BBVA Research

Mexico
Real Estate
Outlook

First half 2019

Creating Opportunities

Contents

Closing date: **February 27, 2019**

1. Summary

As with the rest of the economy, the construction sector experienced a significant slowdown at the end of 2018. The two main components, Building and Civil Engineering Works, recorded drops in GDP in the third and fourth quarters. The result was that the entire sector grew by only 0.6% during that year, while building and civil engineering works showed annual variation rates of 1.3% and -5.8% respectively. Building works still form the foundation of the sector by contributing around 70%, but with its slowdown did little to offset the steady drop in civil engineering works.

The slower pace in building works was due mainly to the construction of shopping malls and industrial warehouses. On the civil works side, a plus point is that it seems to have reached its lowest point, and even when it remains at negative levels it does so at lower rates each time. Furthermore, the gross value of communications and transportation works is affected by the aforementioned decline; but the energy infrastructure shows an emerging recovery.

The lower end of the economic cycle has been extended in the housing market. Since this mass sales segment is of social interest, as long as there is no recovery in this type of housing, there will be no expansion phase. The construction plans, along with the housing inventories shown to us by the Registro Único de Vivienda (National Housing Registry), show that units remain below 300,000. On the one hand, these numbers are positive if we look at them from the perspective that supply and demand are better matched, allowing these assets to maintain a sustained appreciation and without bringing to bear imbalances in the market. However, the production of more units will make it possible to reduce the housing backlog, mainly in states with the most need, and enable market growth.

While house building remains stable, the mortgage market grew 1.1% in real terms during 2018. A significant part of this advancement was through products other than purchasing, whether new or used. Loans for the payment of debts and liquidity helped the banking industry to recover land and grant a 5.9% higher amount in real terms compared to 2017. In this same period, public institutions generated 3% less financing once the effect of house prices was discounted. In both cases, both in the public and private sectors, the number of mortgages decreased by 3.3%, which reveals that the best banking result was due to the residential segment, which has the highest value.

The regional distribution of bank mortgages reveals a preference for location on the part of borrowers (families) regardless of the reasons why they decide to purchase a home in that area. A review from 2010 to 2018 shows that more than 50% of home loans were used in only six states in the country. The novelty is that in 2018, the states of Querétaro and Guanajuato joined with Mexico City, Nuevo León, Jalisco and the State of Mexico in being the preferred states when it comes to purchasing a new or used home. Likewise, with the exception of Guanajuato, the municipalities with the greatest demand are those that form the metropolitan areas of each state.

Lastly, we present a quantitative estimate model of the real estate services sector, the third most important to the Mexican economy. This model complements the housing analysis carried out. This sector grew by 1.7% in 2018 and could grow to 2.4% in 2019 if the rise continues in wholesale and international trade, mostly in manufactured products. More productive building contributes to more spaces being made available for real estate services, and although these also envisage license fee revenues, the most significant sub-sector is constituted by property rental income.

2. Market Conditions

2.a Construction in complete slowdown

Only 0.6% construction advancement in 2018

The first half of 2018 showed a positive outlook for construction, even exceeding expectations by rising above the level of the economy. However, in the third and fourth quarters, the GDP results from this sector show a slowdown, generating growth of only 0.6% during that year.

As this has been continuing for almost a decade, building works is the component that exhibits modest but positive growth. In contrast, the number of civil engineering works continues to fall, at lower rates, but still at negative levels. On the building side, the construction of higher value housing and productive building has helped the sector to a modest extent. Meanwhile, the lower public investment keeps infrastructure works lagging behind, although there could be a slight upturn in 2019 if the PEF (Presupuesto de Egresos de la Federación - Federation Expenditure Budget) 2019 investments are implemented.

Figure 2a.1 Cumulative GDP Construction (Billions in real peso terms and % annual var.)

Construction GDP (lhs)
Total GDP, annual % change
Construction GDP, annual % change
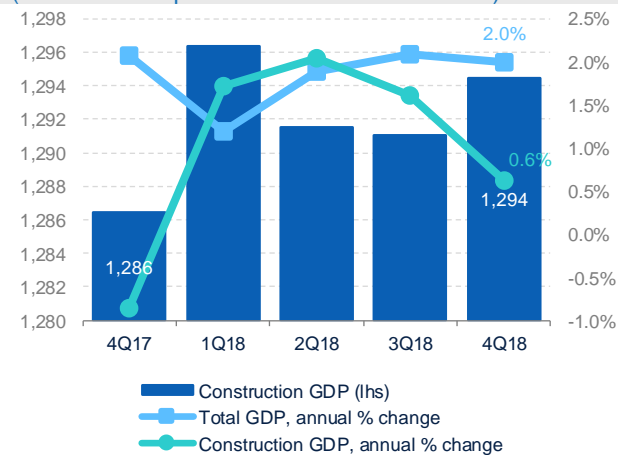
Source: BBVA Research based on data from SCNM and INEGI

Figure 2a.2 Cumulative GDP Construction by component (% annual variation)

Construction   Building
Civil works   Specialized
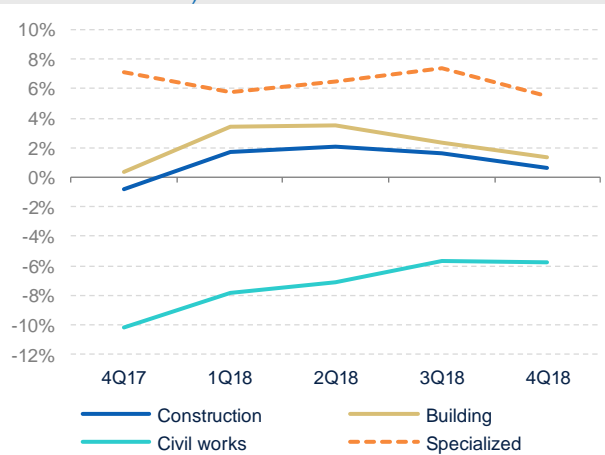
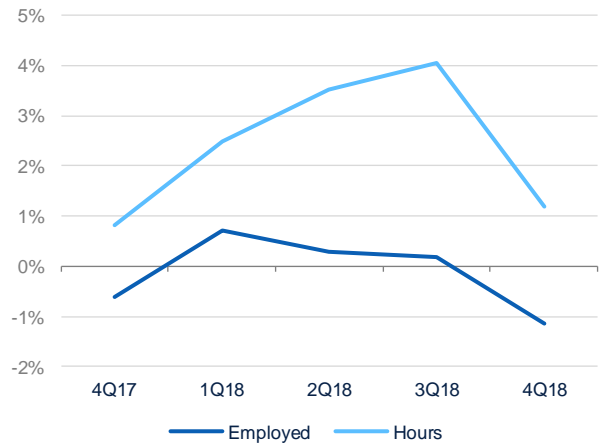Source: BBVA Research based on data from SCNM and INEGI

The slowdown in the production activity of the construction sector is reflected in its demand for labor. For the first time in several years, the number of employees in the sector is decreasing. Companies are demanding fewer workers, therefore the slowdown can be expected to continue for at least the first two quarters of 2019. This may also be influenced by a drop in work factor productivity as measured by the number of employed persons, which is already negative in its annual comparison. In terms of hours, productivity is also slowing, but remains positive. This contributes to the prospect of less employment in the sector, at least in the short term.

**Figure 2a.3 People employed in the construction sector
(Millions of workers and % annual variation)**
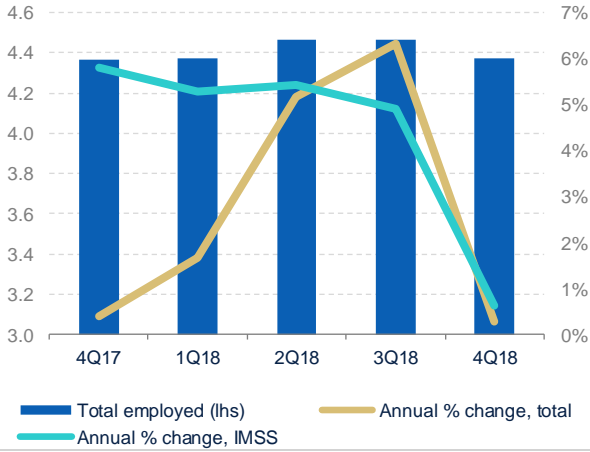
Source: BBVA Research based on data from ENOE and INEGI

**Figure 2a.4 Construction productivity index
(% annual variation)**

Source: BBVA Research based on data from INEGI

Price of supplies up by 10%

The costs faced by builders do not afford breathing space and continue to rise considerably above the level of headline inflation. With data as of December 2018, the construction supplies index shows growth of around 10% annually. This concurs with our predictions published in the previous edition of Mexico Real Estate Outlook; however, the price slowdown that we predicted from 2019 is unlikely to occur, with substantial hikes continuing to occur in the price of supplies. While we continue to believe that remuneration will remain as stable as predicted, and if machinery and equipment rental sees no increase in prices provided that the exchange rate remains below 20 pesos per dollar, the cost of materials could continue to rise as a result of more expensive energy in the production of some supplies, such as cement, concrete, steel and their derivatives.

**Figure 2a.5 NPPI (National Producer Price Index)
Construction supplies (% annual variation)**
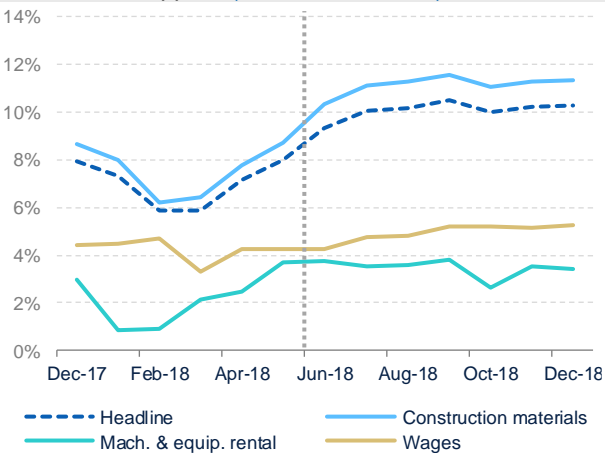
Source: BBVA Research based on data from INEGI

**Figure 2a.6 National Producer Price Index
(Base index 2008 = 100)**
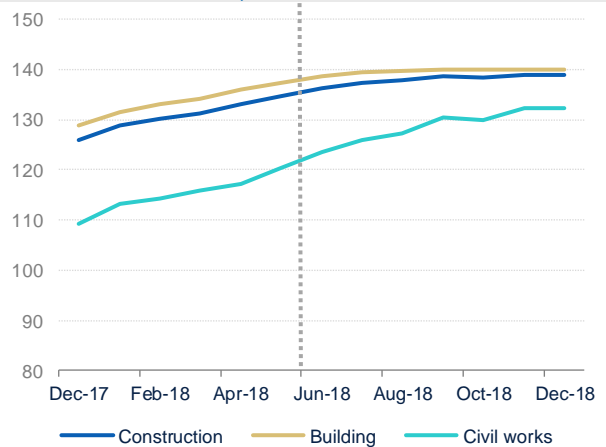
Source: BBVA Research based on data from INEGI

Conversely, the producer price index for construction begins to stabilize. During the second half of 2018, this index barely grew at monthly rates, although its annual comparison is higher due to the low level that it had in 2017. The building component sets the trend of the index as it makes the biggest contribution, and it is precisely this component that shows a lower rate of appreciation. We estimate that, in turn, this is further explained by the productive building component as the residential part also increases its prices well above the level of inflation. The price component of civil engineering works did increase markedly throughout 2018, lessening the gap with the building index.

When considering the historical information and economic cycles of the construction sector, there is an alternation between the value of the production of public and private construction for periods of more than two years. However, in the last few months this alternation occurs each time for shorter periods; as one grows the other falls in almost every quarter. During these years of sustained decline in infrastructure works, public sector participation was expected to decrease while that of the private sector would increase. Now with the slowdown in building, especially in housing, the value of private sector construction has also experienced more marked variations.

Despite the above, in the last quarter of 2018, the value of public construction seems to have made a slight recovery. This is partly due to increased spending on infrastructure on the part of the public sector and during the second and third quarters by Pemex based on information from the SHCP (Secretaría de Hacienda y Crédito Público) (Ministry of Finance and Public Credit). Although the most significant contribution to this result is due to the base effect, i.e., to the low comparison base. This trend could be maintained and further improved if the PEF 2019 budget is implemented; regardless of the adequacy of the energy investments announced, if that capital expenditure grows there is a positive outlook for the construction of energy works.

Figure 2a.7 Value of construction by sector
(% annual variation)
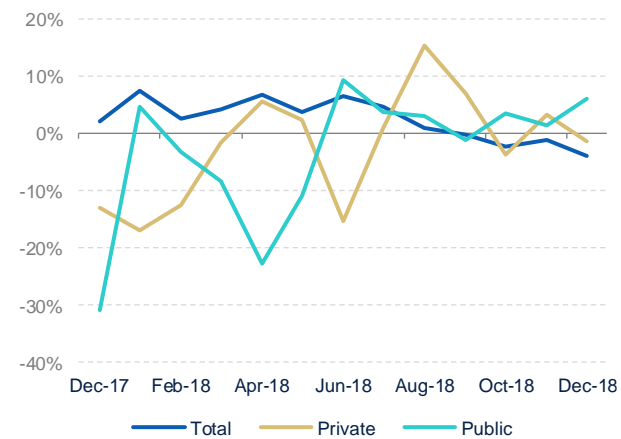
Source: BBVA Research based on data from INEGI

Figure 2a.8 Public expenditure on capital investment
(% annual variation)
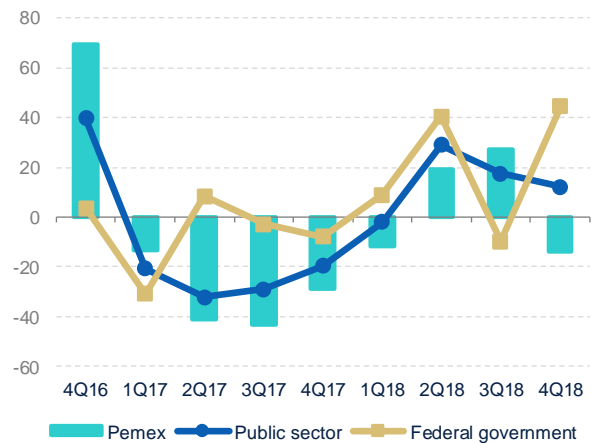
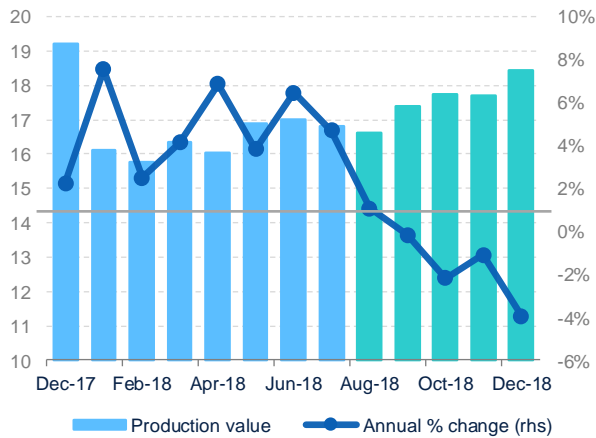Source: BBVA Research based on data from INEGI

In line with the results of the sectoral GDP and its components, the value of production under construction ends 2018 with a contraction. Most of this contraction is in the value of the infrastructure works, which fell throughout the entire fourth quarter of 2018 and particularly in December when it dropped by almost 10%. From the building perspective, the

drop is less, but the slowdown in the sector remains the same. In this subsector, the last quarter of the year was the one with the greatest negative impact.

Figure 2a.9 Value of building construction
(Billions in real peso terms and % annual var.)

Production value — Annual % change (rhs)

Source: BBVA Research based on data from INEGI

Figure 2a.10 Value of infrastructure construction
(Billions in real peso terms and % annual var.)

Production value — Annual % change (rhs)
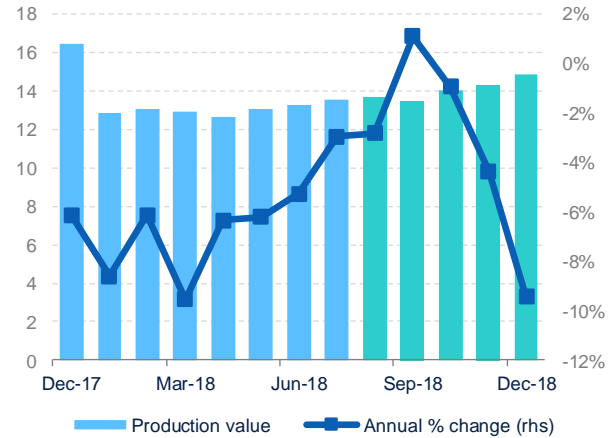
Source: BBVA Research based on data from INEGI

The bank credit balance, both of commercial and development banking, continued to grow as construction activity increased. In line with the lowest activity of the last quarter, the balance decreased at a quarterly rate, but in its annual comparison it exceeded 60 billion in loans. This shows that the banking system, both public and private banks, continues to pump resources into the sector and shows that banks have positive long-term expectations to continue granting more credit.

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

Performing ▬ Past due ▬●▬ Delinquency rate (rhs)
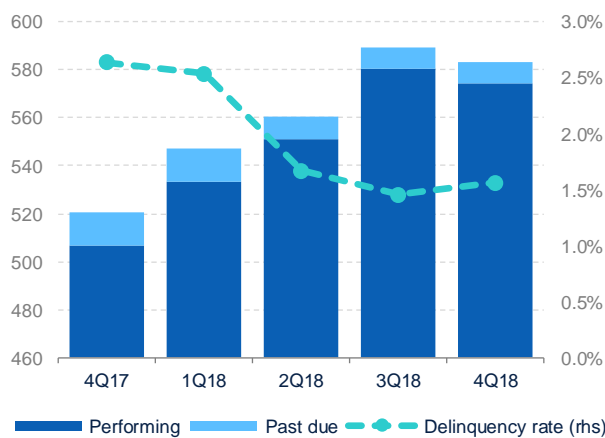
Source: BBVA Research based on data from Banco de México

Figure 2a.12 Penetration rate of banking into the construction sector (% share and % annual variation)

Penetration of credit into construction
Annual % change (rhs)
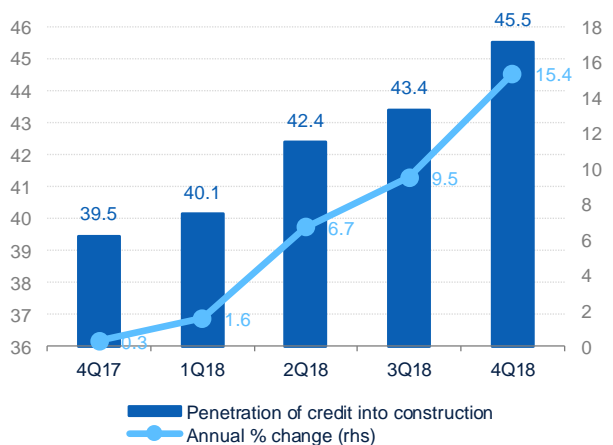
Source: BBVA Research based on data from Banco de México and INEGI

One effect of the increase in credit on the construction sector is that such penetration reached 45% at the end of 2018. Only during 2018 was penetration higher by more than 5 points compared to the close of 2017, or rather, it grew 15.4% in terms of the annual rate. This was as a result of the efforts of both development and commercial banking, and, despite the observed economic cycles, it is considered to be a stable sector that has not shown a marked downturn since the global crisis of 2009.

At the end of 2018, the development banking's share advanced modestly in the sector's credit balance; even so, it is commercial banking that provided the most financing, which exceeded 400 billion constant pesos. The rest of the players practically closed their portfolios. In this way, the annual growth rate of the construction credit portfolio was 16.1% as a result of the 13% that commercial banking advanced and due to a strong advancement from development banking, whose financing was at a rate of almost 25%.

Figure 2a.13 Total real credit balance for construction (Billions of constant pesos)
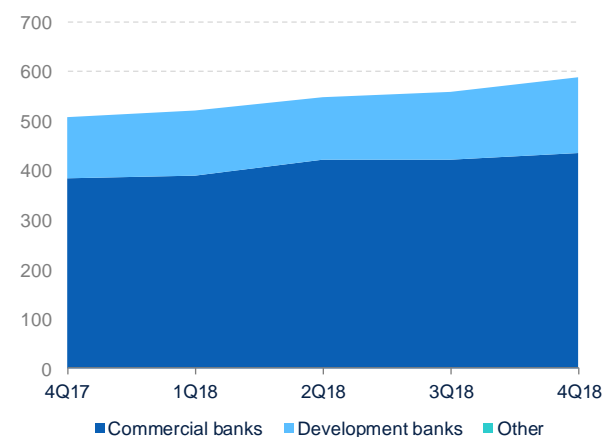
Source: BBVA Research based on data from Banco de México

Figure 2a.14 Commercial interest rate on construction credit (% annual rate)
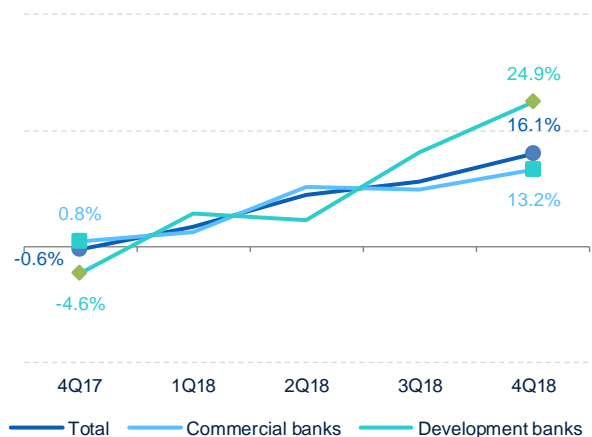
Source: BBVA Research based on data from Banco de México

Building works slow down due to fewer commercial and residential works

As mentioned at the beginning, the buildings works that supported the growth of the construction sector began to slow down again at the end of 2018. The greatest impact can be observed on productive building in the annual comparison, followed by residential building, although the latter had already absorbed the greater impact of less demand in 2017. The lower activity in productive building can be first attributed to a base effect due to the high level of construction in 2017, especially of industrial warehouses and shopping malls, which decreased amid an expectation of lower consumption and a slowing down of the dynamics of the economy as a whole.

Figure 2a.15 Gross value of building works
(Billions of constant pesos and % annual var.)

Residential
Services
Productive
Annual % change (rhs)
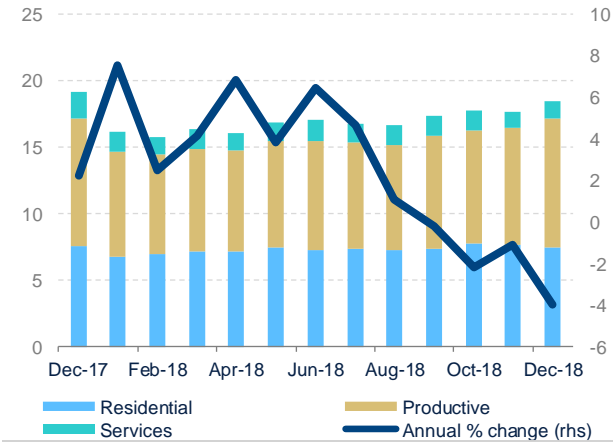
Figure 2a.16 Gross value of building works
(% annual variation, annualized series)

Residential
Productive
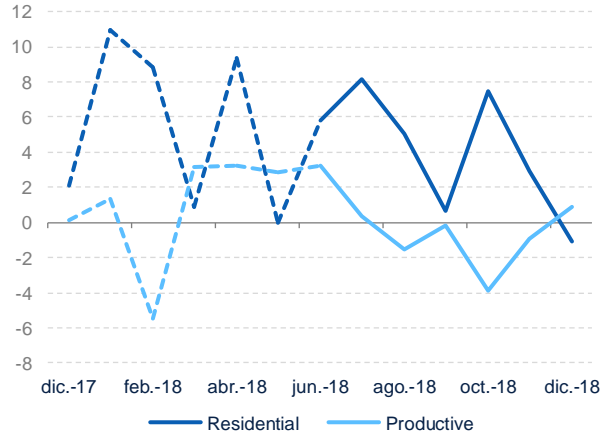
Financing of building works also slowed down at the end of the year. The credit balance for building works decreased in the second and fourth quarters compared with those immediately prior; but the advancement in 1Q18 was so high that the annual comparison gives us a positive result of a rate of 10.4%. This advancement is accompanied by a decrease in the delinquency rate, which is not only due to greater origination but also to a lower nonperforming loan portfolio throughout the year. The credit increase on the part of development banks to building works should be highlighted, because after several quarters without growth, it advanced markedly during the second half of 2018.

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

Performing
Past due
Delinquency rate (rhs)
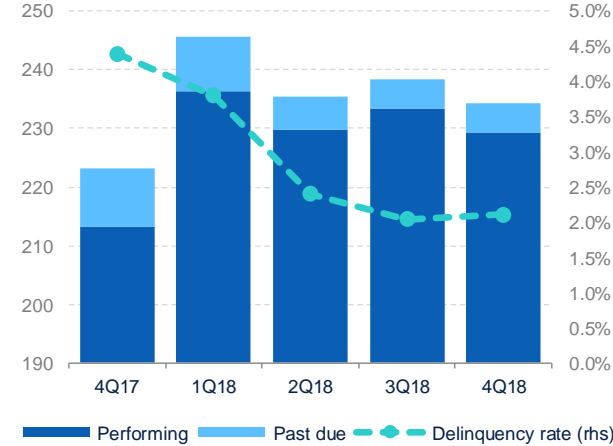
Figure 2a.18 Real total credit balance to building works
(% annual variation)

Total
Commercial banks
Development banks

Civil engineering works make a slight recovery

Energy works grew by 1.5% at the end of 2018

The gross value of civil works fell to 160 billion pesos at the end of the previous year. This time it is the value of the infrastructure in communications and transportation that caused the contraction, while the energy works give a positive result after several years at negative levels. In turn, the value of hydraulic works remains stable at around 20 billion pesos. The case of energy works is also primarily due to a base effect after several years of dropping consistently; but it is likely that they have already touched rock bottom to begin a slight recovery. This expectation gains momentum on learning about the new administration's plans to boost the energy sector, mainly that relating to hydrocarbons, with investments already having been announced.

Figure 2a.19 Gross value of infrastructure
(Billions of real pesos, annualized)
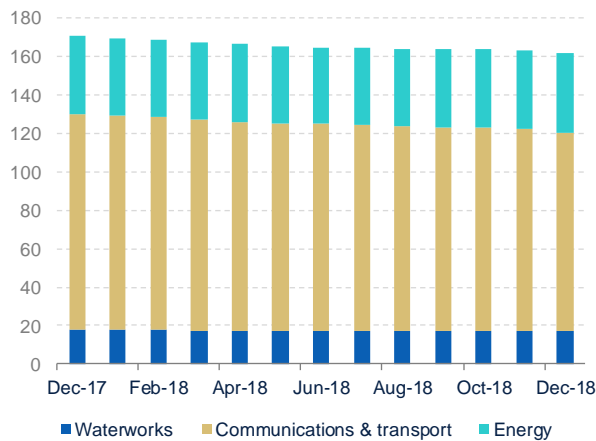
Source: BBVA Research based on data from INEGI

Figure 2a.20 Gross value of infrastructure
(% annual variation, annualized series)
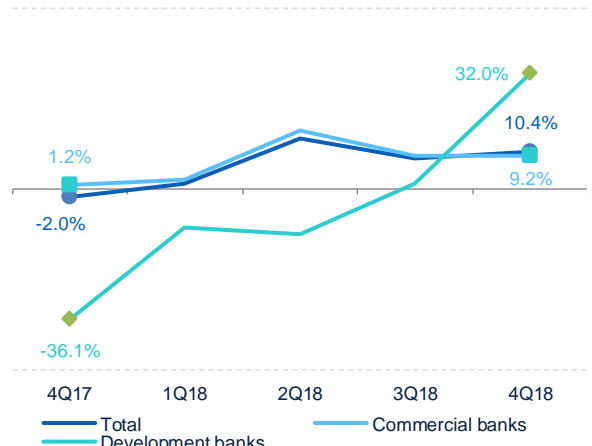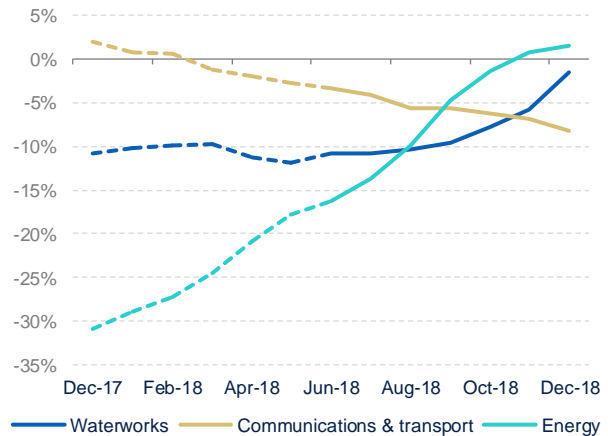

Source: BBVA Research based on data from INEGI

It is indeed these types of works that attracted the attention of the banking sector, both of development and commercial banking, and it is precisely what drove the increase in the construction credit portfolio as in the third quarter of the previous year it surpassed a balance of 320 billion pesos. The quality of this portfolio is at historically low levels and its delinquency will barely be less than 1% where it is currently. During 2018, the flow from development banking increased by almost 20%, while it increased by 15% from commercial banking, both results well above the dynamics of the total economy and the sector.

Figure 2a.21 Total real credit balance to infrastructure (Billions of constant pesos and %)
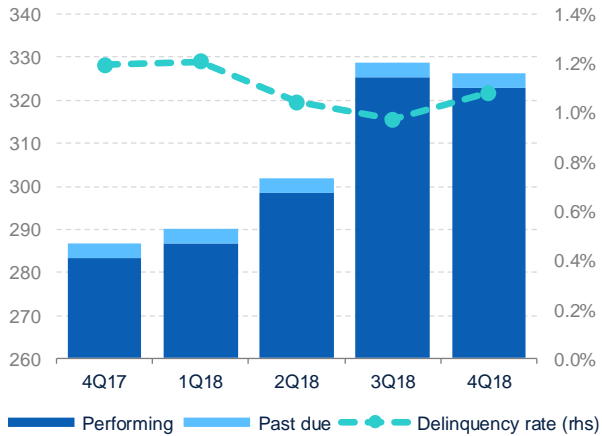
Source: BBVA Research based on data from ENEC and INEGI

Figure 2a.22 Total real credit balance to infrastructure (% annual variation)
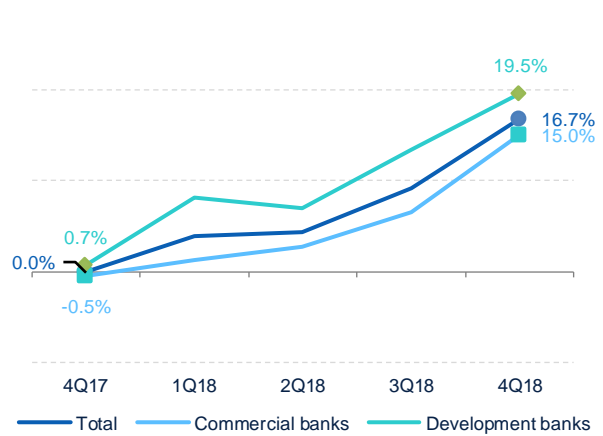
Source: BBVA Research based on data from ENEC and INEGI

Construction effectively brought forward its economic cycle

In our previous edition, we concluded that based on the indicators published up to the middle of the year, it was likely that the construction sector would advance its economic cycle and this is confirmed with the data published for the end of 2018. In the same way that it brought forward its expansion phase, the sector also saw the slow-down arrive earlier. We predict that in view of the changes and uncertainty caused by any change in government, this cycle will be shortened, but will return to its long-term trend. While business confidence of the builders has decreased considerably, they still consider it a good time to invest although to a lesser extent than a few months ago. This is in conjunction with the investments in infrastructure announced by the federal government in PEF 2019; we predict that the sector could grow to surpass the economy in 2019. This is always on the assumption that no further uncertainty is generated and that the energy and transportation projects that were announced are completed.

Figure 2a.23 Forward construction indicators (% annual variation)
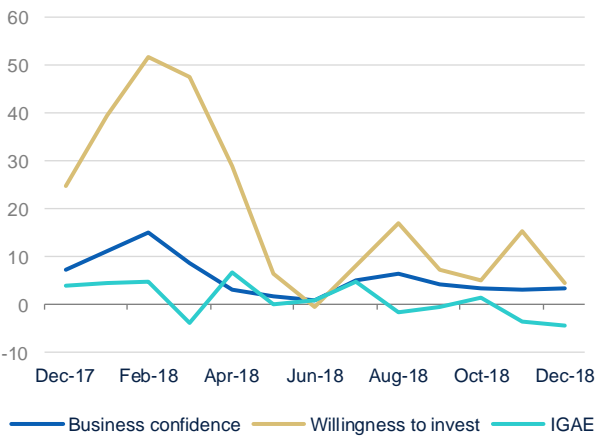
Source: BBVA Research based on data from INEGI

Figure 2a.24 GDP Construction by component (% annual variation)
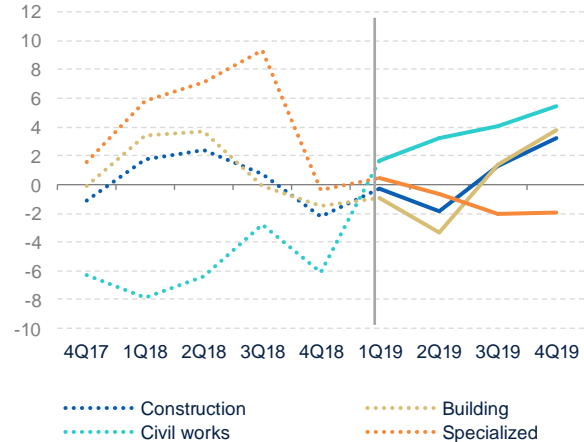
Source: BBVA Research based on data from INEGI

2.b Growth returns to banking

Mortgage banking grew 5.9% in real terms in 2018

In our previous issue of *Mexico Real Estate Outlook* we mentioned that the contraction in mortgage origination on the part of commercial banking that we observed in the first half of 2018 would result in moderate or negative growth. At the end of December, mortgage financing grew by just 1.1% in real terms, compared to 2017. While this growth is modest with respect to 2017, it reflected a reactivation in the payment of liabilities and liquidity and not really in purchase loans which remained at negative levels. While in the second half of 2018, consumer confidence recovered and both employment creation and the total wage bill kept expanding, this was not enough to speed up the market.

We can say that 2018 was a year of contrasts for the mortgage sector. While during the first half of the year, the uncertainty caused by the elections greatly depressed consumer confidence, the low demand that remained was funneled through Infonavit, which grew 3.9% in terms of financing between January and June 2018. This trend was reversed in the second half of the year, and the institute lost almost all of the advancement achieved, concluding the year with a contraction of 1.6% in real terms. For its part, the Fovissste remained in negative territory during the second half of the year, and in December closed the year with a 8.6% decrease in the amount of financing.

The lack of dynamism of the housing institutions was also reflected in moderate growth of the average mortgage amount, where the Infonavit barely registered a 3.2% real increase; while the Fovissste experienced a 3.0% decrease. In contrast, the average mortgage of commercial banks increased 9.1% in the same terms during 2018. In terms of the number of loans awarded, both commercial banks and institutes showed a contraction.

Table 2b.1 Mortgage activity: loans and financing amount awarded per entity
(thousands of loans and billions of pesos in 2018, cumulative figures)

Mortgage Origination	Number of loans (thousands)			Loan amount (billions of pesos)			Average amount (thousands of pesos)		
	Dec-17	Dec-18	% annual var.	Dec-17	Dec-18	Real annual var %	Dec-17	Dec-18	Real annual var %
Public Institutions	**440.5**	**419.5**	**-4.8**	**190.6**	**184.8**	**-3.0**	**433**	**441**	**1.8**
Infonavit	388.8	370.8	-4.6	152.3	149.9	-1.6	392	404	3.2
Fovissste	51.6	48.7	-5.7	38.2	34.9	-8.6	740	718	-3.0
Private Sector*	**122.4**	**118.9**	**-2.9**	**163.5**	**173.1**	**5.9**	**1335**	**1457**	**9.1**
Banks[1]	122.4	118.9	-2.9	163.5	173.1	5.9	1335	1457	9.1
Other									
Subtotal	**562.9**	**538.3**	**-4.4**	**354.0**	**357.9**	**1.1**	**629**	**665**	**5.7**
Co-financing[2] (-)	36.8	29.4	-20.1						
Total	**526.1**	**508.9**	**-3.3**	**354.0**	**357.9**	**1.1**	**673**	**703**	**4.5**

*While there are other private credit institutions (such as unregulated agents), they are not included due to the lack of reliable public information.
1: Includes: loans for self-construction, re-structuring, 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 adjustment factor is based on the House Price Index of the Federal Mortgage Company (Sociedad Hipotecaria Federal – SHF)
Source: BBVA Research based on data from Infonavit, Fovissste, CNBV and SHF

Recovery of consumer confidence

A determining factor in the recovery of commercial banking activity in the second half of 2018 was consumer confidence, which, as we have already mentioned, is statistically significant in anticipating the cycle of demand for mortgage loans. After the election period, the overall consumer confidence index grew by over 20%, while the sub-index for durable goods and housing grew by almost 14%, all at the close of 2018. Even the trend-cycle component was on the rise, which would become more evident in the coming months.

Figure 2b.1 Consumer confidence
(% annual variation)
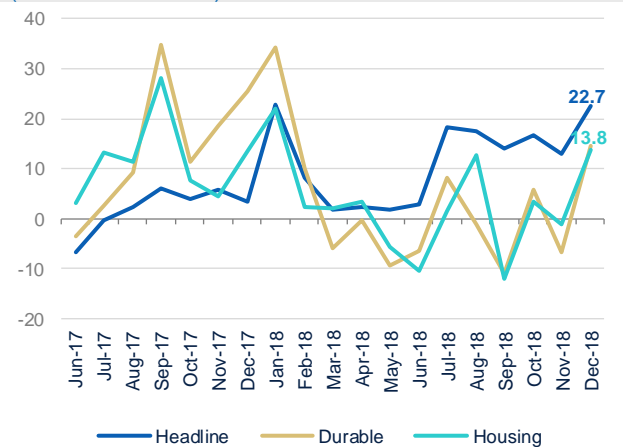
Source: BBVA Research based on data from INEGI

Figure 2b.2 Consumer confidence
(Trend-cycle series, % YoY variation)
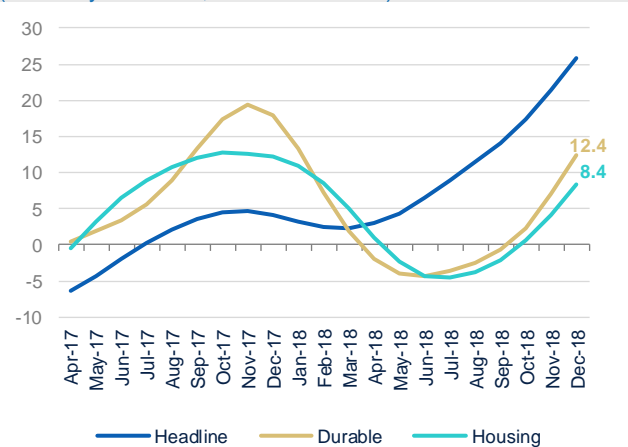
Source: BBVA Research based on data from INEGI

However, it is important to emphasize that this positive performance in both consumer confidence and mortgage transactions at the close of 2018 also reflects a base effect against the first three months of 2017, when origination was on negative ground. Furthermore, as we have already mentioned, the rebound seen in the last months of 2018 did not include financing for buying homes; rather, it was largely due to the reactivation of loans for payment of liabilities and liquidity.

The banks faced strong competition in mid-range segments

Although most of the banking growth in recent years has been due to financing in the most expensive segments, throughout nearly all of 2018 this growth was on negative ground and more positive results were only seen in December. On the other hand, the reactivation of loans for payment of liabilities and liquidity, which showed great dynamism at the close of 2018, reflects a greater desire in the market to search for ways to improve financing conditions and even to allocate resources for starting up a business.

Figure 2b.3 Financing issued by banks
(% annual variation)
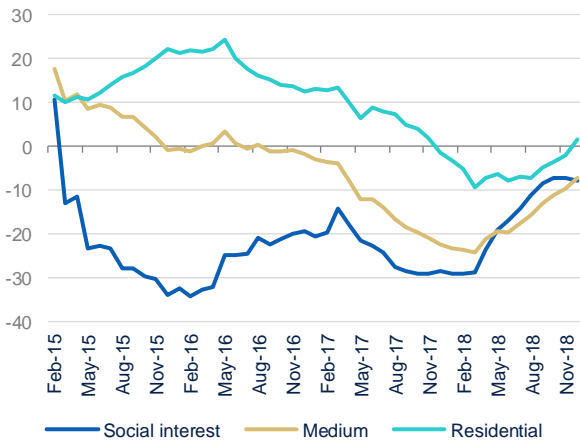
Source: BBVA Research based on CNBV data

Figure 2b.4 Financing issued by banks
(% annual variation)
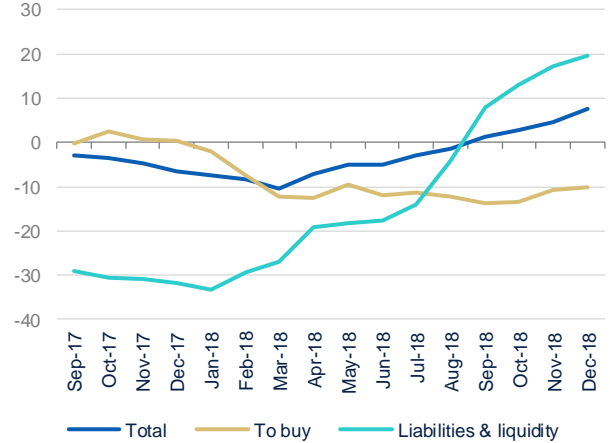
Source: BBVA Research based on CNBV data

Figure 2b.5 Housing actions by segment
(YoY % share)
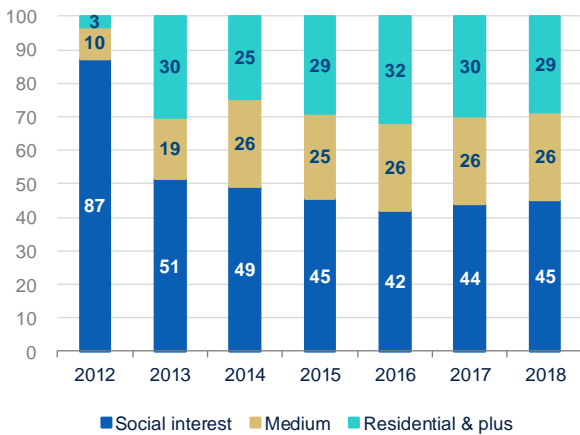
Note: Consider Infonavit, Fovissste, CFE, Conavi, Fonhapo, Fovissste, Habitat, ISSFAM, Pemex and SHF
Source: BBVA Research based on Conavi data

Figure 2b.6 Infonavit: loans issued per segment
(% annual variation)
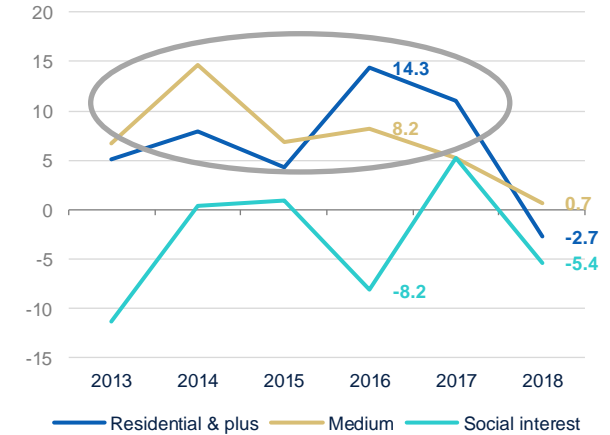
Source: BBVA Research based on Infonavit data

And, in recent years, the banking sector has faced strong competition in the mid-range segments, largely from Infonavit and to a lesser extent from Fovissste. While the entire market has shifted toward increasingly expensive segments, the banking sector's biggest decline in the mid-range segments occurred between 2014 and 2016, when Infonavit began to increase the maximum limits for loans. However, in 2018, with a more widespread decline, Infonavit failed to reverse the downward trend in any of the segments.

Employment, wages and stable interest rates for mortgages

Despite the above, at least at the close of 2018, the main determining factors of mortgage loans remained favorable. As such, we could see moderate progress along the road to recovery, with residential segments at the forefront, during the first half of 2019. On the one hand, employment, based on the number of people insured with the IMSS, was up 3% in 2018. This was accompanied by a recovery in the total wage bill thanks to the regulatory increase that came into force in early 2018. To a certain degree, this offset the decline caused by the increased fuel prices in the previous year. As such, with lower job creation, especially in the high-income segments, mortgage demand will be stagnant.

Figure 2b.7 Insured by IMSS
(% annual variation)
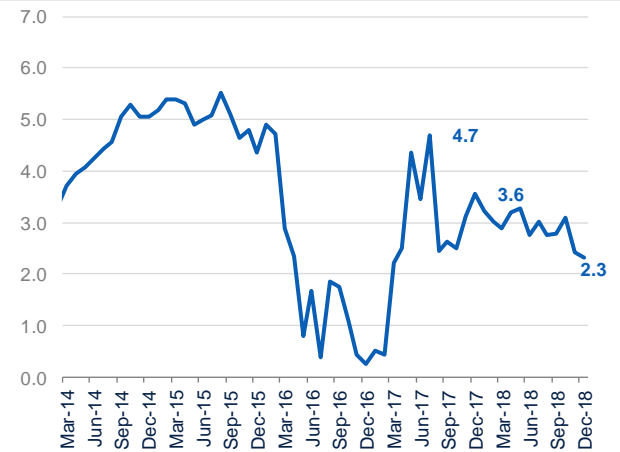
Source: BBVA Research based on data from INEGI

Figure 2b.8 Real wage bill
(% annual variation)
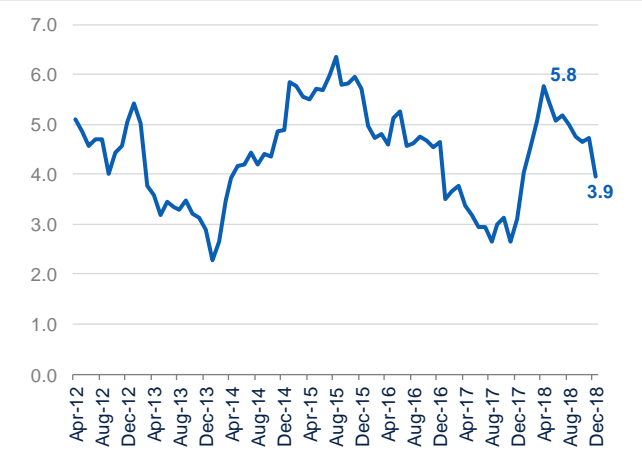
Source: BBVA Research based on data from INEGI

On the cost side of financing, the situation has remained favorable despite the fragility shown by demand over the past twelve months. This has resulted in ever shorter economic cycles in the sector, where previously owned housing could reemerge as a viable alternative to new housing. In fact, the mortgage interest rate for purchasing existing units is below 11%, creating an incentive to buy houses in downtown areas, mainly in those where land shortages significantly increase the cost of building.

Figure 2b.9 Interest rates for buying homes
(Nominal percentage rate YoY)
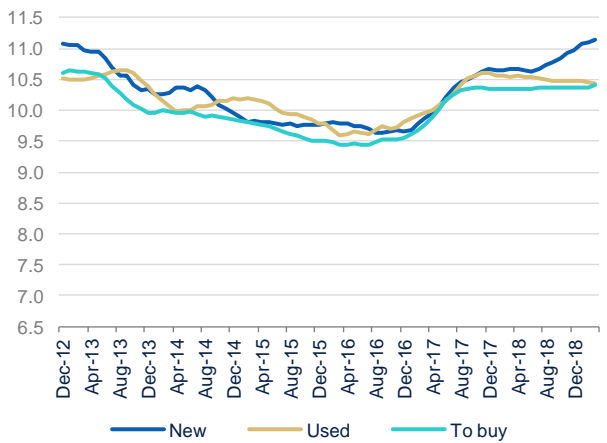
Source: BBVA Research based on CNBV data

Figure 2b.10 Interest rates
(Nominal percentage rate YoY)
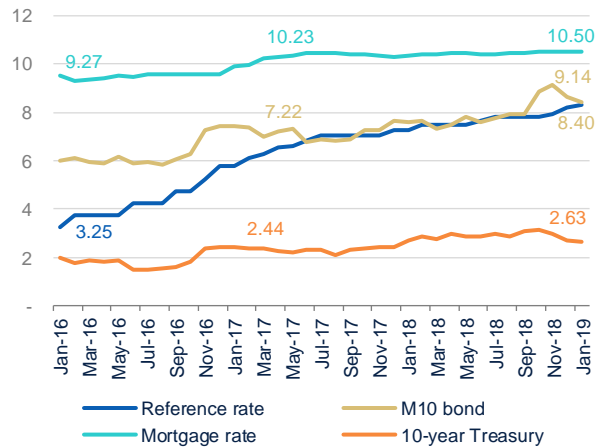
Source: BBVA Research based on data from Banco de México and CNBV

Mortgage interest rates: immune to monetary policy decisions

Unlike other interest rates, the mortgage interest rate was not affected by short-term uncertainty. While Banco de México's reference rate increased by over 500 bp, the mortgage rate only rose by around 100 bp. Even the increase in long-term rates, which have also reached maximum levels and which, as we have already commented on other occasions, determine the behavior of the mortgage market, transmitted about a third of the cycle of increases toward the cost of housing finance.

New housing, at healthy levels, favors appreciation

With regard to housing construction projects, according to information from the National Housing Register (Registro Único de Vivienda – RUV), at the end of December 2018 there were 263,000 registered projects. That is, 5.1% more than at the close of 2017. In turn, the number of ready-to-occupy units stood at 210,000 homes, which represents a decrease of 2.9%. During almost all of 2018, finished housing decreased by an average of 4.5%, all in annualized figures.

Figure 2b.11 Housing construction projects
(Thousands of records and % YoY variation)

Homes — Annual % change (rhs)
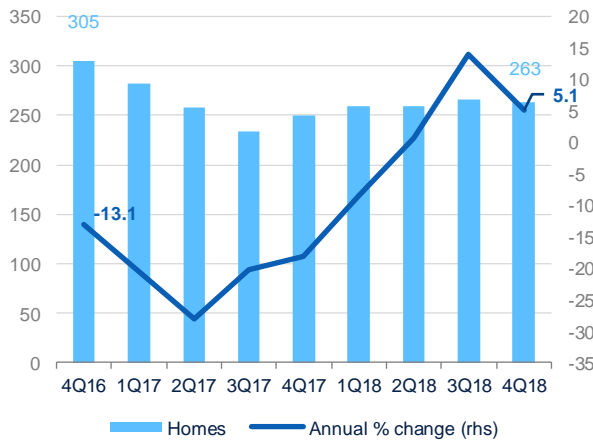
Source: BBVA Research based on RUV data

Figure 2b.12 Ready-to-occupy homes in the RUV
(Thousands of records and % YoY variation)

Homes — Annual % change (rhs)
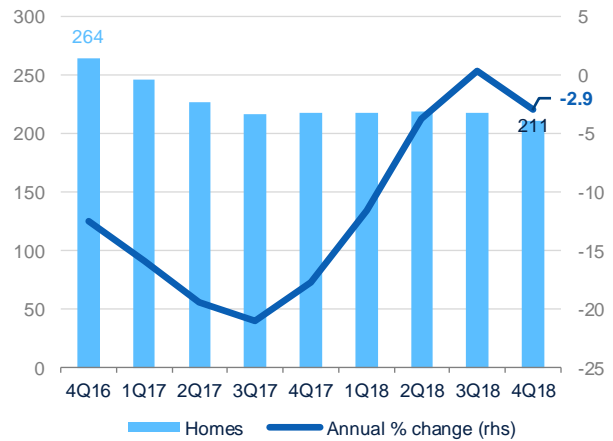
Source: BBVA Research based on RUV data

As mentioned in previous editions, we have calculated that the long-term balance in the inventory is between 200,000 and 250,000 houses. In other words, the current inventory is at a healthy level and does not suggest the possibility of oversupply. As long as there are no excesses in the market, the continuous appreciation of real estate is guaranteed, given the capacity to absorb the level of production, even at moderate rates. This maintains the health of the construction loan portfolio, which increased 11% on average in 2018 in its current balance, but maintained double-digit reductions in its expired component. Thanks to this, delinquency is at just 2%.

Figure 2b.13 Construction loan portfolio
(Billions of pesos and % YoY variation)

Performing — Past due — Delinquency (rhs)
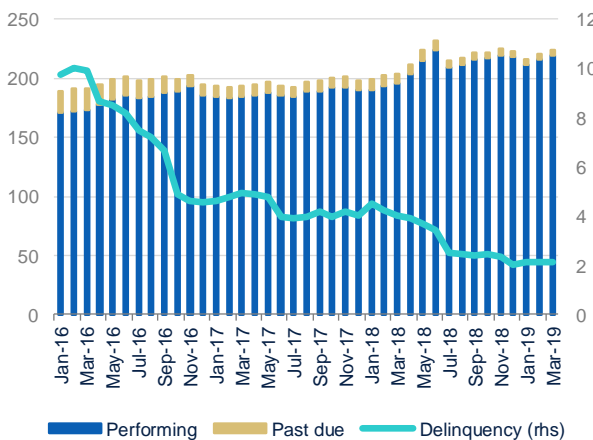
Source: BBVA Research based on data from Banco de México

Figure 2b.14 SHF House Price Index
(% annual variation)

National — Social interest — Medium-Residential
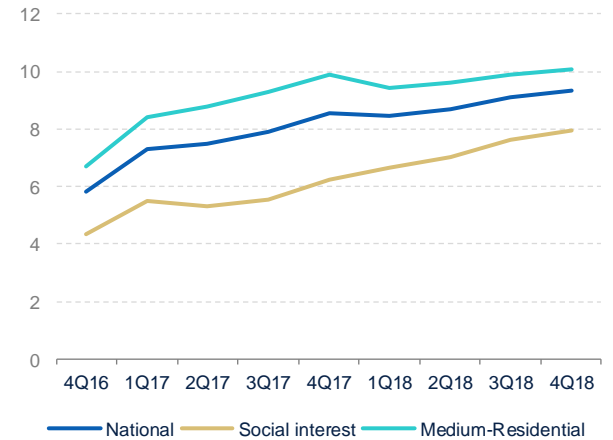
Source: BBVA Research based on SHF data

As a result, inventory stability has maintained the appreciation of housing. According to the SHF House Price Index, national house prices were up 9.35% at the end of the fourth quarter of 2018. The mid-range and residential segments, which saw greater demand, appreciated at an annual rate of 10%; while the rate for social housing was closer to 8%. These are orderly rates of appreciation and do not suggest any significant imbalance.

Conclusions

The second half of 2018 was characterized by the recovery of consumer confidence, which had remained low during the first half of the year. This resulted in the reactivation of banking activity, where financing for payment of liabilities and liquidity boosted the market over purchasing loans. The latter could see some dynamism during the first half of 2019, mainly in the residential segments and with some delay in the mid-range segments, where housing institutes have been more active in recent years.

Although employment, the key determining factor in the demand for housing, continues to grow, the rate of growth is tailing off and any further slowdown could complicate the second half of the year. This will affect the banks' ability to recover purchasing loans. In turn, housing institutes could focus more on maintaining the health of their portfolios, for the benefit of workers with existing loans, which is an assertive measure and will give more certainty, opening up the space for banks to recover lost ground, mainly in the mid-range segments. We believe it is fortunate that Infonavit is refocusing its policy toward the social housing segment.

3. Special topics

3.a Real estate services and their economic determining factors

Introduction

In the previous edition of *Mexico Real Estate Outlook*, we highlight the importance of real estate services in recent economic cycles, where the expectations of higher investment in construction and of appreciation of real estate have had a positive effect on the performance of the industry. However, it is important to remember that after the crisis in 2009, the construction industry underwent a major structural change and companies in the sector began to diversify and expand their activities. At present, virtually half of the companies' production value goes toward building housing, but the other half is destined for investment in industrial warehouses, shopping malls and offices, which has also involved the development of commercial activities and the need for inventory storage sites, both for finished and intermediate goods. As such, in this new edition we describe the latest trends in the GDP of real estate services in Mexico, as well as their main economic determining factors in the different production chains.

In the first section of the article, we review the main elements of the intermediate demand of the GDP of real estate services and the composition of final demand. Based on these findings, secondly, we present the main factors that accompany the growth of this sector with respect to other economic activities. Finally, we run a statistical model to calculate the short- and long-term economic effects of the determining factors of real estate services in Mexico.

Description of the sector based on the SCNM

According to the INEGI System of National Accounts (Sistema de Cuentas Nacionales de México – SCNM) and the classification of economic activities, the GDP of real estate services falls under sector 53 and includes real estate services, the rental of movable property and the rental of intangible property. The first sub-group covers related activities such as the rental of houses, offices and commercial premises, theaters and other buildings, and the rental of land and services related to real estate services. Within these, real estate is defined as having a fixed physical location and being rented for relatively long periods of time.

On the other hand, services for the rental of movable property are separated into two subgroups. The first covers the rental of cars, trucks and other land-based transport; the second covers the rental of household and personal items, and machinery and equipment for agriculture, fishing, industry, trade and services. Within the rental services for trademarks, patents and franchises, rented property is intangible, so its use by third parties is subject to a fee or commission.[1] Companies that rent out these goods monitor the use of the goods for the term of the rental agreement and, as such, this production process is different from the rest of the subgroups.

Within this area, there are also companies that act as intermediaries between businesses in the sale or purchase of various farming products, for industry, trade and services, as well as for domestic and personal use, for which they receive a commission or fee. These economic units do not own the products that are being sold.

1: These may be: names, commercial images, industrial designs, procedures and modes of operation

It also includes the rental of mobile homes to be occupied as houses on specific sites; intermediation in real estate operations concerning real estate located on tourist developments, including vacation homes, vacation ownership, co-ownership and other types, in addition to consultancy or promotion services and the rental of transport equipment, machinery and industrial equipment, in combination with financial leasing.

According to the 2012 input-output model; of total domestic production at basic prices of real estate services, domestic demand represents 84.5%; while intermediate demand stands at 15.5%. In addition, virtually all final demand is destined for private consumption.

Figure 3a.1 Composition of the production of the GDP of real estate services (% share)
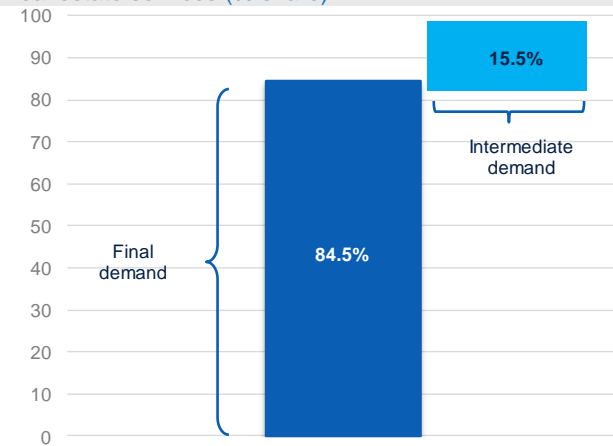
Source: BBVA Research based on data from the 2012 input-output model. INEGI

Figure 3a.2 Composition of the intermediate demand of the GDP of real estate services (% share)
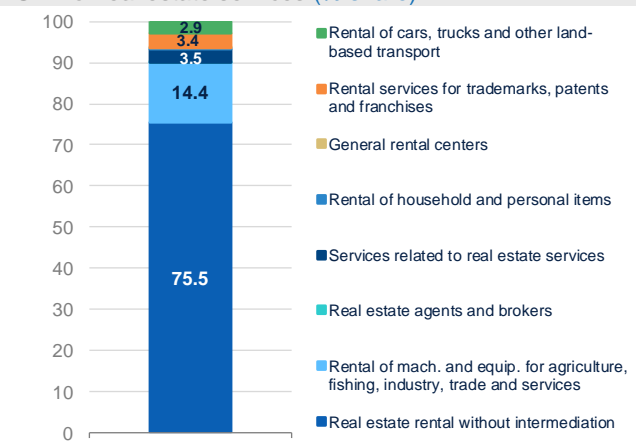
Source: BBVA Research based on data from the 2012 input-output model. INEGI

Table 3a.1 Composition of the final demand of the GDP of real estate services (YoY % share)

Branch	% share
Real estate rental without intermediation	94.0
Real estate agents and brokers	3.0
Rental services for trademarks, patents and franchises	2.7
Rental of household and personal items	0.3
Services related to real estate services	0.1
General rental centers	0.1
Rental of cars, trucks and other land-based transport	0.1
Rental of machinery and equipment for agriculture, fishing, industry, trade and services	-0.2
Total Final Demand	**100.0**

Source: BBVA Research based on data from the 2012 input-output model. INEGI

Description of Sector GDP and trend cycle

The GDP of real estate services represents 11% of the economy's total GDP. Over a third of the sector's intermediate demand comes from wholesale trade activities. However, rental of real estate without intermediation and wireless telecommunication and commercial bank operations account for 16%.

Table 3a.2 Destination of the intermediate demand of real estate services by class in the input-product matrix (YoY % share)

Intermediate demand by class	% share
Wholesale trade	34.1
Real estate rental without intermediation	8.7
Parking lots and garages	4.3
Wireless telecommunication operators, excluding satellite services	3.4
Commercial banking	3.3
Accounting, auditing and related services	2.2
Trucking of general goods and supplies	1.9
Elementary schools, high schools and special needs schools	1.7
Production of bakery products and tortillas	1.6
Legal services	1.4
Repair and maintenance of cars and trucks	1.3
Manufacture of parts for motor vehicles	1.2
Administrative activities of social welfare institutions	1.1
Business management services	1.0
Administration of justice and maintenance of security and public order	1.0
Storage services	0.9
Real estate agents and brokers	0.9

Source: BBVA Research based on data from the input-output model. INEGI

Figure 3a.3 GDP of real estate services and GDP of wholesale trade, original series (% YoY variation)
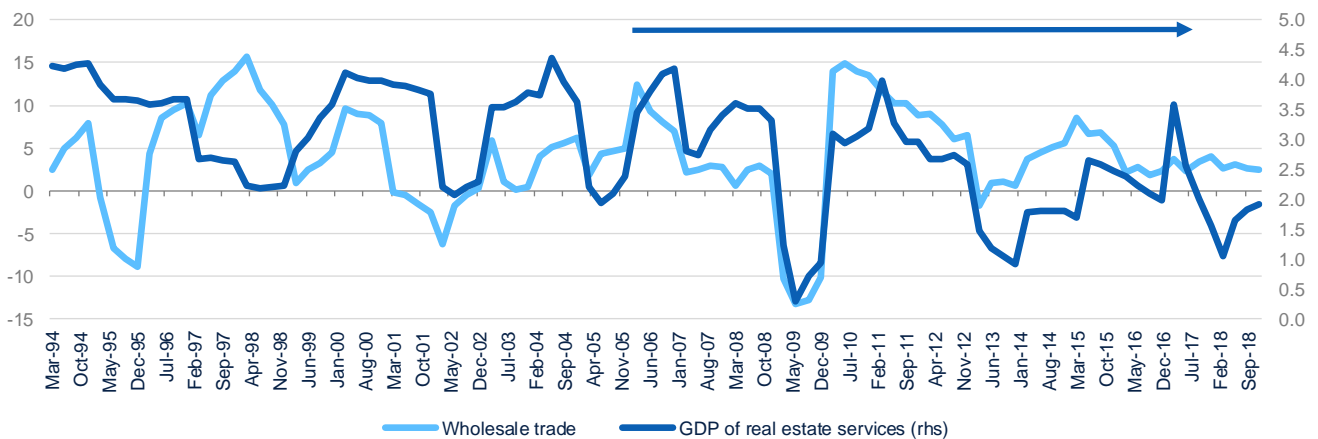
Source: BBVA Research based on data from the input-output model. INEGI

In reviewing the behavior of the time series in year-on-year variation, both of the original series and the corresponding trend-cycle series, we found that there has not always been such clear similarity between the growth cycles of real estate services and wholesale trade. In fact, this similarity is more visible from 2009 onward and, as such, an explanatory model could be more consistent if this estimation period is considered.

Figure 3a.4 GDP of real estate services and of wholesale trade, trend-cycle
(% YoY variation)

Wholesale trade, trend-cycle — GDP of real estate services, trend-cycle (rhs)
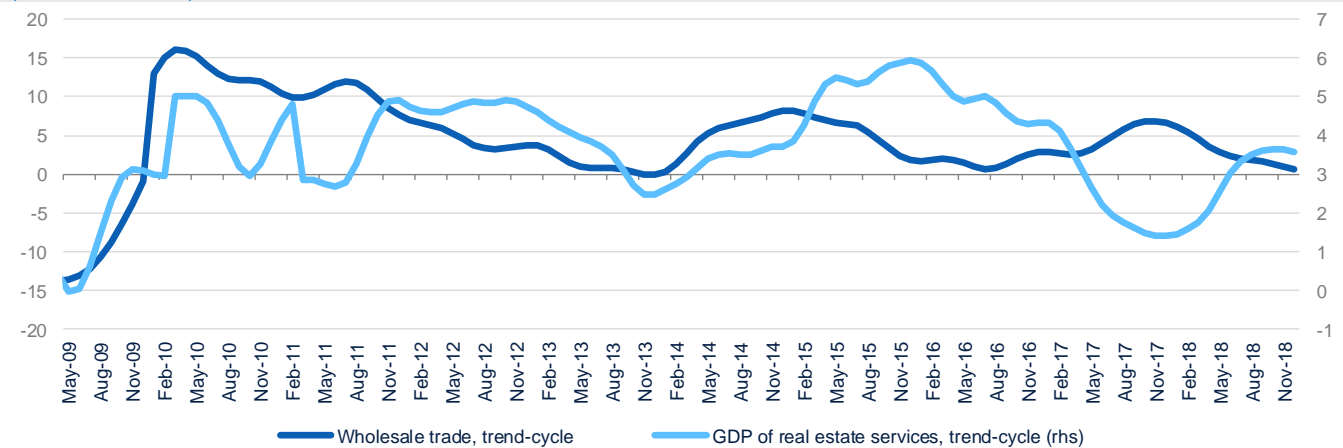
Source: BBVA Research based on data from the Monthly Trade Survey. INEGI

Figure 3a.5 Wholesale trade components
(% YoY variation)

Groceries, food, beverages, ice and tobacco
Textile products and footwear
Pharmaceutical, perfumery, recreational articles, minor and household appliances
Agricultural and forestry raw materials, for the industry and waste materials
Machinery, equipment and furniture for agricultural activities, industrial service and commerce, and other machinery and equipment for general use
Trucks and parts and new parts for cars, vans and trucks
Intermediation and wholesale trade (rhs)

Source: BBVA Research based on data from the Monthly Trade Survey. INEGI

Even the 2012 input-output matrix would involve a structural change in the real estate industry, which, as we have already mentioned in other editions of *Mexico Real Estate Outlook*, involved a shift from large-scale housing production to smaller developments, where construction companies also shifted to building production properties, linked to other economic activities. By observing these same series in their trend-cycle components, we saw that the lag time between wholesale trade performance and real estate services is about 10 months.

The housing market and wholesale trade, determining factors of the sector

As seen in the previous section, virtually all of the final demand of the GDP of real estate services comes from rental of real estate without intermediation, in addition to real estate agents, real estate brokers and trademark and patent rental services. That is why the growth of real estate services began in 2014, alongside the investment in housing construction, which has been more sustained than for other buildings. This was combined with the good performance of transport, postal and storage services over the same period; explained in turn by more wholesale trading of inputs and final goods in these activities. These include trade in trucks and new parts for cars, pick-ups and trucks, as well as intermediation in wholesale trade.

Figure 3a.6 Investment in construction and GDP of real estate services (% YoY variation)

Households
Other buildings and structures
GDP of real estate services (rhs)
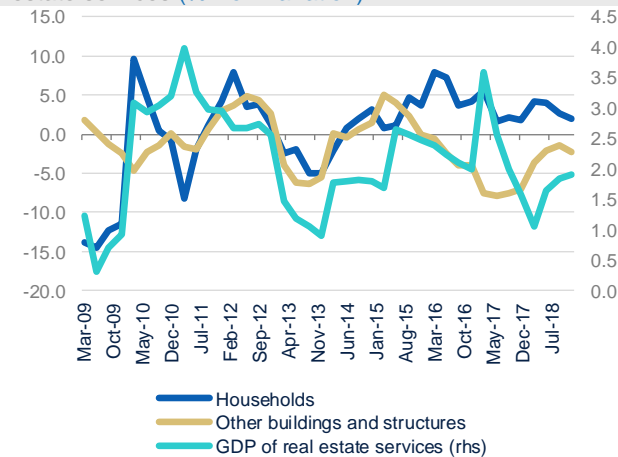
Source: BBVA Research based on data from INEGI

Figure 3a.7 GDP of real estate services and transport services (% YoY variation)

GDP of transportation, mail and storage services
GDP of real estate services (rhs)
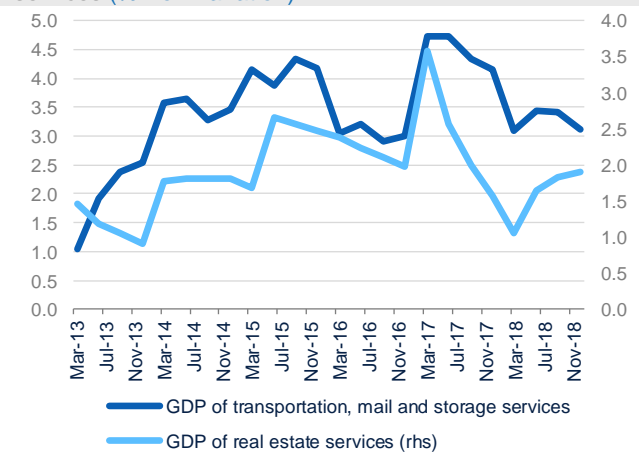
Source: BBVA Research based on data from INEGI

The upturn in trading activities and housing was a good combination, as although the intermediate demand of the sector represents only 15% of total production, it played a significant role in boosting company profits. In the case of the housing market, an increase in profit margins from rents was one of the main incentives to purchase a home, given that the capital gains over time exceed the levels of headline inflation in the long term.

In the case of the margin obtained from the purchase of a home, measured by the relationship between the SHF House Price Index and the cost-of-use component of the home, (included in the National Consumer Price Index), we found that between 2014 and 2016, this indicator increased at accelerated rates. Between the third quarter of 2015 and the third quarter of 2016 alone it grew an average of 6.5%. This means that there has been greater demand in services related to appraisals and property management.

Figure 3a.8 GDP of real estate services and housing margin (% change YoY)
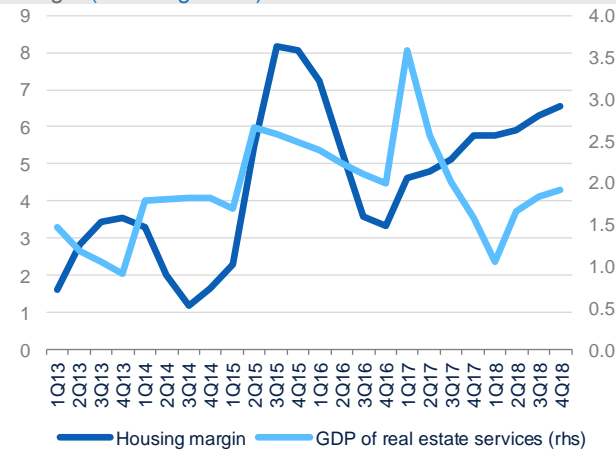
Figure 3a.9 GDP of real estate services and wholesale margin (% change YoY)

Source: BBVA Research based on data from INEGI
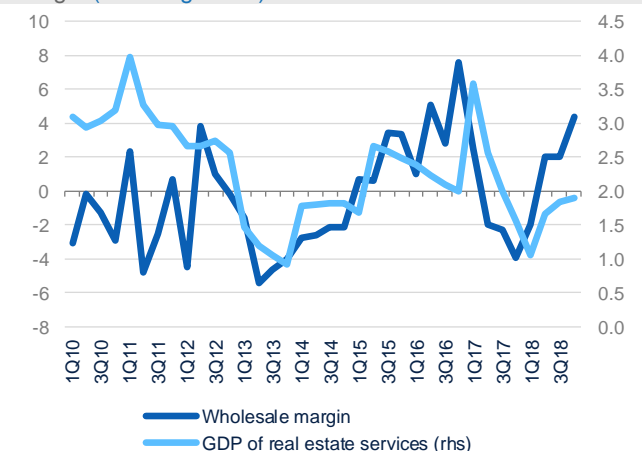
Source: BBVA Research based on data from INEGI

However, the upward cycle in demand for Real Estate Services reflected the reduction in construction activity that had occurred previously. Firstly, due to a reduction in subsidies for the purchase of housing by the Federal Government and, secondly, due to a reduction in the margins of housing due to the increase in inflation, resulting from the impact of energy prices. This raised the use and maintenance costs of houses and housing units, resulting in more moderate margin growth and a slowdown in demand for real estate services.

With regard to profits from commercial activities, the companies engaged in this sector recorded a margin rise between 2014 and 2017. During that period, a wide range of consumer products required storage and transport services to reach their marketing centers. Among the goods that had more momentum and achieved double-digit growth rates are: 1) raw and agricultural materials, 2) machinery and equipment for agricultural activities, textiles and footwear, and 3) pharmaceutical products, perfumery, recreation and small household appliances. Trade in vans and new spare and replacement parts for cars, vans and trucks even grew at rates above 20% between 2015 and 2017.

Another way to appreciate the effect of wholesale trade on real estate services' GDP performance is through income. As we have already seen, a strong upsurge in a wide range of wholesale trade products was recorded between 2014 and 2017. This was not only linked to the impact on the price of energy, but also to the slide in the real exchange rate, which increased the price of some goods quoted in dollars, such as agricultural machinery and some imported consumer products.

Figure 3a.10 Index of income from wholesale trade and real estate services' GDP (% % annual var.)
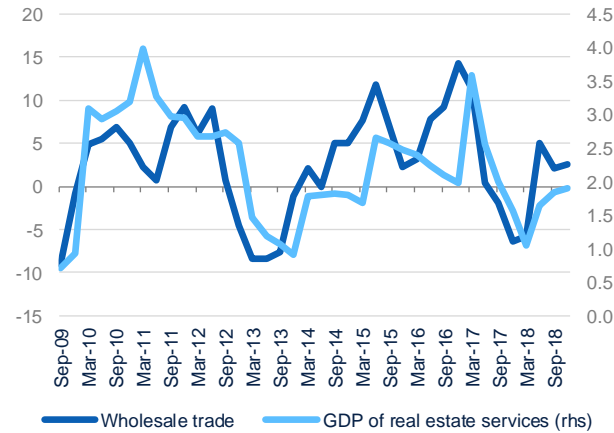
Source: BBVA Research based on data from INEGI

Figure 3a.11 Real estate services' GDP and real exchange rate (% change YoY)
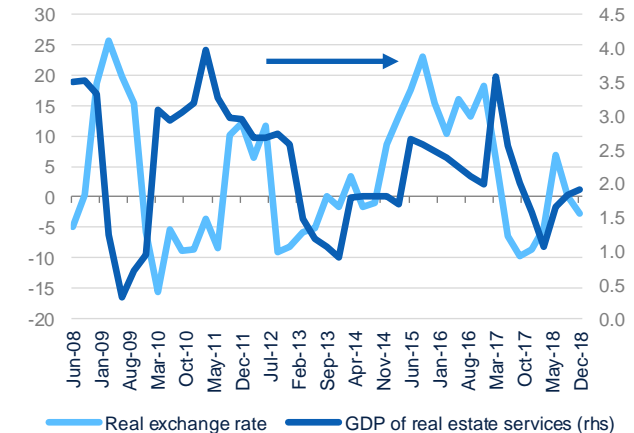
Source: BBVA Research based on data from INEGI

Specification of the Model

According to the monthly trade survey, income from wholesale trade is reflected in real estate services GDP with a lag of about three months. This is because, as retail sales increase, there will be greater demand for wholesale inventories and, therefore, a greater need for the use of premises, warehouses and rental of other furniture to transport these goods, either through franchises or patents.

Figure 3a.12 Scatter diagram comparing real estate services GDP and wholesale trader GDP

Source: BBVA Research based on data from INEGI

Figure 3a.13 Scatter diagram between real estate services GDP and the real exchange rate

Source: BBVA Research based on data from INEGI

According to the graphical analysis in the previous section, it is necessary to confirm that the time series have the suitable characteristics to create an explanatory model. One of the main requirements is to work with a stationary time series, as one of the most recurrent problems in econometric and time-series models is the variance that the data could present. The Dickey-Fuller (1981) and Phillips-Perron (1988) tests are among the most common methods for analyzing this property of the series. The results of these tests are provided in Table 3.

Table 3a.3 Series Order of Integration Tests				
	$RESGDP_t$	$WholesaleGDP_t$	$Rexfr_t$	Critical value (5%)
I(0)ADF(PP)[b]	-2.97 (-3.15)	-2.96 (-2.35)	-2.93 (-2.85)	-1.94 (-2.60)

a: Mackinnon critical value; b: Increased Dickey-Fuller test at 95% confidence (Phillips-Perron at 90% confidence), tests were done with a constant

The results of the tests confirm that the variables are stationary. That is, the annual growth rate in each time series is a transformation that enables us to obtain a constant and average zero variance in all cases. This fact implies that when estimating any economic relationship between these variables, we can generate a relationship that will be determined by something significant (Davis and Kanago, 1996). At the same time, it is feasible to find a long-term relationship between real estate services GDP, wholesale trade GDP and the real exchange rate.

Given the above, the econometric model for studying Real Estate Services GDP in Mexico is provided by a dynamic specification, as a function of Wholesale Trade and the real exchange rate. The variables come from the Mexican National Accounts System (INEGI) and the Bank of Mexico. The specification is provided by the following equation:

$$RESGDP_t = \alpha_1 * RESGDP_{t-1} + \beta_1 * WholesaleGDP_{t-1} + \beta_2 * Rexfr_{t-1} + e_t \qquad (1)$$

In which:

$RESGDP_t$ is the GDP of Real Estate Services

$WholesaleGDP_{t-1}$ is the GDP of Wholesalers in t-1

$Rexfr_{t-1}$ is the real exchange rate at t-1

e_t is the error term

*All variables are expressed in annual growth rates.

From the equation (1), the short- and long-term effects of each of the determinants of real estate services' GDP can be determined. Since it is a dynamic specification, and the variables are expressed in growth rates, then the various coefficients are those of elasticity. For example, in the short term, the effect of an increase in the GDP of wholesalers on real estate services GDP is given by β_1; while in the long term, the balancing effect will be determined by $\beta_1/(1-\alpha_1)$.

Table 3a.4 Elasticities				
Variable	**Wholesale GDP**		**Real exchange rate**	
	ST	LT	ST	LT
GDP of Real Estate Services	0.0762	0.1272	0.0164	0.0273

Source: BBVA Research with its own estimate

The results of the model tell us that for each percentage point of increase in the GDP of wholesale trade, real estate services increase 7% in the short term; with a sensitivity 12% in the long term for each percentage point. As regards the real exchange rate, this has a more stable effect, both in the short and long term. In this case, for each percentage point of increase, real estate services increase 1% and 2% respectively.

Table 3a.5 Econometric Tests		
	$RESGDP_t$ **OLS**	**Implications**
JB	1.9086 (0.3850)	Normal
LM(1)	3.3954 (0.0773)	No serial correlation
ARCH (1)	0.4950 (0.4873)	Homoscedastic
Breusch-Pagan-Godfrey	1.8761 (0.1331)	Homoscedastic
Ramsey-Reset	0.8381 (0.4099)	Linear

Notes: JB is the Jarque-Bera normality test; LM(q-order), is Lagrange multipliers for serial correlation; ARCH (1-order), for dynamic heteroscedasticity; Breusch-Pagan-Godfrey; for static heteroscedasticity; White, for static heteroscedasticity. Ramsey-Reset for the systemic part's linearity. The F test is provided and the probability is given in parentheses. A: R^2= 88, b: R^2=85 adjusted. All parameters were significant at 95% confidence and the necessary qualitative variables were used.
Source: BBVA Research

Conclusions

In recent years, the share of Real Estate Services in the economy has been increasing and now accounts for 11% of total GDP. Although, according to the INEGI National Accounts System, most of the sector's production is final demand through renting without the involvement of real estate; in recent years, performance has been largely determined by the intermediate demand for wholesale commercial activities. This has involved real estate services in broader production chains.

The last growth cycle of Real Estate Services was in a context in which the capital gains generated by the acquisition of housing generated windfall gains, while the costs for the use of houses remained stable. Once these margins decreased, fortunately, the momentum of wholesale business activities slowed the profit growth in these companies and this sustained the demand for Real Estate Services between 2014 and 2017. As early as 2018, the sector suffered a slowdown due to lower margins, as a result of the increase in energy prices.

For this reason, we can conclude that demand for real estate services depends to a large extent on the expansion of the domestic market, which must be provided in a context of employment and income growth, which would encourage demand for end-consumer goods and also income from inputs to complete productive activities.

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3.b High concentration of demand for bank mortgage credit

Over 50% of mortgages are concentrated in only 6 states

In previous editions of *Mexico Real Estate Outlook* we have shown the state distribution of mortgage credit, in order to learn the factors that effectively drive demand. In this way, we have seen that it is formal employment that triggers the demand for mortgage loans for all involved, and formal private employment even more so in the case of commercial banking. We are now reviewing state distribution with a focus on learning which regions of the country are those where families prefer to borrow for housing acquisition regardless of whether it is the housing lag or employment that makes demand grow.

Figure 3b.1 Mortgage origination 2010 to 2018
(Thousands of loans and participation %)
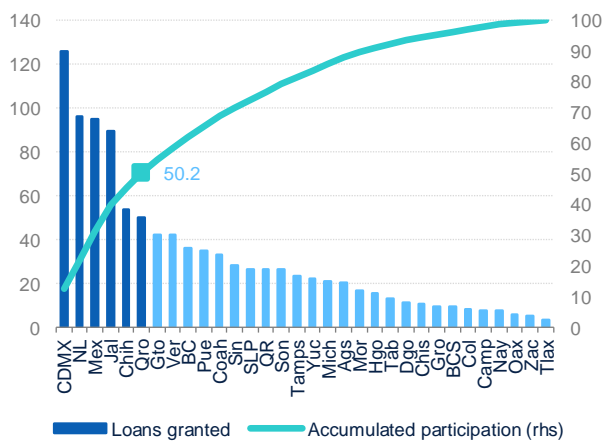
Source: BBVA Research based on CNBV data

Figure 3b.2 Mortgage origination 2010 to 2018
(Billions of pesos in real terms and participation %)
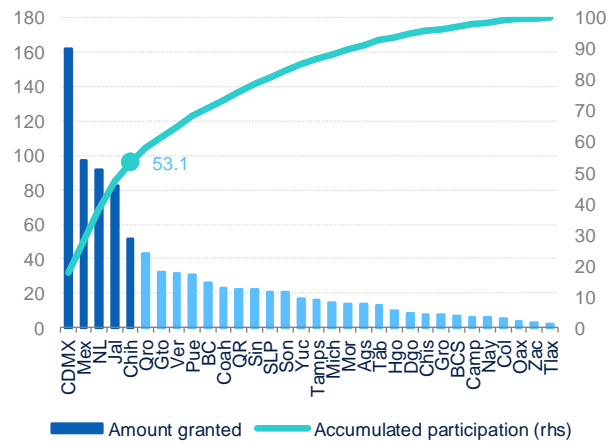
Source: BBVA Research based on CNBV data

In a long-term perspective, nine years after the 2009 crisis, a high concentration of demand for mortgage loans has been confirmed. From the beginning of the decade until the end of 2018, 50% of mortgage loans for both new and old home purchases were concentrated in only six states. In terms of amount, 53% of the total granted for that purpose were from 5 banks.

The geographical location of the housing bought by those receiving the loans is their unilateral decision, so the above figures reveal the preference of consumers, regardless of the reasons for which they have made this decision. In other words, where the provided loan is used is not the decision of the lending institutions, nor of the builders (as this also takes old housing into account).

Figure 3b.3 Mortgage Origination 2018
(Thousands of loans and participation %)

Loans granted —— Accumulated participation (rhs)

Source: BBVA Research based on CNBV data

Figure 3b.4 Mortgage Origination 2018
(Billions of pesos in real terms and participation %)

Amount granted —— Accumulated participation (rhs)

Source: BBVA Research based on CNBV data

A significant change in 2018 is the breakthrough of states in the Bajío region (Aguascalientes, Jalisco, Guanajuato, Michoacán and Querétaro) in consumer preferences for house pur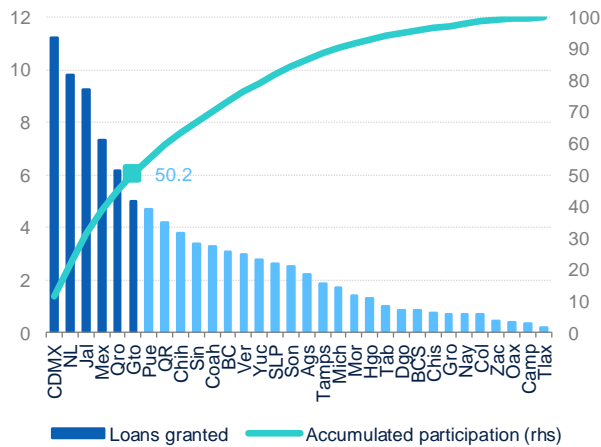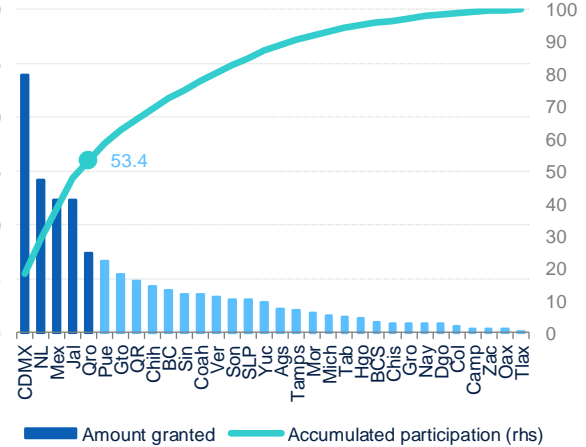chases with bank mortgage loans. Querétaro and Guanajuato have made progress in the distribution, overtaking Chihuahua, a state that was historically one of the leaders in the placement of mortgages. Despite being states with a relatively low population, the strong momentum of their economies in recent years has boosted access to credit and therefore to housing.

The dominance of Mexico City and Nuevo León in preferences has been historically reflected in the balance of banks' portfolios in terms of housing loans. These two regions account for more than 60% of the total banking portfolio. As well as a greater number of loans, this is also due the fact that these regions are those with the highest-valued housing and therefore also the highest average mortgage. Although a significant difference between the two states is that Mexico City has practically no social housing to offer, focusing on middle-income and residential housing; while Nuevo León has a more diversified offer, in which the social housing segment is still a significant market. Although, this effect is a supply side-based result, due to space limitations in the territory.

Delinquency in the states under 4% at the close of 2018

The mortgage loan portfolio by commercial banks is of a high quality measured in terms of delinquency: At the end of 2018 the delinquency rate was only 2.5%. However, the question arises as to whether any of these banks display any deterioration in their loan portfolios. It can be observed that none of the states have a delinquency rate of over 4%. Morelos has the largest proportion of past-due portfolio, but this stands at only 3.8%; while Nayarit has the lowest with only 1%. From 2010 to date, the highest level of portfolio deterioration was 2010Q1 in Durango, to be exact, at a level of 7.3%, but this is currently 2.3%.

Figure 3b.5 Mortgage loan balance 2018
(Billions of constant pesos)

Source: BBVA Research based on data from Banco de México

Figure 3b.6 Mortgage portfolio delinquency 2018
(Percentage delinquency index)

Source: BBVA Research based on data from Banco de México

High interstate concentration, but low intrastate concentration

Now let's look at the preferences of families within each of the six main states where houses are bought with bank credit. The most visible pattern is that there is a low concentration of locations at the municipal level, given that in the first four states, namely Mexico City, Nuevo León, Jalisco and the State of Mexico, loans are distributed relatively homogeneously in at least 5 municipalities. However, in Mexico City the preference is clearly for the center of the city despite that fact that this is the most expensive area.

Figure 3b.7 Mortgage origination - Mexico City
(Number of loans)

Source: BBVA Research based on CNBV data

Figure 3b.8 Mortgage Origination - Nuevo León
(Number of loans)

Source: BBVA Research based on CNBV data

As for Nuevo León and Jalisco, the most in-demand municipalities are those belonging to their capitals' metropolitan areas. The State of Mexico breaks with this trend, as most of the houses bought with bank financing are in the Mexico City metropolitan area, although the capital Toluca is included in this. For this reason, we consider that the number of mortgages within each of these states is relatively diversified in terms of the number of municipalities; but the opposite conclusion would be drawn if this were counted by metropolitan areas.

Figure 3b.9 Mortgage origination - Jalisco
(Number of loans)
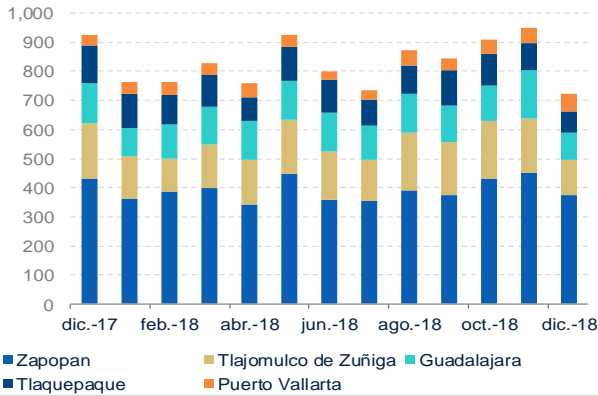
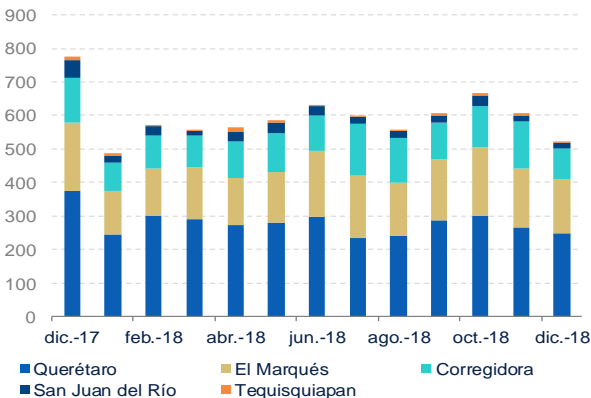Source: BBVA Research based on CNBV data

Figure 3b.10 Mortgage origination - State of Mexico
(Number of loans)
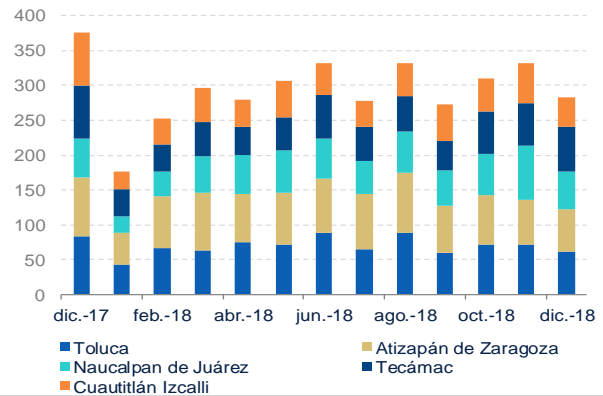
Source: BBVA Research based on CNBV data

On the other hand, of the states that progressed in the rankings in the last year, Querétaro has a high concentration at the municipal level. In the state of Querétaro, not only are just 3 municipalities attracting most of the homebuyers' preferences, these are also part of the capital's metropolitan area. In contrast, out of the preference-leading states, Guanajuato is probably that with the lowest concentration. Although León, a city with the highest economic activity and purchasing power, has half of the resources, the majority of housing sales with mortgage loans are concentrated in 5 municipalities. An additional feature is that these municipalities are not part of a single metropolitan area. This reflects the fact that Guanajuato is the state with the greatest geographical diversification in the country, in terms of economic activity.

Figure 3b.11 Mortgage origination - Querétaro
(Number of loans)

Source: BBVA Research based on CNBV data

Figure 3b.12 Mortgage origination - Guanajuato
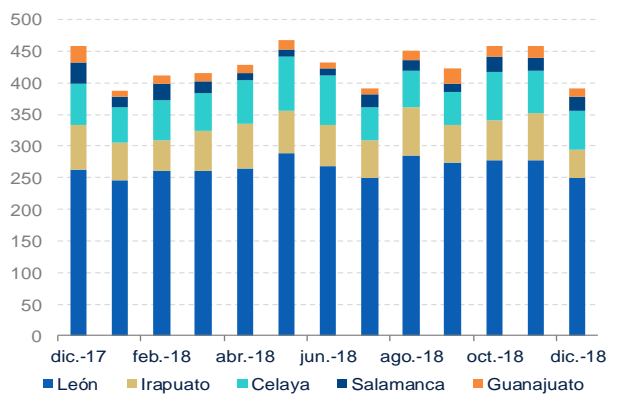(Number of loans)

Source: BBVA Research based on CNBV data

Mortgage rate stability boosts preference for Bajío

While we have previously proven that economic conditions such as private formal employment, long-term consumer confidence and macroeconomic stability are those that govern commercial banking mortgage loan demand, this has also been significantly influenced by the stability of interest rates of this type of product.

To be precise, it is the states of Bajío, Querétaro and Guanajuato where improvements in interest rates both for the acquisition of new and used housing have been observed, while the rest of the banks analyzed do not necessarily show an improvement in both products. This is seen in a context of a rise in short-term interest rates by the tightening of monetary policy by the central bank; and that banks have not reflected such increases in short- or long-term mortgage rates.

Figure 3b.13 Weighted average new housing rate
(Annual nominal interest rate, %)
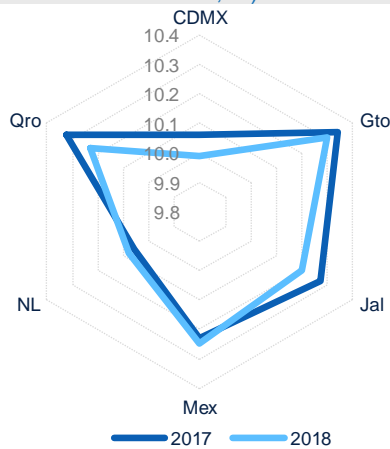
Source: BBVA Research based on CNBV data

Figure 3b.14 Weighted Average Used Housing Rate
(Annual nominal interest rate, %)
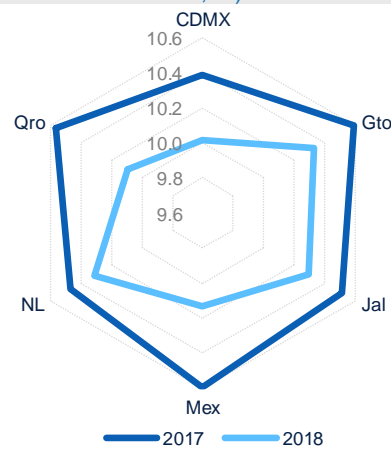
Source: BBVA Research based on CNBV data

This pattern we observe in the interest rates of new and used house purchasing products is not as clear in the case of employment from a perspective of improvement in the Bajío region's states. True, interest rates in all states have remained stable and formal private employment has grown, albeit at different rates. We can see that in Querétaro and Guanajuato, IMSS (Mexican Social Security Institute) employment has also increased above the national average, but these increases have not been significant in the last two years.

From the perspective of the state economy, it is also clear that growth in these regions has encouraged demand for housing provided by mortgage financing. With the exception of Nuevo León in 2016, all of these have grown by more than 2% in the last three years, taking into account that 2018 is an estimate based on the Quarterly Indicator of State Economic Activity published by the INEGI.

Figure 3b.15 State IMSS Employment
(% annual variation)

Dec-18 — Dec-17 — Dec-16

Source: BBVA Research based on IMSS data

Figure 3b.16 State GDP Growth
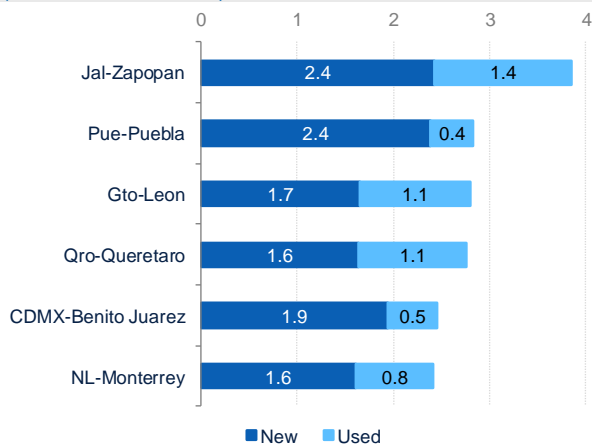(% annual variation)

2016 — 2017 — 2018
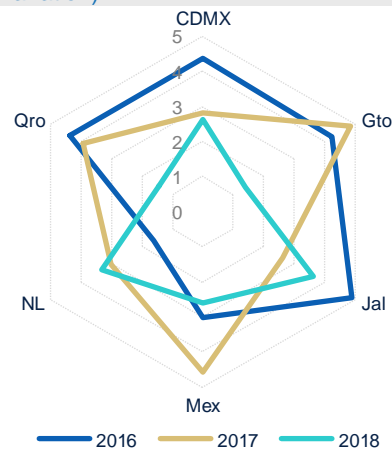
Source: BBVA Research based on data from INEGI

Municipal growth in city centers

Along these lines, we have found that most commercial banking mortgage loans are concentrated among a few banks, and that there is a relative diversification between their municipalities in each state. By further detailing the placement of mortgages at the municipal level we can observe that during 2018, the six municipalities that were most preferred by families accessing loans were in the center of the largest cities of each state. With the exception of Guanajuato, the capitals and their central zones are the ones that most attract banking clients' interest, and it is also true that this is encouraged as they obtain larger loans allowing access to homes of greater value, as a result of their location.

Figure 3b.17 Mortgage origination 2018
(Thousands of loans)

Municipality	New	Used
Jal-Zapopan	2.4	1.4
Pue-Puebla	2.4	0.4
Gto-Leon	1.7	1.1
Qro-Queretaro	1.6	1.1
CDMX-Benito Juarez	1.9	0.5
NL-Monterrey	1.6	0.8

New ■ Used

Source: BBVA Research based on CNBV data

Figure 3b.18 Mortgage origination 2018
(Billions of pesos in real terms)

Municipality	New	Used
Jal-Zapopan	4.1	1.9
CDMX-Benito Juarez	4.6	1.3
NL-Monterrey	3.5	1.6
Pue-Puebla	3.5	0.5
CDMX-Miguel Hidalgo	2.6	1.0
Qro-Queretaro	2.1	1.3

New ■ Used
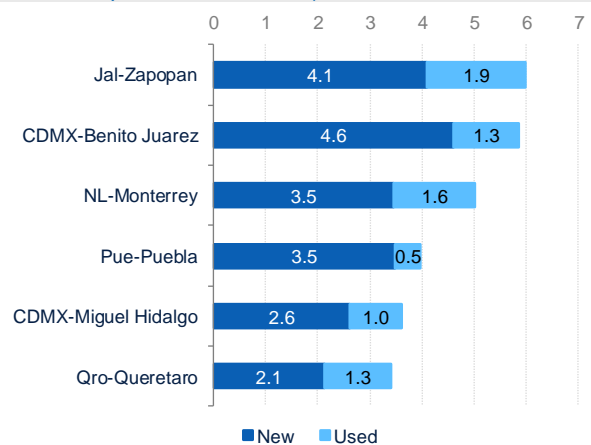
Source: BBVA Research based on CNBV data

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	2.7	2.3	2.0	1.4
Real private consumption (Annual % change)	3.4	2.1	2.0	2.1	2.7	3.5	3.4	2.2	2.0
Real government consumption (Annual % change)	3.1	3.4	0.5	2.6	1.9	2.6	1.0	1.4	-0.5
Real construction investment (annual % chge.)	-0.5	4.0	-4.7	0.7	2.7	0.9	-2.9	0.3	
Residential	-1.3	4.1	-3.6	0.9	2.6	5.7	2.8	3.2	
Non-residential	0.0	3.9	-5.5	0.5	2.8	-2.7	-7.5	-2.4	
Total formal private employment (IMSS)									
Thousands of persons (average, sa)	15,211	15,904	16,459	17,013	17,772	18,492	19,285	20,052	
Annual % change	4.1	4.6	3.5	3.4	4.5	4.1	4.3	4.0	
Average salary (IMSS)									
Nominal pesos per day, average	260.1	270.8	281.5	294.1	306.4	317.9	333.2	352.2	
Real annual % change	1.1	0.0	0.1	0.4	1.4	0.9	-1.1	0.8	
Real total wages (IMSS, annual % change)	6.1	5.1	3.6	4.0	5.8	4.8	3.2	4.9	
Minimum general salary (daily)									
Nominal pesos	58.1	60.5	63.1	65.6	69.2	73.0	80.0	88.4	
Real annual % change	1.0	-0.1	0.4	-0.1	2.8	2.6	3.1	5.5	
Consumer prices (eop, annual % change)	3.8	3.6	4.0	4.1	2.1	3.4	6.8	4.8	
TIIE 28 average (%)	4.8	4.8	4.2	3.5	3.3	4.6	7.1	8.0	
10-year interest rate, Govt. bond (M10)	6.8	5.7	5.7	6.0	5.9	6.2	7.2	8.0	

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	-0.9	0.6	2.0
Building	4.2	2.7	-3.0	3.2	3.3	4.2	0.4	1.3	1.6
Civil engineering and major works	2.8	0.7	3.0	-1.6	-0.5	-9.5	-10.1	-5.8	1.2
Specialized construction work	5.6	4.2	-2.3	9.2	3.1	10.1	7.2	5.5	5.4
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	1,682.6	
Annual % change	4.7	6.3	1.1	7.3	8.7	2.2	4.2	5.0	
Hydraulic cement sales (tons, annual % change)	1.5	2.1	-5.9	5.1	7.4	2.8	-0.1	0.9	
Ntnl. cement consumption (tons, annual % change)	1.4	2.5	-6.0	4.8	0.5	3.1	-0.1	0.7	
Construction companies[1]									
Real production value (annual % change)									
Total	3.2	3.4	-3.7	0.2	-0.1	-1.6	-3.5	-0.3	
Building	6.3	2.0	-5.6	2.9	1.4	2.9	-1.9	2.2	
Public works	0.3	0.5	-4.4	-2.5	-0.3	-8.7	-9.6	-5.2	
Water, irrigation and sanitation	10.5	1.9	-6.0	-5.0	-9.2	1.4	-10.7	-1.5	
Electricity and communications	21.4	-6.8	-2.2	-11.0	9.8	24.2	-14.2	-1.8	
Transportation	-2.8	-2.7	-7.8	3.8	-5.1	-6.6	2.9	-8.6	
Oil and petrochemicals	-7.7	14.7	3.6	-10.7	10.8	-35.8	-44.6	5.9	
Other	6.2	36.4	10.6	1.4	-5.6	13.3	14.6	5.9	
Construction prices (annual % change)									
Headline	9.3	0.4	-0.7	6.5	2.3	8.7	7.9	10.3	
Construction materials	10.6	-0.2	-1.4	4.5	4.5	9.8	8.7	11.3	
Labor	3.8	3.2	2.9	3.5	4.2	2.9	4.4	5.3	
Equipment rental	5.3	-0.2	1.4	4.1	7.8	7.9	3.0	3.4	

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	572.2	562.9	538.3
Infonavit	475.0	445.5	421.9	380.6	387.0	393.0	369.1	388.8	370.8
Fovissste	87.8	75.2	64.3	65.9	63.1	64.4	63.4	51.6	48.7
Commercial banks and Sofoles	74.9	78.6	120.7	137.1	159.3	141.8	139.7	122.4	118.9
Reduction**	18.6	23.4	45.4	58.7	82.5	56.6	51.1	36.8	29.4
Individual credits	619.0	575.9	561.6	525.0	527.0	542.5	521.1	526.1	508.9
Financing flow1									
Total	355.1	353.2	349.9	345.4	379.6	384.6	371.4	354.0	357.9
Infonavit	187.7	188.8	168.2	145.0	154.0	155.1	140.6	152.3	149.9
Fovissste	71.3	54.4	50.1	49.5	53.6	51.7	49.6	38.2	34.9
Commercial banks and Sofoles	96.2	109.9	131.6	150.9	172.0	177.8	181.2	163.5	173.1
Commercial banks current loan portfolio									
Balance end of period1	532.9	554.5	584.6	605.9	631.1	694.3	751.6	767.6	790.6
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.
* Annualized to December
** 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)

	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
National	9.6	7.7	6.0	5.8	7.3	7.5	7.9	8.6	8.4	8.7	9.1	9.3
Aguascalientes	9.7	7.4	5.6	5.5	6.8	7.4	7.8	8.5	8.2	8.3	8.4	8.3
Baja California	7.5	6.4	4.9	4.7	6.3	6.6	7.0	8.2	8.7	9.1	9.4	9.6
Baja California Sur	7.5	6.1	5.2	4.9	6.2	6.3	6.2	7.0	7.7	8.1	9.1	10.1
Campeche	9.3	7.5	5.5	4.6	6.0	6.4	7.1	8.3	8.7	9.0	9.3	9.6
Coahuila	8.9	6.8	5.2	5.4	6.8	6.7	6.7	6.7	6.5	6.8	7.5	8.4
Colima	7.2	6.1	5.0	5.3	6.9	6.9	7.2	8.3	8.5	8.8	9.1	8.9
Chiapas	8.1	6.7	5.3	5.0	6.3	6.2	6.3	7.3	7.5	8.1	8.4	8.4
Chihuahua	7.6	5.9	4.5	4.7	6.3	6.1	6.2	6.5	6.4	6.8	7.4	8.2
Ciudad de México	15.4	12.9	10.8	9.7	11.1	11.8	12.3	12.4	11.3	10.4	10.4	11.0
Durango	9.7	7.0	4.5	3.9	4.9	4.6	5.1	5.7	5.8	6.6	7.1	7.3
Guanajuato	8.6	6.8	5.3	5.3	6.9	7.1	7.8	9.0	9.1	9.5	9.9	9.7
Guerrero	9.1	7.9	6.3	5.8	6.9	6.5	6.8	7.2	7.3	7.7	7.9	8.0
Hidalgo	9.0	7.3	5.5	6.0	7.1	6.1	5.8	5.9	5.9	6.7	7.5	8.0
Jalisco	7.7	6.5	4.7	4.1	6.4	7.3	8.9	10.7	11.0	11.3	11.3	11.5
México	8.8	7.3	5.6	5.4	6.7	6.6	7.0	7.6	7.7	8.3	8.6	8.3
Michoacán	8.3	6.6	5.2	5.2	6.6	6.4	6.9	7.9	8.0	8.8	9.0	8.8
Morelos	8.7	7.5	6.0	5.8	7.1	6.6	6.4	6.6	6.5	7.2	8.1	8.5
Nayarit	8.1	7.2	6.4	6.8	8.6	8.6	8.4	8.8	8.4	8.4	9.2	10.1
Nuevo León	9.0	7.4	5.7	5.9	7.8	8.2	8.8	9.8	9.6	9.6	10.0	9.9
Oaxaca	8.2	6.6	4.6	4.2	5.8	5.9	6.7	8.1	8.2	8.5	8.2	7.9
Puebla	10.1	8.3	6.4	5.8	7.2	7.4	7.8	9.0	9.1	9.3	9.4	9.3
Querétaro	9.6	7.7	5.7	5.2	6.4	6.4	7.1	7.8	7.9	8.4	8.6	8.5
Quintana Roo	9.4	7.8	6.8	7.3	8.3	8.2	7.2	6.4	6.4	6.6	8.4	10.8
San Luis Potosí	8.5	7.1	5.5	5.8	7.3	7.3	7.8	8.4	8.4	9.1	9.5	9.7
Sinaloa	7.6	6.1	5.2	5.5	7.0	7.4	7.5	8.3	8.3	8.6	9.1	9.3
Sonora	8.5	6.3	4.7	4.9	6.2	6.0	5.9	5.9	5.8	6.1	6.7	7.2
Tabasco	9.0	7.3	5.3	4.5	5.6	5.5	6.2	7.8	8.1	8.7	8.7	8.1
Tamaulipas	10.1	7.0	4.8	4.6	5.9	5.6	5.6	5.7	5.5	5.9	6.6	7.4
Tlaxcala	7.5	5.9	4.1	4.6	6.6	6.4	7.0	7.2	6.7	6.6	6.6	7.1
Veracruz	8.5	6.4	4.5	4.2	5.5	5.3	5.6	6.1	6.0	6.4	6.9	7.0
Yucatán	10.4	8.5	7.1	7.0	8.1	8.0	7.7	7.7	7.5	7.8	8.7	9.4
Zacatecas	9.6	7.1	5.0	4.4	5.6	6.1	6.5	7.8	7.8	8.1	8.6	8.6

Source: BBVA Research with SHF data

Table 4.5 Quarterly macroeconomic indicators

	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
Real GDP (annual % change)	2.9	2.3	2.2	3.3	3.2	3.1	1.6	1.5	2.1	1.5	2.5	1.7
Real private consum. (annual % chge.)	3.7	3.1	3.8	3.6	3.5	4.5	3.1	2.4	3.3	2.0	2.2	1.5
Real gvmnt. consum. (annual % chge.)	0.6	2.4	3.9	3.4	2.4	1.4	-0.3	0.3	1.7	2.4	1.0	0.2
Real const.investment (annual % chge.)	2.9	1.8	-0.6	-0.4	-1.8	-3.5	-3.1	-3.0	0.0	0.8	0.5	-0.3
Residential	7.9	7.3	3.7	4.2	5.6	1.7	2.1	1.9	4.2	4.1	2.7	1.9
Non-residential	-0.6	-2.4	-3.9	-4.0	-7.5	-7.9	-7.6	-7.0	-3.7	-2.1	-1.5	-2.4

Source: BBVA Research with Inegi data

Table 4.6 Quarterly construction and housing indicators

	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
Real construction GDP	4.5	4.0	1.7	1.9	1.8	-0.7	-0.8	-0.9	1.7	2.0	1.6	0.6
Vol. index 2003=100 (annual % chge.)												
Building	5.4	5.8	3.4	4.2	4.2	0.5	0.5	0.4	3.4	3.5	2.3	1.3
Const. engineering and major works	3.6	-1.8	-7.3	-9.5	-13.9	-12.9	-11.5	-10.1	-7.8	-7.1	-5.7	-5.8
Specialized construction work	1.1	4.9	8.3	10.1	16.2	12.4	9.1	7.2	5.8	6.5	7.4	5.5
Construction companies[1]												
Real production value (annual % chge.)												
Total	-0.6	-1.3	-2.7	-1.7	-1.6	-4.9	-4.8	-2.7	-0.2	1.5	1.1	-3.4
Building	-2.6	1.7	5.7	6.1	0.6	-3.5	-3.4	-1.1	4.7	5.7	1.8	-2.4
Public works	1.9	-5.9	-15.3	-13.4	-10.9	-10.9	-9.2	-7.3	-8.1	-5.9	-1.6	-5.1
Water, irrigation and sanitation	1.7	-1.5	-2.1	6.8	-6.7	-4.6	-4.0	-24.5	-2.4	-9.1	1.9	3.8
Electricity & communications	17.5	36.4	30.2	13.4	9.1	-19.8	-27.8	-12.2	-10.5	-2.9	7.5	-0.6
Transportation	-2.4	-5.9	-13.9	-3.7	2.4	4.3	5.3	0.1	-9.9	-8.8	-6.0	-9.5
Oil and petrochemicals	4.1	-32.0	-47.9	-55.8	-58.4	-52.1	-39.8	-17.7	1.0	11.6	7.9	4.1
Other	-2.5	7.3	24.4	23.2	35.0	14.9	5.3	8.3	8.5	10.2	7.0	-1.3

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

	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18
Home sales by organization (thousands of credits)												
Infonavit	78.0	103.6	89.6	97.9	76.0	100.2	101.8	110.8	74.7	101.7	98.4	96.0
Fovissste	13.9	19.3	15.8	14.5	10.4	15.0	12.0	14.3	9.8	13.1	13.1	12.7
Banks	19.2	22.2	26.0	24.2	21.0	20.7	19.8	22.2	17.8	20.5	29.1	32.5
Total	111.0	145.0	131.4	136.6	107.4	135.9	133.5	147.3	102.3	135.3	140.6	141.2
Financing (billions of December 2016 pesos)												
Infonavit	29.6	39.4	34.1	37.6	28.5	36.4	42.0	45.5	30.0	41.2	39.3	39.3
Fovissste	10.4	14.8	12.6	11.8	7.7	11.3	9.1	10.1	7.4	9.7	9.0	8.9
Banks	38.9	45.9	46.0	50.4	41.8	37.4	39.7	44.6	36.9	44.7	43.4	48.2
Total	78.9	100.1	92.6	99.8	78.0	85.0	90.8	100.2	74.3	95.6	91.7	96.4
Infonavit: number of credits to buy a house (thousands)												
Economic + Popular[2]	54.4	71.2	58.4	60.7	50.2	67.9	64.1	68.3	47.8	65.4	62.6	57.0
Traditional	13.9	19.0	18.4	22.3	15.2	19.7	23.5	26.1	16.2	22.1	21.8	23.9
Middle income	7.7	10.7	10.0	11.6	8.3	9.9	10.9	13.0	8.5	11.3	10.8	11.8
Residential	1.6	2.3	2.3	2.9	2.0	2.4	2.8	3.1	1.9	2.6	2.7	2.9
Residential Plus	0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.4	0.3	0.4	0.4	0.4
Total	78.0	103.6	89.6	97.9	76.0	100.2	101.8	110.8	74.7	101.7	98.4	96.0

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

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

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

Table 4.9 Monthly macroeconomic indicators

	D.17	J.18	F	M	A	M	J	J	A	S	O	N	D
IGAE (annual % change)	1.1	2.0	2.2	-0.7	4.5	2.2	1.2	3.4	1.8	2.0	2.9	1.8	0.0
Real constr. vol. (ann. % change)	3.8	4.5	4.7	-3.8	6.6	0.0	1.0	4.6	-1.8	-0.4	1.4	-3.5	-4.3
Building	7.2	6.2	8.0	-3.5	10.7	-0.2	1.3	5.2	-3.0	-2.2	1.1	-2.9	-2.6
Civil engineering & major works	-4.3	-6.9	-6.2	-10.9	-7.2	-7.2	-4.7	-3.9	-5.1	1.0	-0.9	-5.6	-10.8
Specialized construction work	-0.5	11.6	2.3	3.7	4.9	10.0	6.4	12.7	8.6	6.7	5.7	-3.4	-3.6
Total formal private empl. (IMSS)													
Thousand people	19,418	19,532	19,696	19,787	19,874	19,908	19,895	19,949	20,063	20,193	20,356	20,458	20,079
Annual % change	4.3	4.5	4.5	4.2	4.5	4.5	4.0	4.1	4.0	3.9	3.7	3.6	3.4
Average salary quote (IMSS)													
Nominal daily pesos	336.3	348.1	349.4	349.3	349.4	353.8	353.5	357.4	356.2	351.8	350.6	352.7	354.4
Real annual % change	-1.2	-0.4	0.1	0.9	1.2	0.9	1.1	1.1	1.0	0.8	0.9	1.1	0.5
Real total wages (IMSS)													
Annual % change	3.1	4.0	4.5	5.1	5.8	5.4	5.1	5.2	5.0	4.7	4.7	4.7	3.9
Minimum general wage (daily)													
Nominal pesos	80.0	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
CPI (end of period)													
Annual % change	6.8	5.5	5.3	5.0	4.6	4.5	4.6	4.8	4.9	5.0	4.9	4.7	4.8
TIIE 28 (average, %)	7.5	7.6	7.8	7.8	7.8	7.9	7.9	8.1	8.1	8.1	8.1	8.3	8.4
10-year Gov. bond int. rate (M10)	7.6	7.6	7.6	7.3	7.5	7.8	7.6	7.8	7.9	7.9	8.9	9.1	8.6

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

Table 4.10 Monthly construction and housing indicators

	D.17	J.18	F	M	A	M	J	J	A	S	O	N	D
Const. employment (IMSS)													
Total (thousand people)	1,577	1,624	1,648	1,639	1,673	1,685	1,689	1,713	1,736	1,736	1,748	1,713	1,587
Annual % change	5.8	6.8	6.9	5.3	7.8	6.9	5.4	5.7	4.9	4.9	3.7	1.5	0.6
Hydraulic cement sales (tons)													
Annual % change	-1.2	1.9	2.6	-1.6	5.0	5.0	3.6	-1.8	5.0	8.7	-3.6	-4.3	-8.8
Cement consumption per capita[1]													
Annual % change	-1.4	1.7	2.4	-1.7	4.7	4.9	3.5	-2.0	4.9	8.5	-3.8	-4.5	-9.0
Resid. cons. prices (ann. % chge.)													
Headline	7.9	7.3	5.9	5.9	7.2	8.0	9.3	10.0	10.2	10.5	10.0	10.2	10.3
Materials	8.7	8.0	6.2	6.4	7.8	8.7	10.3	11.1	11.3	11.6	11.0	11.2	11.3
Labor	4.4	4.5	4.7	3.3	4.3	4.2	4.2	4.7	4.8	5.2	5.2	5.1	5.3
Machinery rental	3.0	0.8	0.9	2.1	2.5	3.7	3.7	3.5	3.6	3.8	2.6	3.5	3.4

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

	D.17	J.18	F	M	A	M	J	J	A	S	O	N	D
Commercial banks loan portfolio													
Balance in billion pesos*	767.6	767.4	767.8	770.7	776.7	785.5	786.0	788.0	786.8	791.4	791.0	792.1	790.6
Annual % change	2.1	2.9	3.0	2.8	3.3	3.5	3.1	2.8	2.6	2.7	2.8	3.1	3.0
Total annual cost (CAT, average)	2.5	2.5	2.5	2.5	2.5	2.6	2.4	2.5	2.5	2.5	2.4	2.5	2.5

* October 2017 pesos
Source: BBVA Research with Banco de México, Conasami, INEGI, IMSS, CNBV data

5. Special topics included in previous issues

Second half 2018
Construction performance below its potential
An approach to the prices faced by builders
Population, lag and employment; their contribution to the state distribution of the mortgage market

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

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Infonavit maintains credit placement stable

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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

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The lower benchmark interest rate could drive residential building
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New housing after the real estate boom
Financing retirement with real estate assets
The Infonavit Financial Plan 2014-2018. A focus on quality

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