

The background of the slide is a photograph of a cityscape under a clear blue sky. In the upper center, a tall, modern building with a distinctive tower structure is visible, featuring a sign for 'BBVA Bancomex'. The rest of the image shows a dense urban area with various buildings and greenery. A dark blue rectangular overlay covers the middle portion of the image, containing the text.

BBVA Research

Mexico Real Estate Outlook

Second half 2018

Mexico Unit



Creating Opportunities

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Closing date: **10 October 2018**

1. Summary

In our previous edition of *Mexico Real Estate Outlook*, we forecasted that construction GDP would fall in 2017 and not grow during 2018. The first part of our forecast was confirmed, but the rest of it was not, at least until the middle of this year, 2018. The GDP of construction closed 2017 with a fall of 1.1% in the annual rate. This is a result of the 10% decline in civil works and the slowdown in building that only improved 0.4%, both in annual terms. However, for the second quarter of 2018, the construction sector has an accumulated advance of 2%. Civil works are behaving as expected, even on negative ground, explained primarily by low investment in infrastructure works despite the announcement of the most ambitious infrastructure plan of the latest investments, which simply failed. Thus, only building remains as a driver of construction.

The level of prices of construction materials has accelerated over the last few months, reaching almost 10%. Cement and ready-mix, the most important inputs in the building materials sub-index, have the largest increases from 2011 to 2018, followed by metal products such as rods. Other inputs, such as rental of machinery and equipment have slowed the pace of price increases but are vulnerable to the exchange rate because leasing is usually defined in foreign currency. We expect the price level to remain high in the short term, but by the end of 2019 we could see lower inflation in construction inputs.

We are including a brief study of the economic cycle of construction and how it influences other aspects of the real estate sector. The construction sector has undergone a structural change, shortening its economic cycles in the wake of the economic crisis of 2009. We see this precisely in the early recovery of GDP mentioned at the beginning of this text. These cycles are largely determined by investment, which in turn influences the real estate sector, whether residential or commercial. Residential investment explains the dynamics of housing price indices, as well as those of commercial real estate.

Entering the housing market, the number of mortgage loans continues to contract. At an annual rate, 2.3% fewer loans were granted in accumulated figures up to June 2018. With respect to the amount originated, the contraction is 5.3% in real terms. Only Infonavit is growing, thanks to its incursion into the middle and residential segments, while Fovissste and the banking sector have not been able to grow. These contrasting results show that the strategy by Infonavit of increasing loan amounts has been better than the containing of increases in interest rates by banks. However, the level of inventories remains at an acceptable level and consumer confidence in the housing market improved once the electoral process was completed.

At the regional level, we see that from 2012 to 2018 mortgage credit both from public institutions and banks has greater opportunities in states with better generation of employment and economic activity, mainly those related to the export sector. By contrast, the housing lag does not define the potential of the mortgage market, nor the allocation of subsidies for housing. So the incoming administration could take a considerable turn from fulfilling its proposal to give priority to the southern states of the country.

2. Market Conditions

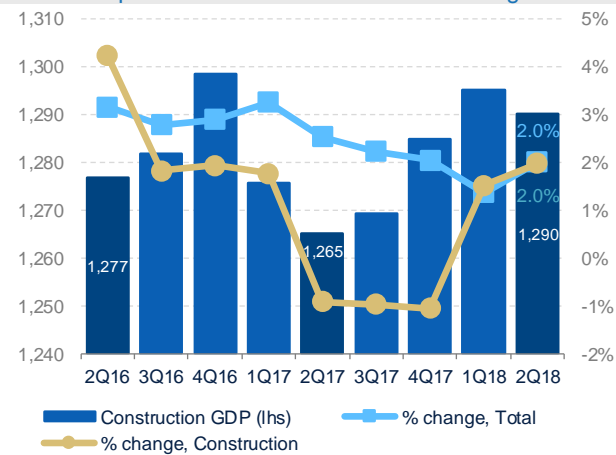
2.a Building surprises with a boost to construction

Recovery of 2% in construction

The construction sector is showing signs of recovering earlier than expected. Until the first half of 2018, construction GDP grows 2.0% in annual terms, the same rate observed for the total economy. This result is the combination of a smaller contraction of the GDP of Civil Works, which fell 7.2%, and an acceleration of the GDP of Building, which reached an annual rate of 3.4%. The

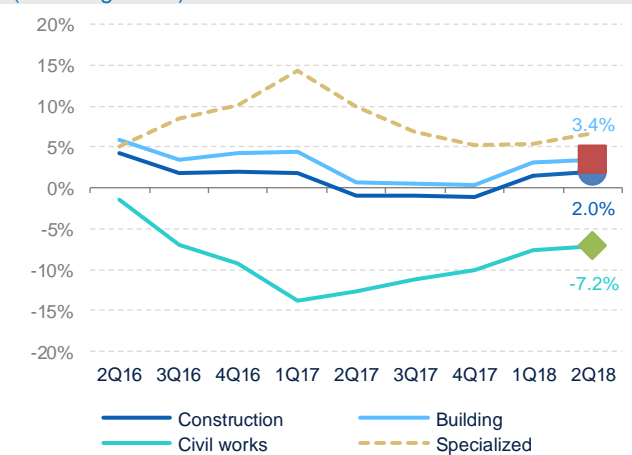
GDP of Specialised Works also contributed positively, although as we have seen previously, its contribution to the sector is marginal.

Figure 2a.1 GDP Accumulated Construction
Billions of pesos in real terms and % YoY change



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

Figure 2a.2 GDP Accumulated Construction
(% change YoY)

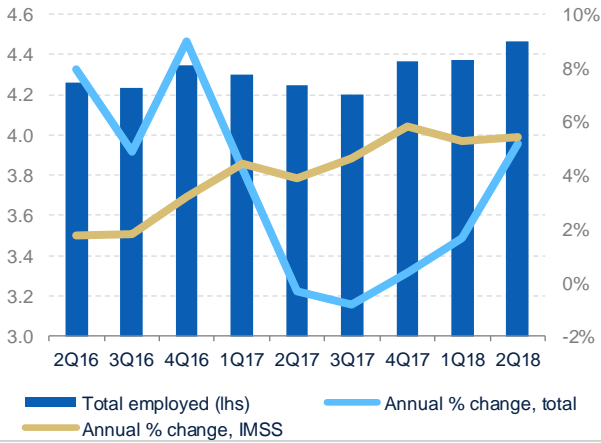


Source: BBVA Research based on data from SCNM (National Accounts System) and INEGI (National Statistics and Geographical Institute)

Along these lines, the demand for workers by construction companies increased during the first two quarters of this year. By March 2018, just over 10,000 jobs had been created in the sector, but by the middle of the year there were just over 90,000 additional jobs, based on data from the ENOE conducted by INEGI. This breaks the barrier of 4.5 million jobs in construction. The subset of formal private jobs within the sector also increased as it has been doing for the last five years. In this same period, we see that in the first quarter of 2018 5.3% more workers were registered in the IMSS and in the following quarter, an additional 5.4% in annual comparison.

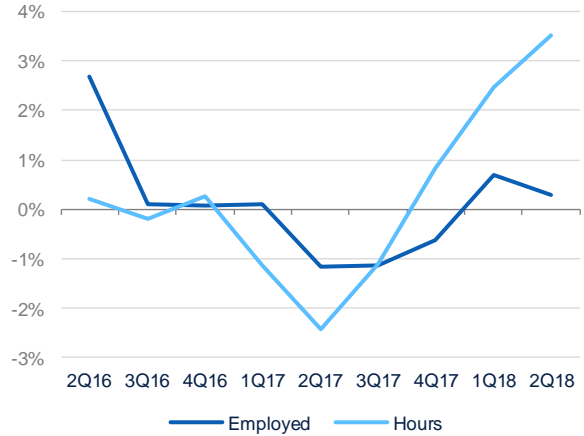
Sometimes the increase in employment without greater investment in physical or human capital tends to deteriorate the productivity of the labour force; but on this occasion both indicators show improvement. The workers' productivity indicator stopped dropping, as it had during 2017; it now presents a subdued advance of around 0.5%. On the other hand, the productivity indicator in terms of working hours in this sector shot up above 3% at the end of the first half-year in annual comparison. This, together with increased employment, suggests that the good pace of the sector could be maintained in the short term.

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
(% change YoY)



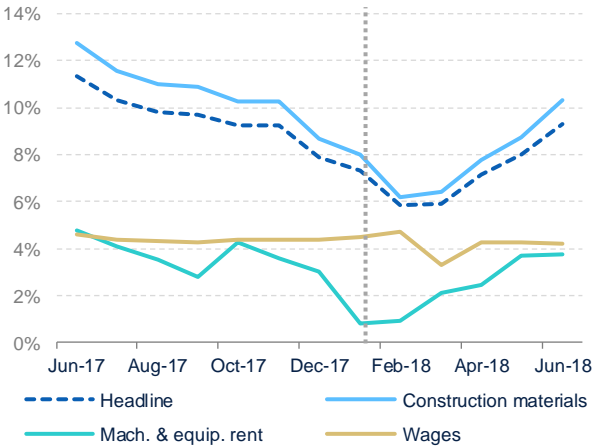
Source: BBVA Research based on data from INEGI

Prices of inputs rose at the rate of 9.3% in 2Q18

This progress in construction during the first two quarters of 2018 is even more significant if we think that the cost of inputs continues to rise, although we expected a moderation in this period. The prices of inputs continue to grow regardless of the type of construction, although in the case of Building, the National Producer Price Index (INPP) has a higher rise than that of Civil Works.

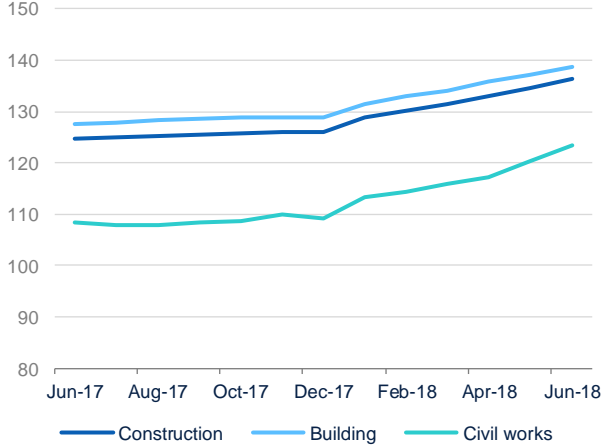
The prices of inputs increase around 10% in annual rate, this figure exceeded 12% at the end of 2017 and the beginning of 2018. In any case, it remains above the headline inflation of consumer prices. Materials such as cement, concrete and metal rods are still those with the most impact; while the cost of renting machinery and equipment has slowed its increases. By contrast, workers' salaries have grown the least at around 4%.

Figure 2a.5 Construction INPP inputs
(% change YoY)



Source: BBVA Research based on data from INEGI

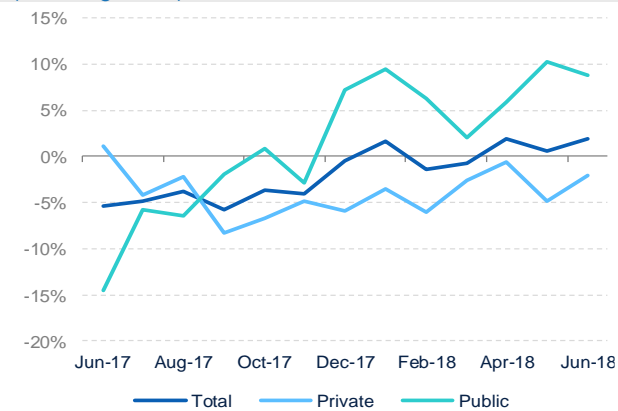
Figure 2a.6 National Producer Price Index
(Base 2008 = 100)



Source: BBVA Research based on data from INEGI

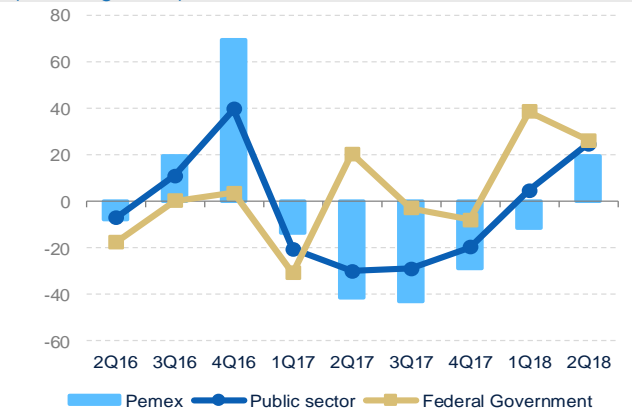
The gross value of production in construction shows a slight advance this year. The value of private sector construction entered negative figures. In the opposite direction, the value of public sector works has improved since the beginning of the year. A considerable part is simply a statistical effect because the basis of comparison is quite low because of the continuous deterioration over these years. This continues to be the result of lower investment in physical capital by public bodies, to a greater extent by Pemex as it has little room for manoeuvre due to pressure on its finances. In addition, the Federal Government also devoted less resources to this type of investment, which is a close parameter for learning about the performance of public sector works.

Figure 2a.7 Value of construction by sector (% change YoY)



Source: BBVA Research based on data from INEGI

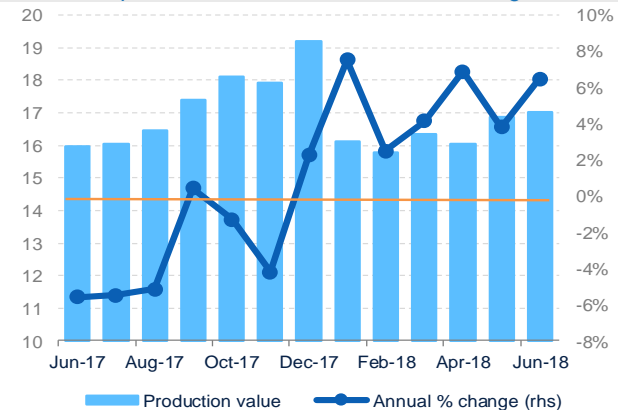
Figure 2a.8 Public physical capital expenditure (% change YoY)



Source: BBVA Research based on data from INEGI

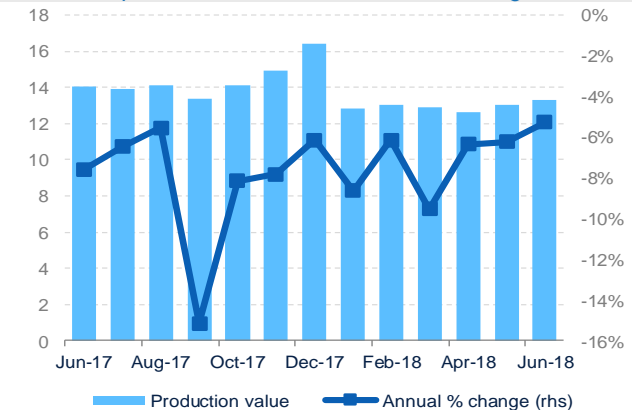
The divergence in the performance of the two main components of the GDP of construction is largely explained by the production value reported by the construction companies to INEGI. As we mentioned in our previous edition of *Mexico Real Estate Outlook*, building activity decreased in the third quarter of 2017, a trend that continued until the end of the year. Building bounced back from 2018, reaching production levels of 16 billion pesos in real terms, but not yet reaching the peak of 19 billion pesos at the end of last year. Conversely, the value of infrastructure works continues without rebounding, stabilising at around 13 billion pesos per month.

Figure 2a.9 Value of building construction Billions of pesos in real terms and % YoY change



Source: BBVA Research based on data from INEGI

Figure 2a.10 Value of infrastructure construction Billions of pesos in real terms and % YoY change

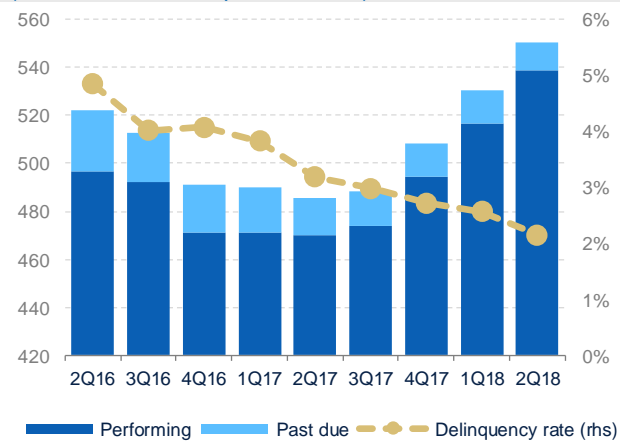


Source: BBVA Research based on data from INEGI

The increase in economic activity within the construction sector has led to increased financing needs, which the banking sector, both commercial and development, has met. Currently the balance of bank credit to construction exceeds 540 billion pesos in real terms. This amount is the historical maximum of financing by commercial and development banks granted to construction in general. The positive outlook for credit to this sector lies not only in having reached such a high point in terms of amount, but also in the quality of the portfolio, as measured by the delinquency rate. This index shows that the proportion of past-due portfolio to total portfolio has gone from 4.8% to only 2.2%.

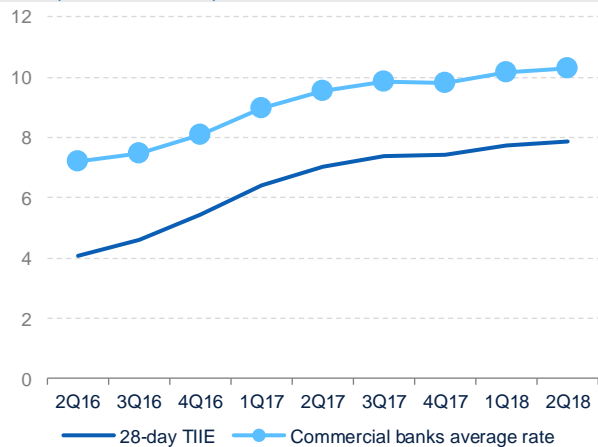
The credit has flowed despite the tightening of monetary policy by the Bank of Mexico. The reference rate has risen 475 basis points from the historical low of 3%; while the weighted average rate has only changed by 300 basis points. Credit institutions have absorbed part of this impact due to competition among players to attract more companies as customers and to maintain the flow of credit being demanded.

Figure 2a.11 Real total balance of credit for construction (Billions of constant pesos and %)



Source: BBVA Research based on Bank of Mexico data

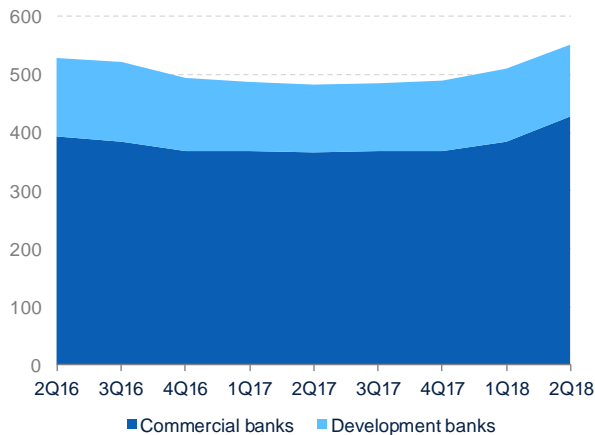
Graph 2a.12 Commercial interest rate on construction credit (Annual % rate)



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

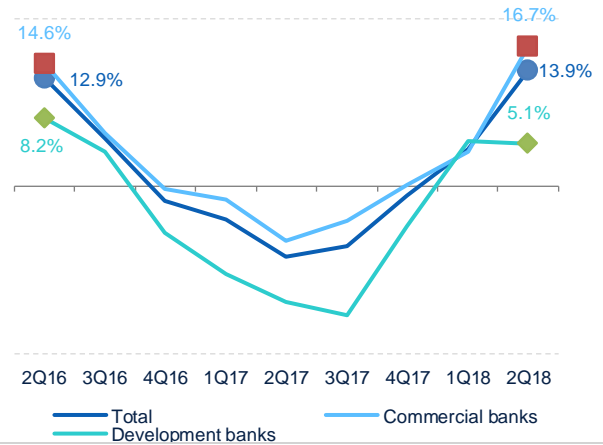
While bank credit has flowed from both commercial and development banks, it is the former that has the largest share and has even gained the most ground. In the middle of 2016, retail banking had 74% of the banking portfolio, but by June 2018 its share had risen to 78%. Development banks had accumulated a portfolio of 123 billion pesos as at this date, while retail banks had reached 428 billion pesos. Measured in annual variations, retail banks increased the real flow of credit by almost 17%, while development banks increased it by 5%. In any case, we observe rates much higher than the economy as a whole and the construction sector in particular.

Figure 2a.13 Real total balance of credit for construction (Billions of constant pesos and %)



Source: BBVA Research based on Bank of Mexico data

Graph 2a.14 Total real balance of credit for construction (Annual % change)

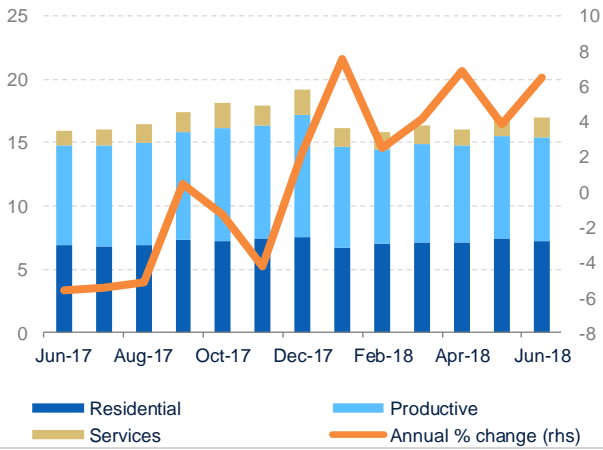


Source: BBVA Research based on Bank of Mexico data

Building materialises the rise of the construction cycle

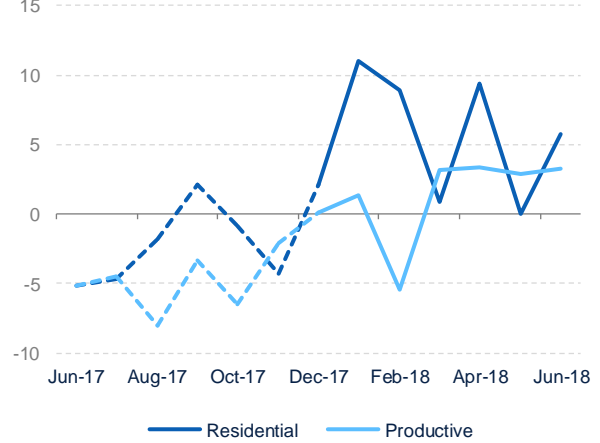
We estimated that this year 2018 would be difficult for construction with figures before the end of 2017, since its pillar, building, was not only slowing down, but some components had even begun to fall. The performance of residential building hesitated in the face of the contraction of the social interest segment and lower demand for middle and residential segments in the face of increases in the central bank rate and the electoral period. On the other hand, productive building stopped from the end of 2017, partly influenced by uncertainty in the negotiations of the North American Free Trade Agreement, now called USMCA. This trend seemed to be observed in the first quarter of 2018, when both types of construction stepped on the subsoil, presented negative rates. However, in the second quarter, residential building improved as there was an advance in financing for medium and residential housing, largely influenced by the change in focus of Infonavit, as financing for social housing decreased and more resources were allocated to the upper segments. In addition, increased activity in school building boosted the value of this type of construction, which in turn led to a recovery in the GDP of building. However, this effect may be temporary and not be maintained during the rest of the year, since the building of schools and hospitals usually presents a seasonal effect in the middle of each year.

Figure 2a.15 Gross value of building construction
Billions of constant pesos



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

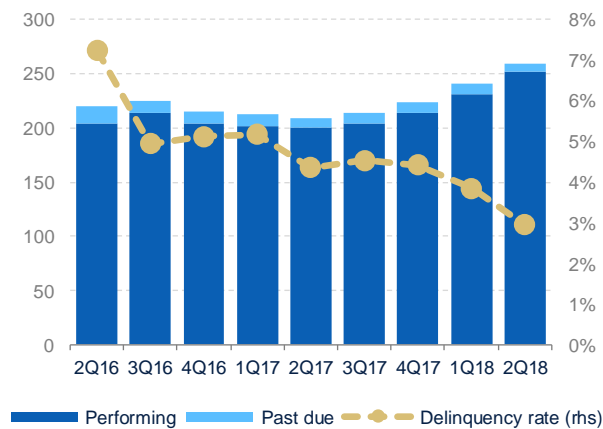
Figure 2a.16 Gross value of building construction
(% change YoY, annualised series)



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

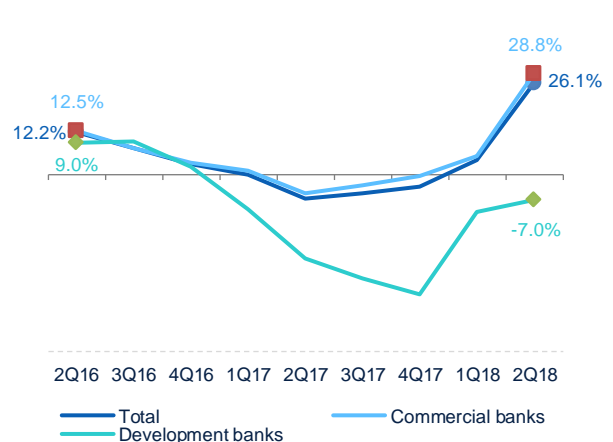
In line with the increased activity in building, the flow of credit to this type of work also improved over previous periods. The banking credit portfolio, both retail and development, exceeded the barrier of 250 billion pesos in real terms. The delinquency rate in this portfolio went from 7% to just under 3%, thus improving the quality of this portfolio. Also, in real terms, in the second quarter of 2018, retail banks increased the flow of financing to building by almost 30%, which increased the total by 26%.

Figure 2a.17 Real total balance of building construction credit
(Billions of constant pesos and %)



Source: BBVA Research based on Bank of Mexico data

Figure 2a.18 Real total balance of building construction credit
(% change YoY)



Source: BBVA Research based on Bank of Mexico data

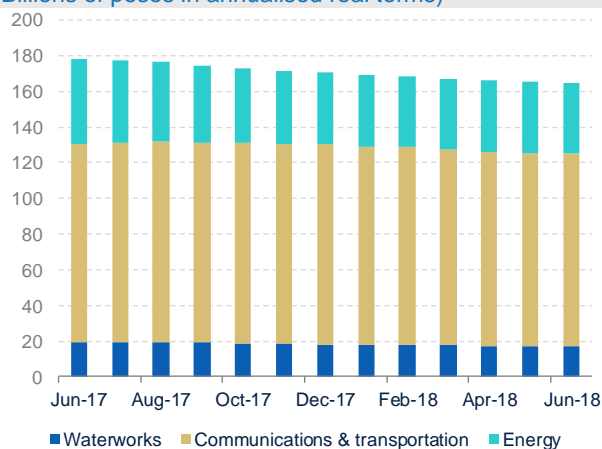
Civil work is continuing and will close the year in abandonment

Gross value of civil works falls below 40 billion pesos

Without being news, but strengthening the same trend, infrastructure works are still in decline so far this 2018. The value of civil works production reached a maximum of 21 billion pesos in real terms in 2010, when the counter-cyclical policy was implemented to boost the economy. Currently the value of these types of works is only 14 billion pesos and we estimate that it will continue to decline in the remainder of the year. In annualised terms, from 2010 to 2012, the value exceeded 220 billion pesos, but now it barely reaches 170 billion pesos, 30% less than the maximum, just 6 years ago.

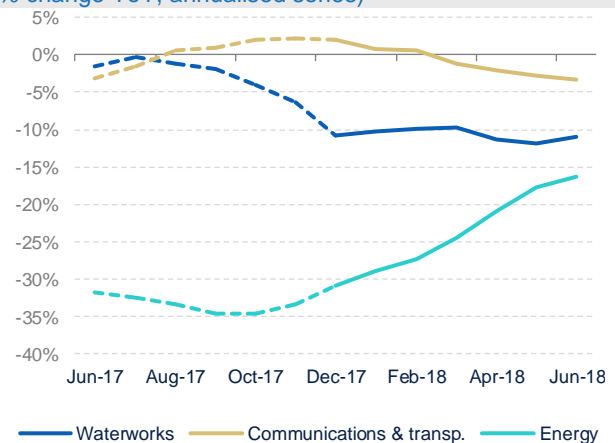
During this 2018, hydraulic infrastructure works average a fall of 10.7% in real terms. Communications and transport works are the least affected with an average reduction of around 1.3%. And as in the rest of the infrastructure, the works associated with the energy sector also fall, 22.6% on average, a much less negative figure if we compare it with the falls of more than 30% that occurred during 2017. Although it should be noted that this moderation is due to a statistical effect and not an increase in investment in these types of works. Going a little more into detail in the energy sector, constructions for electrical energy are those that have the greatest negative effect as opposed to those carried out for hydrocarbons; a result in contrast to previous reviews.

Figure 2a.19 Gross value of infrastructure (Billions of pesos in annualised real terms)



Source: BBVA Research based on Bank of Mexico data

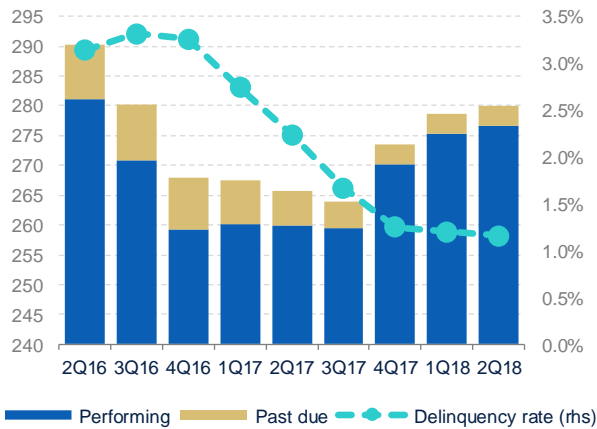
Figure 2a.20 Gross value of infrastructure (% change YoY, annualised series)



Source: BBVA Research based on Bank of Mexico data

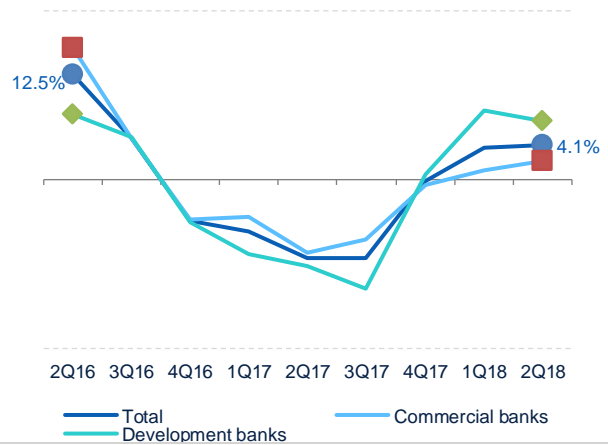
The financing of infrastructure by the banking system is advancing, but well below what we observed for building and without matching the levels reached just two years ago. Currently, the value of the portfolio is 277 billion pesos, of which retail banks contribute 169 billion pesos and development banks 108 billion pesos. This represents an increase of only 4.1% in annual terms. Despite the poor performance of civil works, the loan portfolio for this type of works has maintained its quality since the delinquency rate is only 1.2%.

Figure 2a.21 Real total balance of infrastructure credit (Billions of constant pesos and %)



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

Figure 2a.22 Real total balance of infrastructure credit (% change YoY)



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

The outlook for civil works continues to be unfavourable, as the new administration has not drawn up a complete National Infrastructure Plan as in previous administrations, and the projects announced so far are few and of lesser impact. In addition to the cancellation of the New Mexico International Airport, there is no expectation of growth for the second pillar of construction, so this sector will contribute little to the advancement of the economy during 2019.

Construction would surprise by advancing the rise of its economic cycle

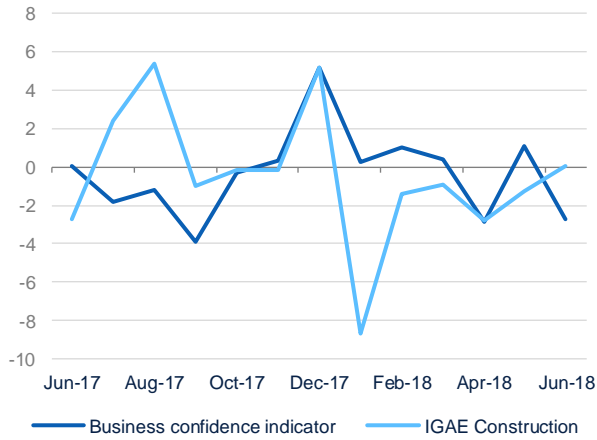
The indicators of the construction sector so far have surprised us positively, specifically, the performance of building, which advances the positive part of its economic cycle; which, combined with a smaller fall in civil works, would result in the GDP of construction growing moderately in 2018. A resurgence of residential building - due to its middle-income and residential segments - together with increased productive building, have reversed the negative trend observed in the second half of 2017. While the construction of schools and hospitals also improved, we relate this to a seasonal effect and do not think it will be sustained at the end of the year.

Civil works continue to fall, albeit at a slower pace, thus subtracting less from the sector. However, the prospect of infrastructure is not rosy in the absence of a National Infrastructure Plan. We hope that in the first few months of 2019 we will have one that gives guidance as to where the investment could be directed.

Financing for the entire construction sector is flowing and has not found dikes despite the higher cost of funding that the change in monetary policy has brought about. The banking system as a whole continues to allocate resources to this economic activity, until now with a high credit quality. We expect that the cancellation of Mexico's New International Airport will have limited effects in terms of risk ratings to infrastructure projects primarily so that resources continue to be channelled.

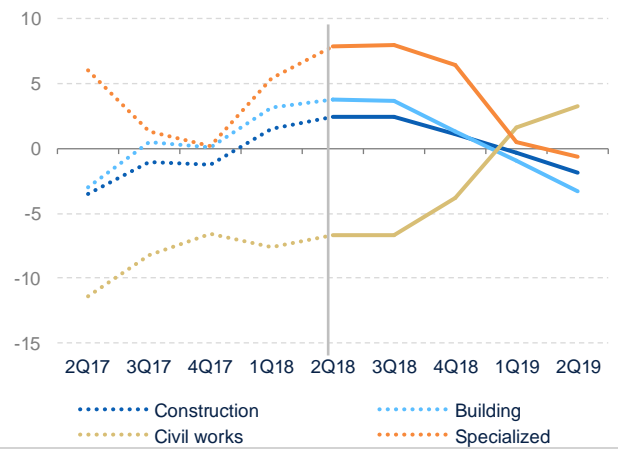
With all of the above, we estimate that the construction GDP could grow almost 1.9% in 2018; but without further investment by 2019 - which will happen without a strategic planning for infrastructure in 2019 -, this progress would be halted.

Figure 2a.23 Advance indicators for construction (% change YoY)



Source: BBVA Research based on data from INEGI

Figure 2a.24 GDP of Construction by components (% change YoY)



Source: BBVA Research based on data from INEGI

2.b The mortgage market, due to the end of the contraction period.

In our previous issue of *Mexico Real Estate Outlook*, we anticipated that the origination of mortgage credit during 2018 could experience a contraction. Although Infonavit continued to grow during the first months of the year, it is already doing so at much more moderate rates. On the other hand, commercial banking remained in negative territory and in the first half of the year lost market share with respect to Infonavit.

As far as the housing supply is concerned, it is already beginning to show signs of recovery, after almost two years of a fall in the number of projects for the construction of houses. This is thanks to a healthy balance of inventories, which at no time showed signs of accumulation, but also at the end of the cycle of rise in short-term interest rates, which have sent the signal of stability and even a possible decline in the cost of financing for housing construction.

Banking loses market share

At the end of the first half of 2018, the amount of mortgage financing granted by the entire system decreased 5.2% in real terms with respect to that originated in the first half of 2017. In this period, the decrease in commercial banking was 10.3% in real amount, while the number of loans was reduced by 13.3%.

Table 2b.1 Mortgage activity: loans and amount of financing granted by agency
(thousands of loans and billions of pesos for 2018, cumulative)

Mortgage Origination	Number of loans (thousands)			Amount of credit (MXN billions)			Average amount (thousands of pesos)		
	June 2017	June 2018	Change % YoY	June 2017	June 2018	Change % real annual rate	June 2017	June 2018	Change % real annual rate
Public Institutions	201.6	199.3	-1.1	86.5	86.1	-0.5	429	432	0.6
Infonavit	176.2	176.4	0.1	66.8	69.4	3.9	379	394	3.8
Fovissste	25.3	22.9	-9.7	19.7	16.7	-15.6	779	728	-6.5
Private Sector*	62.2	53.9	-13.3	80.7	72.4	-10.3	1.298	1.343	3.5
Banks ¹	62.2	53.9	-13.3	80.7	72.4	-10.3	1.298	1.343	3.5
Other									
Subtotal	263.8	253.2	-4.0	167.3	158.5	-5.2	634	626	-1.3
Co-financing ² (-)	20.5	15.6	-23.8						
Total	243.3	237.6	-2.3	167.3	158.5	-5.2	688	667	-3.0

Although there are other private credit institutions (such as non-regulated agents), since there is no reliable public information on them they have not been included.

1: Includes: loans for self-construction, restructuring, acquisition, loans to former employees of financial institutions and loans for payment of liabilities and liquidity.

2: Loans granted in conjunction with Infonavit and Fovissste.

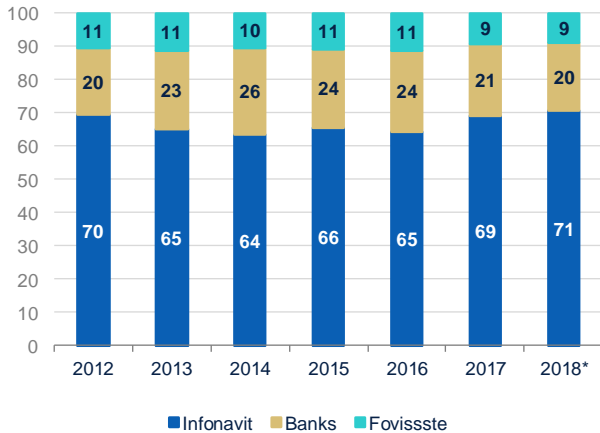
Note: the restatement factor is constructed based on the housing price index of the SHF

Source: BBVA Research based on data from Infonavit, Fovissste, CNBV and the SHF

Infonavit, on the other hand, maintained its growth, albeit at moderate rates compared to the double-digit expansion it experienced during 2017. Thus, the first six months of the year the institution granted loans for an apportionment of almost 70 billion pesos, equivalent to an increase of 3.9% in real terms.

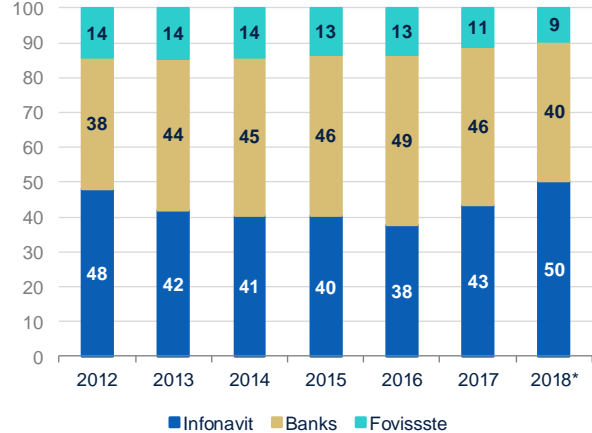
In recent years, Infonavit has gained ground in the placement of the middle-income and residential segments. However, the institution's share in the number of loans granted has remained relatively stable at around 20%.

Figure 2b.1 Number of mortgage loans granted (annual % share)



Source: BBVA Research based on data from Infonavit, Fovissste and the CNBV

Figure 2b.2 Amount of mortgage financing granted (annual % share)

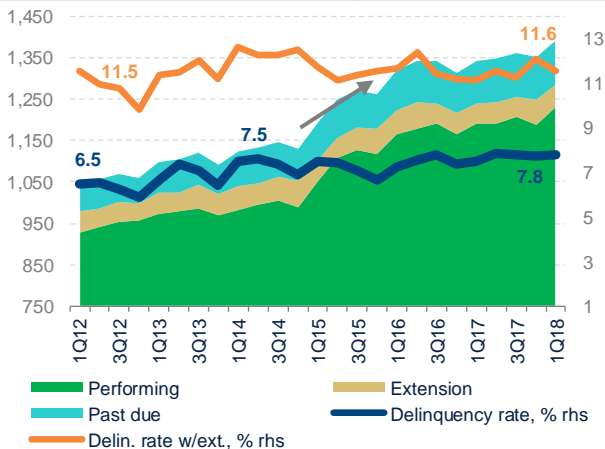


Source: BBVA Research based on data from Infonavit, Fovissste and the CNBV

But in the case of the financed amount, the greatest advantage was obtained from the succession of increases in the maximum credit limits, for which it has practically established himself as the main player in the market and in 2018 it already concentrated 50% of it. The other factor that also had an influence, although indirectly in the widening of the share of the institution is the lower activity by Fovissste, which for the second consecutive year contracted by double digits and in 2018 represents only 9% of the market.

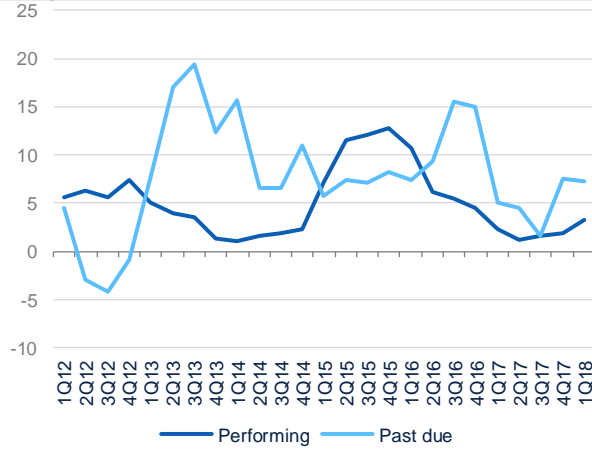
Infonavit's acceleration in the origination of mortgage loans was also reflected in its balance sheet. The cycle of decline in mortgage interest rates by retail banks since 2011 had reduced the growth of the balance of the current portfolio of the institution. It wasn't until 2014 that it accelerated again and peaked in the fourth quarter of 2015 with an increase of 12.8% in real terms. However, during 2016 and 2017 slowed again and the first quarter of 2018 grew only 3.2% real.

Figure 2b.3 Infonavit portfolio balance (millions of pesos and delinquency, %)



Source: BBVA Research based on data from Infonavit

Figure 2b.4 Infonavit portfolio balance (change % YoY)

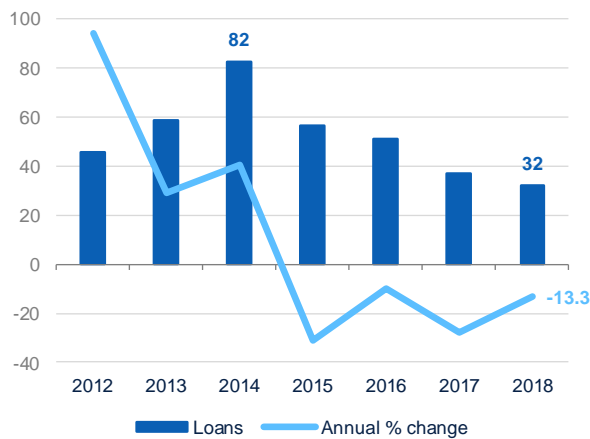


Source: BBVA Research based on data from Infonavit

With all and the widening of the current portfolio, the result of greater origination, the bad news is that the past-due portfolio has continued to increase and as at the first quarter of 2018 is 7.3% higher in real terms over the previous year. As a result, delinquency has maintained its upward trend. While in the first quarter of 2012 this was at 6.5%, to the first quarter of this year practically reached 8%. If we consider the portfolio in extension, the delinquency rate rises considerably and reaches 11.6% as of March 2018.

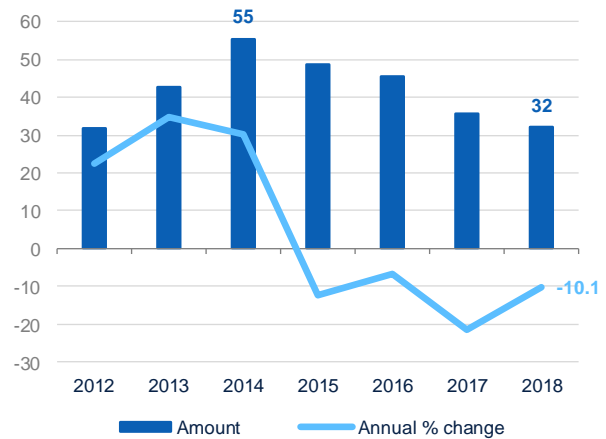
Lower retail banking activity has also been reflected in a sharp drop in consumer demand for co-financing products. From the first increase in the maximum credit limit from 450,000 to 850,000 pesos announced by the Institute in mid-2014, the contraction became evident from the following year. In 2015 alone, the number of co-financing loans by retail banks fell by 31%; while the amount fell by 12.4% in real terms.

Graph 2b.5 Number of bank co-financing transactions (loans and annual % change)



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

Figure 2b.6 Amount of bank co-financing transactions (billions of pesos and % YoY change)



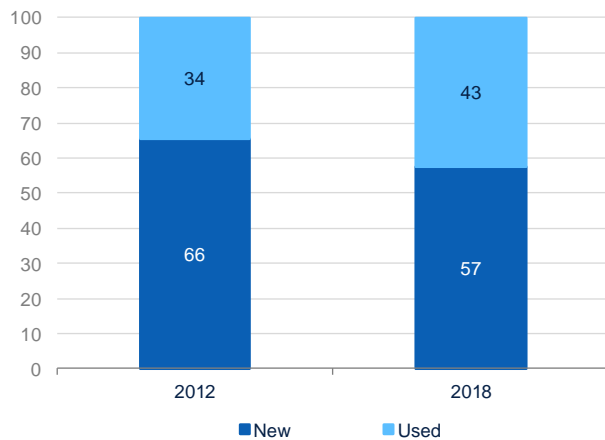
Source: Source: BBVA Research based on data from the CNBV

This trend has been accentuated to date by the succession of additional increases by the institution, which can currently finance up to 1.6 million pesos with terms of up to 30 years. As of June 2018, there were decreases of 13.3% in the number of co-financing loan transactions and 10.1% real in the amount, in annualised figures, according to data from the National Banking and Securities Commission.

The market has opted for greater product diversification

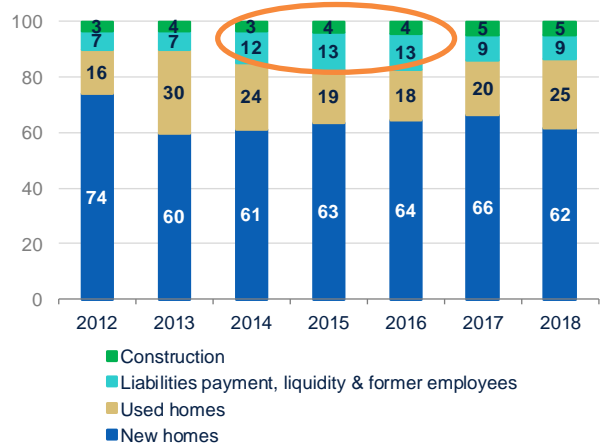
The last few years have been characterised by the diversification of products offered by banking. However, new home loans remain the best option for consumers, representing 62% of the total in 2018. This share decreased compared to 2012, when it was 74%. The cycle of low interest rates motivated the development of three products: 1) payment of liabilities, 2) credit for liquidity and 3) credit for self-construction. Thanks to competition among private sector institutions, they were able to improve their financing conditions with the first alternative. On the other hand, loans for liquidity were shown as an alternative for starting a business with a mortgage guarantee and financing for self-construction, although to a lesser extent they have also gained importance in the market. These three products alone accounted for 20% of the total between 2015 and 2016. With the end of the rate reduction cycle, this share stopped growing and currently stands at 18% of the total.

Figure 2b.7 Credits for condition of use of Infonavit (share, %)



Source: BBVA Research based on data from Infonavit

Figure 2b.8 Mortgage products offered by banks (share, %)



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

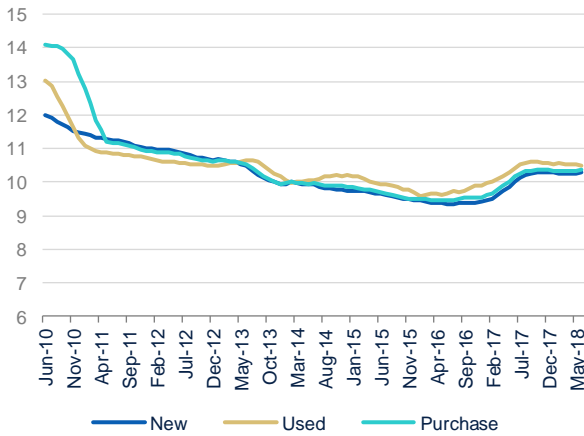
On the other hand, Infonavit registered an even more radical change towards 2018. While in 2012, 34% of loans for acquisition were used to finance used housing, in 2018 this share increased 10 pp and is now 43%. This is largely explained by the fact that a significant proportion of the homes financed in this segment are in the middle-income and residential markets, where the largest price increases are also found. This niche was very attractive for the institution, since the demand for social housing maintains its downward trend, as it depends largely on support from the Federal Government.

The contraction in the placement of social interest housing by the institution, which as we already saw implied a very poor growth in the balance of its current portfolio during 2012 and 2013 was momentarily compensated by the increase in housing subsidies between 2014 and 2015, a bonus that has also come to less by the succession of budget cuts in the matter.

The cycle of lower interest rates in the longer-term mortgage market undoubtedly benefited the development of new products in the private sector, to the extent that Infonavit was motivated to enter that niche, benefited by the privileges it enjoys for being an institution of promotion by the government. The fact that it can collect its money directly from the worker's salary allows the existence of a portfolio with extensions and it can issue bonds, offering higher yields than the market generates conditions of unequal competition, which could be limiting the development of the market.

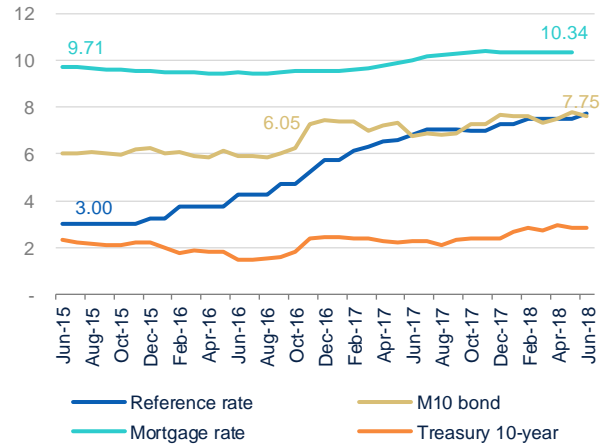
Although, it is true that mortgage rates stopped falling for some time, we cannot say that financing conditions have worsened. The consumer's biggest fear since then has been that short-term rates will end up being reflected in the mortgage market. However, this has not happened so far and will remain the case. Compared to the more than 425 bps by which the reference rate, better known as the funding rate, has increased, the mortgage rate has done so by only 56 bps. As mentioned earlier, this is due to the high correlation between mortgage rates and long-term rates, in this case the ten-year government bond, better known as M10.

Figure 2b.9 Mortgage interest rate in banking (nominal weighted rate, %)



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

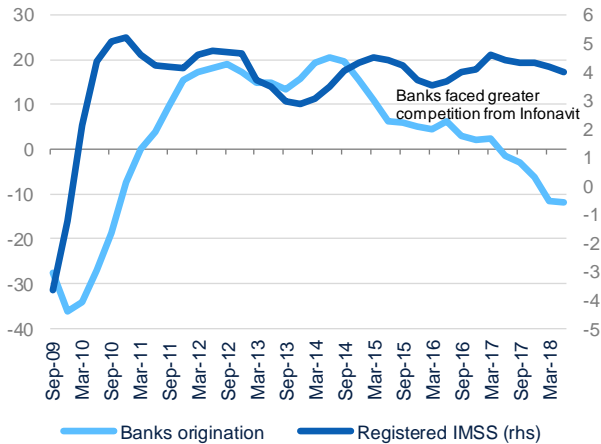
Figure 2b.10 Mortgage and long-term rates (percentage, %)



Source: BBVA Research based on data from the CNBV, Banxico and Bloomberg

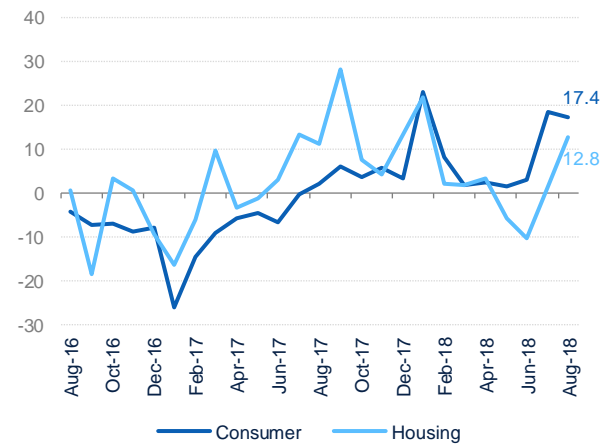
It is for this reason that the mortgage rates of retail banks registered a small rebound, only in response to the increase in the rate of M10, whose first rise was presented at the end of 2016 when it stood at levels of 6%. In 2018, at the end of June, the M10 was at 7.75% and no additional increases are expected in a short-term horizon, so that mortgage rates have remained stable at 10.34% and could close 2019 at 10.5%, due to which undoubtedly still remain at historically low levels.

Figure 2b.11 Mortgage financing and employment IMSS (real annual % change)



Source: BBVA Research based on data from CNBV and INEGI

Figure 2b.12 Consumer confidence (% change YoY)



Source: BBVA Research based on data from INEGI

Another way to see the distortion that Infonavit has generated in the market is the misalignment between the growth cycles of formal employment and the origination of mortgage financing. While employment has continued to grow, mainly by lower-income workers, it is visible as from 2015, the retail banking cycle is dissociated from IMSS employment. This is accentuated as the Institute implemented increases in its credit limits.

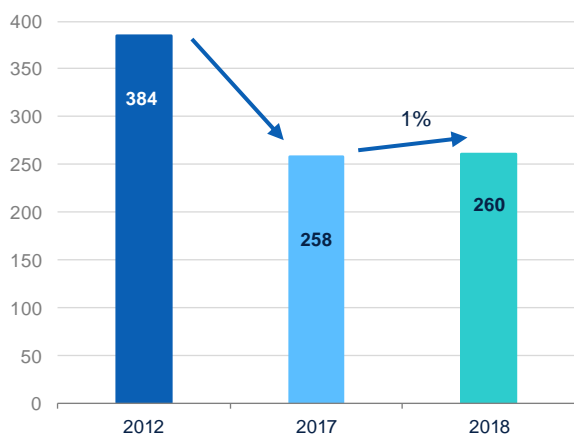
On the other hand, consumer confidence, particularly in housing, has reflected the unjustified uncertainty of the increase in short-term rates, but also the caution of potential buyers during the first half of 2018 towards the closure of the electoral process. Just one month after the election in July, consumer confidence rose 17.4%, while the housing sub-index rose 12.8%. However, it should not be forgotten that this double-digit recovery also reflects a base effect from the previous month, when it was in negative territory. In addition, it should be noted that this indicator is based on sentiment and will not necessarily immediately reflect a recovery in demand.

The supply could benefit from interest rate stability

Housing construction may reflect signs of recovery more clearly. After almost three years, the number of projects filed in the National Housing Register (RUV) registered for the first time a positive growth rate and at the close of the first half of the year, in annualised figures the number of units listed grew 1%.

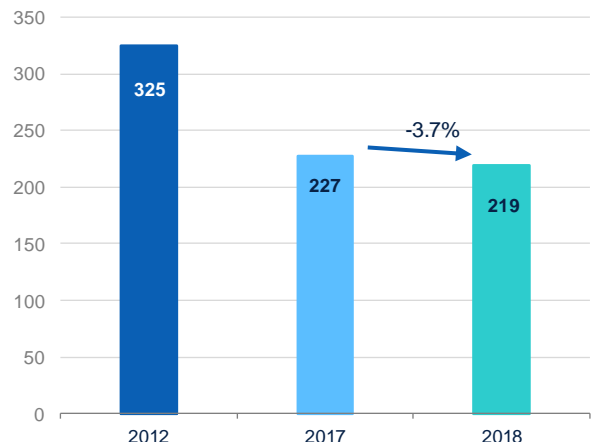
While this result is favourable, it should also be viewed with caution for two reasons. In the first place, the number of projects had already been in contraction for a long time as a compensation for the accentuated growth it experienced between 2014 and 2016, when the amount of subsidies from the government, which reached historic highs, was allocated in almost 90% to the acquisition of new homes. Secondly, the cycle of rise in short-term interest rates, which directly impacts the TIIE and in turn, the interest rate faced by builders on their bridge loans kept construction rates stable.

Figure 2b.13 Registration of housing in the RUV (thousands of units and % YoY change)



*Data to the second half of each year.
Source: BBVA Research based on data from the RUV

Figure 2b.14 Housing inventory in the RUV (thousands of units)



*Data to the second half of each year.
Source: BBVA Research based on data from the RUV

While in 2012 there was a volume of 384,000 projects in the RUV, between 2017 and 2018 the building levels oscillate between 260,000 units per year, which as we have mentioned in other occasions would be very close to the capacity of market demand in the long term. On the other hand, the level of housing inventory has maintained its downward trend

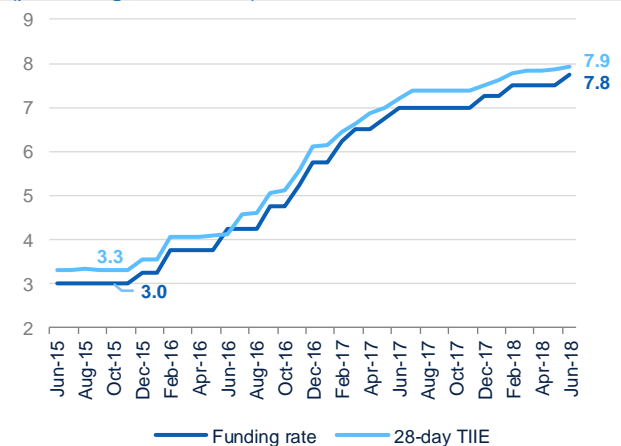
and with the exception of 2012 and 2015, when the rate of production exceeded 300,000 houses, current levels have stabilised at 220,000 units. This level is far from what was promised by the administration that is about to conclude, which was to produce at least 500,000 homes per year.

This process, far from being seen as something negative, has been healthy for the market, since so far there have been no pockets of oversupply which would harm the appreciation of properties. For this reason, it is natural for builders to maintain a certain caution in not accelerating the pace of construction above what the market can absorb.

In fact, the cycle of short-term interest rate hikes seems to have come to an end and could even begin to show signs of beginning its cycle of cuts from 2019. This would be reflected in greater stability in interest rates for bridge loans that could also begin to lower. This transmission process is given firstly by the monetary policy decisions of the Bank of Mexico (Banxico), since as we can see in Figure 15, any movement in the reference rate is immediately reflected in the 28-day TIIE.

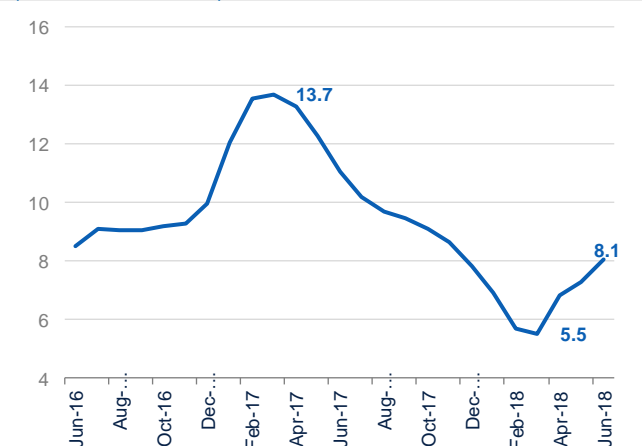
Another factor that also influences builders' decisions is the price they have to pay for the inputs they use to produce. The highest growth in the residential construction cost index, which includes: the price of inputs, the value of machinery rental and the price of labour peaked in March 2017, when they rose almost 14%. Only one year later, at the end of the first quarter of 2018 this indicator increased 5.5% with respect to the same month of the previous year; while, in the month of June, the increase was 8.1% per year.

Figure 2b.15 Short-term interest rates (percentage, annual %)



Source: BBVA Research with data from Banxico and Bloomberg

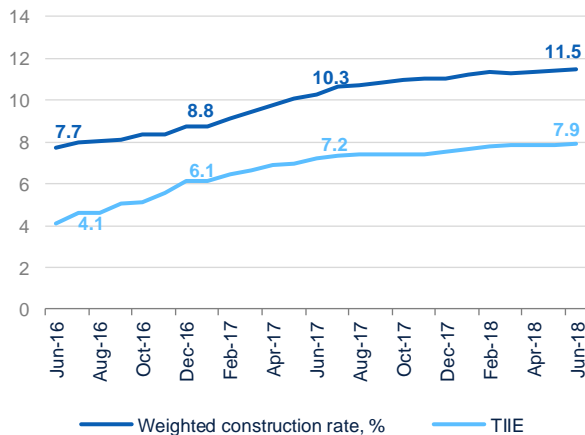
Figure 2b.16 Residential construction costs index (annual % variation)



Source: BBVA Research based on data from INEGI

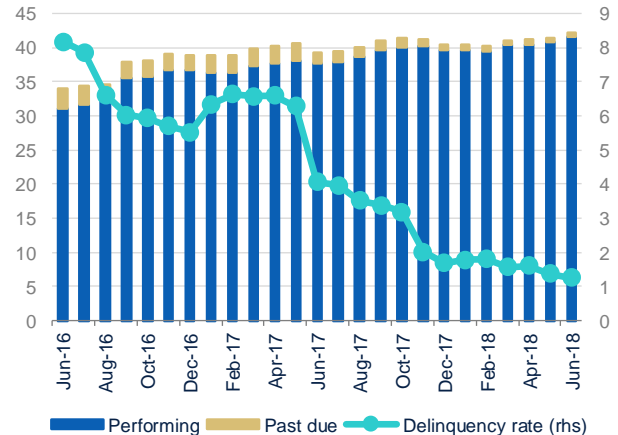
The increase in short-term interest rates, in turn, was transmitted to the construction credit market. Although the biggest increases in the interest rate for building loans were presented at the beginning of the cycle of increase implemented by the Bank of Mexico, as the months went by these increases were acquiring a marginal tone.

Figure 2b.17 Interest rate for construction and TIIE at 28 (percentage, nominal annual %)



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

Figure 2b.18 Bridge loan balance (billions of pesos and delinquency, %)



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

While in June 2016 the weighted interest rate for construction loans was 7.7% per annum; by June of the following year it was already at 10.3% and at the close of the first half of 2018 it closed at 11.5%.

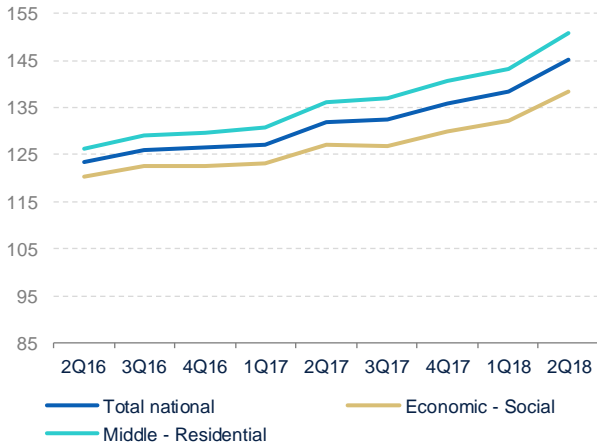
With regard to the balance of the bridge loan portfolio, it has shown healthy behaviour, since construction companies have not committed excesses and have aligned both demand and financing costs. While in June 2017, the current component increased 21%, it continued to grow, but at decreasing rates, and as of May increased 7.6% annually in real terms. The good news is that in the month of June increased 10.4%, a result of increased consumer confidence and stability in short-term rates, already mentioned. Throughout this period, delinquency has maintained its downward trend and went from 4.1% in June 2017 to just 1.3% in June 2018, confirming the health of the portfolio.

Home prices continue to reflect cost pressure

In previous issues, we have mentioned the importance of construction costs in recent housing price cycles. While on the demand side we have experienced a contraction since last year, on the supply side, construction interest rates and input costs have maintained growth. In the case of the latter, we could even be facing the beginning of a new upward cycle.

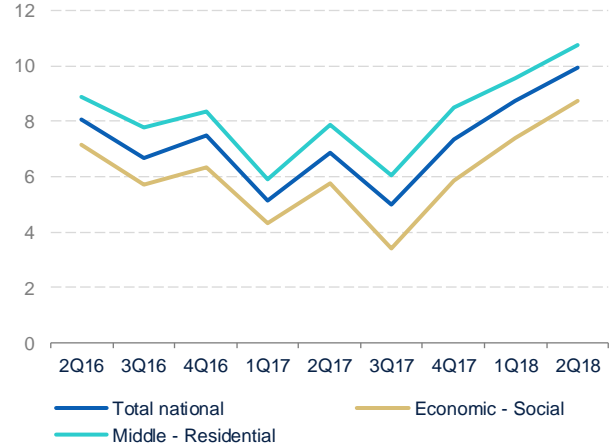
As of the second quarter of 2018, SHF's housing price index increased 9.9% over the same period in 2017. Average and residential housing continued to appreciate at a faster pace and in the same period acquired a capital gain of 10.7%. On the other hand, social interest segments, which have faced lower demand, even from public housing institutions increased their price by 8.7% annually.

Figure 2b.19 SHF House Price Index (Base 2012 = 100)



Source: BBVA Research based on data from the SHF

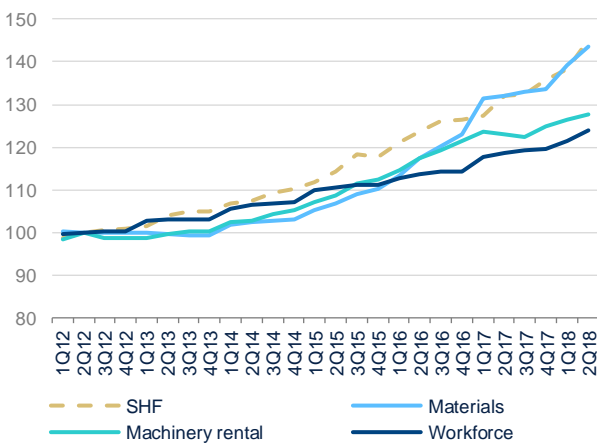
Figure 2b.20 SHF House Price Index (% change YoY)



Source: BBVA Research based on data from the SHF

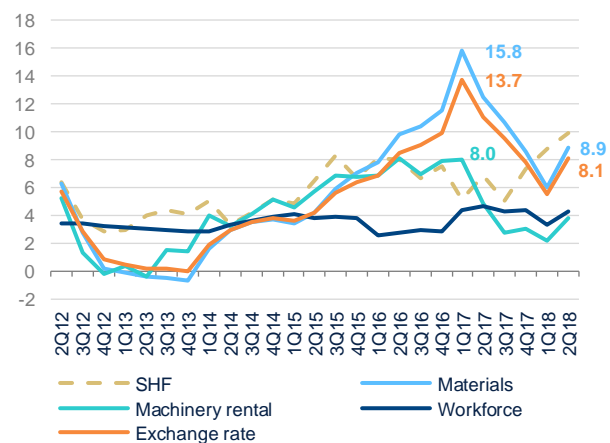
As we have already mentioned in our issue of *Mexico Real Estate Outlook* corresponding to the first half of 2017, according to economic theory, in a long-term equilibrium, the relationship between house prices and construction costs should be close to 100. This is because, in a competitive market, the decision to build an additional house should not be determined by the modification of one of these factors.

Figure 2b.21 SHF housing price index and input costs (index 2012=100)



Source: BBVA Research based on data from SHF and INEGI

Figure 2b.22 SHF house prices, cost of inputs and exchange rate (annual % change)



Source: BBVA Research based on data from SHF and INEGI

As we can see in Figure 21, between 2014 and 2016 a gap was generated between the price of housing and the cost of inputs, which maintained wide margins. At the time, this distortion was explained by the increase in subsidies for house purchases by the federal government¹. However, once the subsidies subsided, the cost of materials returned to

¹See Mexico Real Estate Outlook, 1st Half 2017

a level of equilibrium with the SHF price index. On the contrary, with respect to the index of the cost of rentals and labour the gap widened.

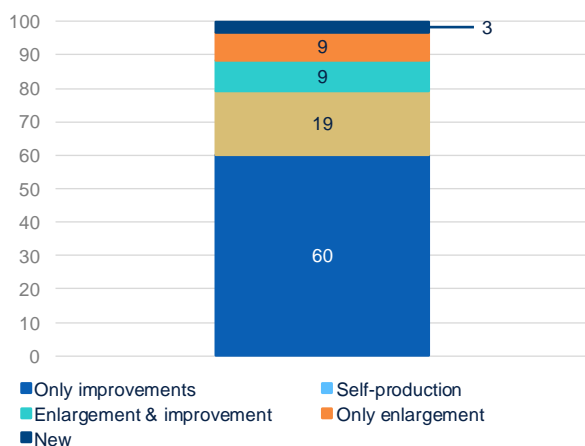
The fact that the margin was widened with respect to rental and labour costs could be seen as a compensation mechanism on the part of producers, who have faced an unusual increase in the price of materials (cement and steel). The largest increase in the price of these goods was reached in the first quarter of last year, when they increased 15.8%, hand in hand with the depreciation of the exchange rate, which was 13.7% in the same period. At the end of the second quarter of 2018 the price of materials rose 8.9%, while the exchange rate increased 8.1%. Although these figures are of lesser magnitude than last year's, we must consider that house prices are reflecting this effect with several months of lag, since a house takes between 6 and 12 months to build.

It is well known that, in recent years, the preference for mid-residential segments over those of social interest has been consolidating; although this has become even more accentuated since Infonavit increased credit limits. As a result, we could face greater demand for imported inputs than in previous years. Even the rental price of machinery, which is generally quoted in US dollars, also reflects the slippage of the exchange rate so far this year.

Housing policy could focus more on urban development

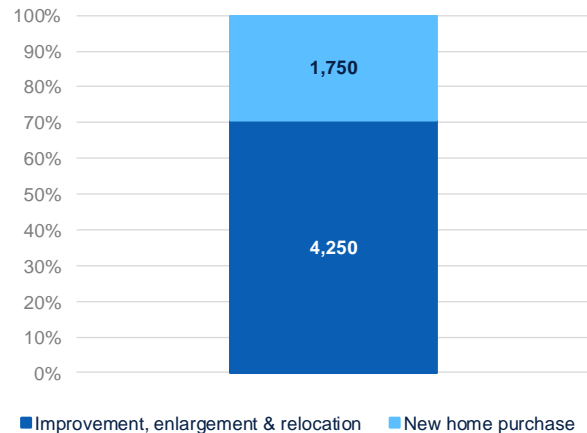
Going forward, there is little clarity as to what the housing policy of the next administration will be. What is certain, however, is that it will face a marked budgetary constraint that will greatly limit the room for manoeuvre through subsidies. For this reason, it is highly probable that the subsidies from now on will place greater emphasis on housing solutions other than purchases, which would be reasonable, given that 80% of the housing lag consists of needs for improvements and expansions. This is equivalent to 7.2 million households. In this sense, the new administration raises the possibility of carrying out 6 million solutions for the period 2018-2024.

Figure 2b.23 Distribution of the 2016 housing lag (percentage)



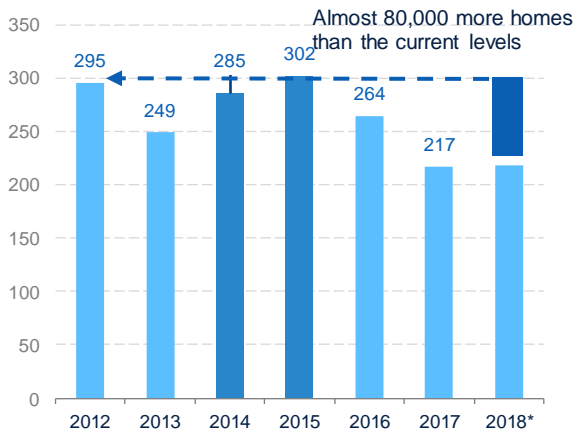
Source: BBVA Research based on data from the SHF

Figure 2b.24 Housing initiatives, 2018-2024 (thousands of initiatives and percentage)



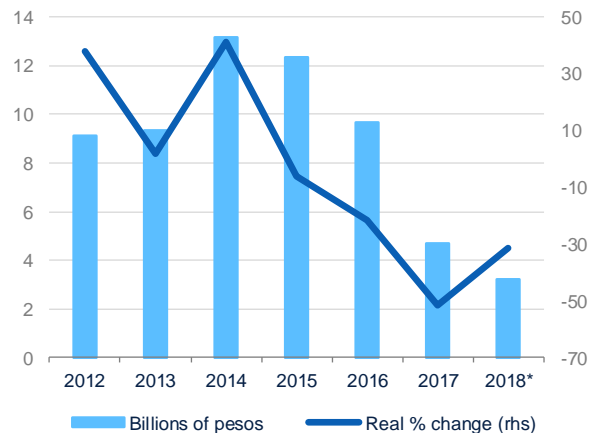
Source: BBVA Research based on information from the CMIC. El Economista <https://www.eleconomista.com.mx/economia/Reestructuracion-gubernamental-en-vivienda-a-la-vista-20180702-0191.html>

Figure 2b.25 Annual production of housing (thousands of units)



*Annualised data as at the month of July.
Source: BBVA Research based on data from the RUV

Figure 2b.26 Housing subsidies (billions of constant pesos and % YoY change)



Source: BBVA Research based on data from CONAVI

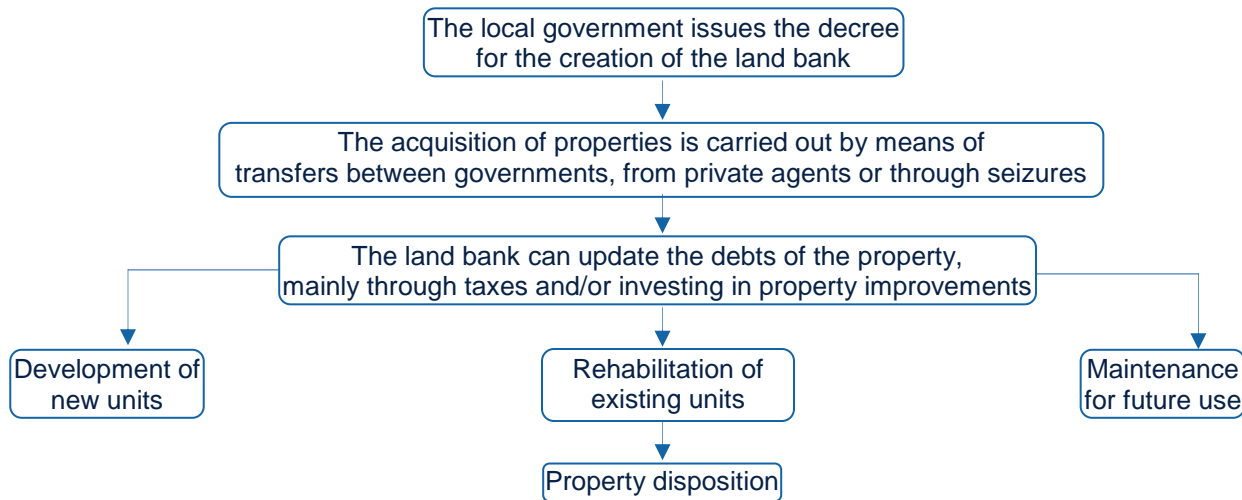
Considering that 70% of the proposed solutions would be aimed at improvement, expansion and relocation, the project of 1,750,000 new dwellings for the whole period seems an unattainable goal. To meet this goal, it would be necessary to build 292,000 homes per year, which would be equivalent to the production in 2014 or 2015, two years in which federal government subsidies almost doubled from their historical average, exceeding 12 billion pesos in each of these years. In 2018, the level of subsidies in annualised figures barely reaches 3 billion pesos, a quarter of the maximum level recorded.

Another central aspect in the urban development vision of the new administration is the implementation of Land Banks. With this, it is proposed to consolidate a National System of Territorial and Urban Information to favour the regularisation of prices and provide them with the necessary attributes to meet the conditions of appropriate urbanisation.

According to international experience, land banks have been constituted as governmental institutions, which establish mechanisms to channel financial resources to specific urban areas, which have administrative problems or suboptimal use, or which plan to improve their use in the future. Although they usually operate with a government budget, they can sometimes obtain private funds.

Among their main objectives are to preserve both the value of land and buildings, especially when they are affected by disturbances in the urban environment. Commonly, these disorders are associated with the abandonment of land or housing; lack of investment in areas with potential urban development and recapitalisation of properties that due to high embargo costs cannot be placed back in the market.

Diagram 2b.1 Typical functions and advantages of Land Banks



Municipal or local governments	Communities	Land banks and housing developers
<ul style="list-style-type: none"> • Better use of community assets • Generate urban development solutions • Potential to generate higher taxes and revenues 	<ul style="list-style-type: none"> • Urban areas better integrated with work centres and urban equipment (schools, hospitals, entertainment, etc.) • Greater capital gain for real estate assets 	<ul style="list-style-type: none"> • Expand funding sources • Develop specific projects or rescue those with problems such as abandonment or underutilisation

Source: BBVA Research

Conclusions

The housing and mortgage financing market poses several challenges regarding the transition. On the part of the private sector, product diversity and low mortgage interest rates in recent years have increased competition among financial institutions, benefiting the development of the market. However, it is necessary to re-evaluate the role of the public sector in housing policy in order to foster demand in the segments of the population that really require it.

The outgoing administration gave preference to incentives for supply. The policy of subsidies that was implemented was aimed practically exclusively at the construction of houses, when the housing lag consists mainly in remodelling, enlargements and self-construction. In addition, the supply subsidy ultimately benefits the producer by increasing profit margins via price increases. It is necessary to stimulate the demand among those segments of the population that really need it and that are located in the more backward regions in the country.

In this sense, it is necessary to rethink Infonavit's functions, because by directly becoming involved in the highest value segments in the market, it is granting more expensive loans, maintaining a cross-subsidy policy that could be harmful in the long term. The proof of this is that, despite generating higher amounts of financing, its level of delinquency continues to increase. In addition, as a public body its growth is based on a different regulation from the rest of the players, which generates distortions of competition in the market.

The key to sustained growth will have to be based on two main pillars. Firstly, the generation of sustained employment and, above all, well-paying jobs; and, secondly, serving the population that does not qualify for financing from the private sector. To this end, mechanisms must be established that encourage savings and that can be channelled through all credit institutions with free competition and not only through public bodies. In this way, the product market could be expanded and those households that are not in the formal market could be served.

3. Special topics

3.a Construction performance below its potential

In recent years, we have witnessed slower growth rates in the construction sector. For several decades this industry had been highly pro-cyclical towards economic activity. However, developments in the real estate market have resulted in greater heterogeneity. This has resulted, on the one hand, in less dependence on the public sector for growth, but also within the private sector in a deconcentration of production. That is why, in this issue of *Mexico Real Estate Outlook*, we delve into the behaviour of the economic cycles of the construction industry, as well as their interaction with the main indicators of the business real estate cycle.

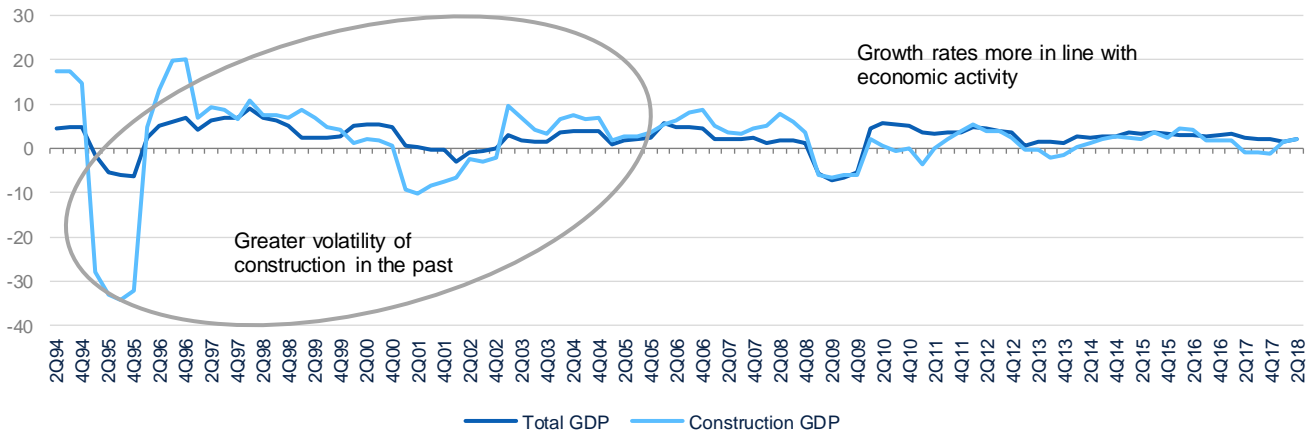
First of all, we consider the components of the GDP of construction, according to the classification of the INEGI national accounts system. Next, we consider gross capital formation in the sector, since it is one of the main indicators of the industry's business cycle, it reflects more clearly the origin of the resources invested, as well as the use in the real estate market as a whole. This distinction is important because, although investment in the construction of houses continues to be significant, that aimed at the construction of productive buildings (industrial warehouses, shopping centres and offices) has undergone notable development and has undoubtedly played a central role in the economic cycles of the industry in recent years.

Construction, showing shorter growth cycles in the last decade

In order to study the economic cycles of the construction industry it is necessary to consider as extensive a time window as possible. In this way, it is possible to appreciate not only the magnitudes, but also the amplitude of those moments in which the industry has gone through booms or depressions. The GDP of construction is particularly interesting because as the number of players in the industry has increased, it has become more stable over time. Figure 1 shows that, over the years, the performance of construction and the economy, both measured by the annual growth rate, can be defined as procyclical. This means that, when the economy grows/decreases, the other registers similar behaviour, although in magnitudes which are not necessarily comparable.

For example, between 1995 and 2007, construction GDP growth rates were highly synchronised with the economy as a whole, as they used to describe similar trajectories, but in a proportionally greater magnitude. On the other hand, after the crisis of 2009, the performance of this industry continues to describe a behaviour similar to the total GDP, but in magnitudes that tend to converge. With this, we can confirm that, the cycles of the industry have been much more stable in recent history as opposed to past decades.

Figure 3a.1 Total GDP and GDP of construction (% change YoY)



Source: BBVA Research based on data from INEGI

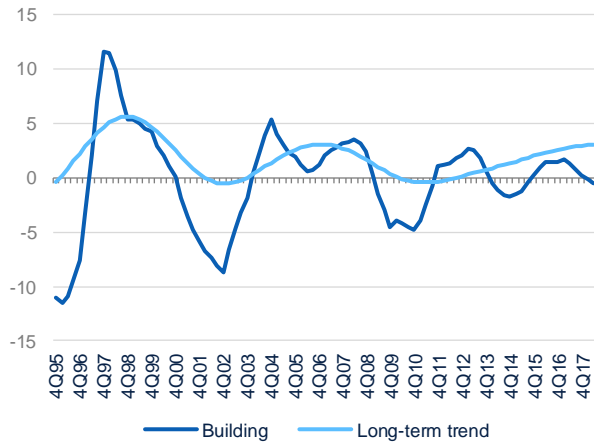
As mentioned above, the GDP of construction is divided into three components. The most important is building, which represents 60%, while civil works and specialised works represent 30% and 10% respectively. Because we have the greatest weight in the industry, we will focus the details on the first two, for which we apply to the corresponding time series a Hodrick-Prescott filter (1980) that facilitates the decomposition in the trend and cycle in each case.

In this way, when observing with greater detail the components of the GDP of construction, we observe that, for the case of construction, that practically dominates the behaviour of the industry, the economic cycles register effectively less variability, although they have greater amplitude. This is largely explained by the inward equity of production in recent years, since almost 80% of the total is divided between housing and productive buildings.

In the period of our study, there are moments in which the performance of building has clearly surpassed its long-term trend. The most recent case was observed between 2011 and 2013. From then until the second quarter of 2018, the growth of building has been below its potential.

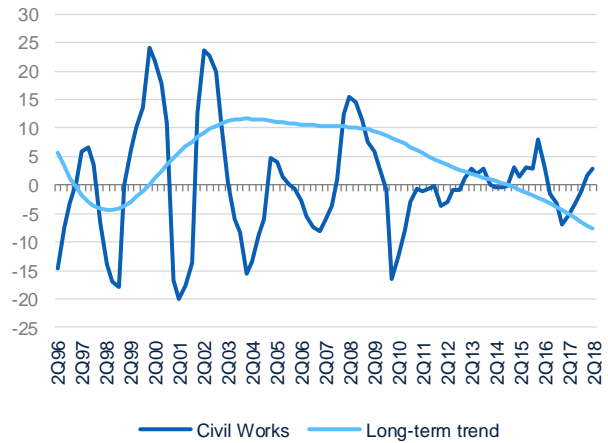
On the other hand, civil works have described much more erratic and unstable economic cycles. Although its performance notably managed to overcome its long-term (potential) trend several times, after the crisis of 2009 it took four years to recover. In addition, the succession of cuts to the budget by the federal government in recent years was expected to already be causing a marked trend towards a lower potential output of civil works. In fact, the last episode with the increased public investment in this area was implemented to mitigate the effects of the 2009 crisis and since then, its share in construction has been decreasing and at present represents 25% of the total.

Figure 3a.2 GDP of building construction (Long-term cycle and trend, annual % change)



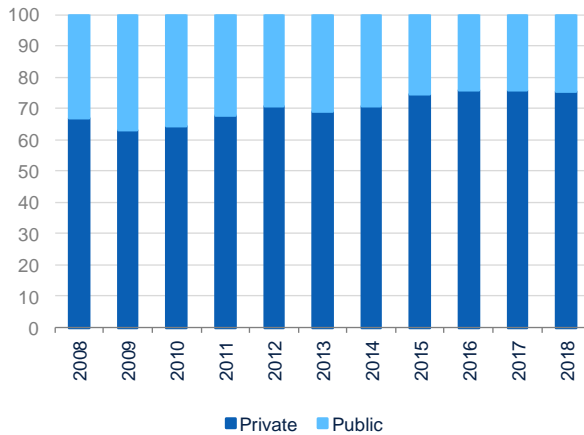
Source: BBVA Research based on data from INEGI

Figure 3a.3 GDP of civil works (Long-term cycle and trend, annual % change)



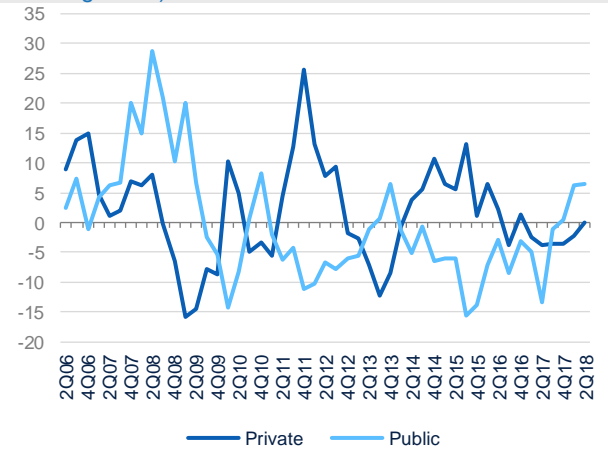
Source: BBVA Research based on data from INEGI

Figure 3a.4 Investment in construction (annual % share)



Source: BBVA Research based on data from INEGI

Figure 3a.5 Investment in construction (% change YoY)



Source: BBVA Research based on data from INEGI

Economic cycles anticipate behaviour in the real estate sector

According to economic theory, in a market with perfect competition, the decision to produce an additional unit by entrepreneurs depends on the relationship between prices/costs; that is, through the margins. In the case of the real estate sector, faced with an expectation of higher prices and/or greater demand, incentives to build are imminent.

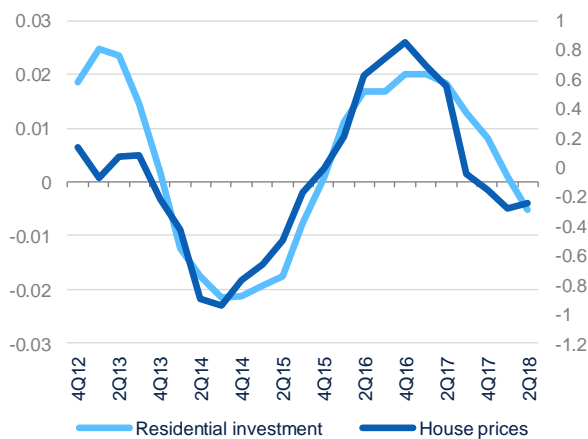
Based on Kindland and Prescott (1982), one of the main characteristics of the real estate market is that on the supply side it is less elastic (sensitive) because it is a sector that can face various costs in the search for available land to build on, as well as mobility of production factors. That is why the expectation about the future behaviour of prices is

decisive. The fact that the construction of any real estate (housing, buildings, industrial buildings, etc.) takes a relatively long time explains this behaviour based on expectation.

On the demand side, there may also be shocks that result in increases in the cost of rentals and other real estate services. This process would end once the market ends up absorbing the surplus supply and once that happens, rents and demand for services will adjust to the equilibrium price level.

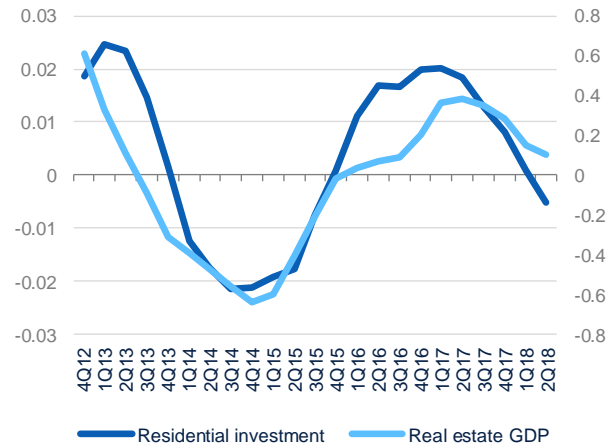
In the case of this study, we evaluated the synchrony between the recent cycles of investment in the construction industry and the cycles of the housing price index of the SHF (Sociedad Hipotecaria Federal). While on the demand side we employ the GDP of real estate services, which includes rental services and others related to the use of real estate.

Figure 3a.6 Residential investment and house prices (annual % change)



Source: BBVA Research based on data from Infonavit

Figure 3a.7 Residential investment and Real Estate GDP (% change YoY)



Source: BBVA Research based on data from Infonavit

The results show the synchrony between residential investment and house prices. In this case, the correlation between the cycles is 87%, confirming that the decision of the builders to increase the building is aligned with the expectation of the capital gain of the properties. In turn, the GDP cycle of real estate services showed a 90% correlation with the cycle of residential investment.

After the crisis of 2009, the construction industry has undergone important changes that are reflected in more stable economic cycles with respect to the total economic activity, where the participation of the private sector has increased. Since then, both housing and productive building have become widespread in a balanced and versatile way in the market. As far as civil works are concerned, they will maintain a negative performance, which even depresses their long-term trend.

The correlation between the cycles of investment in housing construction with the SHF price index and the GDP of real estate services increased from 2012 onwards. In particular, the GDP of real estate already represents 11% of the total GDP, which reflects an increase in demand not only for rental services, but also for administration, collection, appraisals, etc., on the part of new housing developments, but also for buildings with a productive purpose.

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Kydland, F. E., & Prescott, E. C. (1982). Time to build and aggregate fluctuations. *Econometrica: Journal of the Econometric Society*, 1345-1370.

Witkiewicz, W. The Use of the HP-filter in Constructing Real Estate Indicators. *JRER*. Vol 23. No. ½ 2002.

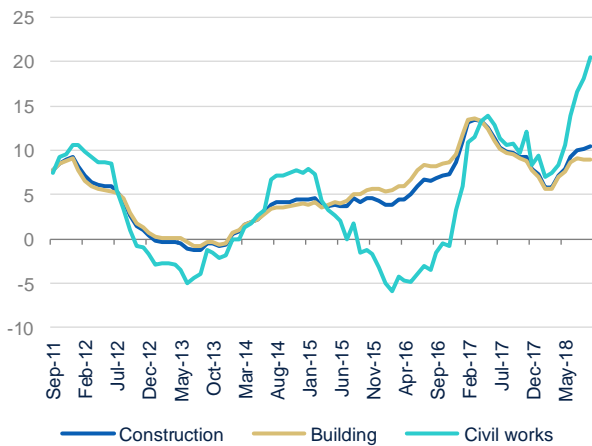
3.b An approach to the prices faced by builders

During the current decade we have seen substantial increases in the National Producer Price Index (INPP) for construction. In three periods the rate of increase of this index has exceeded 10%, which puts pressure on activity in this sector, but also infrastructure costs and property prices. An example is the appreciation of housing that continues despite the fact that we are in a period of low demand. In this section of *Mexico Real Estate Outlook*, we conduct a brief review of this index to see how prices are being adjusted and to have a short-term perspective on the increase in construction costs.

Structure of the Construction INPP similar to that of GDP

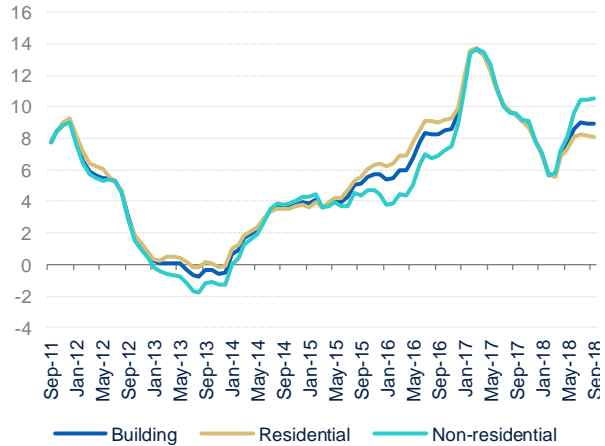
The Construction INPP is made up of two sub-indices, namely the Building sub-index and the Civil Works sub-index. It is therefore the same structure of GDP as one would expect. In turn, the Building index is made up of the Residential and Non-Residential sub-indices. In the aggregate construction index, the highest correlation corresponds to Building, since it has a greater weight in the National System of National Accounts. The Construction INPP series of variations are better synchronised with the variations of the Building sub-index. This dynamic is different in the case of the Building sub-index, where its two sub-indices have a similar behaviour, although the residential component seems to fit better than the non-residential sub-index.

Figure 3b.1 Construction INPP (% change YoY)



Source: BBVA Research based on data from INEGI

Figure 3b.2 Construction INPP (% change YoY)



Source: BBVA Research based on data from INEGI

During the second half of 2011, we observed a significant increase in Construction INPP, reaching an annual rate of 9.3% at year-end. From then on, the increase in these prices began to slow down and by August 2012 it was already below the 5% barrier, even during 2013 the index showed negative rates. As we have previously pointed out, that year was characterised by a fall in residential building in the wake of the 2009 economic crisis; but also began the period when public investment in infrastructure began to fall. These two effects could have resulted in a lower demand for inputs for these works, as well as a lower demand for this production.

Although the index continued to oscillate, it did not exceed the 5% barrier until 2016 and during 2017 it even exceeded the 10% annual rate; this in spite of the contraction of the sector, since during the previous year, the GDP of construction closed in negative figures due to the fall in civil works and the slowdown in building. This is the opposite

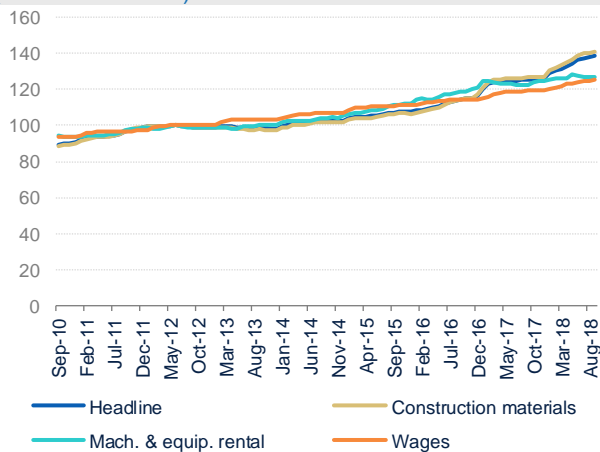
result to what was observed in 2013, so that the variation in economic activity in the construction sector would not explain the increase in the index.

Now, in mid-2018, prices in the sector are once again accelerating. At the same time, we observed a slight advance in construction activity, an incipient recovery in the sector measured by sector GDP. In any case, their behaviour in the periods mentioned has different histories between production and the level of the Construction INPP.

A glance at inputs sheds light on how the Construction INPP will change

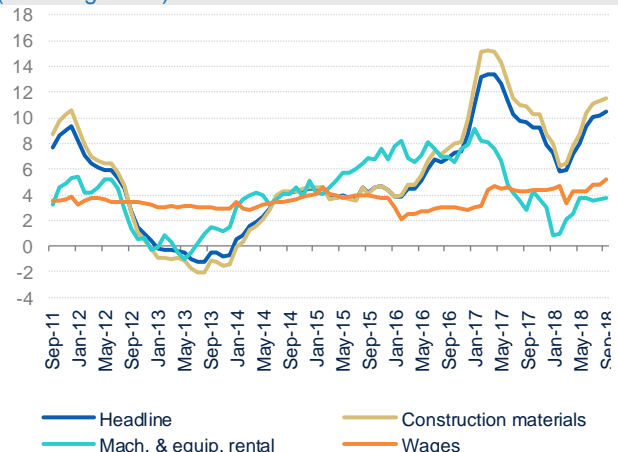
The Construction INPP is also broken down by sub-indices of the inputs of this sector. The three sub-indices are: 1) Materials, 2) Rental of machinery and, 3) Remunerations. With this level of detail, we can identify which are the inputs that drive the movements of this index. For example, variations in the Construction INPP look better correlated with variations in the materials sub-index, while remunerations have remained virtually unchanged so far this decade.

Figure 3b.3 Construction materials INPP (Base 2012 = 100)



Source: BBVA Research based on data from INEGI

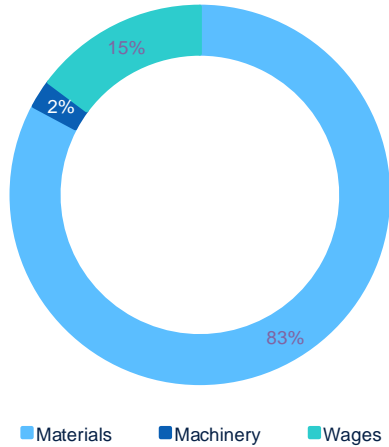
Figure 3b.4 Construction materials INPP (% change YoY)



Source: BBVA Research based on data from INEGI

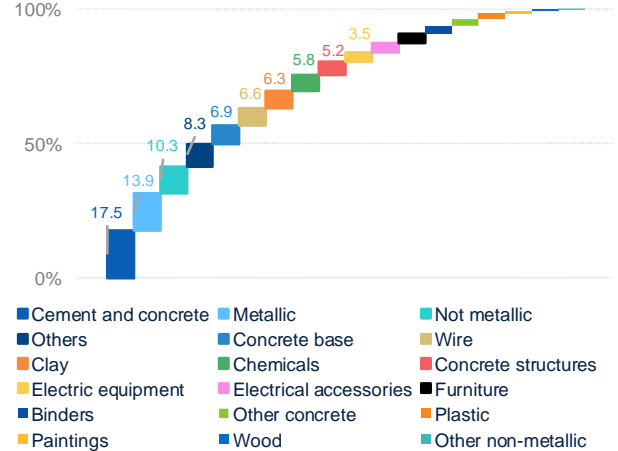
Based on both the weighted data published by INEGI and our own estimate, we estimate that the sub-index of materials explains about 83% of the variations of Construction INPP, while remunerations account for 15% and the rental of machinery and equipment only 2%. In turn, within the sub-index of building materials, 10 of 18 sub-indices explain 84% of the variations of this sub-index; where cement and concrete stand out, metallic and non-metallic products, as well as concrete-based products among others.

Figure 3b.5 Construction materials INPP (share %)



Source: BBVA Research based on data from INEGI

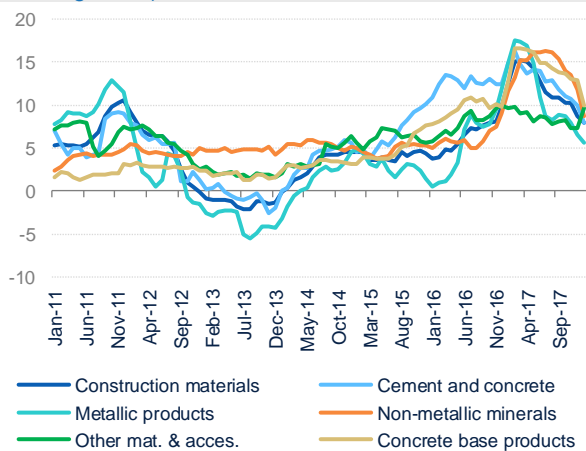
Figure 3b.6 Construction materials INPP (share %)



Source: BBVA Research based on data from INEGI

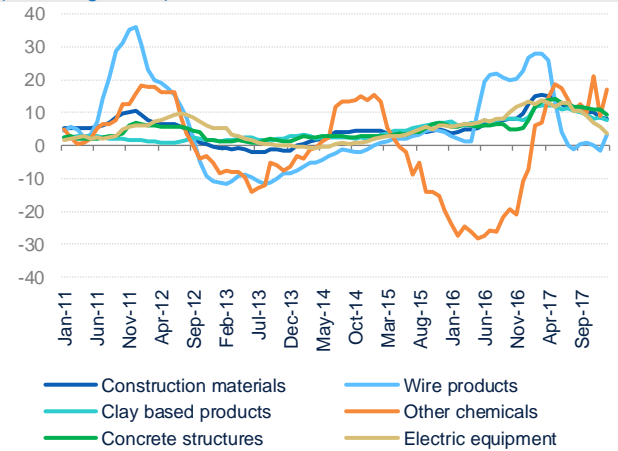
Disaggregating the ten highest weighting sub-indices, we can see that increases in the price level of cement and ready-mix are the highest in 2011 and from 2016 to 2017. This explains the rise of the Construction INPP, because it is the input with the highest weighting, almost 18% of the materials sub-index. In this same sense, some concrete derivatives are also among the most important contributors to the observed increases, followed by metallic products such as rods and some metallic structures. The weight of these inputs is so relevant that they are also those that move the Construction INPP down when these decrease. On the other hand, the sub-index of wire products has presented the greatest increases, even above 20% in annual rate; however, its impact within the Construction INPP is limited by its weight of 6.6% within the sub-index of materials. On the other hand, clay-based articles and concrete structures show us a very similar dynamic both in variations and in the stages of their cycle to the sub-index of materials; although their weight is slightly lower than that of wire products.

Figure 3b.7 Construction materials sub-indices (% change YoY)



Source: BBVA Research based on data from INEGI

Figure 3b.8 Construction materials sub-indices (% change YoY)

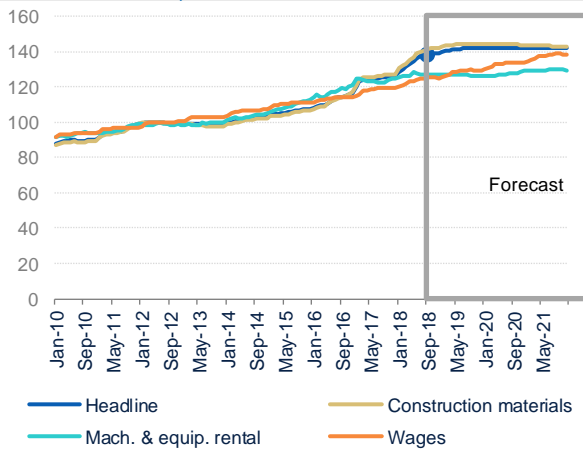


Source: BBVA Research based on data from INEGI

The Construction INPP will continue in the high part of the cycle in the short term

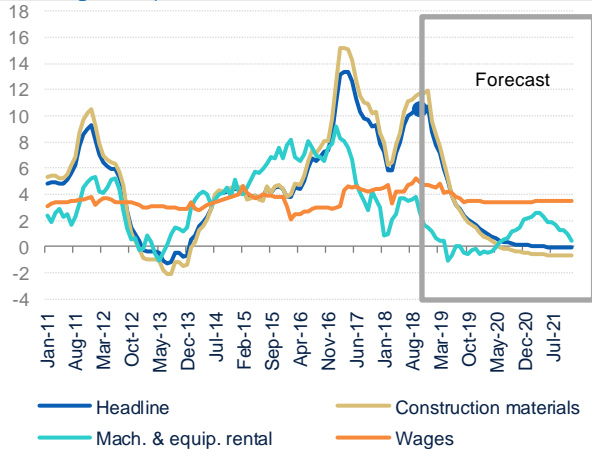
With the decomposition of the Construction INPP in the three input sub-indices, we estimate how the sector's price level will behave during the following years. According to our results, this index will continue to have annual rates above 5% until the second half of 2019. This is mainly due to the fact that the materials sub-index will continue to increase. In contrast, wages will only grow in line with expected inflation, as they have practically done for the entire current decade. The machinery and equipment rental sub-index will have a dynamic that is unrelated to the other two sub-indices, as we estimate it will continue with the downward trend and only expect slight exceptional increases, mainly associated with the depreciation of the exchange rate, as the income prices of these assets are usually defined in foreign currency.

Figure 3b.9 Construction materials INPP (Base 2012 = 100)



Source: BBVA Research based on data from INEGI

Figure 3b.10 Construction materials INPP (% change YoY)



Source: BBVA Research based on data from INEGI

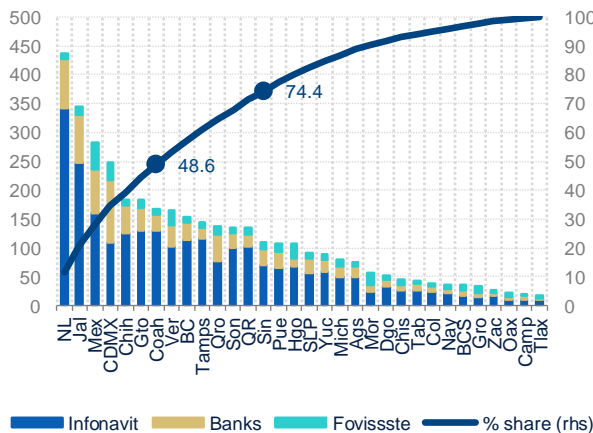
Thus, we do not expect construction input prices to fall in the short term. Therefore, the impulse to the sector should come from greater financing, public policy focused on investment in infrastructure and a demand for commercial and residential real estate. However, we estimate that for the second half of 2019 we will begin to see the moderation of these prices.

3.c Population, lag and employment; their contribution to the state distribution of the mortgage market

In a review of the year 2012 to the middle of 2018, the last date with official figures from both public institutions and banks, we observe how the total mortgage loans granted by Infonavit, Fovissste and banks are distributed at the state level. Not surprisingly, the largest number of mortgages originate in states with larger economies. The exception is the state of Chihuahua, which is the 11th-largest economy but occupies fifth place both in the number of loans and the amount granted.² This is partly explained by the significant activity by the region’s builders, demand driven by manufacturing activity on the state’s northern border and the promotion of housing subsidies during 2014 and 2015.

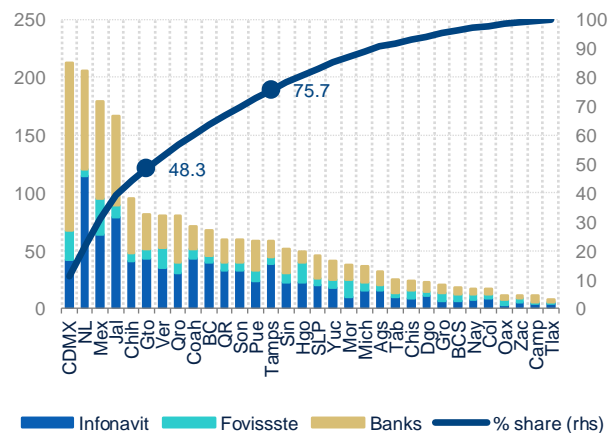
We can also observe a high concentration of this flow of resources to housing. Only seven states accounted for 49% of the number of mortgages, and only six accounted for 48% of the total amount awarded by these three institutions. And less than half, only 14, got 75% of credits and amount. In terms of number, Infonavit is the one that granted more loans in each and every one of the states; while, if we consider the total value of the mortgages generated, Infonavit maintained supremacy in 21 of the 32 states and retail banking in the rest.

Figure 3c.1 Mortgage origination 2012-2018 (Millions of loans and percentage)



Source: BBVA Research based on data from Infonavit, Fovissste and the CNBV

Figure 3c.2 Mortgage origination 2012-2018 (Billions of pesos and percentage)



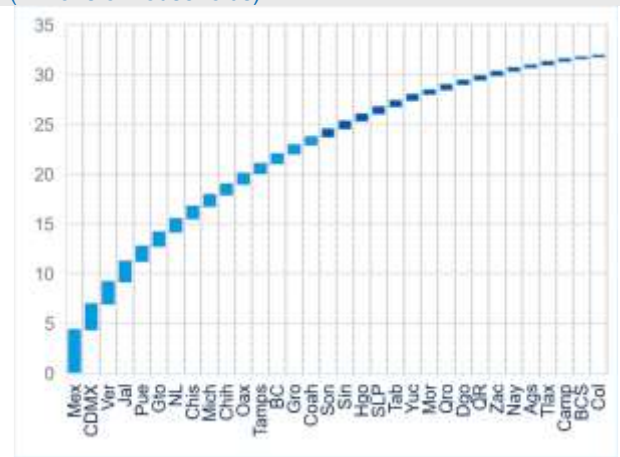
Source: BBVA Research based on data from Infonavit, Fovissste and the CNBV

The size of state economies does not fully explain the distribution of the mortgage market during the period studied. In addition to Chihuahua, we can observe other cases where this rule is not followed. For example, Veracruz, which despite being the fifth largest state economy in the country, ranks seventh in terms of amount and eighth in terms of the number of loans. Or the case of Querétaro, which although being the 16th economy, is the 8th in terms of amount and the 11th in terms of the number of mortgages originated. Probably the most extreme case is the state of Campeche, which, even though in recent years has had falls in its GDP due to lower oil activity, remains the seventh largest state economy, but ranks penultimate in both mortgage origination measures.

2:Based on 2016 state GDP, the latest official figures available at www.inegi.org.mx

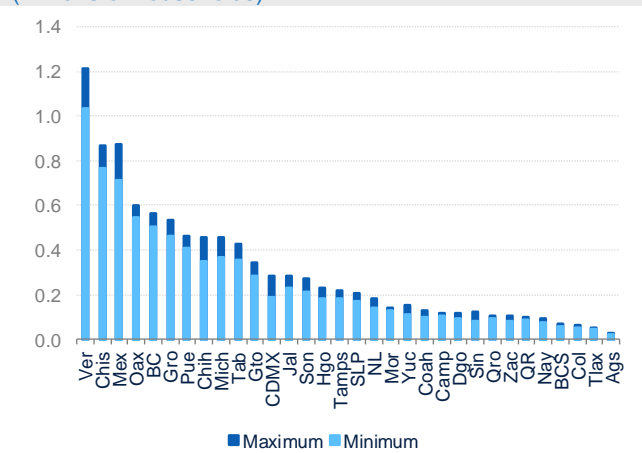
Two additional factors that have been considered to measure the potential of the housing market have been population size and housing lag. Of course, the larger the population or its growth, the greater the housing needs. In the same vein, it could be expected that the states with the greatest housing lag could demand more mortgages. In fact, if we look at the number of households, Campeche is the penultimate state, which would explain its position regarding the placement of housing loans. This also seems to be true for states such as the State of Mexico, Mexico City and Jalisco, which have the largest number of households. In contrast, if we look at the state distribution of the housing lag, there is no direct relationship.

Figure 3c.3 Average households 2011 to 2018
(Millions of households)



Source: BBVA Research based on Conapo figures

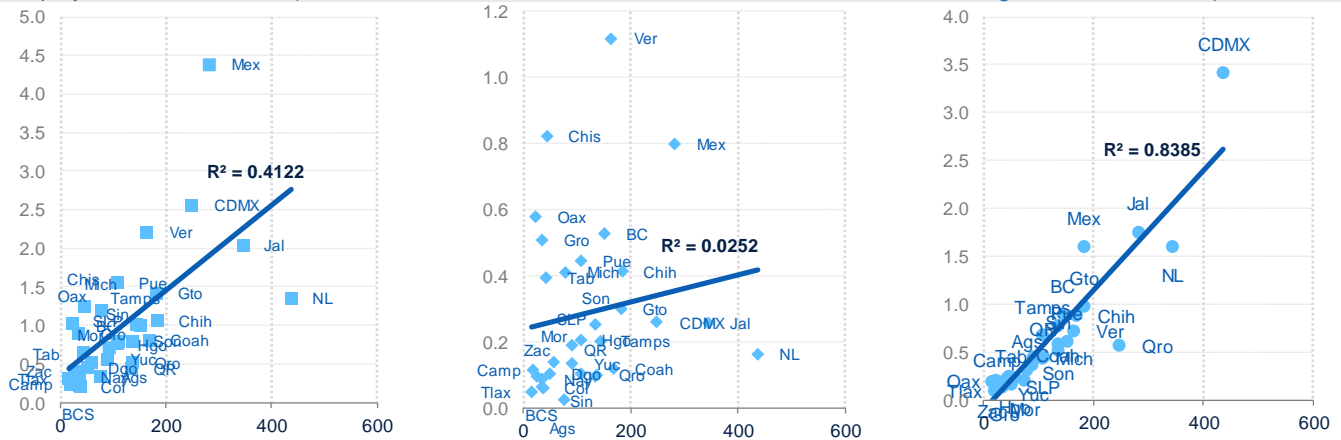
Figure 3c.4 Housing lag 2011 to 2018
(Millions of households)



Source: BBVA Research based on data from the SHF

Below, we present three scatter diagrams relating home mortgage origination by state with three different variables, namely, the number of households, the housing lag and the use of the IMSS, the latter as an indicator of economic activity. At the state level, the ratio of the number of mortgages to the number of households shows a low adjustment, i.e. an unclear association, although it cannot be completely dismissed. Graphically we show the adjustment with the indicator known as R^2 , which, *broadly speaking*, points to only 44% of mortgages being related to the number of households. This same exercise performed between state mortgages and the average lag observed during the period 2008 to 2016 (years for which there is an official lag figure), tells us that this associative relationship would only be explained in little more than 2%; so we can dismiss the housing lag as a relevant factor for the placement of housing loans. On the other hand, in performing the same exercise between the number of mortgages and IMSS employment, the association soars to almost 84%.

Figure 3c.5, 3c.6 and 3c.7 Relationship between mortgages and the number of households, housing lag and IMSS employment 2012 to 2018 (Millions of loans, millions of households and millions of workers registered in the IMSS)



Source: BBVA Research based on data from Infonavit, Fovissste, CNBV, SHF and IMSS

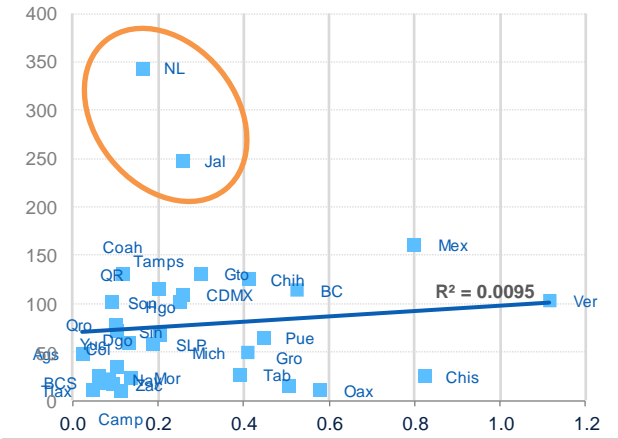
It could be considered that the above results are due to a possible bias created by retail banking, which is focused on a middle-income and residential segment, while public institutions have a more social profile. For example, until a couple of years ago Infonavit devoted the largest proportion of the credit amount to the social interest segment and to workers earning less than 5 times the minimum wage. In the same vein, the National Housing Commission (Conavi) grants subsidies to people who earn less than 2.5 times the minimum wage, even for a period up to 5 times the minimum wage, in order to reduce the housing lag.

The housing lag does not explain Infonavit's loans or Conavi's subsidies

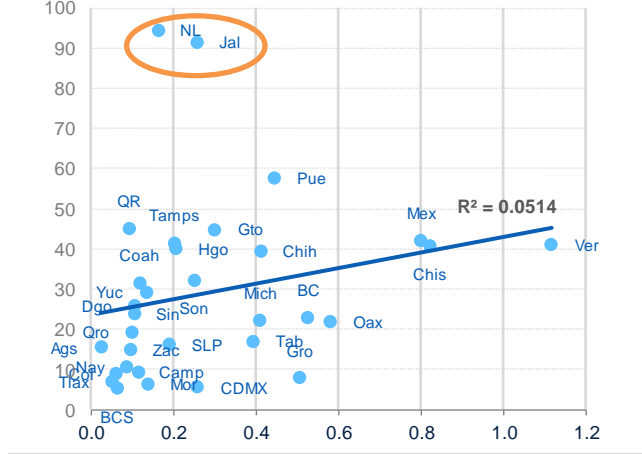
As mentioned in the previous section, IMSS employment is presented as the main variable, followed by the number of households, to explain the state distribution of the mortgage market. Meanwhile, the housing lag does not appear to be associated with the total housing loan received by each state. In this section we perform the same exercise, but this time only considering Infonavit credits and Conavi subsidies in order to avoid a possible bias caused by Fovissste and retail banking that focus primarily on middle-income and residential segments.

In the first case, we can observe that the associative relation between the Infonavit credit and the housing lag is practically nil, only 0.95% of the originated credit can be associated with the lag. However, the explanation may be in part that Infonavit's main task is to care for its beneficiaries and not the housing lag. For this reason, the reduction in the lag is limited to their beneficiaries being in this situation and also applying for credit, which is not the decision of the Institute.

Graph 3c.8 Lag and Infonavit loans 2012-2018
(Millions of households and thousands of loans)

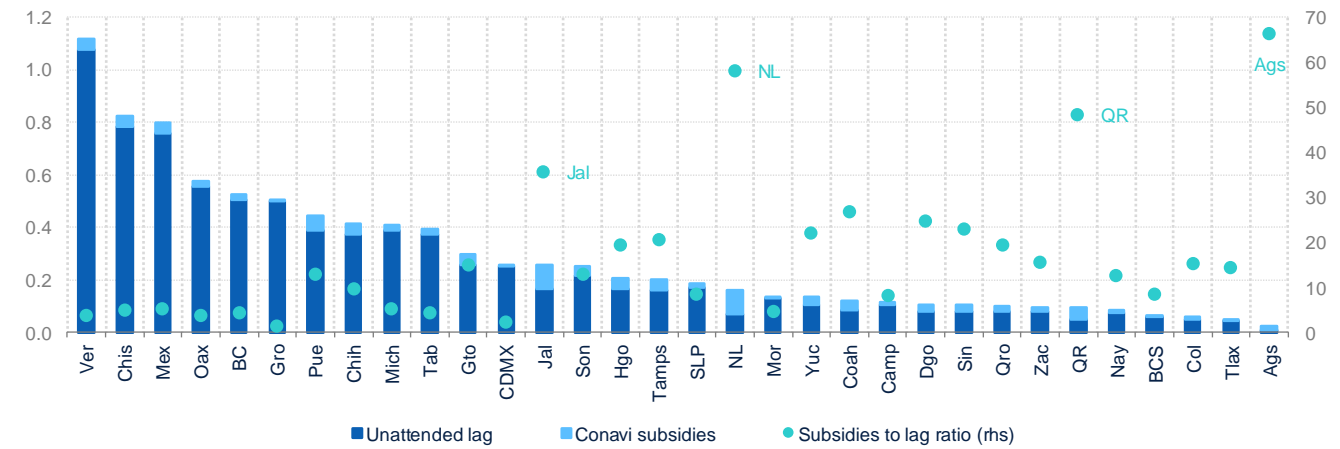


Graph 3c.9 Lag and Conavi subsidies 2012-2018
(Millions of households in lag and thousands of initiatives)



On the other hand, Conavi does aim to guarantee access to housing and the best indicator of accessibility or lack of it, so far, has been the housing lag. When we relate Conavi’s initiatives, that is, the number of subsidies granted with the housing backlog, this ratio only has an association of 5%, that is, practically nil.

Figure 3c.10 Housing lag, Conavi’s subsidy initiatives and proportion of subsidies to the lag
(Millions of households, thousands of initiatives and percentage)



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

In fact, as shown in Figure 3.10, the largest number of subsidies goes to states with the least lag; while those with the greatest housing lag receive the fewest subsidies. For example, Veracruz, Chiapas, the State of Mexico, Oaxaca, Baja California, and Guerrero are the states with the greatest housing lag, but they are the ones that proportionally receive the least amount of subsidies. In contrast, states such as Jalisco, Nuevo León, Quintana Roo and Aguascalientes receive the largest amount of subsidies relative to their total lag even though they are halfway up the distribution or even in the states with the lowest housing deficits. In summary, the subsidy is not directed at the states with the

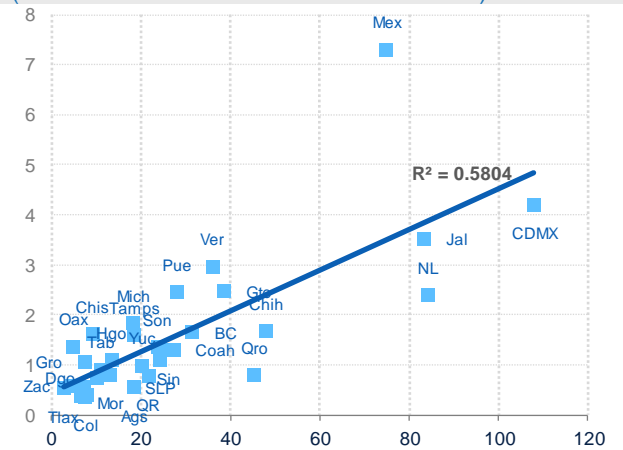
greatest housing lag, but to the states with the highest economic activity such as Nuevo León and Jalisco; and this deficit hardly explains the distribution of subsidies or credit at state level.

Although in all states there is a lag to catch up with, the greatest impact would be on the states most affected by this situation. This result is also explained by the scheme with which the subsidies are granted, since there must be savings for the down payment, a mortgage loan and be within the geographical areas eligible for support. Therefore, in order to receive the Conavi subsidy, a certain economic level is required that gives access to the mortgage credit in the simplest case, which implies a minimum level of economic activity to access it.

States with the most employment capture more bank mortgages

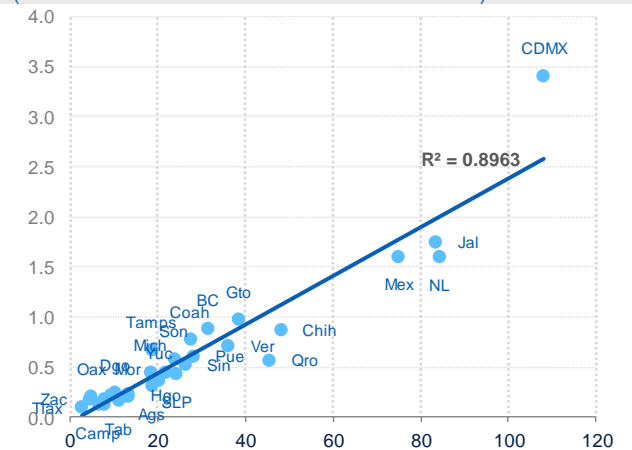
The geographical location of the bank's mortgage credit is practically determined by the generation of employment. Although the population factor, measured through the number of households in each state, is relevant, employment generation is the main component that can be associated with the state distribution of housing finance by retail banks. Other factors that are also relevant is the general economic activity, measured through the quarterly indicator of state economic activity, the perspective of this, that is, the expectations that are had on the state to maintain a good economic performance, and particularly the expectations of appreciation of real estate, among others. Other relevant factors, but of lesser weight, are the availability of housing, that is to say, the supply, as well as the expectation of growth of the cities within the states, the perception of security and availability of public services.

Figure 3c.11 Relationship of bank mortgages and ENOE (Thousands of loans and millions of workers)



Source: BBVA Research based on data from Infonavit, Fovissste, CNBV and Conapo

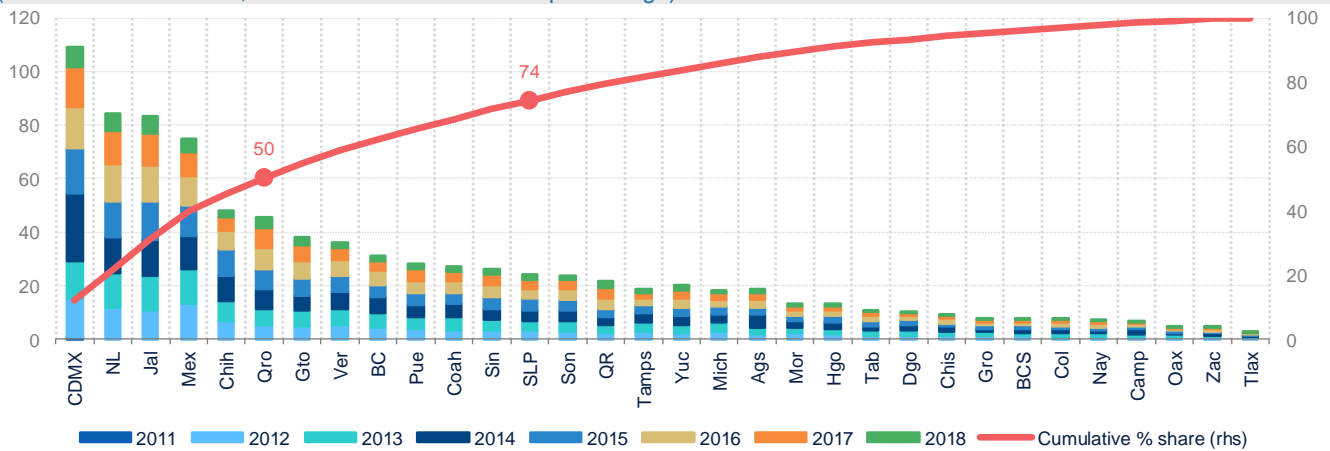
Figure 3c.12 Relationship of bank mortgages and IMSS (Thousands of loans and millions of workers)



Source: BBVA Research based on data from Infonavit, Fovissste, CNBV and SHF

By performing the same exercise as with the rest of the mortgage market players, when we review the relationship between the bank's home loan origination and employment, this variable can be associated with the placement of credit by more than 50%. For example, when using the total paid employment provided by the National Occupation and Employment Survey (ENOE), the indicator used presents a level of 58%. Moreover, if we use the IMSS employment, this indicator increases to 90%.

Figure 3c.13 Origination of bank mortgage loans by state from 2012 to 2018
(Millions of households, thousands of initiatives and percentage)



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

In this way, the state economies with the most employment such as Mexico City, Nuevo León and Jalisco are the ones that have concentrated most of the mortgages. Chihuahua again stands out as the seventh state in terms of the number of workers registered in the IMSS, but the fifth to receive the most financing for housing during the study period. Querétaro can also seem surprising, as this state is number thirteen in terms of the number of jobs registered in the IMSS; however, it is the eighth in terms of new formal private jobs registered.

Figure 3c.14 Map of bank credit 2012-2018
(Cumulative % share)



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

Figure 3c.15 Map of IMSS 2018 workers
(Cumulative % share)



Source: BBVA Research based on data from the IMSS

As can be seen in the maps, except for the cases of Sonora and San Luis Potosí, the relationship between formal and private jobs and the capture of bank mortgage credit is almost direct. Geographically another relationship that can be appreciated is that the states with more employment and more housing finance belong to the industrial corridor, mainly export manufacturing, except for Sinaloa whose agricultural weight is greater, but also with an export profile.

Formal employment, and not the lag, defines the potential of the mortgage market

This analysis of state loan figures gives us a couple of contrasting results. The first seems obvious: where employment is generated is where the mortgage credit originates. Note that mortgage loans are granted where the borrower decides to use it and is not a decision of the credit institutions, public or private. However, the potential of the mortgage market has been estimated more based on the size of the population, as well as on the lag population. And here comes the second result contrary to what was expected: the housing lag does not explain the housing market either in the case of public institutions, or in the distribution of housing subsidies. The latter is of particular interest, since the states with larger economies and greater potential are those that have received more subsidy to the detriment of the south-eastern states that are those that have more lag, but receive fewer resources. This at the same time puts under the spotlight the opportunity of the new public administration that will begin next December and that according to its housing policy plan, the impulse will be to the states of the Mexican south-east. If fulfilled, we could see significant progress in combating that lag.

On the other hand, the housing market is currently in the lower half of its economic cycle. For this reason, the mortgage market, being demand derived from the former, has not grown in real terms during 2018. We estimate that this year could end with almost all estates falling in their placement of mortgages. However, by the end of this year or by 2019, Quintana Roo, Querétaro and Guanajuato could be the first to grow based on their performance in terms of economic activity, and job creation in particular. The case of Quintana Roo is of special interest, as it has even led to increased immigration to the state. Nuevo León, Jalisco, State of Mexico and Mexico City will continue to concentrate the largest number of mortgage loans from both banks and public institutions, but the dependence of the first two in the segment of social interest and subsidies could lead them to lose some of their share. The metropolitan area of Mexico City will continue to concentrate most of its housing finance due to the substantial increase in appreciation, which is significantly different from the rest of the Mexican market. Finally, if support is given to the states in the south of the country for their economic development as proposed by the next administration, the potential of the mortgage market would also extend to these states.

4. Statistical annex

Table 4.1 Annual macroeconomic indicators

	2011	2012	2013	2014	2015	2016	2017	2018f	2019e
Real GDP (Annual % change)	3.7	3.4	1.6	2.8	3.3	2.6	2.3	1.9	2.0
Real private consumption (Annual % change)	3.4	2.1	2.0	2.1	2.7	3.5	3.3	2.4	2.1
Real government consumption (Annual % change)	3.1	3.4	0.5	2.6	1.9	2.3	0.1	2.2	1.1
Real construction investment (annual % chge.)	3.5	2.1	-5.3	2.2	1.5	-0.3	-3.7		
Residential	4.2	1.4	-5.0	3.2	3.7	4.2	1.2		
Non-residential	2.9	2.7	-5.5	1.5	-0.1	-3.8	-7.9		
Total formal private employment (IMSS)									
Thousands of persons (average, sa)	15,154	15,856	16,409	16,991	17,724	18,401	19,206		
Annual % change	4.3	4.6	3.5	3.5	4.3	3.8	4.4		
Average salary (IMSS)									
Nominal pesos per day, average	260.1	270.8	281.5	294.1	306.4	317.9	333.2		
Real annual % change	1.1	0.0	0.1	0.4	1.4	0.9	-1.1		
Real total wages (IMSS, annual % change)	6.1	5.1	3.6	4.0	5.8	4.8	3.2		
Minimum general salary (daily)									
Nominal pesos	58.1	60.5	63.1	65.6	69.2	73.0	80.7		
Real annual % change	1.0	-0.1	0.4	-0.1	0.2	0.8	1.6		
Consumer prices (eop, annual % change)	3.8	3.6	4.0	4.1	2.1	3.4	6.8		
TIIE 28 average (%)	4.8	4.8	4.2	3.5	3.3	4.6	7.1		
10-year interest rate, Govt. bond (M10)	6.8	5.7	5.7	6.0	5.9	6.2	7.2		

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

Table 4.2 Annual construction and housing indicators

	2011	2012	2013	2014	2015	2016	2017	2018f	2019e
Real construction GDP (annual % change)	4.0	2.4	-1.6	2.7	2.4	1.9	-1.1	1.1	3.3
Building	4.2	2.7	-3.0	3.2	3.3	4.2	0.4	1.3	3.8
Civil engineering and major works	2.8	0.7	3.0	-1.6	-0.5	-9.2	-10.0	-3.8	5.4
Specialized construction work	5.6	4.2	-2.3	9.2	3.1	10.1	5.2	6.4	-1.9
Total construction employment (IMSS)									
Thousands people, average	1,199.5	1,275.2	1,289.8	1,383.5	1,504.0	1,537.1	1,602.4		
Annual % change	4.7	6.3	1.1	7.3	8.7	2.2	4.2		
Hydraulic cement sales (tons, annual % change)	1.5	2.1	-5.9	5.1	7.4	2.8	-0.1		
Ntnal. cement consumption (tons, annual % change)	1.4	2.5	-6.0	4.9	7.4	2.8	-0.1		
Construction companies ¹									
Real production value (annual % change)									
Total	3.2	3.4	-3.7	0.2	-0.1	-1.6	-3.5		
Building	6.3	2.0	-5.6	2.9	1.4	2.9	-1.9		
Public works	0.3	0.5	-4.4	-2.5	-0.3	-8.7	-9.6		
Water, irrigation and sanitation	10.5	1.9	-6.0	-5.0	-9.2	1.4	-10.7		
Electricity and communications	21.4	-6.8	-2.2	-11.0	9.8	24.2	-14.2		
Transportation	-2.8	-2.7	-7.8	3.8	-5.1	-6.6	2.9		
Oil and petrochemicals	-7.7	14.7	3.6	-10.7	10.8	-35.8	-44.6		
Other	6.2	36.4	10.6	1.4	-5.6	13.3	14.6		
Construction prices (annual % change)									
Headline	9.3	0.4	-0.7	6.5	2.3	8.7	7.9		
Construction materials	10.6	-0.2	-1.4	4.5	4.5	9.8	11.5		
Labor	3.8	3.2	2.9	3.5	4.2	2.9	4.4		
Equipment rental	5.3	-0.2	1.4	4.1	7.8	7.9	3.0		

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

Source: BBVA Research 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	2017	2018*
Number of loans granted (thousands)									
Total	637.7	599.3	607.0	583.7	609.4	599.2	571.9	560.9	550.3
Infonavit	475.0	445.5	421.9	380.6	387.0	393.0	369.1	388.824	389.001
Fovissste	87.8	75.2	64.3	65.9	63.1	64.4	63.4	51.647	49.186
Commercial banks and Sofoles	74.9	78.6	120.7	137.1	159.3	141.8	139.4	120.439	112.155
Reduction**	18.6	23.4	45.4	58.7	82.5	56.6	50.9	36.807	31.927
Individual credits	619.0	575.9	561.6	525.0	527.0	542.5	521.0	524.1	518.415
Financing flow¹									
Total	306.8	338.0	329.8	329.3	361.8	371.1	358.1	351.4	378.1
Infonavit	162.1	180.8	158.6	138.2	146.7	149.6	135.7	152.6	190.7
Fovissste	61.7	52.0	47.2	47.2	51.1	49.8	47.8	38.6	35.5
Commercial banks and Sofoles	83.0	105.1	124.0	143.9	164.0	171.6	174.6	160.2	151.9
Commercial banks current loan portfolio									
Balance end of period ¹	484.0	527.6	560.1	604.9	637.8	695.4	745.4	757.3	781.0
Delinquency rate (%)	3.4	3.2	3.1	3.5	3.3	2.8	2.4	2.5	2.4

Notes: As of 2011 data do not considers Sofoles/Sofomers

As of 2008, the SHF index of housing prices is used as a price deflator.

* As of June

** 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 Research with Banco de Mexico, ABM & CNBV data

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

	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18
National	8.2	6.7	8.1	8.0	6.7	7.5	5.1	6.9	5.0	7.4	8.7	9.9
Aguascalientes	9.0	6.9	8.2	7.4	6.1	7.2	5.0	7.1	4.9	7.1	8.4	9.7
Baja California	7.0	5.7	7.2	7.3	6.3	6.9	4.7	6.5	4.2	7.0	8.9	10.3
Baja California Sur	6.7	5.9	8.8	10.3	9.7	11.0	7.4	8.3	5.4	6.8	8.2	9.0
Campeche	8.6	6.8	8.9	9.8	8.6	9.7	6.3	7.5	5.2	6.8	8.1	8.9
Coahuila	8.4	6.7	8.2	7.9	6.5	7.6	5.2	7.0	4.4	6.3	7.3	8.2
Colima	8.3	6.3	7.3	7.4	6.5	7.8	6.0	7.6	5.3	7.7	8.6	9.7
Chiapas	8.5	6.7	8.0	8.1	6.5	7.2	4.8	6.3	4.1	6.6	8.3	9.4
Chihuahua	7.7	6.1	7.5	7.5	6.5	7.5	5.3	7.0	4.3	6.1	7.2	8.1
Distrito Federal	10.2	7.8	9.0	9.3	8.3	8.9	6.7	8.5	6.9	9.6	10.2	11.1
Durango	10.3	8.0	8.7	7.7	5.7	6.2	3.9	5.9	4.0	6.7	7.9	9.0
Guanajuato	8.3	6.3	7.4	7.5	6.4	7.6	5.6	7.4	5.2	8.0	9.2	10.4
Guerrero	6.9	6.1	8.4	8.8	7.3	7.7	4.8	6.1	4.5	6.8	8.1	9.6
Hidalgo	10.2	8.0	8.2	6.9	4.9	5.8	3.8	5.6	3.0	5.1	6.4	7.6
Jalisco	6.8	6.0	7.4	7.3	5.9	6.2	4.5	7.1	6.0	9.2	11.0	12.4
México	7.7	6.6	7.7	7.7	5.7	6.1	3.9	5.3	4.0	6.5	8.0	9.7
Michoacán	9.0	7.2	9.0	8.6	7.2	8.2	5.6	7.5	5.8	8.7	9.6	11.0
Morelos	7.2	6.7	8.7	9.1	7.6	8.0	5.1	6.2	4.3	6.4	7.7	9.2
Nayarit	7.3	6.0	7.5	8.1	7.6	8.9	6.6	7.9	4.9	6.9	8.0	8.7
Nuevo León	8.5	6.7	7.8	7.8	6.6	7.7	5.9	7.9	5.7	8.3	9.4	10.2
Oaxaca	9.0	7.3	8.5	8.2	6.5	6.9	4.5	6.4	4.2	7.1	8.6	9.6
Puebla	8.5	7.7	8.7	8.4	6.7	6.8	4.7	6.8	4.7	7.8	9.6	10.7
Querétaro	7.2	6.6	8.5	8.8	7.3	7.6	4.9	6.2	4.8	7.1	8.7	10.4
Quintana Roo	5.9	5.5	8.6	8.8	7.9	9.3	6.1	7.0	4.0	4.9	6.8	8.5
San Luis Potosí	8.1	6.5	8.3	8.4	7.5	8.8	6.2	8.1	5.9	8.2	9.1	10.2
Sinaloa	7.4	5.8	7.5	8.0	7.4	8.8	6.5	8.1	5.7	7.9	8.9	9.9
Sonora	8.2	6.5	7.7	7.6	6.4	7.4	5.0	6.3	3.6	5.3	6.7	7.9
Tabasco	9.1	7.6	8.9	8.5	6.6	7.1	4.6	6.7	4.9	7.8	9.5	10.9
Tamaulipas	10.7	8.1	8.8	8.4	6.7	7.6	5.2	6.5	4.0	5.8	7.0	8.0
Tlaxcala	10.4	7.9	8.5	7.3	5.4	6.0	4.1	6.2	3.9	6.2	7.1	7.8
Veracruz	9.2	7.5	8.9	8.2	6.3	6.6	4.0	5.6	3.5	5.9	7.1	8.3
Yucatán	7.6	5.8	6.9	7.2	6.7	7.8	5.9	7.9	5.5	8.1	9.4	10.3
Zacatecas	9.3	7.1	8.2	7.7	6.6	7.3	4.9	7.2	5.4	8.3	9.4	10.0

Source: BBVA Research with SHF data

Table 4.5 Quarterly macroeconomic indicators

	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18
Real GDP (annual % change)	4.0	2.8	2.8	2.2	2.2	3.3	3.0	3.0	1.7	1.6	2.3	1.6
Real private consum. (annual % chge.)	3.0	3.7	3.8	3.2	3.8	3.4	3.2	4.5	3.1	2.5	3.5	2.1
Real gvmnt. consum. (annual % chge.)	0.2	0.8	0.4	2.2	3.5	2.9	1.3	0.3	-1.0	-0.2	1.5	2.3
Real const.investment (annual % chge.)	4.4	-3.4	3.1	0.8	-5.0	0.1	-3.0	-6.2	-3.0	-2.6	-0.4	1.6
Residential	11.6	0.8	7.9	6.7	-2.8	5.8	5.6	-2.8	2.0	0.3	3.3	3.8
Non-residential	-0.8	-6.3	-0.4	-3.9	-6.7	-4.3	-9.7	-9.3	-7.3	-5.1	-3.8	-0.5

Source: BBVA Research with Inegi data

Table 4.6 Quarterly construction and housing indicators

	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18
Real construction GDP	3.7	2.4	4.6	4.2	1.8	1.9	1.8	-0.9	-1.0	-1.1	1.5	2.0
Vol. index 2003=100 (annual % chge.)												
Building	4.8	3.3	5.5	5.9	3.5	4.2	4.4	0.6	0.6	0.4	3.1	3.4
Const. engineering and major works	0.3	-0.5	3.9	-1.5	-7.0	-9.2	-13.7	-12.6	-11.2	-10.0	-7.6	-7.2
Specialized construction work	4.2	3.1	1.3	5.1	8.4	10.1	14.3	10.0	6.9	5.2	5.4	6.7
Construction companies ¹												
Real production value (annual % chge.)												
Total	0.0	-3.6	-0.6	-1.3	-2.7	-1.7	-1.6	-4.9	-4.8	-2.7	-0.2	1.5
Building	-0.5	-4.2	-2.6	1.7	5.7	6.1	0.6	-3.5	-3.4	-1.1	4.7	5.7
Public works	2.2	-2.3	1.9	-5.9	-15.3	-13.4	-10.9	-10.9	-9.2	-7.3	-8.1	-5.9
Water, irrigation and sanitation	-8.8	-15.3	1.7	-1.5	-2.1	6.8	-6.7	-4.6	-4.0	-24.5	-2.4	-9.1
Electricity & communications	13.7	15.8	17.5	36.4	30.2	13.4	9.1	-19.8	-27.8	-12.2	-10.5	-2.9
Transportation	-4.0	-10.7	-2.4	-5.9	-13.9	-3.7	2.4	4.3	5.3	0.1	-9.9	-8.8
Oil and petrochemicals	17.2	16.8	4.1	-32.0	-47.9	-55.8	-58.4	-52.1	-39.8	-17.7	1.0	11.6
Other	-8.6	-7.2	-2.5	7.3	24.4	23.2	35.0	14.9	5.3	8.3	8.5	10.2

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

Source: BBVA Research with Inegi and Banco de México data

Table 4.7 Quarterly housing market indicators

	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18
Home sales by organization (thousands of credits)												
Infonavit	90.7	113.4	78.0	103.6	89.6	97.9	76.0	100.2	101.8	110.8	74.7	101.7
Fovissste	17.1	11.5	13.9	19.3	15.8	14.5	10.4	15.0	12.0	14.3	9.8	13.1
Banks	22.4	23.5	19.2	22.2	26.0	24.2	21.0	20.7	19.8	22.2	17.8	20.5
Total	130.2	148.4	111.0	145.0	131.4	136.6	107.4	135.9	133.5	147.3	102.3	135.3
Financing (billions of December 2016 pesos)												
Infonavit	28.2	33.5	23.8	32.1	28.2	31.6	24.4	34.9	37.5	41.4	28.0	39.2
Fovissste	10.6	7.0	8.3	12.1	10.4	9.9	6.6	10.9	8.1	9.2	6.9	9.2
Banks	35.8	39.5	31.2	37.4	38.1	42.2	35.8	35.8	34.8	38.3	31.3	38.8
Total	74.6	80.0	63.3	81.6	76.7	83.7	66.9	81.6	80.5	88.9	66.1	87.2
Infonavit: number of credits to buy a house (thousands)												
Economic + Popular ²	59.1	83.0	54	71	58.4	60.7	50.2	67.9	64.1	68.3	47.8	65.4
Traditional	18.7	18.7	14	19	18.4	22.3	15.2	19.7	23.5	26.1	16.2	22.1
Middle income	10.2	9.7	8	11	10.0	11.6	8.3	9.9	10.9	13.0	8.5	11.3
Residential	2.3	1.7	1.6	2.3	2.3	2.9	2.0	2.4	2.8	3.1	1.9	2.6
Residential Plus	0.4	0.3	0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.4	0.3	0.4
Total	90.7	113.4	78.0	103.6	89.6	97.9	76.0	100.2	101.8	110.8	74.7	101.7

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

2: Includes new and used homes

Source: BBVA Research with INEGI, Infonavit, Fovissste, Banxico data

Table 4.8 Quarterly housing credit indicators

	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18
Commercial banks current loan portfolio												
Delinquency rate (%)	2.9	2.8	2.8	2.8	2.6	2.4	2.4	2.4	2.4	2.5	2.5	2.4

Source: BBVA Research with Inegi, Infonavit, Fovissste, Banxico data

Table 4.9 Monthly macroeconomic indicators

	J.17	J	A	S	O	N	D	J.18	F	M	A	M	J
IGAE (annual % change)	2.4	1.2	2.5	0.4	1.6	1.6	1.2	2.2	2.3	-0.6	4.5	2.2	1.2
Real constr. vol. (ann. % change)	-0.8	-2.4	-1.0	0.2	-1.6	-5.6	3.5	4.1	4.5	-3.8	6.6	0.1	1.0
Building	0.5	-1.7	-0.5	3.6	-0.2	-6.5	7.2	5.7	7.5	-3.6	10.7	-0.2	1.3
Civil engineering & major works	-8.1	-5.9	-3.9	-14.5	-7.9	-6.8	-5.4	-5.6	-6.0	-11.1	-8.0	-7.3	-4.6
Specialized construction work	2.7	-1.3	0.5	4.9	0.2	1.7	-1.4	9.5	2.5	4.4	6.2	11.1	6.5
Total formal private empl. (IMSS)													
Thousand people	19,134	19,172	19,293	19,429	19,624	19,756	19,418	19,532	19,696	19,787	19,874	19,908	19,895
Annual % change	4.4	4.5	4.5	4.3	4.4	4.3	4.3	4.5	4.5	4.2	4.5	4.5	4.0
Average salary quote (IMSS)													
Nominal daily pesos	334.2	337.4	336.2	332.4	331.3	333.0	336.3	348.1	349.4	349.3	349.4	353.8	353.5
Real annual % change	-1.4	-1.5	-1.8	-1.3	-1.2	-1.6	-1.2	-0.4	0.1	0.9	1.2	0.9	1.1
Real total wages (IMSS)													
Annual % change	3.0	2.9	2.6	3.0	3.1	2.7	3.1	4.0	4.5	5.1	5.8	5.4	5.1
Minimum general wage (daily)													
Nominal pesos	80.0	80.0	80.0	80.0	80.0	80.0	88.4	88.4	88.4	88.4	88.4	88.4	88.4
CPI (end of period)													
Annual % change	6.3	6.4	6.7	6.3	6.4	6.6	6.8	5.5	5.3	5.0	4.6	4.5	4.6
TIIE 28 (average, %)	7.2	7.4	7.4	7.4	7.4	7.4	7.5	7.6	7.8	7.8	7.8	7.9	7.9
10-year Gov. bond int. rate (M10)	7.0	6.9	6.9	6.8	7.1	7.3	7.5	7.6	7.7	7.5	7.7	7.7	7.9

Source: BBVA Research with Inegi, Banco de México, IMSS data

Table 4.10 Monthly construction and housing indicators

	J.17	J	A	S	O	N	D	J.18	F	M	A	M	J
Const. employment (IMSS)													
Total (thousand people)	1,602	1,620	1,654	1,655	1,685	1,687	1,577	1,624	1,648	1,639	1,673	1,685	1,689
Annual % change	3.9	4.5	4.9	4.6	5.0	5.3	5.8	6.8	6.9	5.3	7.8	6.9	5.4
Hydraulic cement sales (tons)													
Annual % change	-3.8	-6.6	-1.3	-4.5	-2.3	6.3	-1.2	1.9	2.6	-1.6	5.0	5.0	3.6
Cement consumption per capita ¹													
Annual % change	-3.9	-6.8	-1.5	-4.7	-2.5	6.1	-1.4	1.7	2.4	-1.7	4.7	4.9	3.5
Resid. cons. prices (ann. % chge.)													
Headline	11.3	10.3	9.8	9.7	9.2	9.3	7.9	7.3	5.9	5.9	7.2	8.0	9.3
Materials	12.7	11.6	11.0	10.9	10.2	10.3	11.5	9.3	7.2	7.8	9.2	10.3	11.3
Labor	4.6	4.4	4.3	4.2	4.4	4.4	4.4	4.5	4.7	3.3	4.3	4.2	4.2
Machinery rental	4.8	4.1	3.5	2.8	4.3	3.6	3.0	0.8	0.9	2.1	2.5	3.7	3.7

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

Source: BBVA Research with Banco de México, INEGI, IMSS data

Table 4.11 Monthly housing credit indicators

	J.17	J	A	S	O	N	D	J.18	F	M	A	M	J
Commercial banks loan portfolio													
Balance in billion pesos*	752.0	754.9	755.2	759.2	758.1	757.1	757.3	757.2	758.2	762.2	768.9	777.8	781.0
Annual % change	3.3	2.9	2.7	2.8	2.6	2.2	1.6	2.5	2.7	2.8	3.5	3.8	3.9
Total annual cost (CAT, average)	13.3	13.2	13.2	13.1	13.1	13.1	13.1	13.2	13.1	13.1	13.3	13.3	13.3

* October 2017 pesos

Source: BBVA Research with Banco de México, Conasami, INEGI, IMSS, CNBV data

5. Special topics included in previous issues

First Half 2018

The significance of business expectations in construction
Low mortgage debt of households

First Half 2017

The determining factors of the housing supply in Mexico
Infrastructure still awaits reform effect

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

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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

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New housing after the real estate boom
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