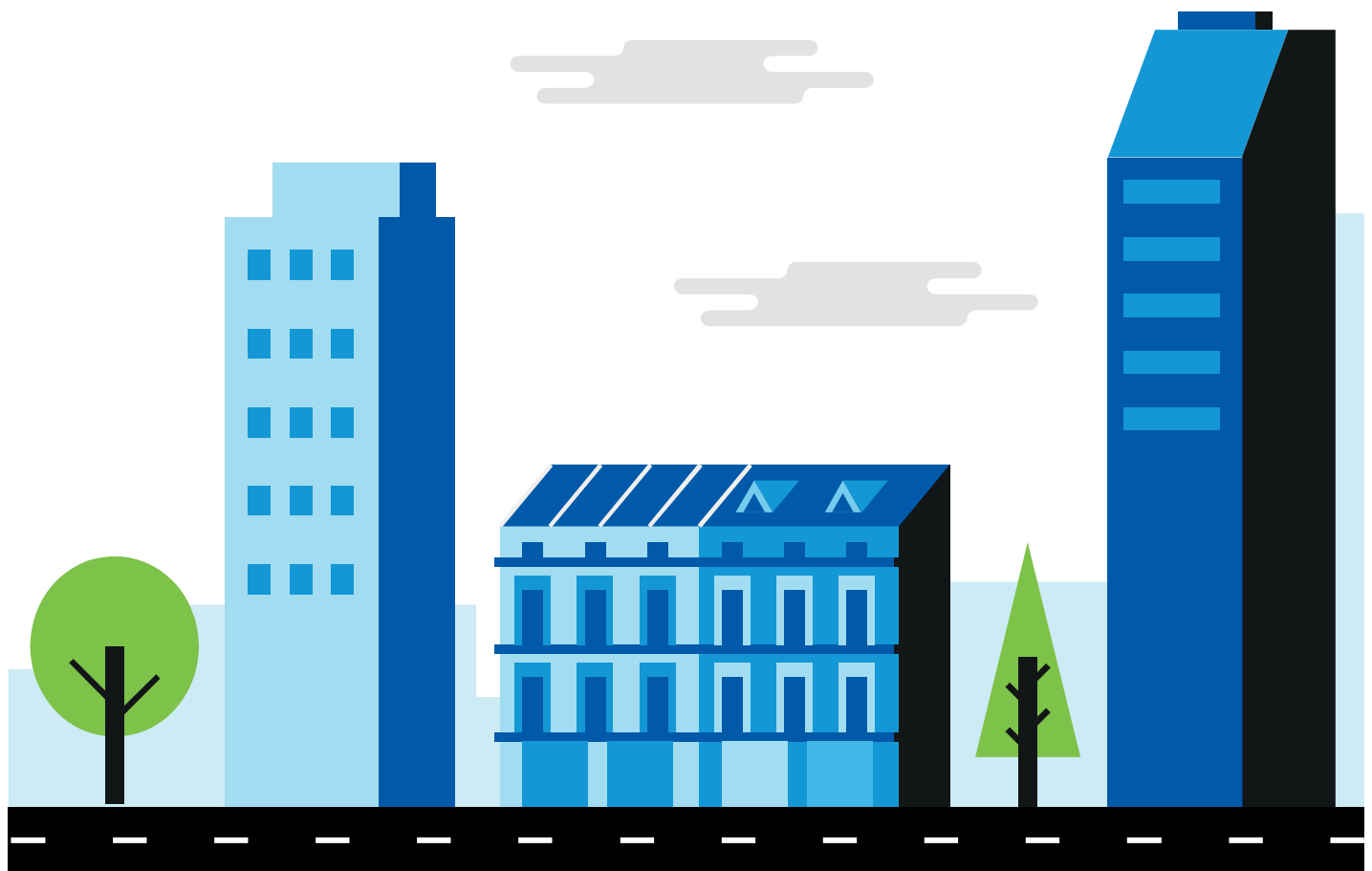


Mexico Real Estate Outlook

1st HALF 2016 | MEXICO UNIT



01
The mortgage market has grown in double digits yet another year. Although it will grow at a slower pace in 2016

02
Demand for housing still governs the behaviour of prices, now examined from a spatial perspective

03
A new way of measuring accessibility indicates how much purchasing power has grown

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Closing date: March 4, 2016

1. Summary

Last year, we commented on the shortening of the construction economic cycle, thanks to a hike in residential building that led to the sector achieving positive rates sooner than expected. In 2015, construction continued to grow, this time at the same rate as the economy; but the slowdown also arrived earlier than expected. Expectations of civil engineering have been very high since 2013, especially with the publication of the National Infrastructure Programme, but the result has been disappointing. Nevertheless, credit has continued to flow to building and civil engineering projects. We do not expect a recovery in civil works in 2016, especially with a smaller budget and spending cuts. Building will have to lift the sector again.

The mortgage market has again had an excellent year, growing more than 10% in real terms. The number of loans is also growing, albeit at a slower pace –only 3.3%– indicating that higher-value housing is being financed. This result has been positive for both public institutions and banks, the latter grew more than 20% in loan amounts, after removing the effect of prices. Several changes have contributed to a fruitful 2015. First, increases in the maximum amount of credits from public institutes continue to affect the demand of its affiliates, who have used them to acquire higher-value homes. In banking, the lower cost of credit and financing of higher-value homes have meant that the average mortgage amount exceeds 1,100,000 pesos. Regarding housing supply, it is likely that the lower subsidy budget and the fear of further restrictions have lowered builders' expectations. However, we believe that the current level of inventory would be close to achieving equilibrium.

We have addressed the issue of housing prices in several numbers of *Mexico Real Estate Outlook*. On the first occasion, we wanted to learn about the behaviour of housing prices in the market niche that banks often serve using a model that reflects the characteristics of the housing. Next, we analysed the structure of prices and the economic variables that most affected their dynamics. Now, we are supplementing the analysis of this important aspect of the housing market with a spatial pricing-model at municipal level. Based on appraisals, we have calculated some clusters and found that demand has led to a concentration of price increases in the cities with greatest economic activity. At the same time, this study helps to discover the geographical relationship of price changes; for example, how a price increase affects neighbouring municipalities or even if it has any effect at all.

It is known that mortgage loans are the main access route to housing; so a lower cost of mortgages should point towards greater accessibility. Several measurements are typically used in analyses of this type in different economies, such as the ratio of house prices to income, or the monthly instalment relative to income. We believe that these indicators reflect the cost change in terms of income, but not necessarily whether a decrease in that cost is enough to obtain housing. We therefore propose a measurement based on purchasing power through the mortgage loan, while taking into account the current housing supply. Our calculations indicate that more households can buy a home of greater value taking into account housing prices in their states. Moreover, we estimate the amount by which buying power has increased.

The Infonavit has not modified its four strategic priorities for the 2016-2020 period. Since the Institute is the leading underwriter of mortgages in terms of number and the second in value, we focus on its Annual Operational Programme (AOP) in more detail. Compared to last year's AOP, the Infonavit is very cautious in its 2016 plan, especially if we compare it with how much it actually placed in 2015. We believe that with the changes made to its lending policy and an increase in the number of IMSS workers, the probability of exceeding the provisions of the AOP is very high.

2. Situation

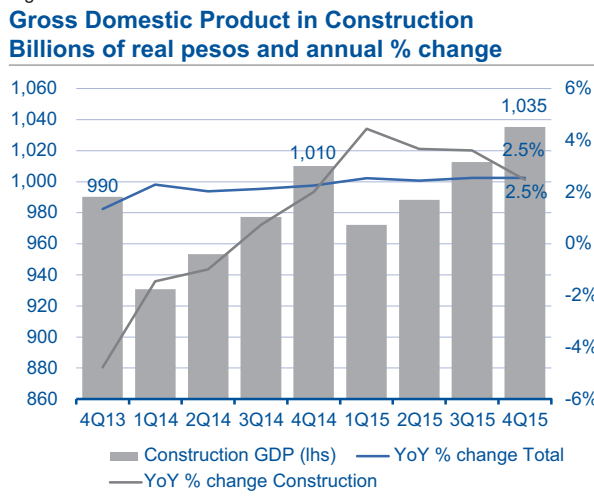
2.a The dearth of Civil Works slows Construction

Construction shortened its economic cycle during 2014 and started growing sooner than expected. The cycle may also change in 2016 to enter a phase of slower growth. This is especially so, considering the adjustment to infrastructure spending.

More construction, but at a slower pace

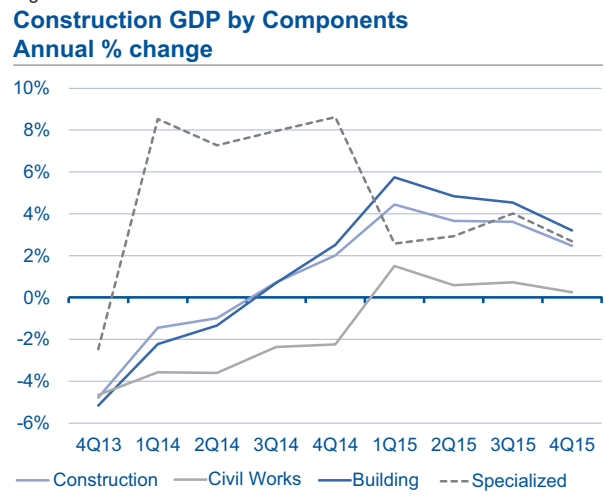
As in 2014, the construction sector was growing at the end of 2015. Construction GDP increased 2.5% over the previous year. This time, the difference is a slowdown at year's end. Building is again the mainstay of the sector throughout the year with the lukewarm progress in civil works. Residential construction and manufacturing building showed a positive trend, although the second slowed compared to previous years. On the other hand, civil work made progress during the first three quarters, but more as a statistical effect over past performance than real growth. Both components fell in the last quarter, slowing the progress of the sector which, after growing above the economy, ended at the same rate.

Figure 2a.1



Source: BBVA Research with SCNM, Inegi data

Figure 2a.2

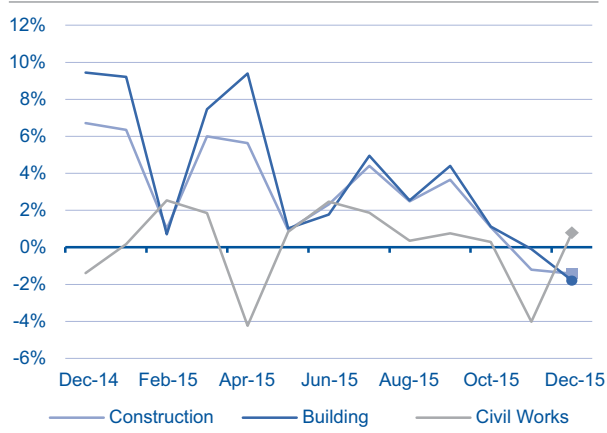


Source: BBVA Research with SCNM, Inegi data

The slowdown was seen at the beginning of the second half as a signal of industrial construction activity. Its two main components began decreasing and reached negative numbers in the months of November and December. Meanwhile, the gross value of construction yielded negative numbers three months before the activity figures. In particular, the public sector declined almost throughout year, while the private sector rose in the first half of 2015, but fell again during the last quarter. The private sector remains the most active, with a share slightly above 50%, so its reduced activity explains why the sector is slowing as a whole.

Figure 2a.3

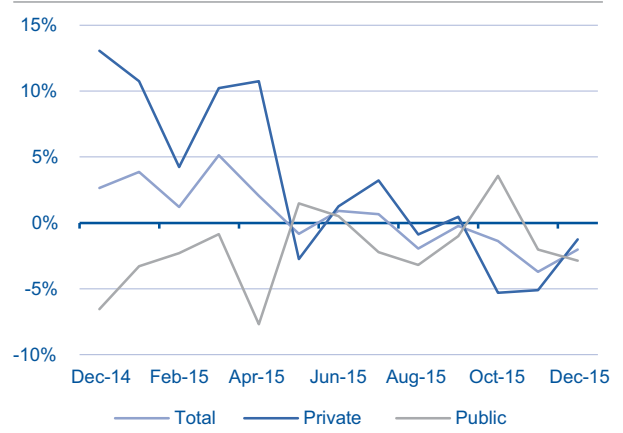
Industrial Activity in Construction
Annual % change



Source: BBVA Research with SCNM, Inegi data

Figure 2a.4

Value of Construction by Sector
Billions of real pesos and annual % change

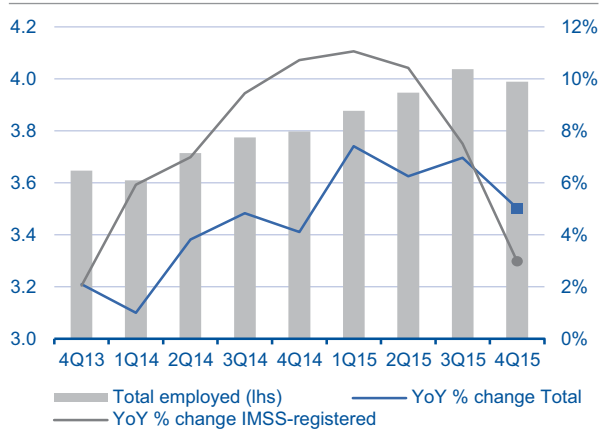


Source: BBVA Research with ENEC, Inegi data

With a slowdown, demand for building work has also been frozen during the fourth quarter, although it is true that in 2015 the total number of jobs created in construction exceeded those of 2014. Many of them were formalised through the IMSS. Building workers' productivity remains positive, whether measured by the number of workers or the hours worked (although there are differences between both indexes, the correlation between them is very high). This increased productivity could explain why even though the gross value of construction began to fall from the second half of the year, it continued to generate added value during the third quarter of the reporting period. We should point out that, despite being positive, growth of productivity has been declining.

Figure 2a.5

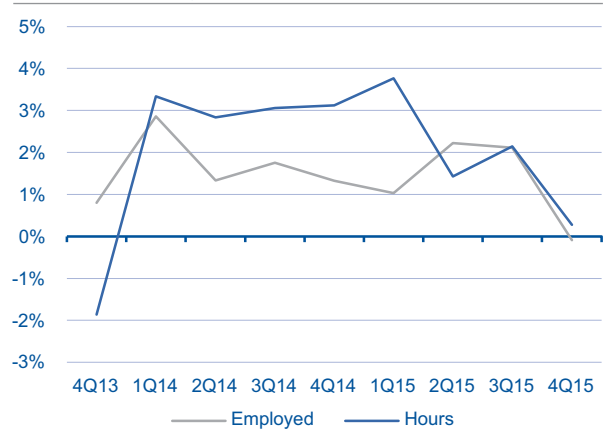
Employees in the Construction Industry
Millions of workers and annual % change



Source: BBVA Research with ENOE, Inegi data

Figure 2a.6

Productivity Index in the Construction Industry
Annual % change



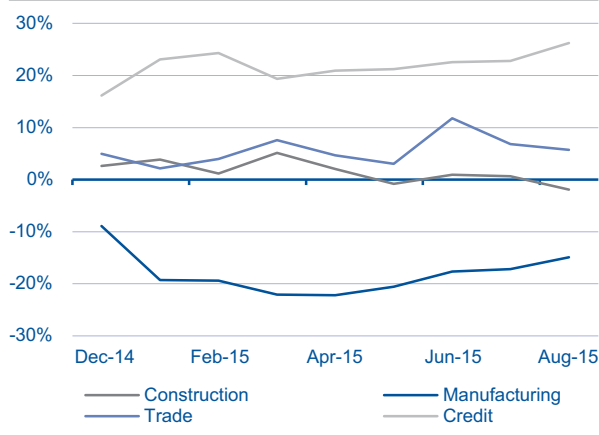
Source: BBVA Research with Inegi data

In addition to lower demand for labour, demand for some of the main construction materials has decreased. The case of products that target the sector is striking; during 2015 they have fallen by around 15%. Among these are products associated with petrochemicals and refining. In contrast, credit targeting the sector continued upward. In part, this may be associated with an increase in prices of construction materials, specifically in the

case of building, particularly as the producer price index for civil works has dropped. The latter is probably a result of lower activity in infrastructures, which has decreased demand for materials. Among other products, the increase in the price of cement has affected most works. Investment in infrastructure has been weak over the past three years; it has been especially so in the last two because of the pressure on public finances caused by the fall in oil prices.

Figure 2a.7

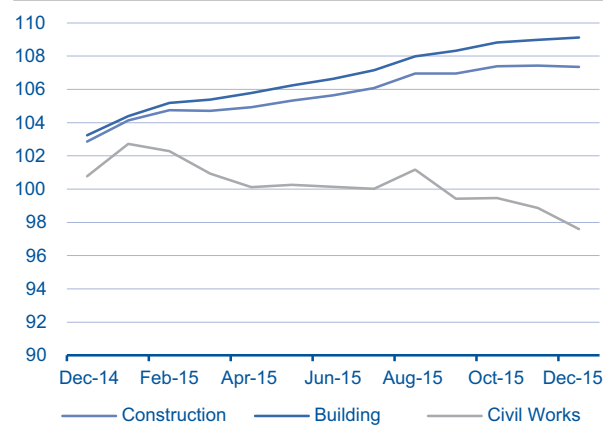
Main Construction Materials
Annual % change



Source: BBVA Research with ENOE, Inegi data

Figure 2.a8

National Production Price Index
Index base 2008 = 100

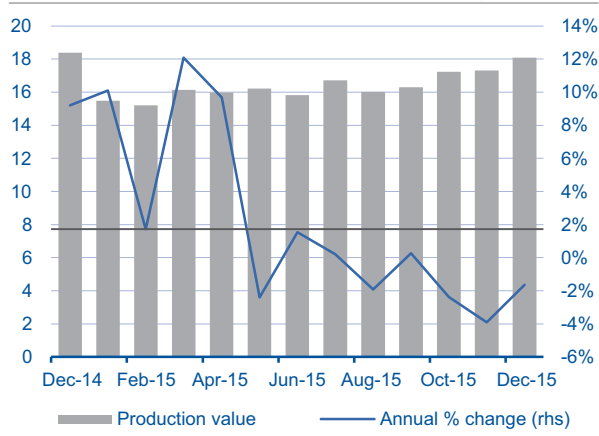


Source: BBVA Research with Inegi data

As mentioned, the gross value of construction began to decline from the second quarter of 2015. Reviewing the figures by individual components, the value of building construction would explain most of the aforementioned result; civil works seem to have recovered slightly. However, we must note that in the case of infrastructure, the effect is merely statistical because of last year's low production.

Figure 2a.9

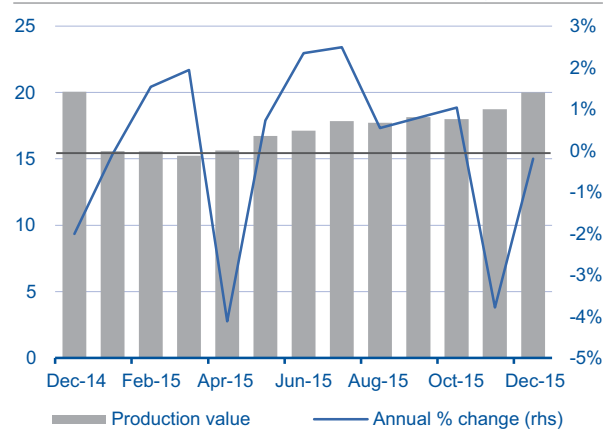
Value of Construction of Buildings
Billions of real pesos and annual % change



Source: BBVA Research with ENEC, Inegi data

Figure 2a.10

Value of Construction of Infrastructure
Billions of real pesos and annual % change

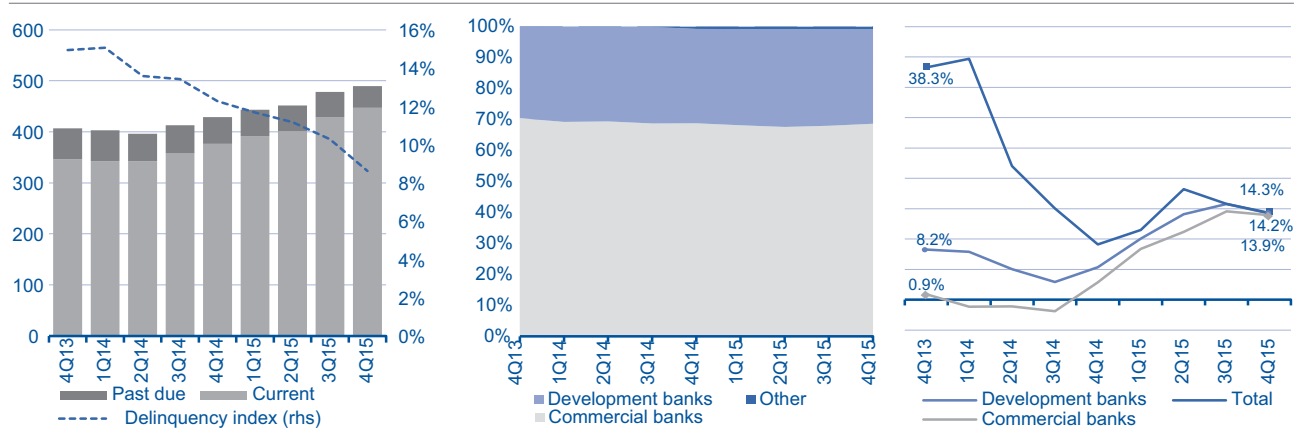


Source: BBVA Research with ENEC, Inegi data

The balance of the bank lending portfolio to construction companies grew as a result of increased originations. Development banks, which have been competing with commercial banks –which is a questionable public policy– held the ground gained from commercial banks at the end of 2014, but both grew during 2015. Although the latter continues with a share of almost 70% of the total balance. A favourable result is the improvement of the portfolio quality as measured by the delinquency rate, which had risen sharply a couple of years ago and is now below 10%.

Figure 2a.11, 2a.12 y 2a.13

Real Total Balance of Credit to Construction, % share and annual % change
Billions of constant pesos and %

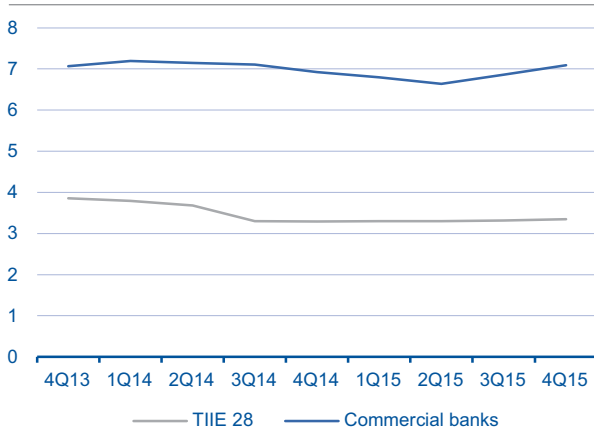


Source: BBVA Research with Bank of Mexico data

In contrast to economic activity, in real terms, more bank credit was granted to builders. In part, this could be attributed to banks having extended their offering from customers of residential building to include other types of works; they have also entered development banking more strongly, not only with direct credit, but with other support measures such as guarantees. In addition to the foregoing, the construction-credit interest-rate has remained stable despite the pressures of risk and the funding rate.

Figure 2a.14

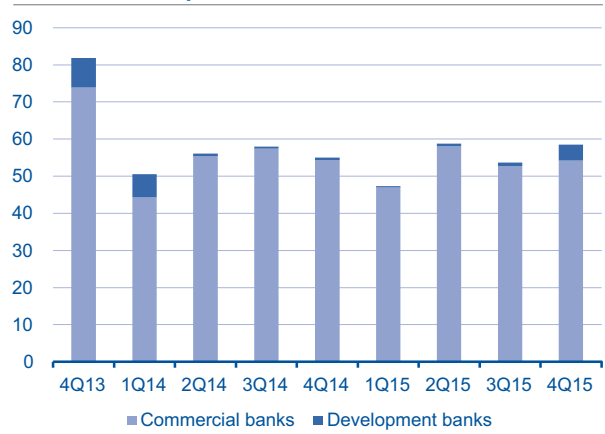
Interest Rate of Construction Loans
Annual interest rate



Source: BBVA Research with CNBV data

Figure 2a.15

Construction Credit Origination
Billions of real pesos



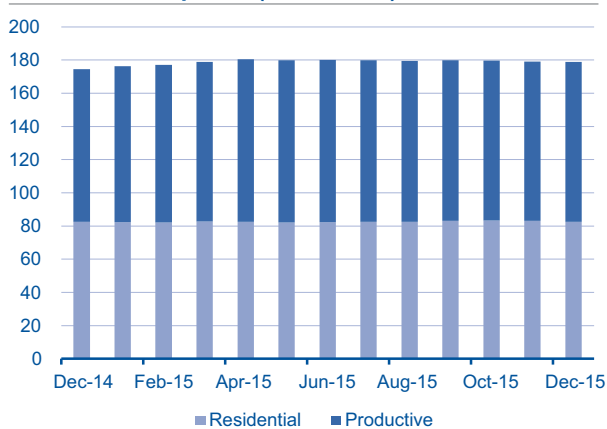
Source: BBVA Research with CNBV data

Construction with a high dependence on buildings

More than 60% of the GDP of the construction is provided by buildings. Therefore, considering the weakness of civil works, the performance of building construction will lead the sector. The first three quarters of last year building made clear progress with increased activity in both residential and productive areas. This type of work increased throughout the year if we look at the annualised gross value for the residential and other types of building. However, even this indicator shows the slump at the end of 2015. The construction of industrial buildings, shopping centres and office buildings has increased in the cities with greatest economic activity, but it will be difficult to maintain the pace of previous periods where rates above 10% were observed. This increase is partly based on major investments in the manufacturing sector and office buildings. Moreover, residential building seems to be approaching an equilibrium, with a more stable number of homes built.¹

Figure 2a.16

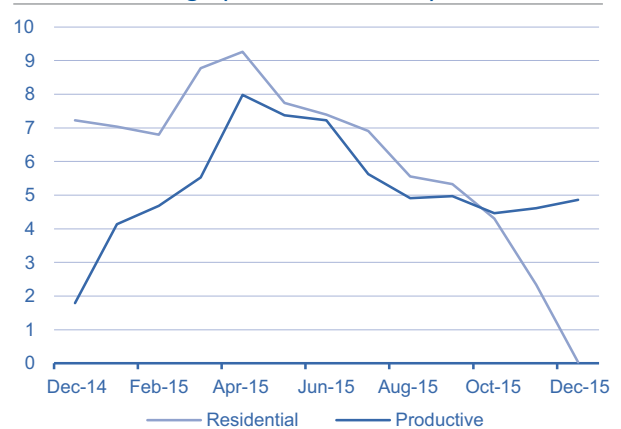
Gross Value of Buildings
Billions of real pesos (annualised)



Source: BBVA Research with ENEC, Inegi data

Figure 2a.17

Gross Value of Buildings
Annual % change (annualised series)



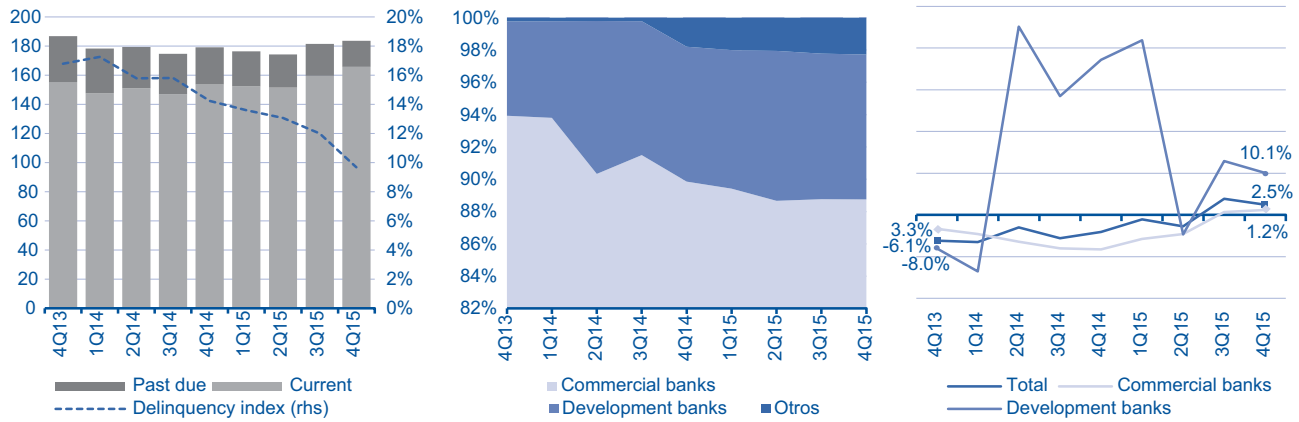
Source: BBVA Research with ENEC, Inegi data

Similarly, regarding increased building, the credit balance has increased slightly. Commercial banks have clearly decreased their share of corporate credit aimed at building works. Not only have development banks partly displaced commercial banks, but other players, such as Sofomes have obtained space in this segment to the cost of traditional banks. This is even more so in residential building, where competition has increased among the various intermediaries. The positive outlook could be that they may concentrate more on productive building during 2016.

¹ We estimate the equilibrium value in the national inventory of housing would be around 340 thousand homes in annualised figures

Figure 2a.18, 2a.19 y 2a.20

Real Total Balance of Credit to Building, % share and annual % change
Billions of constant pesos and %



Source: BBVA Research with Bank of Mexico data

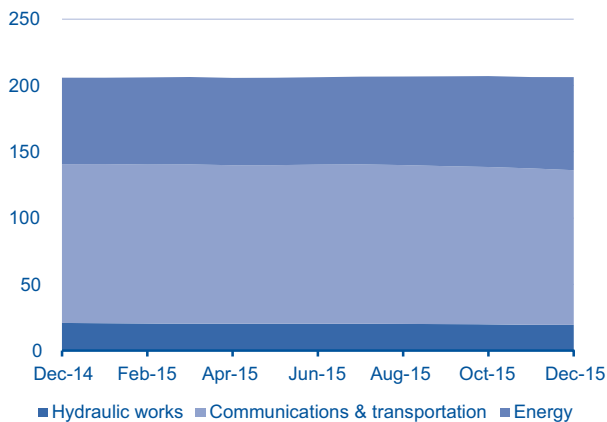
Increased origination of loans for building (mostly bridge loans) has meant that late payments have fallen to 10% from around the 20% of three years ago that was caused by the deterioration of the residential component of the portfolio. There is still plenty of scope for building credit to businesses and the balance of the portfolio at the end of 2015 is higher than in 2014. However, it does not reach the levels of 2013 in real terms, when credit demand for this type of work reached its highest level.

Energy works replace communications and transport

After a long period during which communications and transport infrastructure were the only growth sectors, they have exchanged place with energy works in the second half of 2015. It should be noted also that the communications and transport projects started the year very fast, while energy works have a statistical effect as they are compared to the low base of previous periods. Within the energy sector, companies engaged in oil plant infrastructures, as well as oil and gas pipelines reported increased activity. Again, it should be noted that this result is only for the final months of 2015 in the annual comparison; if we contrast this with the achievements of 2014, the average level would not yet be reached.

Figure 2a.21

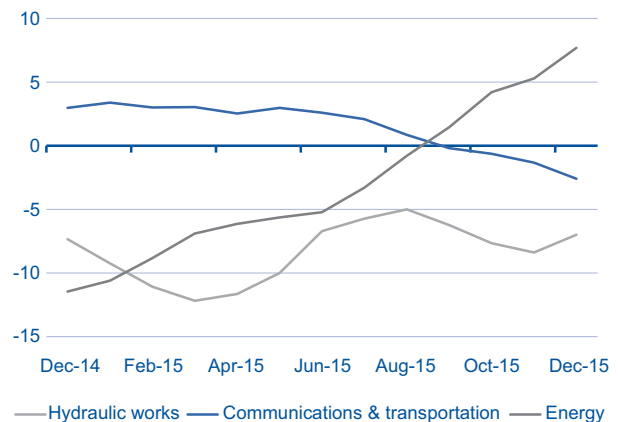
Gross Value of Infrastructure
Billions of real pesos (annualised)



Source: BBVA Research with ENEC, Inegi data

Figure 2a.22

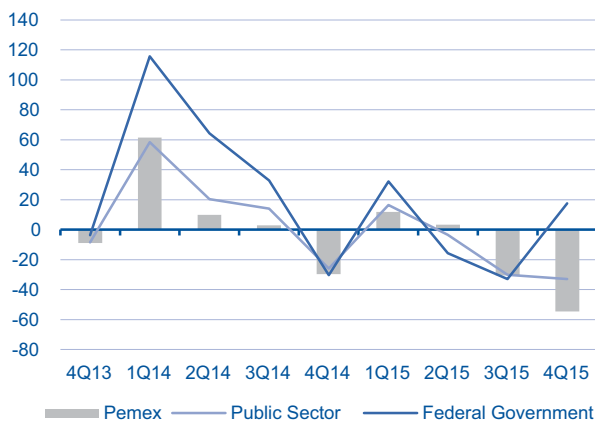
Gross Value of Infrastructure
Annual % change (annualized series)



Source: BBVA Research with ENEC, Inegi data

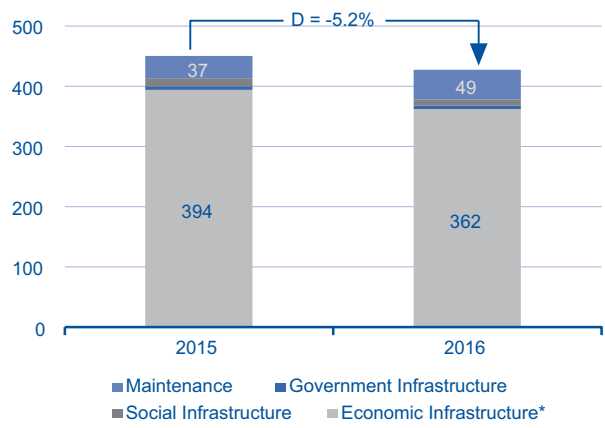
We associate the discrete progress of civil works with the reduced intervention of the public sector in direct construction and its lower spending on infrastructure. The main public actors affecting infrastructures have reduced the resources they allocate to them. According to the Expenditure Budget of the Federation for 2016, this result may be maintained for 2016 with lower investments in the various types of infrastructure. Economic infrastructure would have the greatest impact with a budgetary cut of just over 30 thousand million pesos in real terms, compared with the previous year's provisions. This figure may increase with the recently announced spending cuts.

Figure 2a.23
Physical Investment Spending
Real annual % change



Source: BBVA Research with Inegi & Pemex data

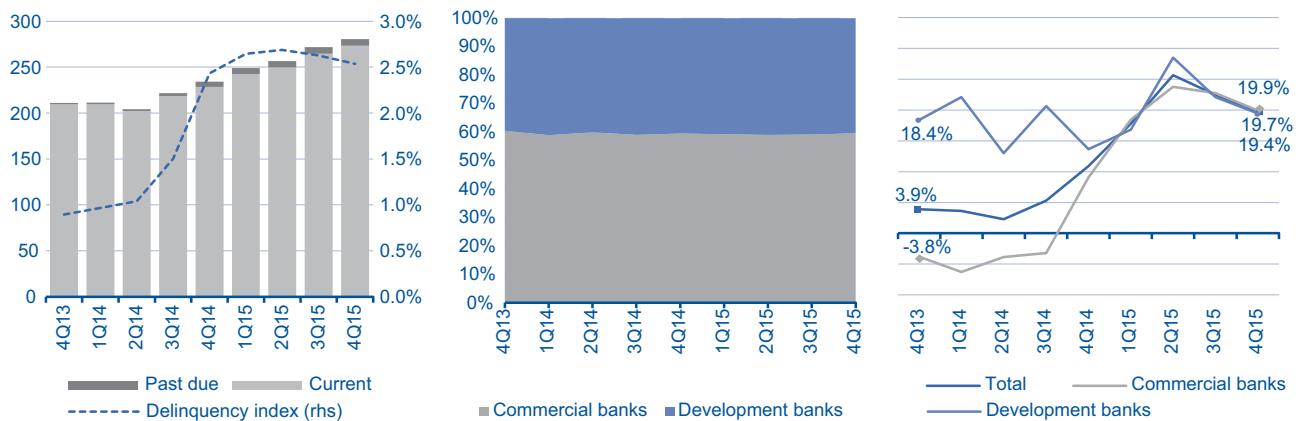
Figure 2a.24
Federal Government Investment in Infrastructure
Billions of real pesos



*Includes Pidiregas
Source: BBVA Research with PEF 2015 & PEF 2016, SHCP data

In 2015, the credit portfolio grew significantly in roads and other engineering works, unlike last year where credit was given to communications and transport projects. In total, the balance of the portfolio increased by almost 20%, something unheard of in recent years. Although the activity has not increased at the same rate, this could be indicative of a greater share of bank credit aimed at these companies.

Figure 2a.25, 2a.26 y 2a.27
Real Total Balance of Credit to Infrastructure, % share and annual % change
Billions of pesos and %



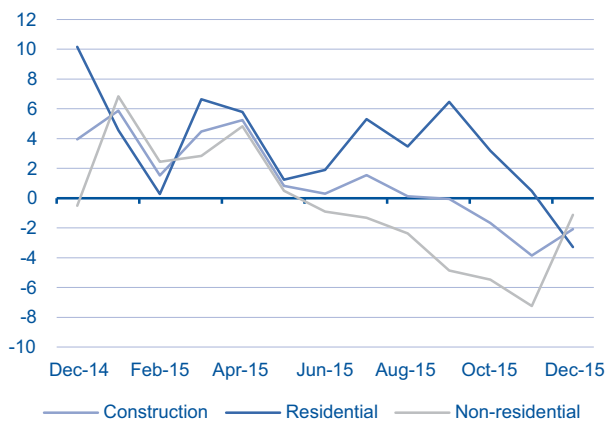
Source: BBVA Research with Bank of Mexico data

The challenge remains for the construction sector in 2016

Some of the indicators that we consider to be precipitate for the construction sector have a slightly positive outlook. Particularly, the construction IGAE (Indicador Global de la Actividad Económica, Global Economic Activity Index) fell at the end of 2015, although this behaves more like a indicator of the observations of previous figures. When compared against the construction GDP, the variations in the IGAE depict a period of the previous 3 to 6 months and so we might therefore expect a difficult start to the year. Similarly, for most of the year, construction companies had kept their confidence despite a downward trend, but this confidence fell as the year ended.

Figure 2a.28

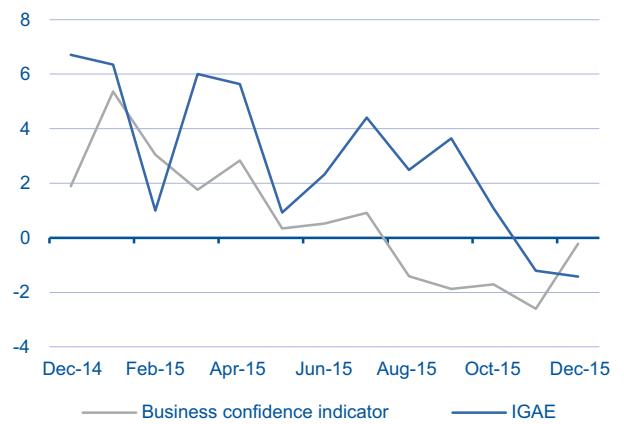
Gross Fixed Investment Annual % change of the physical volume index



Source: BBVA Research with Inegi data

Figure 2a.29

Anticipated Construction Indicators Annual % change

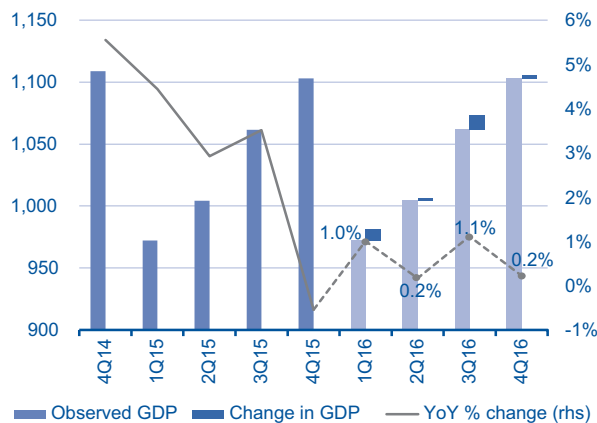


Source: BBVA Research with Inegi data

The slowdown in building and a grey outlook for civil works during 2016 lead us to believe that the construction sector may have little room to grow. Infrastructure and its effect on civil works would lead to progress by a base effect. Building would once more have to be the force that keeps the industry growing.

Figure 2a.30

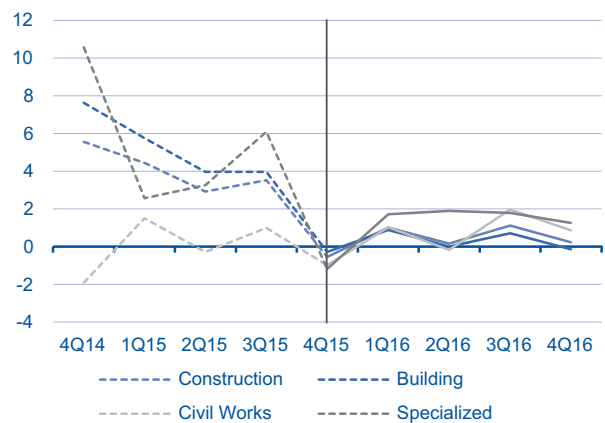
Accumulated GDP in Construction Billions of real pesos and annual % change



Source: BBVA Research with Inegi data

Figure 2a.31

Construction GDP by Components Annual % change



Source: BBVA Research with Inegi data

2.b More equitable mortgage solutions

Introduction

In our previous issue of *Mexico Real Estate Outlook* we highlighted the bank conditions that boosted credit capacity and similar measures implemented by housing institutions. However, the terms of mortgage financing, which are in one of the best periods of its history, have recently faced a marginal increase in benchmark rates; this will be transmitted unequally between the individual mortgage loans and credit for housing construction. Moreover, slower growth in income and employment are expected for 2016 and, as we have seen in previous real estate cycles, its effect would become visible after several months.

We therefore hope that the mortgage market will continue its growth trend in 2016, although at a slower rate, based on consumer confidence, where pre-owned housing and improvements are directed towards regions whose cities are growing, but also towards those consolidated metropolitan areas where banks and public institutions continue to cover increasingly diverse needs.

Housing institutions are transforming their relationship with banks

The diversity of mortgage products, both for acquisition and other options, have developed to such an extent that the historically favourable credit conditions continue to drive the housing market. The number of mortgages granted in 2015 increased by 4.1%, while the amount financed grew by 11.2% in real terms.

Table 2b.1

Mortgage activity: number and amount of loans at December

Mortgage Origination	Number of loans (Thousand)			Loan amount (MXN bn)			Average sum (MXN thousand)		
	Dec-14	Dec-15	Annual % change	Dec-14	Dec-15	Real annual % change	Dec-14	Dec-15	Real annual % change
Public agencies	450.1	457.4	1.6	153.7	160.5	4.4	341	351	2.8
Infonavit	387.0	393.0	1.5	114.0	120.5	5.7	295	307	4.1
Fovissste	63.1	64.4	2.0	39.7	40.0	0.9	629	622	-1.1
Private intermediaries	95.4	110.6	15.9	100.2	121.9	21.7	1,050	1,102	4.9
Banks ¹	95.4	110.6	15.9	100.2	121.9	21.7	1,050	1,102	4.9
Subtotal	545.5	568.0	4.1	253.9	282.4	11.2	465	497	6.8
Co-financings ² (-)	32.6	38.0	16.4						
Total	512.9	530.0	3.3	253.9	282.4	11.2	495	533	7.7

Published figures

Total co-financings	77.8	49.1	-36.9	39.7	23.3	-41.3	510	474	-7.1
Infonavit Total	45.2	11.2	-75.3	16.8	3.8	-77.3	372	341	-8.3
Other co-financings	32.6	38.0	16.4	22.9	19.5	-14.9	701	513	-26.9

¹ Includes loans granted to employees by financial institutions.

² Without Infonavit Total and Apoyo Infonavit (New and previously-owned housing). Products for renovations and expansions are not included.

Source: BBVA Research with data from Infonavit, Fovissste, ABM, Bank of Mexico and CNBV.

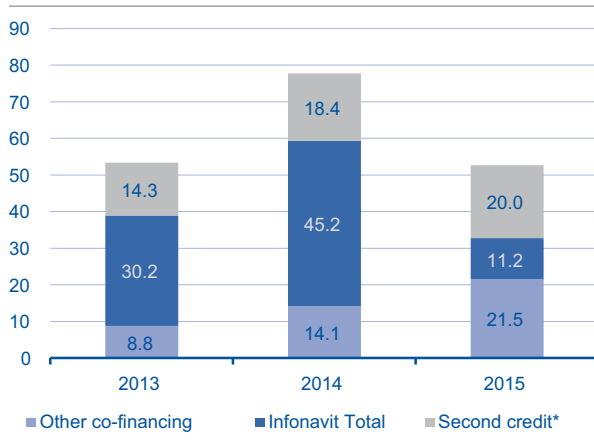
Housing institutes registered growth of 1.6% in the number of mortgages and 4.4% in real funding. The Infonavit continued to provide greater amounts and originated more than 120 thousand million pesos in real terms, 5.7% more than in 2014. The Fovissste registered growth of 2% in the number of mortgages and 0.9% in real funding.

One of the main effects in 2015 were the changes in the structure of loans granted in co-financing and/or co-participation of the *Infonavit* with commercial banks, mainly in the “*Infonavit Total*” product. In 2008, this financing option was created for those employees earning 8 times the minimum wage or more, in order to increase their access and overcome the existing limitation of not lending more than 483,000 pesos to each affiliate.

However, by increasing the maximum amount up to 850,000 pesos, the Institute seeks to strengthen the cross-subsidy model. This also means that commercial banks contribute a smaller amount of funding to this particular type of credit which, because it is granted in pesos, avoids negative amortization and guarantees debt relief within the contract period.

Figure 2b.1

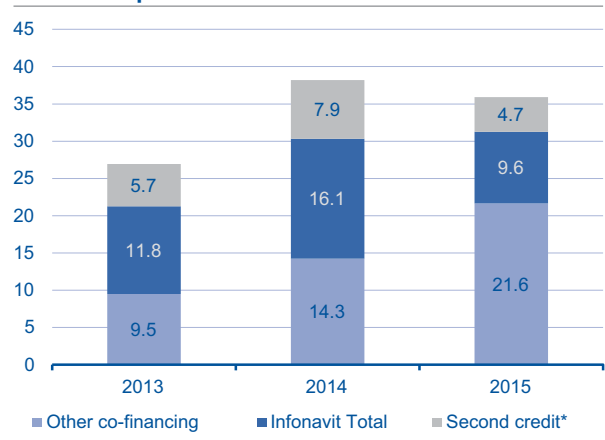
Co-financing and Co-participation Credits
Thousands of credits



*Estimate for 2015
Source: BBVA Research with CNBV & ABM data

Figure 2b.2

Co-financing and Co-participation Credits
Billions of pesos



*Estimate for 2015
Source: BBVA Research with CNBV & ABM data

Moreover, the second Infonavit credit, for workers who had paid off their first mortgage, reduced its requirements from January 2014. It reduced the contribution time required from five to two years and also reduced the time between settling the first and applying for the second loan from one year to six months.

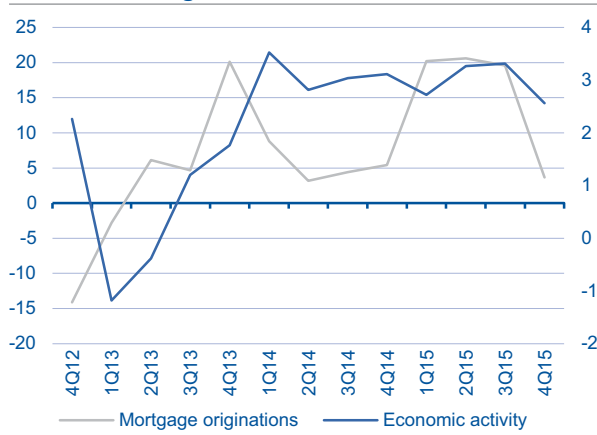
The immediate consequence of changes in lending policy led to the apparent contraction of the “*Infonavit Total*” product funded by the banks, which fell from over 58% in 2014 to 21% in 2015. Not so the second loan, which rose from 23.7% to 37.9% over the same period. The most prominent case occurred in the other the co-financing products, which increased their share from 18.1% to just over 40%.

While the reduction in the number of credits was caused by the measures implemented in 2014, in terms of the amount financed the situation is different. This is because the amounts directed to products other than co-financed products increased their coverage from 37.3% to 60.2%, which is almost double. So we can say that the reduction seen in the Infonavit Total product was offset by other products, boosting the average amount in real terms from 2014 to 2015 by 4.9%.

Employment continues to set the pace of housing demand

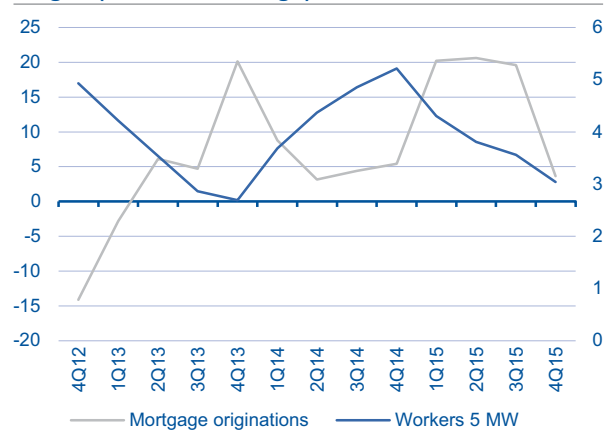
Economic activity and particularly job creation remain the main determinants of housing demand in the short term. Together with the changes in housing policy which began in 2014, in mid-2013 the federal government launched a program of formal employment, whose effect would be seen more clearly in the housing market in 2014 when it combined with an increased demand for loans in pesos, mainly in the middle segments. As a result, the average amount per mortgage of commercial banks grew 4.9% in real terms in 2015.

Figure 2b.3
Mortgage Originations and Economic Activity
Annual % change



Source: BBVA Research with Inegi and CNBV data

Figure 2b.4
Mortgage Originations and Workers with 5 Min. Wages (Annual % change)

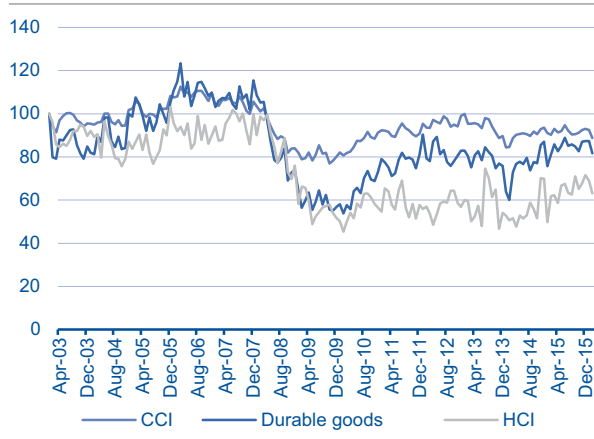


Source: BBVA Research with Inegi and CNBV data

In graphs 2b.3 and 2b.4 we can see that both economic activity and employment are highly correlated with the origination of mortgage loans from commercial banks.¹ However, the greatest synchrony with the real estate cycle occurs with the number of workers registered in the IMSS who receive five times the minimum wage or more; this is the market segment that banks mostly cater for. The fact that there is a shift to the right in mortgage origination tells us that the generation of formal employment takes about a year to become effective demand for financing, when the consumer needs it and decides to buy a house. Therefore, the fact that double-digit increases in originations were recorded in 2014 and 2015 respectively was caused by a combination of the upturn in economic activity and growth in the number of workers with high incomes. This also raised the housing confidence index to a slightly higher level than the previous year, while the consumer confidence index remained stable overall. The cyclical trend series and Bancomer housing confidence index show similar behaviour. This index forecasts that high growth-rates in the mortgage market will continue.

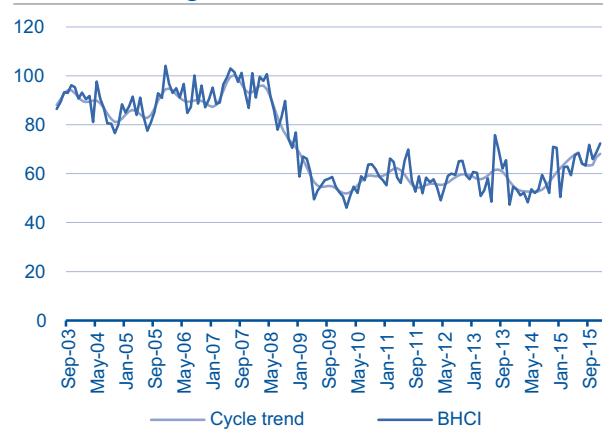
¹ Not taking into account co-financing

Figure 2b.5
Consumer Confidence Indices
Base Index 2003 = 100



Source: BBVA Research with Inegi data

Figure 2b.6
Bancomer Housing Confidence Index
Annual % change



Source: BBVA Research with Inegi data

Used housing and improvements surpass their highest ever levels

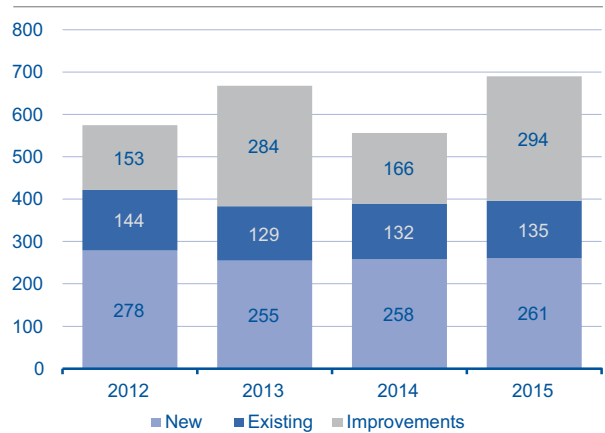
The fact that the demand for higher amounts of funding in 2015 is a response to the combination of the above factors was seen in higher sales of new housing, which is also receiving most federal government subsidies. Nevertheless, loans for previously-owned homes are gaining ground and this time represented 37% of total funding, exceeding the new account Infonavit Annual Operational Plan (OAP).²

Table 2b.2
Infonavit: Credits Granted by Product
Thousands of Loans

Investment: (mp)	Programmed December 2015	Progress December 2015	% progress towards goal
Mortgages	116,466	119,838	103%
New	76,868	75,202	98%
Existing	39,598	44,636	113%
Improvements	4,030	8,462	210%
Total	120,496	128,300	106%

Source: BBVA Research with Infonavit data

Figure 2b.7
Infonavit: Credits Granted by Product
Thousands of Loans



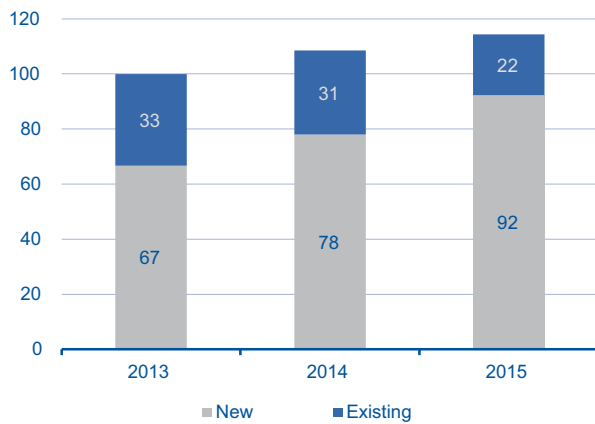
Source: BBVA Research with Infonavit data

Credits for improvements more than doubled the provisions of the AOP, so these, and those for the purchase of previously-owned homes, together accounted for more than 60% of the total, above the level reached in 2013. Therefore, it is not surprising that the institute maintains its estimate of 350,000 mortgage loans for 2016.

² Includes the Apoyo Infonavit programme

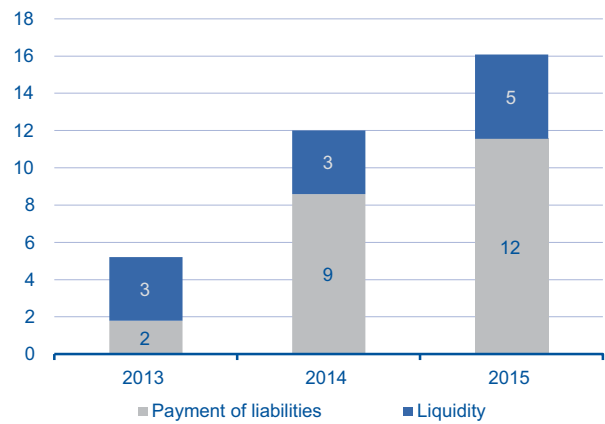
Regarding commercial banks, the range of products regained ground during 2015 for the new housing market, but also in credits for payment of liabilities and liquidity, which practically grew by a factor of four in two years, as a result of greater level of competition in the banking market.

Figure 2b.8
Commercial Banking: Loans by Use
Billions of pesos



Source: BBVA Research with CNBV data

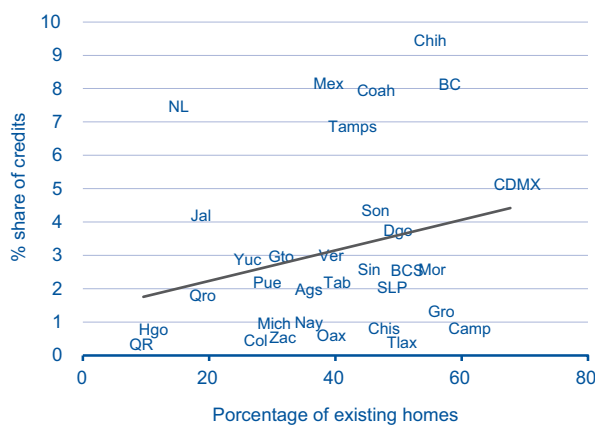
Figure 2b.9
Commercial Banking: Payment of Liabilities and Liquidity
(Billions of pesos)



Source: BBVA Research with CNBV data

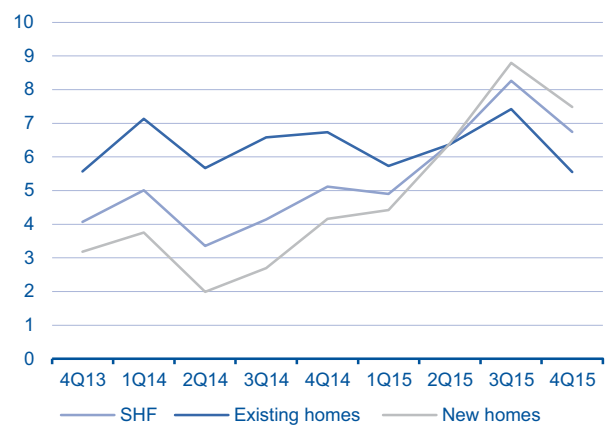
Given the growth experienced by loans for improvements, we should focus on the entities where there is a demand for this product, because it is likely that they are destined for regions where previously-owned housing has increased its relative share against new housing, which would contribute to a greater diversity of housing stock.

Figure 2b.10
Credits for Improvements and existing homes
% shares



Source: BBVA Research with Infonavit data

Figure 2b.11
Housing Prices by Condition of Use
Annual % change



Source: BBVA Research with SHF data

The tendency confirms that there is a positive relationship between the percentage of previously-owned housing originated by the Infonavit in each of the states and the corresponding share of loans for improvements. As expected, Mexico City and the State of Mexico, being the conurbations with the highest population density in the country, have a higher percentage of previously-owned housing loans. This is explained by the shortage of land for construction and growing needs for renovation and extensions. This has also contributed to this kind of loans growing annually at rates above 5% since 2013, because of their relative weight in the number of commercial appraisals.

According to Infonavit data at national level, 35% of mortgages for house purchase are for previously-owned homes. Among the states where this occurs and which also have a high demand for improvement loans are: Chihuahua, Baja California, Coahuila, Estado de México and Tamaulipas.

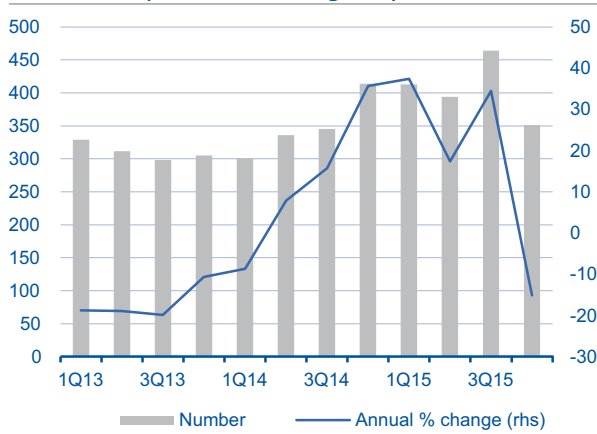
The states with the highest balance in the demand for loans for housing improvements and previously-owned homes are in the central region of the country and are typically areas of urban growth, such as: Querétaro, Puebla, Aguascalientes and Guanajuato. On the other hand, states such as Nuevo Leon and Jalisco which, despite being consolidated urban concentrations, have the option to continue to expand and there is a high level of demand for new housing, along with demand for improvements to the existing housing stock.

The construction is stabilised in line with subsidies in 2016

At the close of the fourth quarter of 2015, registrations for housing construction totalled 351,000 homes in annualised terms. The increase in projects during most of 2015 was due to the announcement, made in late 2014, that the amount of subsidies would be very similar. This encouraged builders to start projects. Nevertheless, the inventory absorption process has been slower than expected, so that by the end of 2015 builders decided to pause.

Figure 2b.12

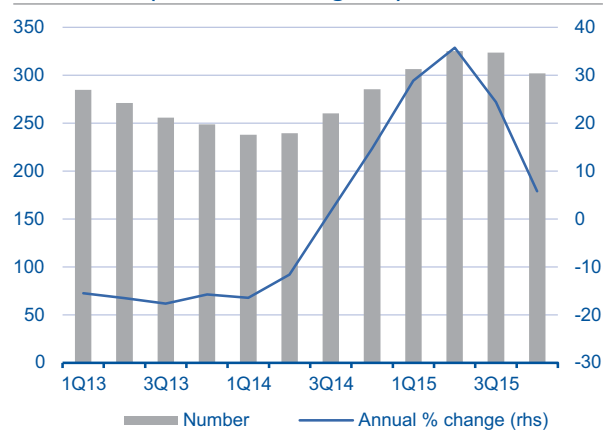
Registration of Dwellings in the RUV Thousands (in annualised figures)



Source: BBVA Research with RUV data

Figure 2b.13

Inventory of Dwellings in the RUV Thousands (in annualised figures)

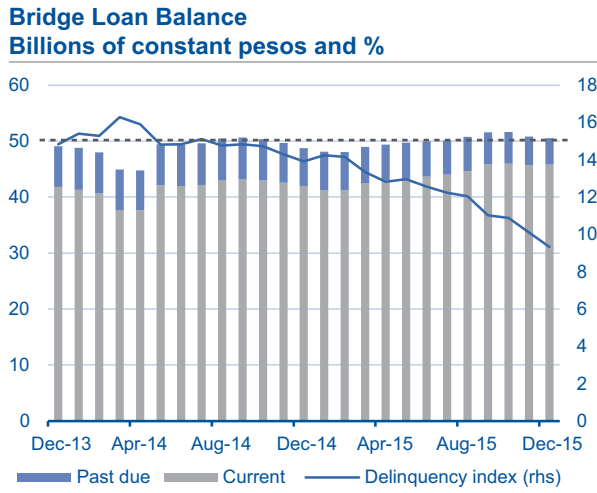


Source: BBVA Research with RUV data

A reduction of 15.1% in the fourth quarter of last year is mainly explained as a base effect, as the number of records made at the end of 2014 was particularly atypical for December. However, it also should be noted that the inventory remained stable during 2015 and fell slightly during the last three months of the year. Of the projected 351,000 homes, only 30% have made progress in construction, while 43% have made no progress or not presented verification reports. We estimate that current inventory levels are healthy.

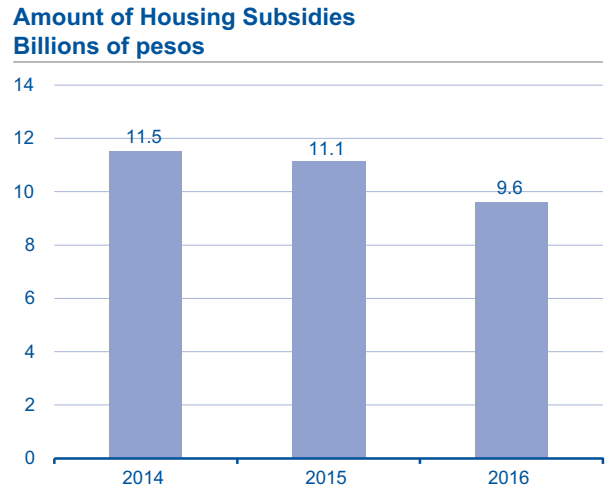
Bridge loans remain the main source of financing and already indicate that builders have taken advantage of interest rates, which reached minimum levels in December 2015, before the Bank of Mexico increased the benchmark interest rate, which was almost immediately passed on to the construction credit interest rate. Furthermore, the quality of such loans has continued to show improvement.

Figure 2b.14



Source: BBVA Research with CNBV data

Figure 2b.15



*Through Conavi.
Source: BBVA Research with PEF 2016 data.

The increase in loans contracted at the end of 2015 had a positive effect on the balance of the bridge loan, which increased 9.1% in real terms. Moreover, the fact that more than 80% of subsidies have led to the construction of new housing in recent years (which is a questionable public policy), would generate a favourable outlook, albeit to a lesser extent than the previous year. Note that although there has been a reduction of 2,000 000,000 pesos, subsidies are still above the average for recent years.

The sector will grow in 2016, despite the difficult economic environment

Funding conditions are favourable for the sector at the beginning of 2016 and are maintaining builders' confidence in the future. However, we have seen that the main market determinants, such as income and employment, are tending to slow down. In 2015, housing institutes intensified their funding product-offering to attract a greater number of workers earning more than 4 times the minimum wage. It is anticipated that this trend will continue in 2016, because changes were made in the Infonavit regulation to stipulate that all credits from the institute were to be originated in pesos. We think this was a wise decision, as was changing ranges of the maximum credit amounts to make them more equitable among wage segments.

Nevertheless, we must bear in mind that once a worker joins the formal sector, it takes about a year for him to consider buying a home, if he needs one. It is therefore important that programmes to formalise employment be continued, especially those aimed at high-income employees, as these are the workers who access a mortgage most easily. This guarantees stable inventories, while building-credit portfolios remain healthy.

3. Special topics

3.a The evolution of housing prices in regional clusters in Mexico

Introduction

In previous issues of *Mexico Real Estate Outlook* we studied the dynamics of housing prices through their main determinants. In recent years, while historically low interest rates, availability of credit and stable consumer prices have benefited the mortgage market throughout the country –all elements that make homes profitable investment assets– we have also seen that the appreciation of real estate is increasingly diversified across the regions.

Some states have experienced higher economic growth over the past two years, which has meant that the demand for housing in some new or consolidated cities have shown greater momentum. These local housing market dynamics are pushing the value of housing in some regions of the country as municipalities unify and/or become incorporated into large metropolitan areas.

In this article of *Mexico Real Estate Outlook* we review the value of housing in the municipalities where what is known as spatial price dependence occurs. Given the paucity of studies of this type in the Mexican real estate market, on this occasion we use information from micro-regions to find the local features that explain the relationship between the value of the property and the profile of economic activity, population density and subsidies, which jointly encourage the purchase of houses and thus, increase the commercial value of properties in different regions of Mexico.

Housing prices in a spatial context

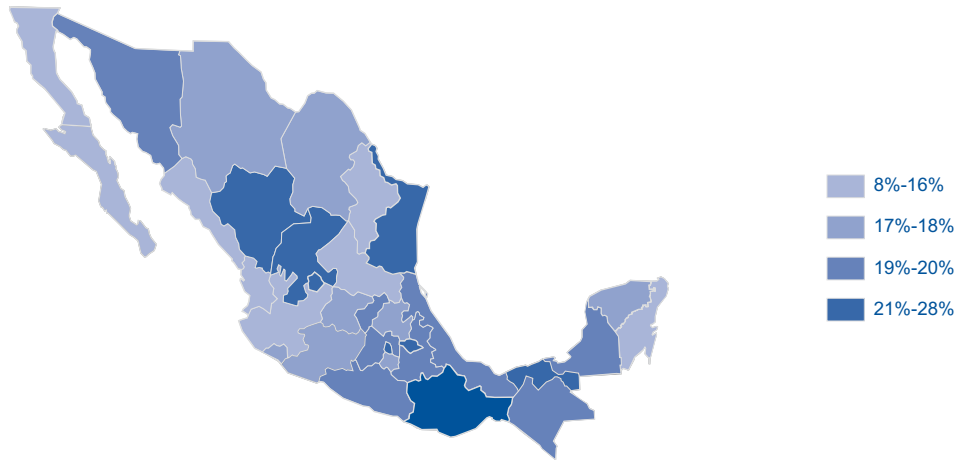
According to the index of housing prices of the Federal Mortgage Society (FMS), (Sociedad Hipotecaria Federal or SHF) between the second quarter of 2012 and the third quarter of 2015, prices have grown by over 18% in 16 out of the 32 states. The states with the highest levels during this period are: Ciudad de México, Durango, Oaxaca, Tlaxcala, Tabasco, Tamaulipas and Zacatecas with growth above 20%. States with lower levels of appreciation were: Baja California, Baja California Sur, Jalisco, Nayarit, Nuevo León, Quintana Roo, San Luis Potosí and Sinaloa, which increased their value by between 10% and 14% in the same period.¹

This tells us that levels of housing prices across the country are increasingly diverse and, particularly in the last two years, some areas have moved away from the national average. This is mainly for two reasons. First, in 2012, when inventories reached their highest level, the industry was being reconfigured, where demand for middle and residential segments caused a period of prosperity, especially in consolidated metropolitan areas, where economic activity and income are higher. Recently, this effect has transferred to regions where income and employment grow at a great pace and where demand is characterised the purchase of increasingly expensive homes, so the middle segments continue to gain even greater importance in regions traditionally characterised by the construction of mostly social housing.

¹ It should be noted that the variations are in local price levels, and having the highest rate of increase does not necessarily mean the state has the homes of highest value.

Map 3a.1

Appreciation of the SHF Price Index. 2Q12-3Q15. Quartiles



Source: BBVA Research with SHF data

Secondly, the social housing production model has given way to another model at a smaller scale in regions where the availability of land makes it possible to increase urban sprawl. Therefore, it is important to distinguish between regions where economic growth has sustained increased demand towards the interior from those towns where labour mobility and greater transfers through subsidies could both encourage the growth of some cities. As a result, any of these could cause greater economic correlation between the municipalities located on the periphery of these metropolitan areas. The latter would also explain labour mobility and thus greater population density.

To detail this behaviour, in subsequent sections we analyse the value of housing not only through the SHF index of housing prices, but through the national base of appraisals which, although being the input for the elaborating this indicator, shows more clearly the value of each of the transactions in the 1800 + municipalities of the areas where they were carried out.²

In the next two sections we shall establish the presence of municipalities with statistically inter-dependent housing prices, as well as those for the demand for bank mortgages and population density. First, we shall check whether there are groups of municipalities which, because they share a neighbourhood, also display dependency on the value of the home. This would form a group called a cluster. Second, we shall determine whether there are also regional correlations between the housing-price clusters and with economic activity in the region that derive from this dependency.

The presence of clusters of housing prices in Mexico

The spatial dependence based on the market value of housing prices involves a search of regions throughout the country where appraisals of the properties have been carried out. Thus, we define a cluster as a group of municipalities which, by sharing a neighbourhood, record a statistically significant correlation between them.³ In other words, when the price level changes in a given municipality, there is a 95% probability that prices will change in the neighbouring municipalities by very similar degrees, maintaining the correlation in price levels.

² Geo-referenced with the catalogue of the Instituto Nacional de Estadística y Geografía (INEGI) National Institute of Statistics and Geography (NISG) of 2,457 municipalities.

³ Two regions are considered to be neighbours if they have a common border, regardless of its length, including vertices.

This can also be observed in some demand indicators, such as population density, mortgage originations, income and subsidies; therefore, comparing these variables will tell us whether the existence of housing-price clusters would be related to these factors.

Currently, about 80% of the housing market in Mexico is intended for social housing, which would be highly correlated with subsidies. That is why we classify the national base of appraisals in three classes of market values; obtaining the average value not only for those of social housing, but also of middle and residential segments, which are primarily served by banks.⁴

In this section, we present the maps of statistical significance obtained by the LISA test (*Local Indicator of Spatial Association*). This test makes it possible to accurately identify regions/municipalities where clusters of municipalities with positively or negatively correlated dependent prices occur. In this test for social housing in 2014 and 2015, the clusters are presented in maps 2 and 3.⁵ Observing the municipal clusters with price dependency, we can see a clear de-concentration of groups from 2014-2015 in much of the country. This means that because demand for housing is explained by different factors in each region, said demand is encouraging a regrouping of real estate markets in accordance with local characteristics.

Map 3a.2

Cluster of Housing Prices in Municipalities, 2014.



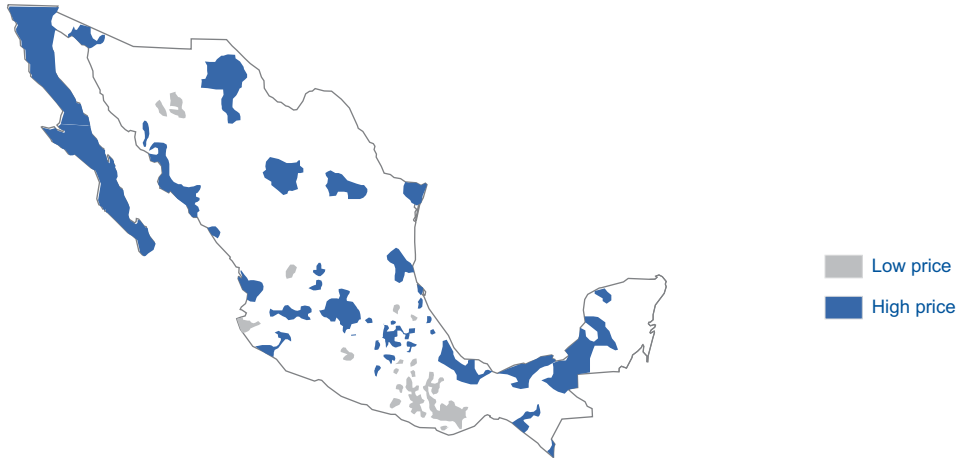
* LISA Test at 95% significance.

Source: BBVA Research with data from the national appraisals data base.

⁴ Considering a minimum wage of 70.1 pesos. Housing up to 420,000 pesos is considered to be social housing, mid-range housing ranges from 421,000 to 1,577,000 pesos and residential housing over 1,577 thousands pesos.

⁵ The proof of the hypothesis of the LISA test indicator must meet two conditions. First, the statistical value obtained for each of the observations must provide information on the existence of a spatial clustering of similar values around the neighbourhood. Second, that the sum of the value of the statistic for all observations must be proportional to a global spatial association indicator.

Map 3a.3

Cluster of Housing Prices in Municipalities, 2015.

* LISA Test at 95% significance.

Source: BBVA Research with data from the national appraisals data base.

The distribution shown on maps 2 and 3 facilitates the locating of clusters of municipalities where there is statistically significant price dependency. Because the correlation can be positive or negative, then so must the spatial dependence. The municipalities coloured deep blue are those neighbouring on at least another municipality with very similar prices, above each year's mean sample. Those coloured light blue show clusters of municipalities with spatial price dependencies that are below the mean sample. The municipalities marked in both colours are statistically significant at 95%. The main advantage of the analysis at municipal level is that we can see areas which, although not necessarily in the same state, are part of the same cluster.

While the data of the estimate would enable a detailed analysis for each cluster identified, for the sake of simplicity, in this article we will discuss the three geographical areas that recorded major changes between 2014 and 2015 and which are framed in dark grey on the map 2 for the northern, central and south-eastern regions of the country.

On maps 4 and 5 we can see that in 2014-2015, clusters of municipalities with housing-price dependencies became more scattered across the central plateau of the country. By zooming in on this area, we note that in 2014, this situation affected the central states, where traditionally much of the demand for housing concentrates, reaching out from the states of Mexico, Puebla and Tlaxcala; to Hidalgo, Queretaro, Guanajuato and Aguascalientes. However, in 2015 these last three states recorded GDP growth of 9.4%, 7.5% and 4.5% respectively; this is well above the 2.5% recorded at national level, and may have generated important poles of attraction and greater price dependency in some cities located in those regions.

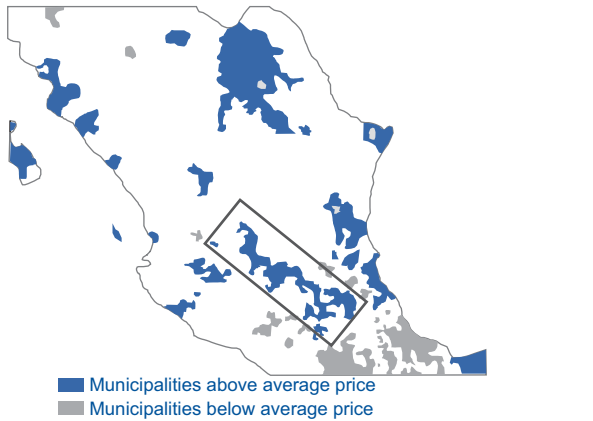
Another cluster, although more irregular in shape but no less important, is the one that has been generated around the metropolitan area of Puebla, which is being reconfigured by the investments it receives and labour mobility from other states, such as Veracruz and Morelos.

When zooming in towards the centre of the country, we note that, while in 2014 there was a cluster of municipalities with price dependency from Puebla to Aguascalientes, in 2015 this had almost disappeared, leading to the creation of a new one, round in shape and covering several municipalities with Guanajuato as its centre of attraction. It extends to the municipality of Queretaro, which borders on the municipalities of San Miguel de Allende, Apaseo el Grande and Comonfort, belonging to Guanajuato. A similar situation was seen in the north, where there was a large elongated cluster between the states of Coahuila, Nuevo Leon and Durango in 2014. In 2015 it had disappeared, giving way to the formation of another, where the most spectacular growth was that of the metropolitan area of Monterrey, which, by appending a greater number of municipalities, formed

a cluster of housing prices extending into the West. The economic growth of some regions framed in dark grey on map 5 was the most important factor; although in other northern and western areas, subsidies are also playing an important role. Such is the case of Nuevo Leon which, although it recorded growth of 5.8% of the state GDP in 2015, also received 13% of the total nationwide subsidies for purchase of new housing. This encouraged the increase in urban sprawl by expanding the perimeters eligible for support.

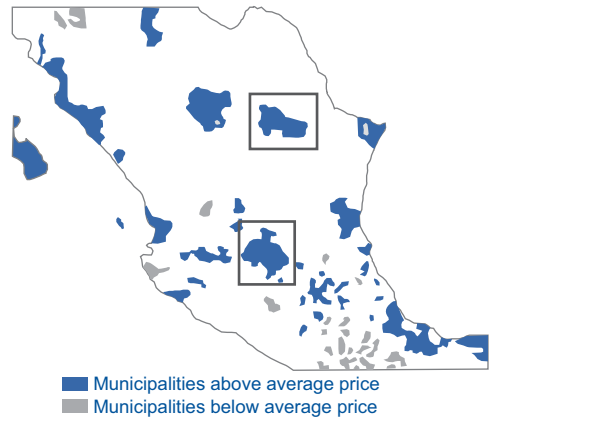
Therefore, the formation of clusters of housing prices in the Bajío region is the clearest sign of rises in the value of housing caused by demand, since economic activity was the main factor, not the higher amount of subsidies or population density, as it remains in other regions.

Map 3a.4
Price Clusters in the Northern and Central Regions, 2014



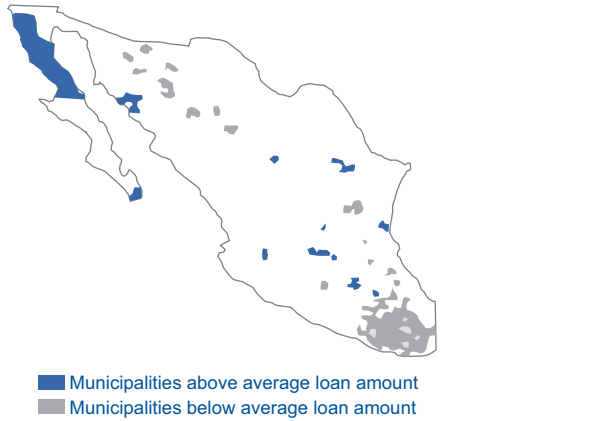
Note: This takes into account social housing segments and an average appraised value of 482,117 pesos
Source: BBVA Research with data from the national appraisals data base.

Map 3a.5
Price Clusters in the Northern and Central Regions, 2015



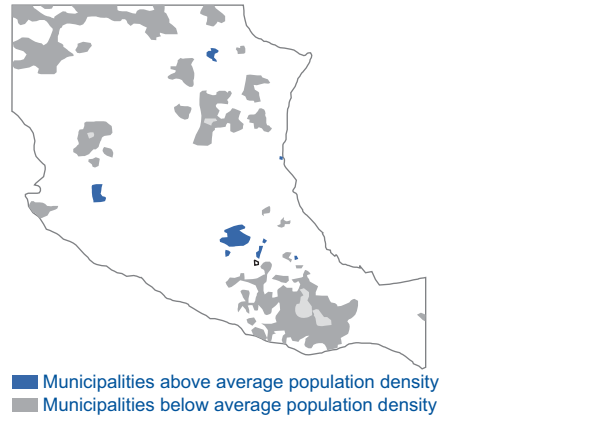
Note: This takes into account social housing segments and an average appraised value of 481,728 pesos
Source: BBVA Research with data from the national appraisals data base.

Map 3a.6
Clusters with Higher Amounts of Mortgage Financing, 2015



Source: BBVA Research with CNBV data.

Map 3a.7
Most Densely Populated Clusters, 2015



Source: BBVA Research with Inegi data.

For example, if we consider the demand for mortgages from commercial banks, we realize that the largest amounts of credit are not granted in the traditionally most densely populated regions. In these cases, the increased economic activity, whether from manufacturing or tourism, is maintaining the clusters of municipalities with loan amounts that are higher than the national average and that will not necessarily be destined to the most densely populated places. This is the case of municipalities such as Tlalnepantla de Baz and Ecatepec de Morelos in the state of Mexico. In these areas, the shortage of land for construction is obvious because of its proximity to Mexico City.

At the bottom of the maps 2 and 3 are housing-price clusters in the states of Oaxaca and Chiapas. These municipalities are the clearest example of spatial dependence with price levels below the national average. However, it is important to note that, like elsewhere, in 2015 the municipalities are much more widely dispersed than in 2014, which is explained by an increase in demand for loans for renovations and expansions in these areas. The main feature here is the perpetuity of tenure of land, which unlike the central areas of the country, does not follow a housing construction and urban development model and this accentuates the differences between the housing stock in this region.

Income and housing prices in clusters of municipalities

In our previous issue of Mexico Real Estate Outlook we found that demand for bank mortgages and income has a significant effect on the short-term price of housing.⁶ We also mentioned that subsidies, by generating a positive short-term impact on family income, would also have an effect on demand, although this would be more noticeable in areas where these resources are received. We must remember that these subsidies would be aimed at reducing the housing shortage in its various forms, which would not necessarily be related to population density, but with the lack of housing solutions in the states.

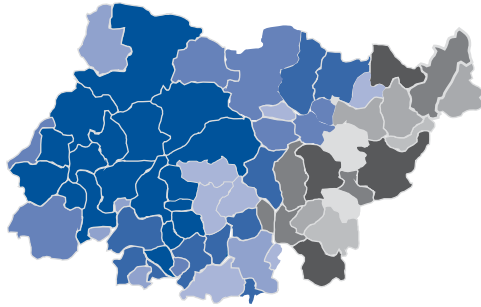
For example, as already mentioned, the economic development of the bajío region has meant greater need for housing in some cities, thus promoting the interconnection of a larger number of municipalities. This means that not only the needs of the local population must be met, but also the needs of those who migrate to these regions when jobs are created and the mobility requirements that that implies. When developments of this kind involve the entry of transnational corporations, foreign workers must also be catered for.

This, together with the decentralization of the population of large metropolitan areas has, in some cases, been the main driver of growth in urban locations in places inside the country. The clearest example is what can be seen in the state of Guanajuato, where economic growth has been robust and several of its municipalities are being integrated, as shown on map 8. The corridor that starts in the city of Leon and extends to Silao, Irapuato, Salamanca and Celaya has generated greater demand for housing around each of these locations, forming a housing-price cluster as far as the municipality of Queretaro.

Something similar has happened in Nuevo Leon, where GDP growth has been higher than the national level for the last two years. Furthermore, in 2014 and 2015 the state topped the nationwide list of subsidies received for purchasing new housing and so the incentive coincided with increased economic activity. This can be seen on map 9.

³ See *Mexico Real Estate Outlook*. First Half 2015.

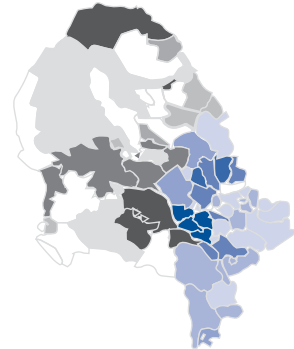
Map 3a.8
Price Clusters of the Municipalities of Guanajuato and Querétaro, 2015



■ Municipalities with price dependence in Guanajuato
■ Municipalities with price dependence in Querétaro

Source: BBVA Research with data from the national appraisals data base.

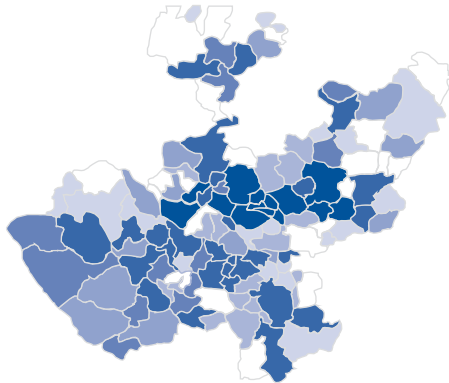
Map 3a.9
Price Clusters of the Municipalities of Nuevo León and Coahuila, 2015



■ Municipalities with price dependence in Nuevo León
■ Municipalities with price dependence in Coahuila

Source: BBVA Research with data from the national appraisals data base.

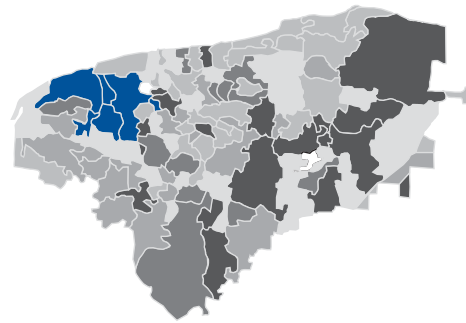
Map 3a.10
Price Clusters of the Municipalities of Jalisco, 2015



■ Price clusters in Jalisco

Source: BBVA Research with data from the national appraisals data base.

Map 3a.11
Price Clusters of the Municipalities of Yucatan, 2015



■ Price clusters in Yucatán

Source: BBVA Research with data from the national appraisals data base.

Here, the housing-price clusters have spread to the west, covering three municipalities of Coahuila, which are: Ramos Arizpe, General Cepeda and Arteaga near the city of Saltillo. These are part of the chain that starts from the metropolitan area of Monterrey, joined through the municipalities of Garcia and Santa Catarina in Nuevo Leon.

As we can see on map 10, in the western region, the state of Jalisco is very similar to what happens in Nuevo Leon; it enjoys above national-average economic growth-rates and the state received the second largest subsidies 2014 and 2015. The municipalities that continue to spread westward in Jalisco formed the largest cluster of metropolitan areas in the country in 2015, even larger than that the Monterrey cluster and second in number of municipalities after Guanajuato and Queretaro. The municipalities that make up this cluster are: Ahualulco de Mercado, Ameca, Atotonilco el Alto, El Salto, Guadalajara, Juanacatlán, Tala, Tepatitlán de Morelos, Tonalá, Tototlán, Tlaquepaque, Tlajomulco de Zúñiga, Zapopan and Zapotlanejo.

Finally, on map 9 we have the case of the Yucatan Peninsula. This is particularly interesting since between 2014 and 2015 several clusters of municipalities where there was housing-price dependency disappeared. The state of Quintana Roo, where property had not gained much value and even lost 0.80% in the first quarter of 2015, has entered a process of gradual price recovery. However, this mechanism could increase the differences in the property market in the region both in value and in the characteristics of the homes sold, because we must not overlook the fact that these markets are for holiday housing. Once an equilibrium has been reached under these conditions, it is very likely that new clusters of municipalities are formed with price dependencies, reflecting the region's economic growth.

Conclusions

The dispersion of clusters of municipalities with housing-price dependencies in the country has three causes. First, the housing policy of creating compact cities, which intensified in 2015 through the subsidy policy, restricted growth in almost all cities. Second, the demand for increasingly expensive housing, which has made the features of social housing more expensive, along with historically low interest rates and repayment terms close to 20 years and the increase in the maximum amount of funding granted by the Infonavit –now in pesos instead of minimum wages– have all made mortgages more available to workers, who can aspire to housing which increasingly approaches the mid-range segments. Thirdly, increased economic activity in some regions of the country has involved the creation of clusters of municipalities where labour mobility has increased, thus increasing housing needs. Therefore, the idea that housing should be built in places with the highest concentration of the population should also be discarded. This is because, as we have already seen, the demand for housing is determined not only by the existence of families that need a home, but by the subset of the population who have the financial capacity to acquire one. These families tend to live in areas of higher economic growth.

It is encouraging that economic activity in some regions is encouraging the development of cities, especially because in these cases, job creation is supported by structural factors, such as investment in the automotive industry. This also contributes to the process of decentralising the Mexico City megalopolis.

However, there are regions in the country where an effort is still required to integrate orderly and sustainable cities in the long term. Such are the cases of the states of Oaxaca and Chiapas, where the clusters with lowest price levels in the country are found. Moreover, tourist areas, such as those in the state of Quintana Roo, must adopt a more integrated urban policy, because although this market is directed to the holiday home segment, it also requires an effort to keep long-term jobs and permanent residents to increase demand for services and consolidate their employment residence.

References

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Box 1. Methodology to assess the spatial dependence of housing prices

This section presents the basic spatial econometrics techniques for obtaining the degree of correlation between regions of the country where housing transactions are carried out. That is, the model raises the issue of the lack of statistical independence among certain municipalities, assuming that those who can provide them have neighbouring municipalities with similar price levels. Therefore, in this context of proximity, it is also necessary to define the concept of neighbourhood in geographic space.

Let N_j be the group of all the municipalities that are part of municipality j . That is, $N_j = \{k; k \text{ is a neighbour of } j\}$. The criterion to define neighbourhoods is that they have a common border or vertex with another municipality. If we have n municipalities, then we define the structure of neighbourhoods through the matrix $W = \{w_{ij}\}$ of order $n \times n$. If the municipality i is not a neighbour of municipality j , then $w_{ij} = 0$. Conversely, if both municipalities are neighbours, then $w_{ij} \neq 0$ and this coefficient measures the intensity of the spatial dependence. Given the average price of housing in a given area, we can determine the presence of identical or similar prices in the neighbouring areas. When one price facilitates the presence of a similar price in its neighbourhood, it is said that there is positive spatial correlation. Conversely, if a price makes the existence of similar values less likely in the surrounding area, then there would be a negative spatial correlation. Finally, if we do not find any significance in any case, then we say that there is no spatial correlation.

The Moran (1948) and Geary (1954) indices are among the most relevant statistics for measuring the degree of spatial correlation. In our analysis we use the former because, as the calculations are applied to cross products, it gives the distance between the average value of the observations, of the average of its neighbouring observations. The Moran index is given by the following expression:

$$I = \frac{n \sum_{i=1}^n \sum_{j=1}^n w_{ij} Z_i Z_j}{A \sum_{i=1}^n Z_i^2}$$

Where: $A = \sum_{i,j} W_{ij}$. So that the Moran index can take negative or positive values depending upon whether a positive or negative correlation exists.

The other requirement for conceptualising spatial dependence is the criteria for determining neighbourhoods, because this affects the correlation index. In this study, two regions are considered to be neighbours if they have a common border, regardless of its length, including vertices.

Based on the above, we define the neighbourhood matrix, which we call the called “queen matrix” by the following expression:

$$W = \begin{bmatrix} 0 & w_{12} & \dots & w_{1N} \\ w_{21} & 0 & & w_{2N} \\ w_{N1} & w_{N2} & \dots & 0 \end{bmatrix}$$

This matrix, containing w_{ij} elements shows the intensity of interdependence between each pair of municipalities i and j . Each w_{ij} element is standardized by the total of the row to which it belongs, so that the total influence received by each municipality from its neighbours is equally weighted, regardless of the total number of residents in each municipality. According to Cliff and Ord (1981) when the sample size is large enough (as we believe it is in our study), the standardized Morán index $Z(I)$ is distributed as a normal standard. A non-significant value of $Z(I)$ means there is no spatial correlation, while a significant value $Z(I)$, either positive or negative, confirms the presence of (positive or negative) spatial autocorrelation.

The Moran scatterplot is another very useful tool for discovering the degree of spatial dependence between regions. The X-axis on the graph shows the observations of the variable x standardised to the average price of the sample and the Y-axis shows the spatial lag of this variable, also standardised with the average sample of its neighbouring municipalities. In this way, the four quadrants classify the different types of spatial dependence. If the cloud of observations is spread across the four quadrants, it very likely indicates the absence of spatial autocorrelation. Conversely, when observations are concentrated above the diagonal that crosses the quadrants I (upper right) and III (bottom left), there is a high positive or a high negative spatial correlation respectively. If the values are concentrated in the remaining quadrants then the dependence is zero.

From the calculation of the Morán index I_i , we can discover whether the contribution of the observations of the overall value of the dependency is statistically significant, and then detect very distant observations of the distribution of prices which are considered

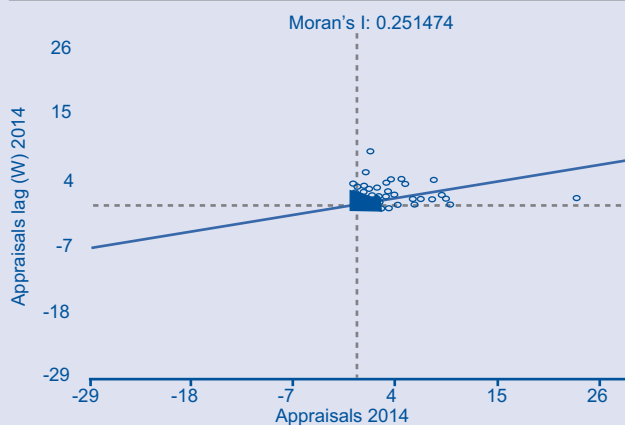
atypical. In this case, the significance test is obtained through LISA statistical (*Local Indicator of Spatial Association*).¹

The results of Moran scatterplot for the assessments made in 2014 and 2015 place standardized observations of total transactions for the respective years on the x-axis. The spatial lag of the same variable is placed on the y-axis, obtained from the product of the W matrix with the average market value in those municipalities that meet the condition of being in the vicinity.

The Moran scatterplot represents (in each of the quadrants) possible combinations of spatial dependence for the total market values of all municipalities in the country where home appraisals were made.

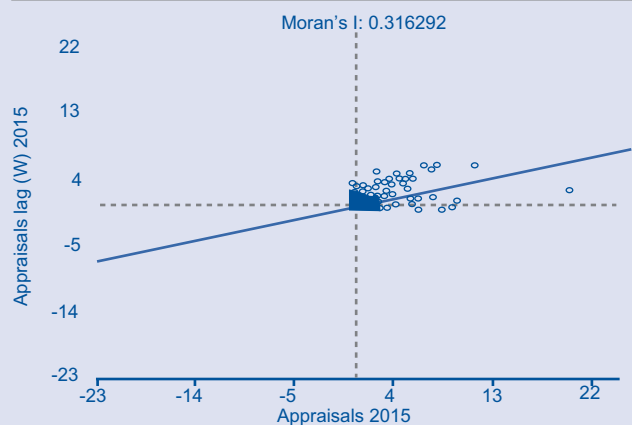
The results for diagrams of 2014 and 2015 (Graph R2.1 and R2.2) show a high concentration of data in Quadrant I (top right), with a gradient in each case given by the Moran index, which goes from 0.25 in 2014 to 0.31 in 2015, increasing the spatial correlation.

Figure B1.1
Moran Scatterplot 2014 Appraisals
Moran Index



Source: BBVA Research with data from the national appraisals data base.

Figure B1.2
Moran Scatterplot 2015 Appraisals
Moran Index



Source: BBVA Research with data from the national appraisals data base.

¹ The proof of the hypothesis of the LISA test indicator must meet two conditions. First, the statistical value obtained for each of the observations must provide information on the existence of a spatial clustering of similar values around the neighbourhood. Second, that the sum of the value of the statistic for all observations must be proportional to a global spatial association indicator.

Significantly, the whole basis of the appraisals has been taken into account in this calculation. Of the 2457, appraisals were conducted each year in just over 50% of the municipalities; this also indicates a high degree of market concentration.

This positive autocorrelation in most of the sample would imply that, in regions where some municipalities make clusters of housing prices, an increase or decrease in market values would encourage the same behaviour in the municipalities that are in their respective neighbourhoods. Conversely, a negative correlation would indicate a reciprocal effect between housing prices, where the fact that a building

increases its value means that areas in neighbouring regions with similar characteristics would lose value.

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3.b Mortgage essential in housing demand

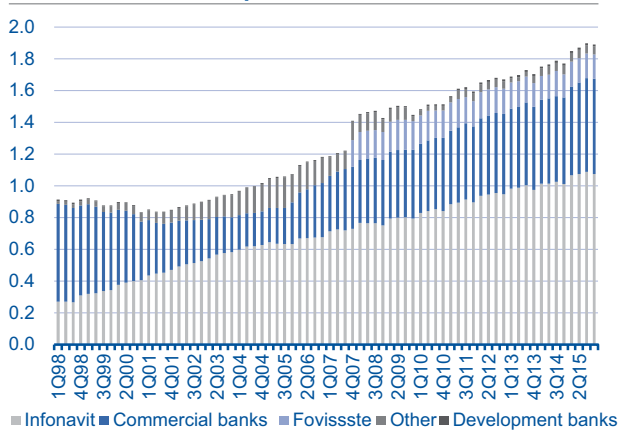
Much has been said about the cheapening of mortgage loans offered by commercial banks. In addition to this, diversification of credit products and increased limits to funding by public institutions has been identified as a primary cause of the development of the housing market. But, how much have these conditions contributed to increasing access to housing and therefore demand? In this section we propose to measure the impact of declining interest rates and increased limits on mortgage loans offered by banks. We see that the effect of increasing purchasing power of households has been positive, but the cost of credit appears to have reached its lower limit, considering the current level of funding rates.

The mortgage market is growing steadily

The balance of the mortgage portfolio exceeded 1.8 billion pesos in real terms at the end of 2015. The Infonavit, with a portfolio of little more than a billion pesos, has been the the alternative for most people seeking credit as a way to a housing solution, although banking gives greater amounts of funding. The second most used option is the mortgage credit offered by commercial banks, which reached 600 thousand million pesos also in real terms, thus recovering the ground lost in the 1995 crisis. In both cases the quality of the portfolio, measured through the delinquency rate has improved substantially over previous years. The Infonavit delinquencies fell from over 13% in 2003 to around 7% currently without considering the extended portfolio. The bank exceeded 25% delinquency after the 1995 crisis, reaching 3% at the end of 2015. In this private sector mortgage portfolio, there have been attempts by players such as Sofoles or Sofomes to increase the supply of credit, but it is clear that structurally commercial banks represent the sustained supply of this type of financing.

Figure 3b.1

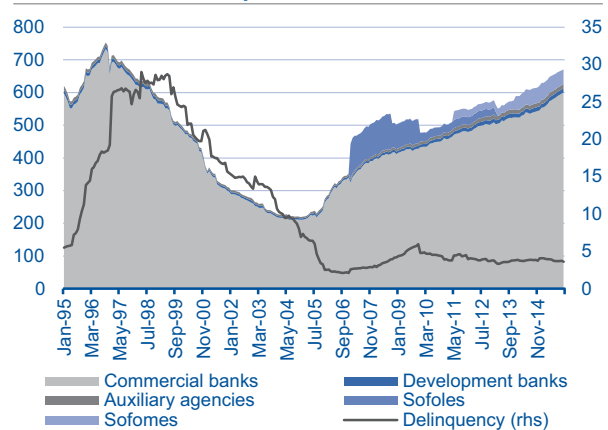
Mortgage Loan Balance
Trillions of constant pesos



Source: BBVA Research with Bank of Mexico data

Figure 3b.2

Mortgage Loan Balance
Billions of constant pesos and %



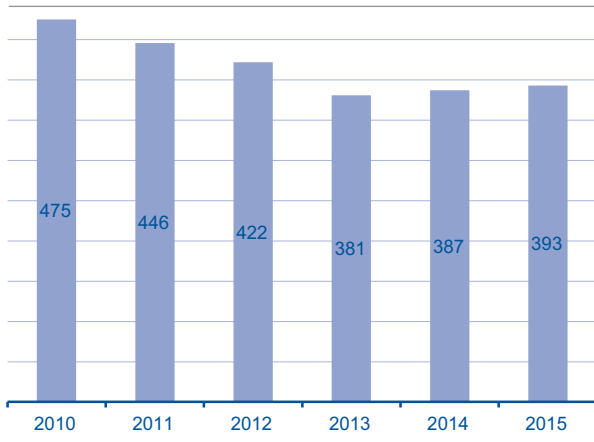
Source: BBVA Research with Bank of Mexico data

The increase in the balance of the mortgage portfolio is due to the continuous origination of both public institutions and private intermediaries. In the current decade, several efforts have been made to encourage the demand for mortgage credit and thus for housing. Diversification of credit products for different housing solutions by public institutions, mainly by the Infonavit, initially had replaced mortgage credit for new housing and then overall. The observed change in demand was that Infonavit affiliates increased their preference for

using their credit for purchasing previously-owned houses rather than new ones. Between 2003 and 2004, the proportion of mortgages for previously-owned home was around 10% of total loans for acquisition; this has tripled to reach 34% in the current five year period.¹ In a similar vein, the credits for improvement allowed people to use this option as a better housing solution instead of a mortgage. The result was a fall in mortgage loans from 2010 to 2013. In 2014 this trend was reversed, in both the number of credits and the amount of financing. We believe the reason for this is that the the maximum amount of credit increased from 483,000 pesos to 850,000, as well as the change in conditions from the number of minimum wages to pesos. This meant there was a lowering of the nominal interest rate and the possibility of negative equity was eliminated.

Figure 3b.3

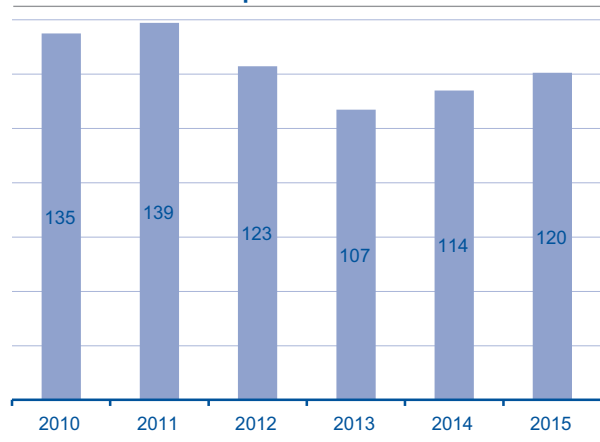
Origination of the Infonavit Mortgage
Thousands of loans



Source: BBVA Research with Infonavit data
Note: Does not take Apoyo Infonavit into account

Figure 3b.4

Origination of the Infonavit Mortgage
Billions of constant pesos

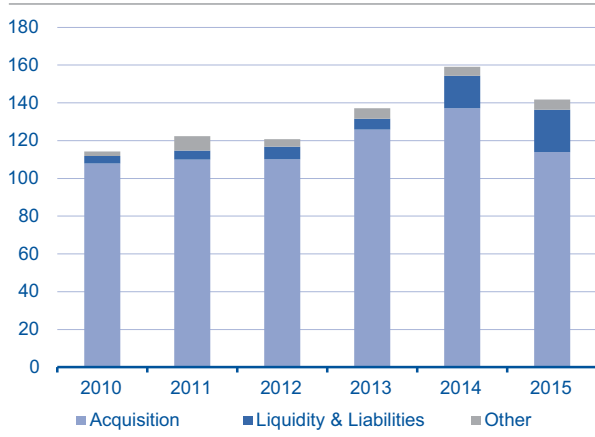


Source: BBVA Research with Infonavit data
Note: Does not take Apoyo Infonavit into account

The banking side of the story differs little. From 2010 to 2014 it was observed that the number of mortgage loans and the amount granted grew steadily, only during 2015 did the number of loans decrease. We attribute this growth in the last five years more to co-financing with public institutions, but mostly to the continuous improvement of credit conditions offered by the banks. As already mentioned in previous issues of Mexico Real Estate Outlook, interest rates have declined year after year, the repayment term has increased to 20 years and the loan-to-value-of-housing ratio have all boosted demand for bank mortgage loans. Only in the last year have we see a decrease in the number of loans, but not in the amount loaned, which we associate with smaller credits in partnership, because innovations in products offered by public institutions have led them to take a greater part in mid-range segments by increasing credit limits. Improved credit conditions by commercial banks is attributable to macroeconomic stability and strong competition between banks. Further evidence of competition is the increase in loans for payment of liabilities, a product which reached 10% of banking originations in the last year. These loans are a mortgage whose resources pay the mortgage from another bank in order to lower the cost of financing. Although this product has existed for several years, it has gained relevance in the last two.

¹ At the end of 2015 this ratio reached 37%. See "More equitable mortgage loan solutions" in this issue of *Mexico Real Estate Outlook*.

Figure 3b.5
Origination of the Bank Mortgage by Product
Thousands of loans



Source: BBVA Research with CNBV data

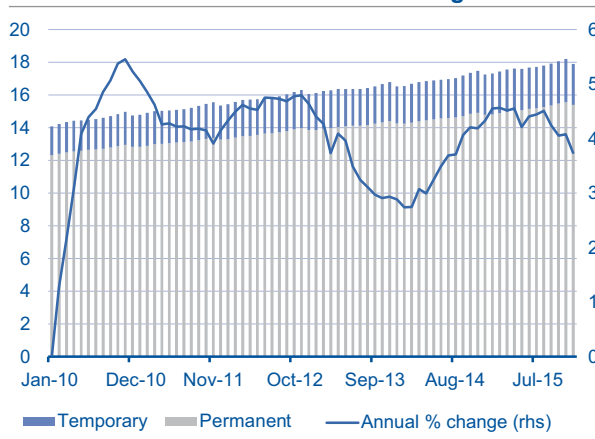
Figure 3b.6
Origination of the Bank Mortgage by Product
Billions of constant pesos



Source: BBVA Research with CNBV data

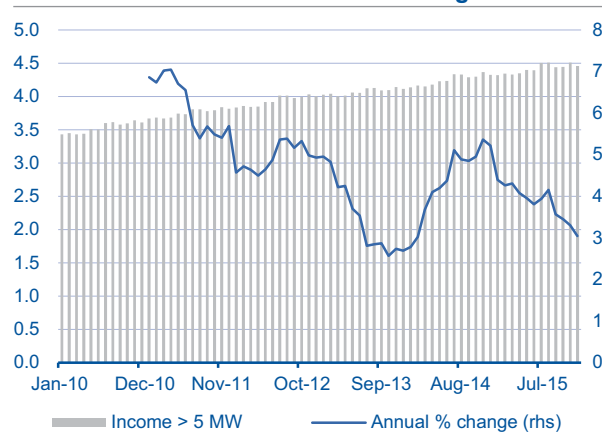
While several impulses have driven demand for housing, the most significant reason, besides the more favourable mortgage loan conditions offered by commercial banks, is the growth of private formal employment, in this case measured through workers registered in the IMSS who mostly have are affiliated to the Infonavit, the Mexico's leading mortgage provider. Among workers, those with income greater than 5 times the minimum wage often apply for bank mortgages.² The number of workers with this income level has also increased steadily in the IMSS, at a rate of around 4% in the current decade (although ENOE reports the contrary in the overall labour market). This all means that the potential the market for commercial banks and the Infonavit has grown. The importance of workers earning over 5 times the minimum wage is not limited to banking, but also affects the Infonavit, as the loans of this subset of workers provide the resources for cross-subsidization to low-income workers accredited by the Infonavit.³

Figure 3b.7
Workers Insured in the IMSS
Millions of workers and annual % change



Source: BBVA Research with IMSS data

Figure 3b.8
IMSS Workers Earning + 5 times the MW
Millions of workers and annual % change



Source: BBVA Research with IMSS data

² Over 75% of banking credits are aimed at private salaried workers, of these, just over 95% reported incomes of over 5 times the minimum wage.

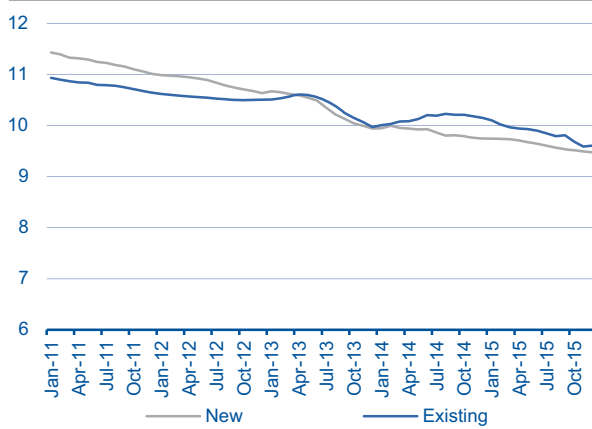
³ While the number of workers has grown at an average rate of 4% since 2010, the proportion of temporary workers has also increased, from below 10% to about 15%.

Better mortgage conditions increase access to housing

The actors increasing the demand for housing can be grouped as: family income, long-term expectations and access to mortgage loans. In particular, we have seen that public and private mortgage loans have improved and that the demand for this type of financing has risen. The increase in the amount and the change in the conditions of the Infonavit loan, in addition to the guaranteed compensation in the case of Fovissste, are probably the most significant changes that have stimulated demand for loans from the public sector. This has reversed the downward trend in mortgage loans.

Figure 3b.9

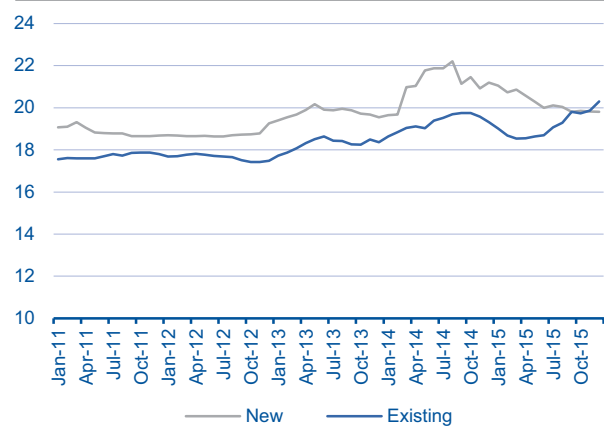
Bank Interest Rate for Purchase Moving average of annual interest rate



Source: BBVA Research with CNBV data

Figure 3b.10

Bank Mortgage Loan Term Moving average of term in years

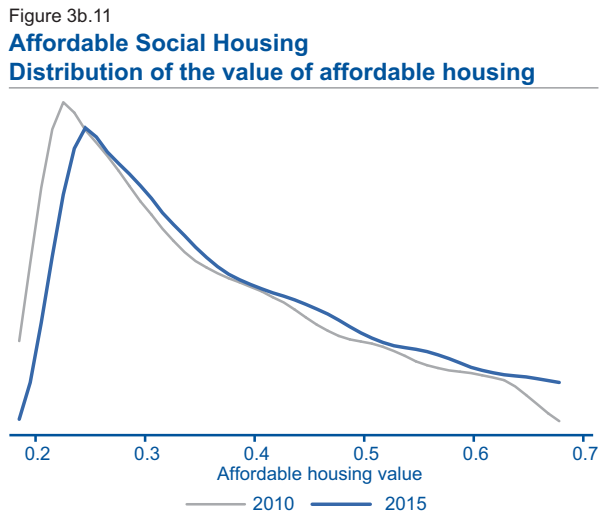


Source: BBVA Research with CNBV data

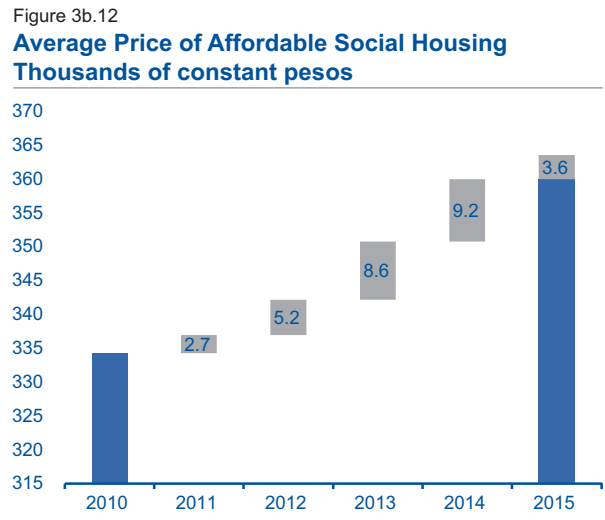
Commercial banking mortgage lending for new or previously-owned house purchase, has seen lower interest rates, higher credit limits and loan-to-home-value ratios of up to 95%. This has greatly improved access to mortgage loans for families, so that demand has grown steadily. With lower interest rates and longer-term averages, payment per thousand decreases and therefore the monthly mortgage payment is lower for a home of equal value and given credit risk. With the increase of the loan amount in proportion to the value of housing, borrowers required smaller deposits or could opt for a higher-priced housing, meaning they could pay for their home more quickly or acquire a better one. The result is that families who previously could not obtain housing because they did not have enough credit or could not obtain sufficient funds, could now enter the housing market, or otherwise obtain more valuable housing, despite the increase in prices. In other words, the cheapening of credit has generated an income effect on families, resulting in an increase in housing affordability.

In order to get a better idea of how much the cheapening of mortgage loans has contributed, we calculated the purchasing power of families for acquiring a property of this type. From the income from work, we calculated the households' credit capacity. The amount of the loan would cover 90% of the value of the home and the family would have to make the 10% down payment. Affordable housing must be consistent with local supply, because, even if the household obtained a loan and the required down payment, if there were no supply of housing at that price, there would no access to the housing market. This clarification is distinct from other accessibility measures, as most of the indicators of this type tend to refer to the lower relative value of homes or the cost of mortgages, but they do not necessarily mean that the current housing supply it is within that budget.

We calculated families' earned income based on information from the National Survey of Income and the Household Expenditure Survey 2010, 2012 and 2014 (ENIGH).. We calculated their credit worthiness based on their income with interest rates of 2010-2015 and examined whether there was a supply of housing within that budget available in their area. In this way we elaborated the distribution by housing segment, namely social, middle and high-segments for each year of the period under study. This distribution is shifted to the right each year, which is interpreted as meaning that with each passing year, households can buy a home of greater value in each of said segments. Another result is that some of the families who, in a given year could not afford housing because their budget was not high enough for the current supply of housing in the state, would –with the cheapening of mortgages– at least have been able to obtain one of these properties in the social housing segment. In this regard, some families also left this segment and joined the mid-range, or left the mid-range and joined the residential segment. The latter is consistent with the growth of the bank mortgage market in the two segments of greater value.



Source: BBVA Research with CNBV, Inegi & RUV data

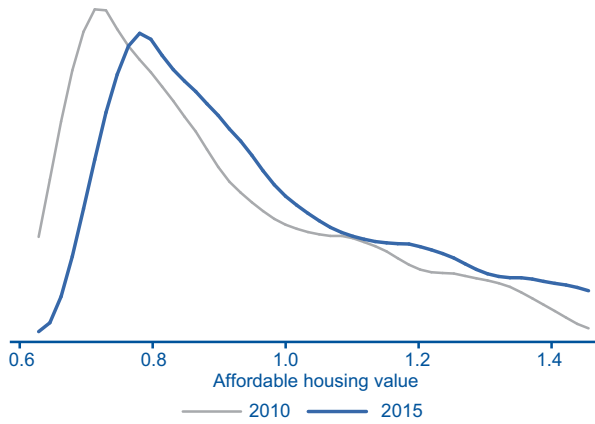


Source: BBVA Research with CNBV, Inegi & RUV data

In the housing segment we can see how from 2010 to 2015 the distribution of families that could buy a home moved to the right. As a benchmark to measure by how much purchasing power improved, we used the average value of housing available in this segment. In 2010, the average value of affordable housing was almost 335,000 pesos, but by 2015, on average this value had reached 363,000 pesos. Increases in affordability through bank mortgage grew until 2014, but in 2015 the increase was already becoming more moderate. This was mostly a result of interest rates no longer falling in 2015 in response to pressure by the central bank's monetary policy.

Figure 3b.13

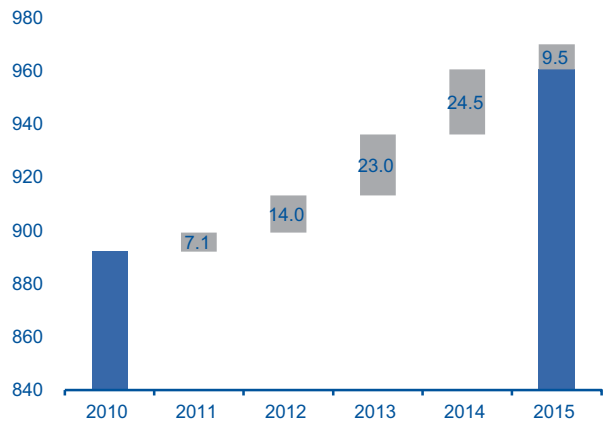
Average Affordable Housing
Distribution of the value of affordable housing



Source: BBVA Research with CNBV, Inegi & RUV data

Figure 3b.14

Average Price of Affordable Housing
Thousands of constant pesos



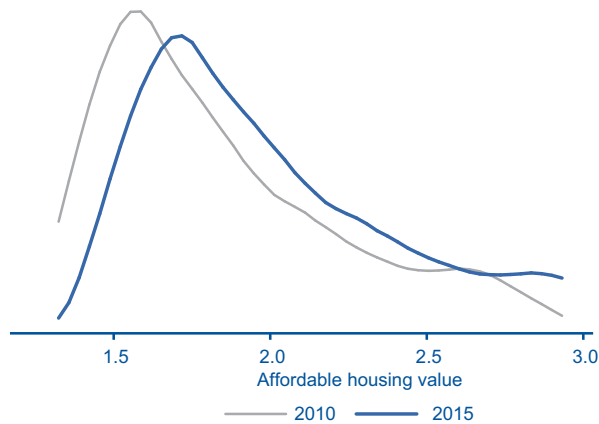
Source: BBVA Research with CNBV, Inegi & RUV data

The effect of cheaper mortgages is multiplied by the higher the value of housing, which guarantees the loan. For example, in 2010 the average price of affordable housing was 892,000 pesos, which increased to 970 thousand pesos. As in the case of social housing, affordability moved increasingly upwards until 2015, where after increasing almost 25,000 pesos the previous year, it only increased by 9,500 pesos.

The story is similar in the residential segment. Affordable housing prices rose from 2.2 million in 2010 to 2.4 million in 2015. We also saw the biggest leap in affordable housing which exceeded 60,000 pesos in 2014, but it only increased by 24,000 pesos in 2015. However, it is clear that all segments improved their purchasing power even with the increase in house prices seen in recent years.

Figure 3b.15

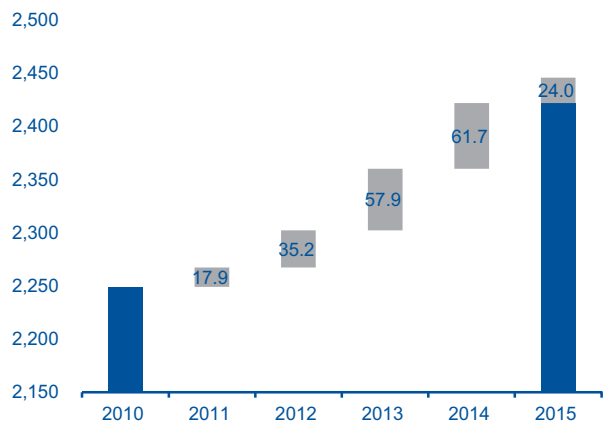
Average Residential Housing
Distribution of the value of affordable housing



Source: BBVA Research with CNBV, Inegi & RUV data

Figure 3b.16

Average Price of Affordable Residential Housing
Thousands of constant pesos

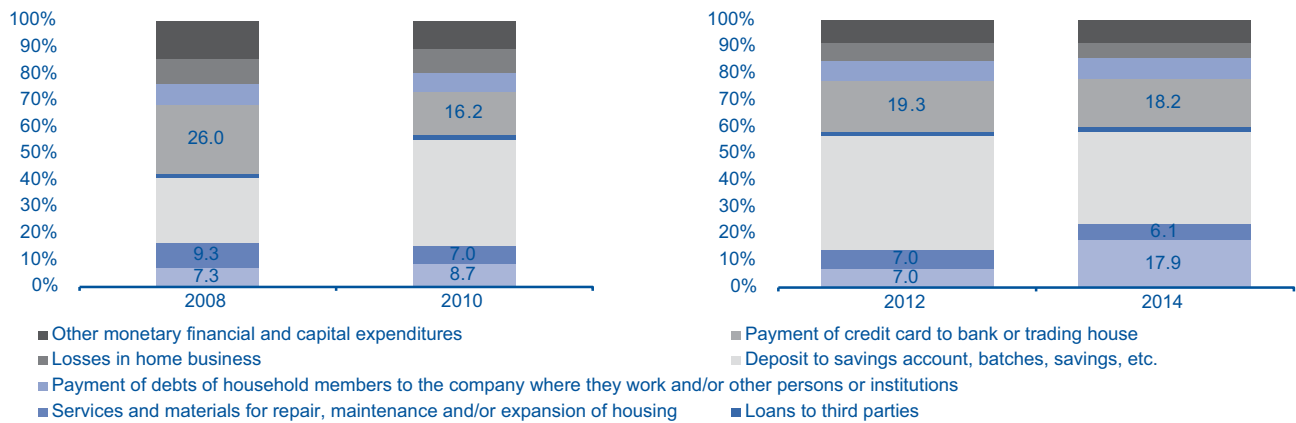


Source: BBVA Research with CNBV, Inegi & RUV data

We have also seen that families recognize the opportunity offered by the different sources of mortgage financing. According to the results of the ENIGH of those years, we see that households have opted for a higher debt when purchasing homes. From 2010 to 2014, the proportion of financial expenditure of households in this category increased by more than 10 percentage points, replacing savings and consumer credit. But also it partly means that a lower cost of consumer credit released borrowing capacity for home purchases.

Figure 3b.17 y 3b.18

Financial and Capital Expenditure
Percentage of total expenditure



Source: BBVA Research with ENIGH 2008, 2010, 2012 & 2014, Inegi data

Mortgages will continue to help demand but with less effect

Since the beginning of the last decade we have seen that the mortgage market, and therefore the housing market, has grown. Although it fell in 2008 and 2009, the balance has been positive for all participants. Many families have been able to obtain some kind of housing solution, which can already be seen in a decrease in the housing deficit. The acquisition of housing has been the main housing solution and this has generated economic benefits for both supply and demand. Credit has played a key role, especially mortgages in making this happen. Public bodies have greatly diversified their product offerings and provide more suitable options and improved credit conditions to their affiliates. In the banking sector, the cheapening of credit has been the main driver of demand and has led to an increase in access to the housing market. Nevertheless, as the driver of demand, the credit beta seems to be reaching a stable equilibrium. It is clear that both the public and private sectors will continue to offer mortgages, but it will be employment and income that will have the most favourable effects on demand.

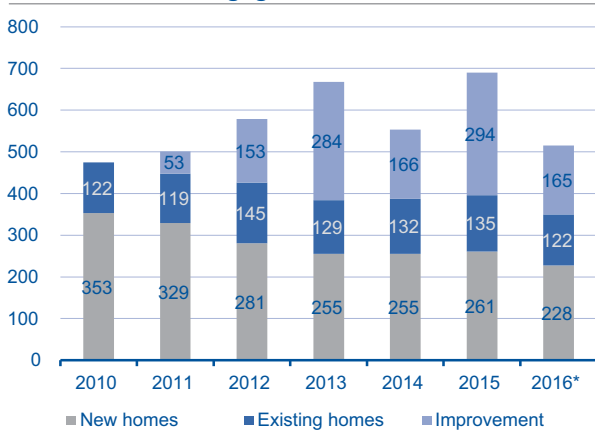
3.c Infonavit maintains credit placement stable

The new Infonavit Financial Plan for the period 2016-2020 presents no major changes in the strategic design. For this reason, this section of Mexico Real Estate Outlook we will focus on its credit placement plan.

Annual Operational Programme 2015

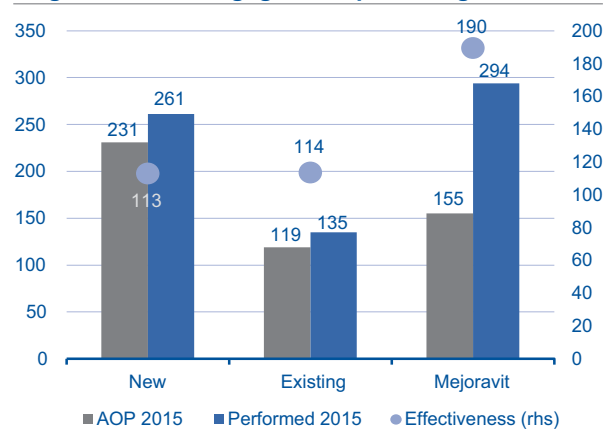
The Annual Operational Programme 2015 that we reviewed last year contained a mortgage loan origination plan that was significantly less ambitious than the 2014 plan. The number mortgages for new and previously-owned housing was reduced from 390,000 to 350,000, while loans for improvement went from 166,000 to 155,000. However, by the end of 2015 the number of mortgages had increased, something that had not happened for a decade. The Institute not only exceeded the provisions of the Annual Operating Plan (AOP) 2015, but reversed a decline in mortgages. In particular, origination of the Mejavit product almost doubled the levels of 2014.

Figure 3c.1
Origination of Mortgages
Thousands of mortgages



Source: BBVA Research with Infonavit data
* Estimated originations during 2016

Figure 3c.2
Programmed and Performed Origination of mortgages and percentage

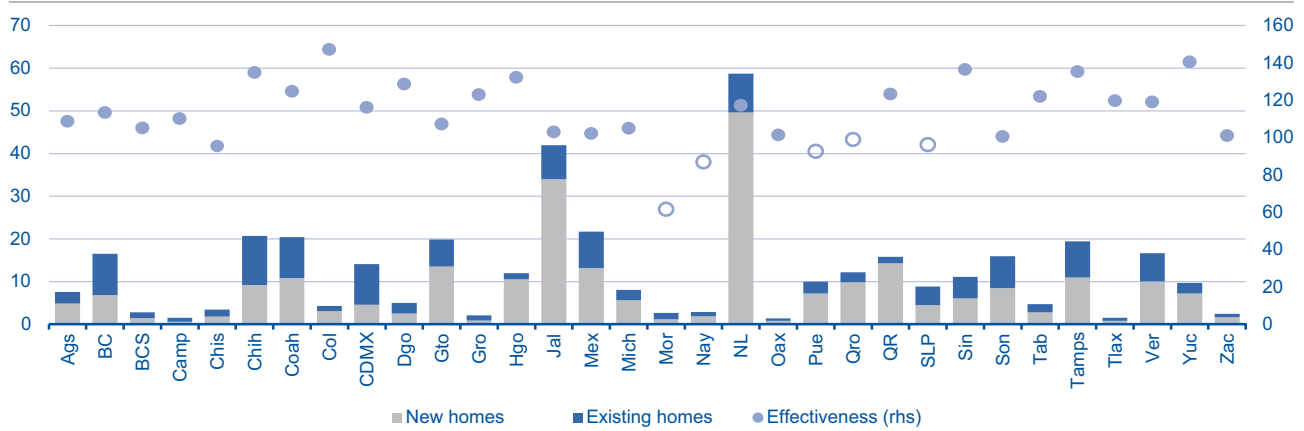


Source: BBVA Research with Infonavit data

From the first quarter of 2015, significant growth in demand for the different products offered by the Infonavit was observed. We attribute the year-end result largely to the increased credit limit from 483,000 pesos to 850,000, and the change of mortgage product funding conditions from the number of minimum wages to pesos. The placement of loans for new housing was 13% higher than scheduled, which originated 261,000 mortgages. Similarly, funding for previously-owned housing exceeded the estimate by 14% and 135,000 loans were granted for this housing solution. The Mejavit product is surprising and 294,000 loans of this type were granted, almost doubling the OAP 2015 reference. Thus, for the first time since 2010, more loans for house purchase were granted.

Figure 3c.3

Origination of Mortgage Loans by Type of Housing
Thousand of mortgages and percentage



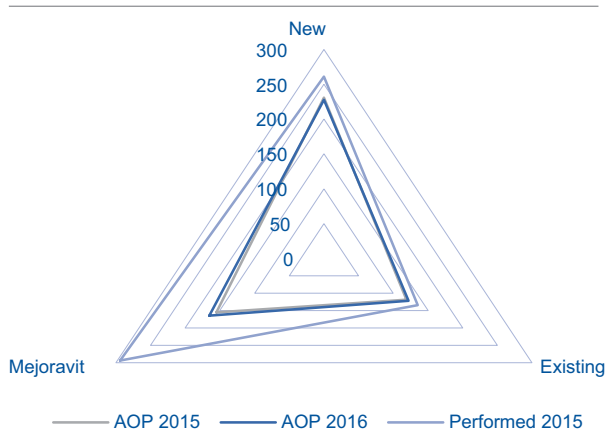
Source: BBVA Research with Infonavit data

At state level, the regions with highest economic activity were again those that contracted the largest loans. In first place, the state of Nuevo Leon, followed by Jalisco and thirdly the State of Mexico. The exception to this pattern is Mexico City, which, although it has the greatest economic activity, has less social housing options, the main segment served by the Infonavit credit. In the three aforementioned states, more loans were formalised than were programmed for 2015. Two other states stand out, Chihuahua and Coahuila, where more than 20,000 mortgage loans were placed. Only six states did not reach the expected demand: Chiapas, Morelos, Nayarit, Puebla, Queretaro and San Luis Potosi; except for Morelos and Nayarit, the rest achieved over 90%, very close to meeting the target. Morelos is a different case. It only reached 62% of the expected placement; this situation is similar to that observed in commercial banking where demand for mortgage credit decreased in the state.

Annual Operational Programme 2016

Figure 3c.4

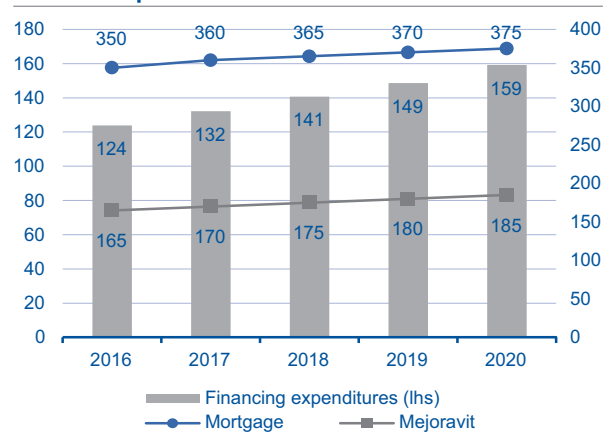
Origination Programmes 2015 and 2016
Thousands of loans



Source: BBVA Research with Infonavit data

Figure 3c.5

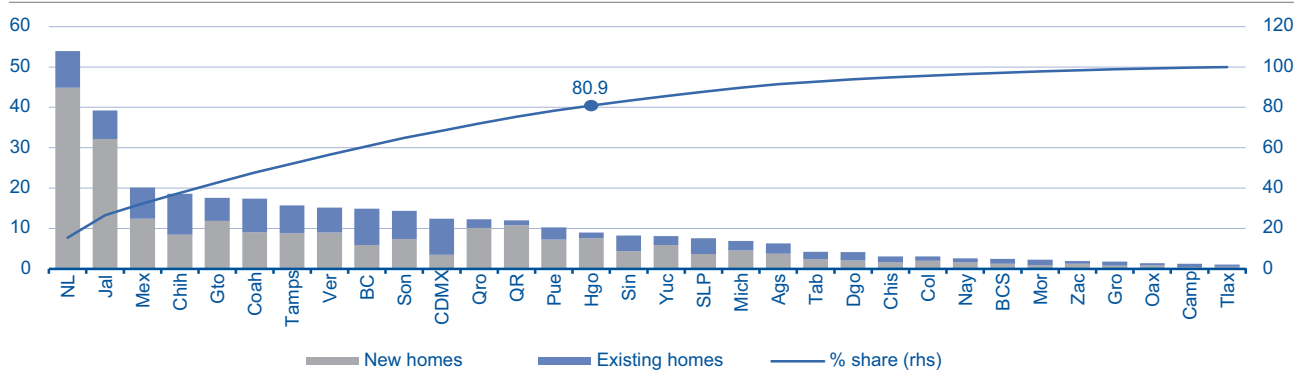
Financing Programme 2015-2020
Billions of pesos and thousands of credits



Source: BBVA Research with Infonavit data

The Annual Operational Programme 2016 contains no significant changes in the estimated placement of credits over 2015. There is practically no difference in any of the major segments. Credits for the purchase of new and previously-owned housing are very similar to the 2014 estimates for 2015, and are similar for improvement loans. However, if we compare the 2016 OAP with the loans actually granted during 2015, the Infonavit should expect a decrease in demand in each of these three areas. The largest decrease would be in Mejoravit, followed by acquisition of new housing and almost no difference for previously-owned housing. The 2016-2020 Financial Plan itself indicates a possible decline in demand compared to the provisions of previous years.¹ However, greater generation of employment in the IMSS and better the credit conditions offered by the Institute could continue to maintain the demand for mortgages.

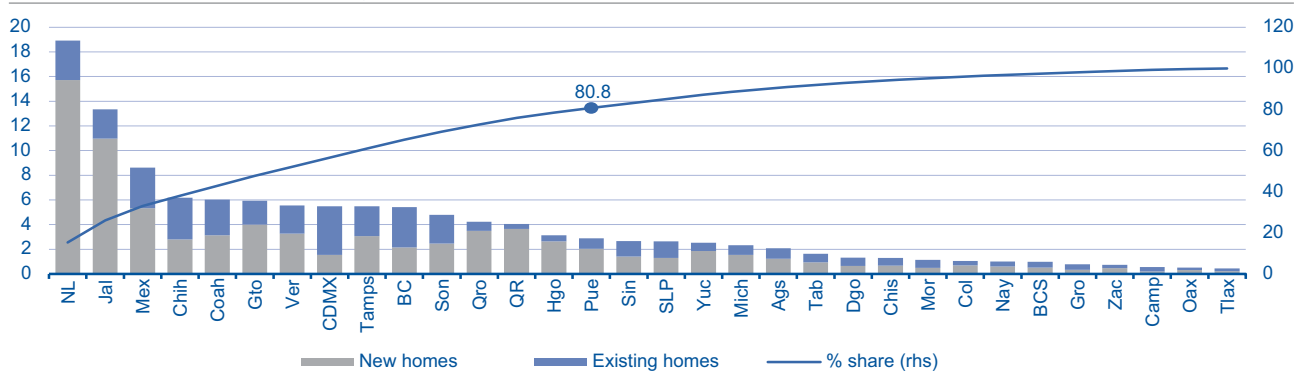
Figure 3c.6
Origination of Mortgage Loans by State 2016
Thousand of mortgages and percentage



Source: BBVA Research with Infonavit data

As in previous years, Nuevo Leon, Jalisco and Mexico State may achieve most mortgage loans, mainly new housing. Other states that have gained importance in the number of mortgages achieved are Chihuahua, Coahuila and Guanajuato where economic activity has also improved. The case of Mexico City is the most unusual, because it is the only one where previously-owned housing is expected to play the leading role. This phenomenon is to be expected in a city where space for new housing construction (unless it is vertical) is very small, especially for the social housing segment, because the scarcity of land has significantly pushed prices up. Something similar happens in other high-density cities around the world.

Figure 3c.7
Origination of Mortgage Loans by State 2016
Billions of pesos and percentage

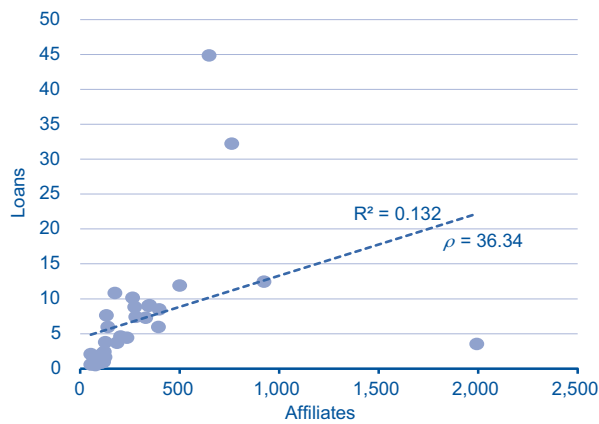


Source: BBVA Research with Infonavit data

¹ See Infonavit. "Plan Financiero 2016-2020" ("Financial Plan 2016-2020)". p. 138

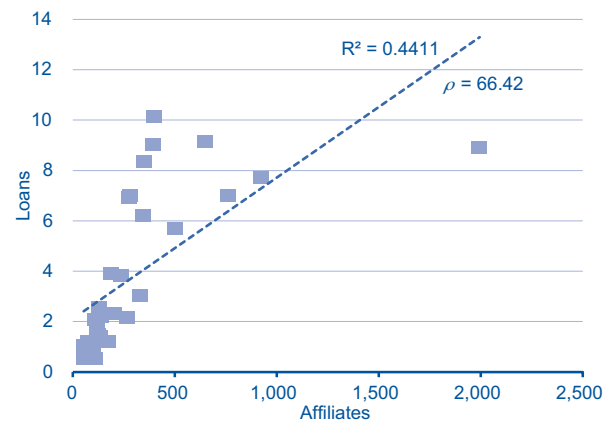
According to the 2016 OAP, 80% of mortgage financing will be contracted in 15 states, just under half the country –a high degree of concentration– whether measured in the number of credits or their amount.

Figure 3c.8
Affiliates without Loans and New Housing
Thousands of affiliates and thousands of new housing mortgage loans



Source: BBVA Research with Infonavit data

Figure 3c.9
Affiliates without Loans and Existing Housing
Thousands of affiliates and thousands of existing housing mortgage loans



Source: BBVA Research with Infonavit data

Finally, we review the relationship between the number of workers who do not yet have a mortgage and the placement of credit for the purchase of new and previously-owned housing statewide. According to the figures presented by the Infonavit on members with no loans and how many of these are expected to request them, the relationship with previously-owned housing looks more accurate than that of new housing. In other words, placing credit to buy previously-owned housing has a closer relationship to the potential demand at state level measured by affiliates who do not yet have a loan. On the other hand, the relationship between the origination of loans for new housing and the described potential demand is not as close, which could indicate a shift in demand towards other cities. An example of this may be precisely City of Mexico, where low-price housing options are scarcer, so some people affiliated to the Infonavit could be using the provision for the purchase of new housing in other cities.

The Infonavit could surpass the 2016 OAP again

The new 2016 Annual Operational Programme forecasts modest demand. There are virtually no changes from 2015, but there is a decrease compared with what was actually placed during the previous year. However, changes to encourage demand made by the Institute could maintain levels for their mortgage products. In addition to this, a greater number of members, as inferred from the constant growth registered in IMSS workers, could keep demand relatively stable. While we do not expect requests for mortgages from the Infonavit to increase sharply, we do think that it will meet and perhaps surpass the OAP figures for 2106.

4. Statistical appendix

Table 4.1

Annual macroeconomic indicators

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016p
Real GDP¹ (annual % change)	3.1	1.2	-4.5	5.1	4.0	3.8	1.6	2.3	2.5	2.2
Private consumption, real (annual % change)	3.0	1.9	-6.5	5.7	4.8	4.7	2.5	1.8	2.8	2.3
Government consumption, real (annual % change)	2.5	3.0	2.2	1.7	2.5	3.3	1.3	2.4	2.3	1.5
Investment in construction, real (annual % change)	5.1	6.2	-5.7	-0.2	3.0	2.0	-4.5	1.4	0.9	
Residential	4.0	2.4	-11.6	-0.6	4.1	1.4	-4.9	3.1	2.9	
Non-residential	6.1	9.6	-0.7	0.1	2.3	2.5	-4.1	0.0	-0.7	
Formal private employment (IMSS) ² , total	14,145	14,436	13,994	14,524	15,154	15,856	16,409	16,991	17,724	
Annual % change	4.2	2.1	-3.1	3.8	4.3	4.6	3.5	3.5	4.3	
Avg. salary of cont. (IMSS, nominal pesos per day, avg.)	211.0	222.3	231.6	239.2	249.3	260.1	270.2	282.1	294.0	
Real annual % change	109.6	0.2	-1.0	-0.9	0.8	0.2	0.1	0.4	1.5	
Real total wages (IMSS, annual % change)	118.4	2.3	-4.0	1.9	5.7	5.2	3.6	3.9	5.9	
Minimum general salary (daily, nominal pesos)	48.9	50.8	53.2	55.8	58.1	60.5	63.1	65.6	69.2	
Real annual % change	7.8	-1.3	-0.4	0.6	1.0	-0.1	0.4	-0.1	0.2	
Consumer prices (end of period, annual % change)	3.8	6.5	3.6	4.4	3.8	3.6	4.0	4.1	2.1	
TIIE 28 average (%)	7.7	8.1	6.7	4.9	4.8	4.8	4.3	3.5	3.3	
10-year interest rate, 10 year Govt bond (M10)	7.8	8.3	8.0	6.9	6.8	5.7	5.7	6.0	6.0	

¹ Seasonally adjusted series.

² Thousands of people

Source: BBVA Bancomer with Bank of Mexico, Conasami, Inegi & IMSS data.

Table 4.2

Annual construction and housing indicators

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016p
Real GDP (annual % change)	4.7	3.8	-6.1	-0.5	4.1	2.5	-4.8	2.0	2.5	0.6
Building	3.5	2.0	-11.1	-0.4	4.3	2.7	-5.2	2.5	3.2	0.3
Civil engineering and major works	11.2	20.0	6.7	3.6	2.9	1.0	-4.7	-2.2	0.2	0.9
Specialized construction work	2.8	-12.4	4.8	1.9	5.6	4.3	-2.5	8.6	2.7	1.7
Construction employ. (IMSS, thousands people, avg.)	1,203.8	1,209.5	1,103.6	1,145.5	1,199.5	1,275.2	1,289.8	1,383.5	1,504.0	
Annual % change	6.3	0.5	-8.8	3.8	4.7	6.3	1.1	7.3	8.7	
Hydraulic cement prod. (tons, ann. % change)	0.9	-2.8	-3.1	-2.9	1.5	2.1	-5.9	5.1	7.5	
Nat'l. cement consumption (tons, ann. % chge.)	0.0	-3.7	-6.1	-5.3	1.4	2.5	-6.0	4.9	7.5	
Construc. comp.¹ (real prod. value, ann. % chge.)	2.2	-2.2	-8.6	3.3	3.2	3.4	-3.7	-0.1	0.1	
Building	6.5	-2.3	-18.6	-5.3	6.3	2.0	-5.6	2.7	1.6	
Public works	-2.1	-1.5	8.0	9.8	0.3	0.5	-4.4	-3.1	0.2	
Water, irrigation and sanitation	-23.4	4.3	4.9	3.7	10.5	1.9	-6.0	-7.4	-7.0	
Electricity and communications	-12.6	15.4	8.2	27.0	21.4	-6.8	-2.2	-10.5	9.1	
Transportation	6.6	6.3	9.5	8.0	-2.8	-2.7	-7.8	2.6	-4.0	
Oil and petrochemicals	-4.2	-24.3	5.3	9.5	-7.7	14.7	3.6	-9.9	9.5	
Other	-3.2	-6.0	-31.5	21.5	6.2	36.4	10.6	2.2	-6.7	
Resid. construc. prices, general (ann. % change)	2.9	13.1	-1.0	4.8	9.3	0.4	-0.7	6.5	2.3	
Construction materials (annual % change)	2.6	15.5	-1.8	5.2	10.6	-0.2	-1.4	4.5	4.5	
Labor (annual % change)	4.4	3.5	3.1	3.3	3.8	3.2	2.9	3.5	4.2	
Rental equipment (annual % change)	2.9	6.9	1.8	3.2	5.3	-0.2	1.4	4.1	7.8	

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

Source: BBVA Bancomer with Bank of Mexico, Inegi & IMSS data.

Table 4.3

Annual housing credit indicators

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Number of loans granted (thousands)											
Total	567.5	670.8	725.7	746.5	632.8	639.7	599.3	571.0	537.9	545.1	599.2
Infonavit	376.4	421.7	458.7	494.1	447.5	475.0	445.5	421.9	380.6	387.0	393.0
Fovissste	48.7	76.6	68.4	90.1	100.1	87.8	75.2	64.3	65.9	63.1	64.4
Commercial banks and others	142.4	172.5	198.6	162.3	85.2	76.9	78.6	84.8	91.3	94.9	141.8
Reduction ¹	38.1	73.7	79.2	80.8	39.4	30.7	23.4	26.7	25.3	26.1	19.5
Individual credits	529.4	597.1	646.5	665.6	593.4	609.0	575.9	544.3	512.6	519.0	579.7
Financing flow (billion pesos, December 2014 prices)											
Total	90.6	138.4	167.0	197.5	173.3	178.7	259.9	255.6	265.9	292.6	303.5
Infonavit	52.7	64.5	142.6	152.7	131.0	135.0	138.9	122.9	111.3	118.8	122.4
Fovissste	10.4	17.7	31.2	39.2	59.8	51.2	40.2	36.6	38.1	41.3	40.7
Commercial Banks and others	27.6	56.2	128.4	113.7	72.5	69.2	80.9	96.1	116.4	132.6	140.4
Commercial banks current loan portfolio											
Balance end of period (billion pesos, Dec. 2014 prices)	190.1	235.9	268.7	287.8	287.9	333.7	371.5	417.2	447.0	505.5	583.1
Past-due loans index (%)	2.4	2.0	2.5	3.2	4.4	3.4	3.2	3.1	3.5	3.3	3.0

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

Table 4.4

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

	13'I	II	III	IV	14'I	II	III	IV	15'I	II	III	IV
National	2.9	3.9	4.4	4.1	5.0	3.4	4.1	5.1	4.9	6.4	8.3	6.7
Aguascalientes	2.2	3.3	4.9	5.0	6.4	5.2	5.4	6.7	5.8	7.1	9.0	6.9
Baja California	2.1	3.2	4.0	3.3	4.2	2.7	3.5	4.2	4.0	5.1	7.0	5.8
Baja California Sur	4.8	5.1	4.6	3.1	2.7	0.8	1.3	2.4	2.8	4.3	6.8	5.9
Campeche	5.7	6.2	6.0	4.9	4.4	2.4	3.3	4.7	5.3	6.7	8.6	6.8
Coahuila	3.6	4.4	4.4	3.9	4.8	2.9	3.8	4.7	4.5	6.4	8.4	6.8
Colima	3.1	4.5	5.1	4.5	4.2	1.9	2.4	3.9	4.3	6.3	8.3	6.3
Chiapas	3.7	4.5	4.9	4.3	4.8	3.3	4.5	5.5	5.5	6.7	8.4	6.8
Chihuahua	2.7	3.7	4.1	3.9	5.1	3.5	4.2	5.0	4.5	6.0	7.8	6.1
Distrito Federal	5.3	6.6	7.2	7.0	8.2	6.8	7.8	9.2	9.0	9.3	10.2	7.9
Durango	2.0	3.6	4.7	5.4	7.1	5.6	7.0	8.1	7.8	9.1	10.4	7.9
Guanajuato	3.0	3.9	3.9	3.4	3.6	1.9	3.0	4.3	4.8	6.5	8.3	6.3
Guerrero	2.9	4.0	4.7	4.9	6.3	5.1	5.3	5.2	4.2	5.0	6.9	6.2
Hidalgo	1.4	2.8	3.3	3.3	3.9	1.5	2.3	3.7	4.6	7.5	10.2	8.0
Jalisco	2.3	3.0	3.1	2.8	4.5	2.7	3.5	4.0	3.1	4.8	6.8	6.0
México	2.7	3.8	4.6	4.7	6.1	4.8	5.2	5.4	4.7	5.8	7.7	6.6
Michoacán	2.5	4.0	4.5	4.3	4.4	2.1	2.9	4.1	4.7	6.9	9.1	7.2
Morelos	2.1	3.8	5.1	5.0	5.8	3.9	3.6	3.7	3.4	4.8	7.3	6.7
Nayarit	2.6	3.1	2.6	1.1	1.1	-0.8	-0.2	1.5	2.1	4.5	7.2	6.0
Nuevo León	2.8	3.7	3.6	2.7	3.0	1.2	2.6	4.3	4.7	6.7	8.6	6.7
Oaxaca	2.3	4.4	5.8	5.6	6.0	3.9	4.4	5.5	5.6	7.0	9.1	7.4
Puebla	2.3	4.3	5.7	5.0	5.9	3.9	4.2	5.0	4.9	6.3	8.5	7.6
Querétaro	2.4	3.9	4.9	5.3	6.7	5.2	5.6	5.4	4.5	5.5	7.2	6.6
Quintana Roo	0.4	1.2	2.3	1.8	2.6	0.7	-0.6	0.2	-0.8	1.9	6.0	5.4
San Luis Potosí	3.3	4.1	3.9	3.2	3.3	1.3	2.3	3.6	4.1	6.2	8.1	6.5
Sinaloa	3.6	4.0	3.6	2.7	2.9	0.9	1.7	2.9	3.3	5.3	7.3	5.8
Sonora	3.1	3.8	4.1	3.8	5.0	3.4	4.3	5.3	4.9	6.5	8.3	6.5
Tabasco	2.9	4.1	4.9	4.8	5.9	4.8	6.3	7.2	6.8	7.7	9.1	7.6
Tamaulipas	1.3	2.4	2.7	3.1	5.0	4.2	6.5	8.2	8.2	9.6	10.7	8.2
Tlaxcala	0.9	3.3	5.0	5.6	7.2	5.3	6.1	7.7	7.2	8.6	10.4	7.9
Veracruz	4.0	4.6	4.3	3.8	4.5	2.5	3.5	4.6	4.7	7.0	9.2	7.6
Yucatán	4.3	4.9	5.3	4.4	4.6	3.0	3.7	5.2	5.0	6.1	7.6	5.7
Zacatecas	3.8	4.2	4.8	4.2	4.9	3.5	4.5	6.5	6.5	7.8	9.4	7.0

Source: BBVA Bancomer with SHF data.

Table 4.5

Quarterly macroeconomic indicators

	12'IV	13'I	II	III	IV	14'I	II	III	IV	15'I	II	III	IV
Real GDP (annual % change)	3.4	3.1	0.6	1.6	1.1	1.1	3.0	2.3	2.6	2.5	2.4	2.6	2.5
Real private consum., (annual % change)	4.2	4.0	2.5	2.4	1.1	0.1	2.4	2.1	2.6	3.3	2.4	2.8	2.6
Real gov. consumption, (ann. % change)	1.5	0.7	0.3	1.6	2.5	2.0	2.1	3.7	1.8	3.1	2.7	1.2	2.0
Real const. investment, (annual % change)	-0.1	-3.2	-3.7	-6.3	-4.5	-1.4	-1.1	3.8	3.8	4.0	2.1	0.5	-2.5
Residential	-0.2	-3.0	-3.9	-7.2	-5.3	-2.5	0.2	5.9	8.5	3.9	2.9	5.1	0.1
Non-residential	-0.1	-3.3	-3.5	-5.7	-3.9	-0.6	-2.0	2.3	0.4	4.0	1.4	-2.9	-4.6

Source: BBVA Bancomer with Inegi data

Table 4.6

Quarterly construction and housing indicators

	12'IV	13'I	II	III	IV	14'I	II	III	IV	15'I	II	III	IV
Construction GDP, real (ann. % change)	0.1	-3.2	-4.0	-6.9	-4.7	-1.5	-0.5	4.1	5.6	4.4	2.9	3.5	-0.5
Building	0.8	-3.0	-4.4	-7.1	-6.0	-2.2	-0.5	4.7	7.6	5.7	4.0	4.0	-0.3
Construc. engineering and major works	-2.2	-4.3	-4.3	-7.6	-2.4	-3.6	-3.6	0.0	-1.9	1.5	-0.3	1.0	-1.0
Specialized construction work	1.8	-2.0	-1.4	-4.4	-1.9	8.5	6.1	9.3	10.6	2.6	3.3	6.1	-1.2
Construc. companies ¹ (real ann. % change)	1.5	-1.8	-1.5	-6.3	-4.9	-2.2	-2.2	1.7	1.8	3.4	0.7	-0.5	-2.4
Building	0.5	-3.4	-4.8	-7.1	-6.9	-2.1	0.1	5.2	7.2	7.9	2.7	-0.5	-2.6
Public works	-1.2	-4.1	-3.9	-7.3	-2.4	-4.1	-4.3	-1.5	-2.8	1.1	-0.3	1.3	-1.0
Water, irrigation and sanitation	-11.3	-28.1	3.9	-7.1	9.7	14.8	-22.5	-9.5	-6.8	-9.2	-0.5	-7.8	-9.6
Electricity & communications	-16.5	-10.8	-11.4	7.6	6.6	-11.1	-6.5	-17.3	-6.3	0.3	8.4	11.9	14.6
Transportation	-0.2	-4.0	-9.3	-13.6	-4.1	-0.5	0.4	9.2	1.0	2.1	-2.3	-4.7	-9.6
Oil and petrochemicals	11.1	16.6	11.8	-0.2	-7.8	-15.9	-4.5	-11.7	-7.9	4.9	-0.4	15.2	17.0
Other	24.4	21.6	37.0	3.9	-7.7	6.5	-1.5	3.3	1.2	-5.7	-3.5	-9.2	-8.1

Source: BBVA Bancomer with Inegi & Bank of Mexico data.

Table 4.7

Quarterly housing market indicators

	12'IV	13'I	II	III	IV	14'I	II	III	IV	15'I	II	III	IV
Home sales by organization (thousands of credits)													
Infonavit	95.8	82.7	99.9	92.1	106.0	71.8	92.8	100.2	122.3	86.4	102.5	90.7	113.4
Fovissste	14.2	12.6	18.0	16.0	19.2	13.7	16.8	11.1	21.5	15.4	20.4	17.1	11.5
Banks	15.7	13.1	16.1	17.4	19.4	15.0	16.2	17.7	19.9	17.41*	21.5	23.5	24.2
Total	125.6	108.5	133.9	125.5	144.6	100.5	125.8	129.0	163.7	119.3	144.4	131.3	149.1
Financing (billions of December 2015 pesos)													
Infonavit	29.5	23.4	27.6	28.1	32.3	21.3	28.3	30.8	38.3	27.3	32.0	29.3	33.8
Fovissste	8.2	6.8	10.0	9.8	11.6	8.4	11.0	7.3	14.6	9.6	13.0	11.0	7.1
Banks	27.5	20.9	27.0	31.6	36.9	30.0	31.5	33.3	37.8	29.8	33.7	37.1	39.9
Total	65.2	51.0	64.6	69.5	80.8	59.8	70.7	71.4	90.8	66.6	78.8	77.4	80.7
Infonavit: number of credits to buy a house (thousands)													
Economic + Popular ²	59.3	60.3	70.1	62.2	72.1	51.3	61.3	69.8	87.5	63.0	72.9	59.1	83.0
Traditional	26.2	15.4	20.5	19.9	21.7	14.1	19.0	19.0	21.5	13.8	17.4	18.7	18.7
Middle income	8.0	5.6	7.4	7.8	9.4	5.0	10.1	9.0	10.5	7.6	9.5	10.2	9.7
Residential	1.9	1.3	1.6	1.9	2.3	1.2	2.1	2.1	2.3	1.7	2.2	2.3	1.7
Residential Plus	0.3	0.2	0.3	0.3	0.5	0.2	0.4	0.4	0.4	0.3	0.4	0.4	0.3
Total	95.8	82.7	99.9	92.1	106.0	71.8	92.8	100.2	122.3	86.4	102.5	90.7	113.4

Source: BBVA Bancomer with Bank of Mexico, CNBV, Infonavit, Fovissste & ABM data.

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

Table 4.8

Quarterly housing credit indicators
Commercial banks current loan portfolio

Past-due loans index (%)	3.1	3.2	3.4	3.5	3.5	3.5	3.5	3.5	3.3	3.2	3.1	3.0	3.0
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¹ Considers the value of production of firms affiliated and not affiliated to the Mexican Chamber of the Construction Industry.

² Includes new and existing homes.

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

Source: BBVA Bancomer with Inegi, Infonavit, Fovissste & Bank of Mexico data.

Table 4.9

Monthly macroeconomic indicators

	S.14	O	N	D	J.15	F	M	A	M	J	J	A	S	O	N	D
IGAE (annual % change)	3.0	2.4	1.8	3.1	2.2	2.6	2.7	2.2	1.4	3.3	2.1	2.8	3.3	2.2	2.7	2.6
Real constr. vol. (ann. % change)¹	4.7	5.5	4.5	6.7	6.4	1.0	6.0	5.6	0.9	2.3	4.4	2.5	3.6	1.1	-1.2	-1.4
Building	4.5	7.6	5.8	9.4	9.2	0.7	7.5	9.4	1.0	1.8	4.9	2.5	4.4	1.1	-0.1	-1.8
Civil engineering and major works	2.2	-2.5	-1.9	-1.4	0.2	2.5	1.9	-4.2	0.8	2.5	1.9	0.4	0.8	0.3	-4.0	0.8
Specialized construction work	12.0	10.0	12.0	9.7	2.6	-0.3	5.3	3.9	0.5	5.4	6.3	6.6	5.3	2.4	-2.0	-4.3
Formal private empl. (IMSS, mills)²	17,180	17,352	17,475	17,240	17,299	17,433	17,538	17,603	17,596	17,674	17,719	17,791	17,909	18,055	18,188	17,884
Annual % change	4.1	4.2	4.2	4.3	4.5	4.6	4.5	4.5	4.2	4.4	4.4	4.5	4.2	4.1	4.1	3.7
Average salary quote³	281.6	280.0	281.5	280.9	294.5	293.4	292.3	292.1	295.9	294.5	298.3	296.7	293.6	291.6	293.3	292.0
Real annual % change	0.4	0.3	0.7	0.7	1.2	1.0	1.2	1.1	1.5	1.3	1.6	1.6	1.7	1.6	1.9	1.8
Real total wages (IMSS, ann. % chg.)	4.5	4.5	4.9	5.0	5.8	5.7	5.8	5.7	5.8	5.8	6.1	6.1	6.0	5.7	6.1	5.6
Min. general wage (daily, pesos)	65.6	65.6	65.6	65.6	68.3	68.3	68.3	69.3	69.3	69.3	69.3	69.3	69.3	70.1	70.1	70.1
CPI (end of period, ann. % change)	4.2	4.3	4.2	4.1	3.1	3.0	3.1	3.1	2.9	2.9	2.7	2.6	2.5	2.5	2.2	2.1
TIIE 28 (average, %)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4
10-year Gov. bond int. rate (M10)	6.1	5.9	5.8	5.9	5.2	5.6	5.9	5.9	6.0	6.1	6.1	6.1	6.1	6.1	6.2	6.2

¹ industrial activity index

² Thousands of persons

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

Source: BBVA Bancomer with Bank of Mexico, Inegi & IMSS data

Table 4.10

Monthly construction and housing indicators

	S.14	O	N	D	J.15	F	M	A	M	J	J	A	S	O	N	D
Constr. emp. (IMSS, thousands)	1,445	1,486	1,490	1,403	1,426	1,453	1,463	1,484	1,487	1,516	1,536	1,553	1,554	1,571	1,561	1,445
Annual % change	9.4	10.1	10.3	10.7	11.6	11.6	11.1	11.5	9.7	10.4	9.5	9.4	7.5	5.7	4.7	3.0
Cement sales (tons, ann. % chge.)	11.4	8.5	7.7	14.2	5.6	10.7	10.4	13.5	7.2	10.1	8.3	6.3	12.7	5.1	1.4	0.0
Cement cons. per inh. (ann. % chg.)¹	11.4	8.5	7.7	14.2	5.6	10.7	10.4	13.5	7.2	10.1	8.3	6.3	12.7	5.1	1.4	0.0
Construction prices (ann. % chge.)	4.1	4.2	4.4	4.5	4.4	4.6	3.7	3.8	3.9	3.7	3.7	4.5	4.1	4.6	4.6	4.4
Materials (annual % change)	4.3	4.3	4.5	4.5	4.5	4.6	3.6	3.7	3.9	3.6	3.5	4.6	4.1	4.6	4.7	4.4
Labor (annual % change)	3.6	3.7	3.8	3.9	4.0	4.6	4.1	3.9	3.7	3.8	4.0	3.9	3.9	3.8	3.8	3.8
Mach. Rental (annual % change)	4.1	4.6	3.8	5.1	4.1	4.1	4.5	5.1	5.7	5.7	6.0	6.4	6.9	6.7	7.6	6.8

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

Source: BBVA Bancomer with Bank of Mexico, Inegi & IMSS data

Table 4.11

Monthly housing credit indicators

	S.14	O	N	D	J.15	F	M	A	M	J	J	A	S	O	N	D
C. banks loan port. (bal., bn pesos*)	481.5	488.3	498.6	505.5	512.2	515.0	524.2	527.2	529.9	534.9	541.1	546.7	555.8	564.8	574.2	583.1
Annual % change	12.3	13.1	13.0	13.1	12.6	12.6	12.6	13.3	13.0	13.9	15.3	15.1	15.4	15.7	15.2	15.3
Total annual cost (CAT, average)	13.3	13.3	13.3	13.3	13.3	13.2	13.2	13.2	12.5	12.6	12.6	12.6	12.5	12.5	12.6	12.6

Note: As of March 2013 Mortgage Sofoles transformed into Sofomes

* December 2015 pesos

Source: BBVA Bancomer with Bank of Mexico, Conasami, INEGI, IMSS & CNBV data

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