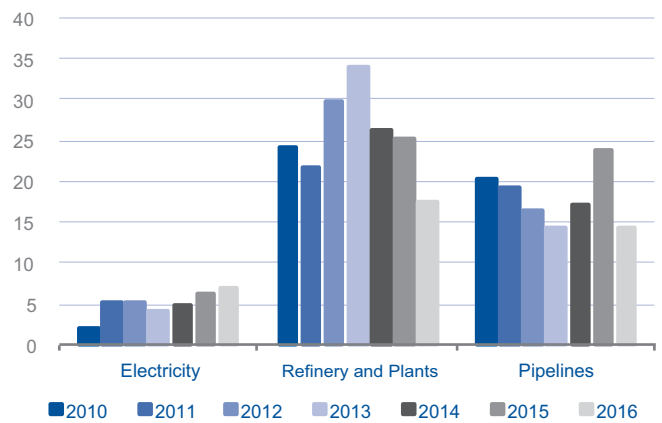
In the case of infrastructure projects for the energy sector, the constant drop in investment has led to a reconfiguration of the share of construction types based on their gross value. During the first five years of the present decade, refineries and oil plants contributed most of the value of construction. However, by the end of 2016, the construction of oil and gas pipelines had become the main energy infrastructure measured by this variable. This was partly driven by the higher demand for natural gas. Even so, the general trend for the overall value of energy infrastructure is also

Figure 3b.13 Gross value of energy infrastructure % share



Source: BBVA Research based on data from ENEC, INEGI

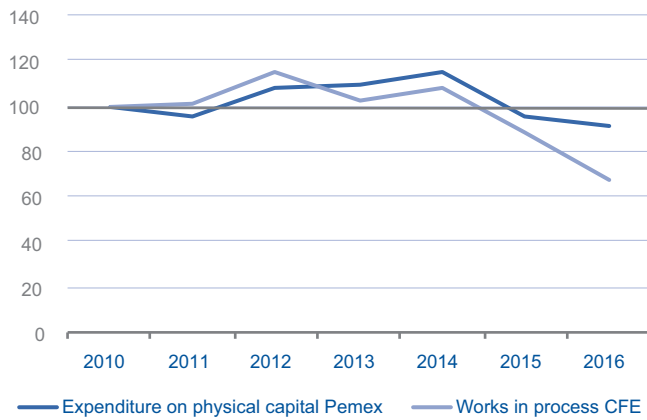
Figure 3b.14 Gross value of energy infrastructure Billions of constant pesos



Source: BBVA Research based on data from ENEC, INEGI

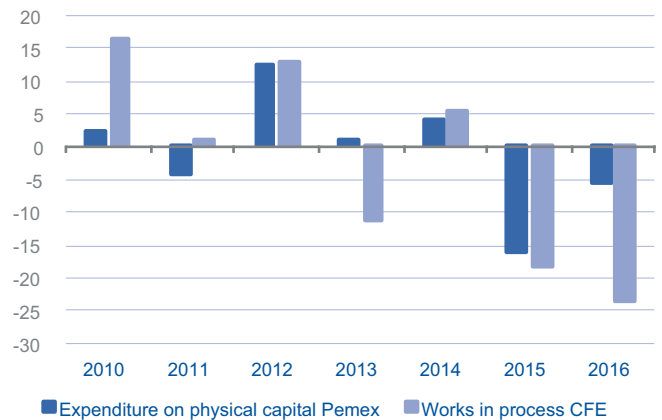
This result is explained to a great extent by lower investment by the main requesters of these projects. Petróleos Mexicanos and the Federal Electricity Commission have reduced the resources dedicated to infrastructure, as can be seen based on the amount of physical capital and the number of projects in progress. An index constructed with this information, whose base is 2010 for comparison purposes, indicates that no relevant growth was observed, and the result to 2016 was negative. In the same way, the growth rates for these investments were negative during the last two years. This trend could be maintained as a result of the greater participation of the private sector due to the energy reform, but the total amount directed to this infrastructure could reverse its negative trend as private investments begin to flow.

Figure 3b.15 Physical Capital and Work in Progress
Base 2010 = 100



Source: BBVA Research based on data from INEGI and CFE

Figure 3b.16 Physical Capital and Work in Progress
YoY % change



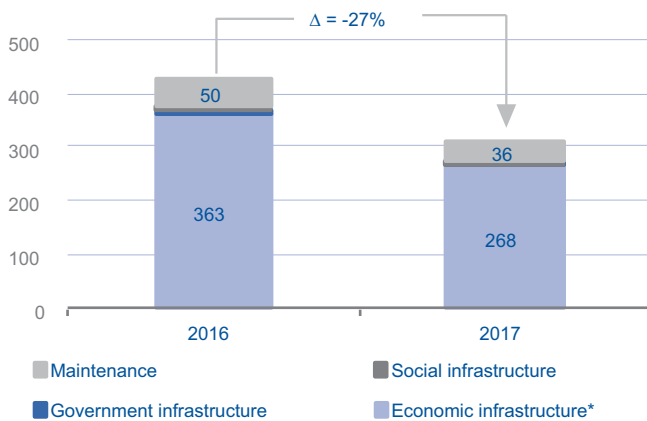
Source: Source: BBVA Research based on data from the CFE

In the short term civil engineering will continue without creating structure

The expectations for the recovery of civil engineering cannot be positive in the short term. The Federal Expenditure Budget further reduced the amount allocated to infrastructure. A reduction of 27% to the almost 450 billion pesos allocated in 2016 does not offer much scope for many projects. The existing pressure on public finances leaves no room for an early change in this trend. On the contrary, there is a latent probability of an even greater cut. Based on the 2017 Federal Budget, the states that will obtain greater resources, and therefore where economic activity is expected to increase, are first and foremost the State of Mexico with resources of almost 15 billion pesos, followed by Tabasco and Guanajuato with 10 billion and 7.6 billion pesos respectively. The states of Jalisco and Veracruz occupy the rest of the first five places with 7.6 billion and 6 billion pesos respectively. These infrastructure plans will be particularly relevant to the states whose state finances have not been able to push the construction of public works.

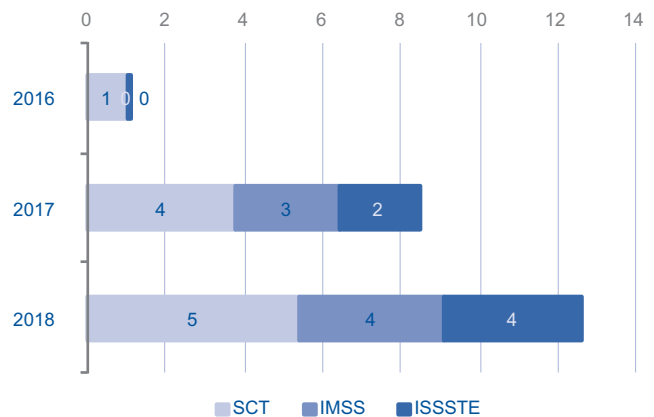
The alternative for the increasingly smaller participation of the public sector in infrastructure is precisely the private sector through entities such as Public Private Partnerships. The increase in these projects for 2017 is more than triple the previous year and almost 50% more for 2018, at least until now. Although for the time being it is not enough to compensate for the budget cut, the growing trend of these projects could be a viable option in the medium term for the recovery of civil engineering.

Figure 3b.17 Federal Expenditure Budget
Billions of constant pesos



Source: BBVA Research based on data from the SHCP

Figure 3b.18 Budget Public Private Partnerships
Billions of constant pesos



Source: BBVA Research based on data from the SHCP

4. Statistical appendix

Table 4.1 Annual macroeconomic indicators

	2010	2011	2012	2013	2014	2015	2016	2017p
Real GDP¹ (annual % change)	5.1	4.0	4.0	1.4	2.3	2.6	2.3	1.9
Private consumption, real (annual % change)	5.7	4.8	4.9	2.1	1.8	2.3	2.7	2.2
Government consumption, real (annual % change)	1.7	2.4	3.5	1.0	2.1	2.3	1.2	1.3
Investment in construction, real (annual % change)	-0.2	3.0	2.0	-4.5	1.4	1.6	-0.1	
Residential	-0.6	4.1	1.4	-4.9	3.1	3.3	4.4	
Non-residential	0.1	2.3	2.5	-4.1	0.0	0.4	-3.7	
Formal private employment (IMSS) ² , total	14,524	15,154	15,856	16,409	16,991	17,724	18,474	
Annual % change	3.8	4.3	4.6	3.5	3.5	4.3	4.2	
Avg. salary of cont. (IMSS, nominal pesos per day, avge.)	248.7	260.1	270.8	281.5	294.1	306.4	317.9	
Real annual % change	-0.5	1.1	0.0	0.1	0.4	1.4	0.9	
Real total wages (IMSS, annual % change)	2.3	6.1	5.0	3.6	4.0	5.8	4.8	
Minimum general salary (daily, nominal pesos)	55.8	58.1	60.5	63.1	65.6	69.2	73.0	
Real annual % change	0.6	1.0	-0.1	0.4	-0.1	0.2	0.8	
Consumer prices (end of period, annual % change)	4.4	3.8	3.6	4.0	4.1	2.1	3.2	
TIIE 28 average (%)	4.9	4.8	4.8	4.3	3.5	3.3	4.5	
10-year interest rate, 10 year Govt bond (M10)	6.9	6.8	5.7	5.7	6.0	5.9	6.0	

1: Seasonally adjusted series.

2: Thousands of people

Source: BBVA Bancomer with Banco de Mexico, Conasami, Inegi & IMSS data

Table 4.2 Annual construction and housing indicators

	2010	2011	2012	2013	2014	2015	2016	2017p
Real GDP (annual % change)	-0.5	4.1	2.5	-4.8	2.0	2.5	1.8	1.4
Building	-0.4	4.3	2.7	-5.2	2.5	3.2	4.2	1.8
Civil engineering and major works	3.6	2.9	1.0	-4.7	-2.2	-0.1	-9.4	-3.4
Specialized construction work	1.9	5.6	4.3	-2.5	8.6	3.1	10.0	7.1
Construction employ. (IMSS, thousands people, avg.)	1,145.5	1,199.5	1,275.2	1,289.8	1,383.5	1,504.0	1,506.4	
Annual % change	3.8	4.7	6.3	1.1	7.3	8.7	0.2	
Hydraulic cement prod. (tons, ann. % change)	-2.9	1.5	2.1	-5.9	5.1	7.4	1.5	
Nat'l. cement consumption (tons, ann. % chge.)	-5.3	1.4	2.5	-6.0	4.9	7.4	1.5	
Construc. employment¹ (real prod. value, ann. % chge.)	3.3	3.2	3.4	-3.7	0.2	-0.1	-1.3	
Building	-5.3	6.3	2.0	-5.6	2.9	1.4	3.1	
Public works	10.2	0.3	0.5	-4.4	-2.5	-0.3	-8.3	
Water, irrigation and sanitation	5.1	10.5	1.9	-6.0	-5.0	-9.2	0.8	
Electricity and communications	22.9	21.4	-6.8	-2.2	-11.0	9.8	23.7	
Transportation	8.8	-2.8	-2.7	-7.8	3.8	-5.1	-5.9	
Oil and petrochemicals	10.2	-7.7	14.7	3.6	-10.7	10.8	-35.3	
Other	16.6	6.2	36.4	10.6	1.4	-5.6	14.2	
Resid. construc. prices, general (ann. % change)	4.8	9.3	0.4	-0.7	6.5	2.3	8.7	
Construction materials (annual % change)	5.2	10.6	-0.2	-1.4	4.5	4.5	9.8	
Labor (annual % change)	3.3	3.8	3.2	2.9	3.5	4.2	2.9	
Equipment rental (annual % change)	3.2	5.3	-0.2	1.4	4.1	7.8	7.9	

1: Considers companies affiliated and not affiliated to the Mexican Chamber of the Construction Industry.

Source: BBVA Bancomer with Banco de Mexico, Conasami, Inegi, IMSS, Infonavit and Fovissste data

Table 4.3 Annual housing credit indicators

	2010	2011	2012	2013	2014	2015	2016
Number of loans granted (thousands)							
Total	637.7	599.3	607.0	583.7	609.2	599.2	571.3
Infonavit	475.0	445.5	421.9	380.6	387.0	393.0	369.1
Fovissste	87.8	75.2	64.3	65.9	63.1	64.4	62.9
Commercial banks and others	74.9	78.6	120.7	137.1	159.0	141.8	139.3
Reduction ¹	18.6	23.4	45.4	58.7	82.2	56.7	50.9
Individual credits	619.0	575.9	561.6	525.0	527.0	542.5	520.4
Financing flow (billion pesos, December 2016 prices)							
Total	291.7	294.6	287.4	287.0	315.1	323.4	312.1
Infonavit	154.1	157.6	138.2	120.5	127.9	130.4	118.3
Fovissste	58.6	45.4	41.1	41.1	44.5	43.4	41.7
Commercial Banks and others	79.0	91.6	108.1	125.4	142.7	149.6	152.1
Commercial banks current loan portfolio							
Balance end of period (billion pesos, June 2016 prices)	323.5	360.1	404.4	433.3	489.9	565.1	636.8
Past-due loans index (%)	3.4	3.2	3.1	3.5	3.3	2.8	2.7

¹: It refers to financing (loans and grants) that are considered in two or more institutions. Do not considers "Infonavit Total" nor Second loan granted by the Infonavit.
Source: BBVA Bancomer with Banco de Mexico, ABM & CNBV data

Table 4.4 SHF Quarterly Housing Price Index by state (annual % change)

	14'III	IV	15'I	II	III	IV	16'I	II	III	IV
National	4.1	5.1	4.9	6.4	8.3	6.7	8.1	8.1	6.7	7.4
Aguascalientes	5.4	6.7	5.8	7.1	9.0	6.9	8.3	7.5	6.1	7.2
Baja California	3.5	4.2	4.0	5.1	7.0	5.8	7.2	7.4	6.2	6.9
Baja California Sur	1.3	2.4	2.8	4.3	6.8	5.9	8.8	10.3	9.8	11.0
Campeche	3.3	4.7	5.3	6.7	8.6	6.8	8.9	9.7	8.6	9.7
Coahuila	3.8	4.7	4.5	6.4	8.4	6.8	8.2	7.9	6.6	7.5
Colima	2.4	3.9	4.3	6.3	8.3	6.3	7.3	7.4	6.5	7.7
Chiapas	4.5	5.5	5.5	6.7	8.4	6.8	8.0	8.0	6.5	7.2
Chihuahua	4.2	5.0	4.5	6.0	7.8	6.1	7.5	7.4	6.5	7.5
Distrito Federal (Mexico City)	7.8	9.2	9.0	9.3	10.2	7.9	9.0	9.4	8.3	8.9
Durango	7.0	8.1	7.8	9.1	10.4	7.9	8.6	7.7	5.7	6.3
Guanajuato	3.0	4.3	4.8	6.5	8.3	6.3	7.4	7.5	6.4	7.6
Guerrero	5.3	5.2	4.2	5.0	6.9	6.2	8.3	8.8	7.2	7.7
Hidalgo	2.3	3.7	4.6	7.5	10.2	8.0	8.2	6.9	5.0	5.8
Jalisco	3.5	4.0	3.1	4.8	6.8	6.0	7.4	7.3	5.9	6.2
México	5.2	5.4	4.7	5.8	7.7	6.6	7.8	7.7	5.7	6.1
Michoacán	2.9	4.1	4.7	6.9	9.1	7.2	9.0	8.6	7.2	8.2
Morelos	3.6	3.7	3.4	4.8	7.3	6.7	8.7	9.1	7.6	8.0
Nayarit	-0.2	1.5	2.1	4.5	7.2	6.0	7.6	8.2	7.6	8.9
Nuevo León	2.6	4.3	4.7	6.7	8.6	6.7	7.8	7.7	6.7	7.7
Oaxaca	4.4	5.5	5.6	7.0	9.1	7.4	8.5	8.2	6.4	6.9
Puebla	4.2	5.0	4.9	6.3	8.5	7.6	8.7	8.4	6.7	6.8
Querétaro	5.6	5.4	4.5	5.5	7.2	6.6	8.5	8.8	7.3	7.6
Quintana Roo	-0.6	0.2	-0.8	1.9	6.0	5.4	8.6	8.9	7.8	9.4
San Luis Potosí	2.3	3.6	4.1	6.2	8.1	6.5	8.3	8.4	7.5	8.8
Sinaloa	1.7	2.9	3.3	5.3	7.3	5.8	7.5	8.0	7.4	8.8
Sonora	4.3	5.3	4.9	6.5	8.3	6.5	7.7	7.6	6.4	7.4
Tabasco	6.3	7.2	6.8	7.7	9.1	7.6	8.8	8.5	6.7	7.1
Tamaulipas	6.5	8.2	8.2	9.6	10.7	8.2	8.8	8.3	6.8	7.5
Tlaxcala	6.1	7.7	7.2	8.6	10.4	7.9	8.5	7.4	5.4	6.0
Veracruz	3.5	4.6	4.7	7.0	9.2	7.6	8.9	8.2	6.3	6.6
Yucatán	3.7	5.2	5.0	6.1	7.6	5.7	6.9	7.2	6.8	7.8
Zacatecas	4.5	6.5	6.5	7.8	9.4	7.0	8.2	7.8	6.5	7.3

Source: BBVA Bancomer with SHF data

Table 4.5 Quarterly macroeconomic indicators

	13'IV	14'I	II	III	IV	15'I	II	III	IV	16'I	II	III	IV
Real GDP (annual % change)	1.1	2.3	1.8	2.3	2.7	2.8	2.5	2.8	2.5	2.2	2.6	2.0	2.3
Real private consum., (annual % change)	1.0	1.4	1.5	2.1	2.3	2.4	2.0	2.1	2.8	2.6	2.4	3.0	2.8
Real gov. consumption, (ann. % change)	1.8	2.5	1.6	2.8	1.7	3.1	2.6	1.6	2.0	0.1	1.6	1.5	1.6
Real const. investment, (annual % change)	-4.7	-1.6	-1.2	3.8	4.1	5.0	3.1	1.5	-2.4	0.7	0.8	-3.1	1.2
Residential	-5.4	-2.6	0.2	5.9	8.6	4.1	3.3	5.5	0.4	4.8	6.8	0.6	5.5
Non-residential	-4.2	-0.8	-2.2	2.3	0.8	5.6	2.9	-1.5	-4.6	-2.3	-3.8	-6.2	-2.3

Source: BBVA Bancomer with Inegi data

Table 4.6 Quarterly construction and housing indicators

	13'IV	14'I	II	III	IV	15'I	II	III	IV	16'I	II	III	IV
Construction GDP, real (ann. % change)	-4.8	-1.4	-0.5	4.1	5.5	4.8	2.9	3.4	-0.7	1.3	3.0	0.0	3.0
Building	-6.0	-2.3	-0.5	4.7	7.7	5.9	3.9	3.9	-0.2	1.8	5.9	2.4	6.6
Construc. engineering and major works	-2.8	-3.4	-3.6	-0.1	-1.9	1.7	-0.5	0.9	-2.1	1.2	-8.0	-16.4	-13.3
Specialized construction work	-1.8	8.7	6.2	9.3	10.2	5.1	4.0	5.1	-1.5	-1.7	7.4	17.9	15.7
Construc. companies ¹ (real ann. % change)	-4.9	-1.6	-2.4	1.2	3.0	3.2	1.0	0.0	-3.6	-0.4	-1.2	-2.3	-1.0
Building	-6.9	-0.7	-2.2	4.8	8.9	6.7	5.2	-0.5	-4.2	-2.5	2.0	5.9	6.4
Public works	-2.4	-4.0	-2.4	-2.2	-1.6	1.5	-2.3	2.2	-2.3	1.9	-6.1	-14.7	-12.6
Water, irrigation and sanitation	9.7	13.4	-21.4	-8.7	0.7	-7.7	-3.1	-8.8	-15.3	1.2	-1.4	-3.3	6.0
Electricity & communications	6.6	-10.1	-7.1	-18.4	-7.4	-0.4	8.7	13.7	15.8	15.5	33.7	30.9	15.0
Transportation	-4.1	0.4	4.3	8.7	1.8	1.8	-6.0	-4.0	-10.7	-2.0	-5.6	-12.9	-2.8
Oil and petrochemicals	-7.8	-17.4	-5.3	-13.1	-7.5	7.1	1.4	17.2	16.8	4.5	-31.9	-47.2	-55.2
Other	-7.7	6.3	-3.4	2.9	0.2	-4.4	-1.8	-8.6	-7.2	-1.4	7.3	25.1	24.8

Source: BBVA Bancomer with Inegi, Banco de México data

Table 4.7 Quarterly housing market indicators

	13'IV	14'I	II	III	IV	15'I	II	III	IV	16'I	II	III	IV
Home sales by organization (thousands of credits)													
Infonavit	106.0	71.8	92.8	100.2	122.3	86.4	102.5	90.7	113.4	78.0	103.6	89.6	97.9
Fovissste	19.2	13.7	16.8	11.1	21.5	15.4	20.4	17.1	11.5	13.3	19.3	15.8	14.5
Banks	19.4	15.0	16.2	17.7	19.9	17.4	21.5	23.5	24.2	19.2	22.2	22.9	24.2
Total	144.6	100.5	125.8	129.0	163.7	119.3	144.4	131.3	149.1	110.4	145.1	128.3	136.6
Financing (billions of December 2016 pesos)													
Infonavit	34.0	23.0	30.2	32.9	41.8	29.8	34.2	30.5	35.9	25.0	33.1	28.5	31.6
Fovissste	12.2	9.0	11.7	7.8	16.0	10.5	13.9	11.5	7.5	8.8	12.5	10.5	9.9
Banks	38.9	32.4	33.5	35.5	41.3	32.5	35.9	38.7	42.4	32.8	38.6	38.4	42.3
Total	85.1	64.4	75.4	76.2	99.1	72.8	84.0	80.7	85.8	66.6	84.2	77.4	83.8
Infonavit: number of credits to buy a house (thousands)													
Economic + Popular ²	72.1	51.3	61.3	69.8	87.5	63.0	72.9	59.1	83.0	54.4	71.2	58.4	60.7
Traditional	21.7	14.1	19.0	19.0	21.5	13.8	17.4	18.7	18.7	13.9	19.0	18.4	22.3
Middle income	9.4	5.0	10.1	9.0	10.5	7.6	9.5	10.2	9.7	7.7	10.7	10.0	11.6
Residential	2.3	1.2	2.1	2.1	2.3	1.7	2.2	2.3	1.7	1.6	2.3	2.3	2.9
Residential Plus	0.5	0.2	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.4	0.5
Total	106.0	71.8	92.8	100.2	122.3	86.4	102.5	90.7	113.4	78.0	103.6	89.6	97.9

Source: BBVA Bancomer with Banco de Mexico, CNBV, Infonavit, Fovissste & ABM data

²As of this period includes loans with CNBV co-participation.

Table 4.8 Quarterly housing credit indicators

Commercial banks current loan portfolio	13'IV	14'I	II	III	IV	15'I	II	III	IV	16'I	II	III	IV
Past-due loans index (%)	3.5	3.5	3.5	3.5	3.3	3.2	3.1	2.9	2.8	2.9	2.9	2.6	2.7

1: Considers the value of production of firms affiliated and not affiliated to the Mexican Chamber of the Construction Industry.

2 Includes new and existing homes.

Note: Price ranges expressed in times the minimum monthly wage (VSMM); Economic and Popular Segment (118-200), Traditional (201-350), Middle income (351-750), Residential (751-1500) and Plus (1500 and more) SMM=2,046 pesos in 2014 in the "A" zone.

Source: BBVA Bancomer with Inegi, Infonavit, Fovissste & Banco de Mexico data

Table 4.9 Monthly macroeconomic indicators

	S.15	O	N	D	J.16	F	M	A	M	J	J	A	S	O	N	D
IGAE (annual % change)	3.3	2.2	2.4	2.5	1.9	3.9	0.6	3.0	2.2	2.3	1.2	3.0	1.6	1.3	3.5	2.1
Real constr. vol. (ann. % change)¹	3.3	1.0	-1.4	-1.8	2.4	3.3	-1.7	3.5	2.6	3.0	-1.0	-0.2	1.1	3.1	4.1	1.8
Building	4.6	1.2	-0.1	-1.6	4.1	3.9	-2.4	6.3	4.7	6.7	1.1	2.7	3.4	7.2	8.4	4.3
Civil engineering and major works	0.0	-0.2	-4.7	-1.3	0.1	1.5	2.1	-1.7	-8.2	-13.5	-17.8	-16.8	-14.5	-14.8	-12.9	-12.3
Specialized construction work	2.9	2.2	-2.4	-4.6	-3.3	2.8	-4.4	-4.2	11.0	14.5	19.2	15.4	19.0	13.0	13.9	20.8
Formal private empl. (IMSS, mills)²	17,909	18,055	18,188	17,884	17,953	18,095	18,155	18,237	18,258	18,326	18,348	18,466	18,626	18,798	18,936	18,617
Annual % change	4.2	4.1	4.1	3.7	3.8	3.8	3.5	3.6	3.8	3.7	3.6	3.8	4.0	4.1	4.1	4.1
Average salary quote³	305.3	304.3	305.9	306.7	318.2	317.7	315.6	314.8	319.6	318.8	321.8	320.9	316.6	315.3	317.4	318.7
Real annual % change	1.5	1.7	1.8	1.9	1.1	0.9	1.2	1.0	1.3	1.5	1.0	0.8	0.7	0.5	0.4	0.5
Real tot. wages (IMSS, ann. % chg.)	5.8	5.8	6.0	5.7	5.0	4.7	4.8	4.6	5.1	5.3	4.6	4.6	4.7	4.7	4.6	4.6
Min. general wage (daily, pesos)	69.3	70.1	70.1	70.1	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0	73.0
CPI (end of period, ann. % chge.)	2.5	2.5	2.2	2.1	2.6	2.9	2.6	2.5	2.6	2.5	2.7	2.7	3.0	3.1	3.3	3.4
TIIE 28 (average, %)	3.3	3.3	3.3	3.4	3.6	3.8	4.1	4.1	4.1	4.1	4.6	4.6	4.6	5.1	5.3	5.8
10-year Gov. bond int. rate (M10)	6.0	6.0	6.2	6.3	6.0	6.1	5.9	5.9	6.1	5.9	5.9	5.8	6.0	6.2	6.2	6.2

1: industrial activity index

2: Thousands of persons

3 Nominal pesos per day for the number of IMSS-registered workers.

Source: BBVA Bancomer with Banco de Mexico, Inegi & IMSS data

Table 4.10 Monthly construction and housing indicators

	S.15	O	N	D	J.16	F	M	A	M	J	J	A	S	O	N	D
Constr. emp. (IMSS, thousands)	1,554	1,571	1,561	1,445	1,471	1,497	1,490	1,512	1,525	1,542	1,551	1,577	1,582	1,604	1,602	1,491
Annual % change	7.5	5.7	4.7	3.0	3.2	3.1	1.9	1.9	2.6	1.7	1.0	1.6	1.8			
Cement sales (tons, ann. % chge.)	12.7	5.0	1.2	0.0	0.8	3.2	-6.2	2.5	4.2	6.2	11.4	-1.0	0.7	2.6	-0.7	8.9
Cement cons. per inh. (ann. % chg.)¹	12.7	5.0	1.2	0.0	0.8	3.2	-6.2	2.5	4.2	6.2	11.4	-1.0	0.7	2.6	-0.7	8.9
Construction prices (ann. % chge.)	4.1	4.6	4.6	4.4	3.8	3.8	4.5	4.4	5.1	6.0	6.7	6.5	6.9	7.2	7.3	8.7
Materials (annual % change)	4.1	4.6	4.7	4.4	3.8	4.0	4.8	4.7	5.5	6.6	7.4	7.2	7.6	8.0	8.1	9.8
Labor (annual % change)	3.9	3.8	3.8	3.8	3.1	2.0	2.5	2.5	2.7	2.7	2.9	3.0	3.0	3.0	3.0	2.9
Mach. Rental (annual % change)	6.9	6.7	7.6	6.8	7.8	8.2	6.8	6.5	7.0	8.1	7.6	6.9	6.9	6.5	7.5	7.9

1: The volume of cement production is used as a proxy for consumption.

Source: BBVA Bancomer with Banco de Mexico, Inegi & IMSS data

Table 4.11 Monthly housing credit indicators

	S.15	O	N	D	J.16	F	M	A	M	J	J	A	S	O	N	D
C. banks loan port. (bal., bn pesos*)	537.8	546.5	555.6	564.1	572.9	577.4	583.8	586.9	592.9	598.3	607.1	612.5	623.2	631.8	644.5	655.0
Annual % change	9.8	10.2	10.2	10.6	9.8	9.5	9.4	9.4	9.9	10.0	10.0	9.7	9.3	8.8	8.7	8.7
Total annual cost (CAT, average)	12.5	12.5	12.6	12.6	12.6	12.6	12.7	12.7	12.6	12.5	12.5	12.5	12.5	12.7	12.7	12.9

Note: As of March 2013 Mortgage Sofoles transformed into Sofomes

* December 2016 pesos

Source: BBVA Bancomer with Banco de Mexico, Conasami, INEGI, IMSS & CNBV data

5. Special topics included in previous issues

Second Half 2016

Commercial building construction and its cycle of appreciation
Rising house prices due to increased costs

First Half 2016

The evolution of housing prices in regional clusters in Mexico
Methodology to assess the spatial dependence of housing prices
Mortgage essential in housing demand
Infonavit maintains credit placement stable

First Half 2015

Drivers of housing prices in Mexico
The significance of consumer expectations in mortgage lending
The Infonavit 2015-19 Financial Plan. Financial soundness and a greater amount of lending are key features

Second Half 2014

Transmission of monetary policy to the mortgage market
The lower benchmark interest rate could drive residential building
Mortgage portability

First Half 2014

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New housing after the real estate boom
Financing retirement with real estate assets
The Infonavit Financial Plan 2014-2018. A focus on quality

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The new housing policy: between short and long term
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The “Ésta es tu casa” subsidy program 2014 operating rules
Listed Homebuilders: a Foretold Ending?
The impact of the crisis of public-sector developers

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Non-residential construction is the structure on which the sector builds
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