

Real Estate Outlook

Mexico

First Half 2015
Economic Analysis

- Construction sector was growing as it saw out 2014. Building works in housing and commercial productive facilities are recovering earlier than expected, while civil works have lagged behind in spite of the PNI (the National Infrastructure Programme). In 2015, building works will once again shepherd the sector.
- The mortgage market has seen an increase in loan financing, not just in the banking sector, as the public agencies have also lifted lending in the middle-income and residential segments.
- Housing prices are reflecting certain supply-side components more sharply, although demand fundamentals remain key.
- Families' long-term expectations really do help us to gain a better insight into the dynamics of mortgage loan demand.
- Financial soundness has become a core theme within Infonavit's strategy for 2015-19.

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Closing date: February 21, 2015

1. Summary

Contrary to our estimate of one year ago, construction GDP closed 2014 showing growth. Thanks to an upturn in building in H2, the construction sector managed to make up for the fall observed over the opening six months of the year. The progress made in building was brought about by both the fact that its productive and commercial component kept rising and an acceleration by residential building, which received a substantial boost from the Federal Government via a raft of programmes which have together targeted supply and demand alike. Conversely, civil works, for which we had entertained high hopes on account of the National Infrastructure Programme, remained mired in negative territory throughout this time. The public spending cuts could work against infrastructure, whereupon civil works would take longer to come back from behind, although in 2015 we might see a positive statistical effect arising from 2014's low relative base.

2014 was a good year for the housing market. As we were expecting, housing ought to have stopped its fall in this period, although, better still, new housing outstripped its readings for sales and construction for previous periods, as did the number of mortgage loans. As though this were not enough, the mortgage lending volume performed better, as a result of cheaper bank loans and higher credit limits for those registered with the public agencies. This trend is set to continue in 2015, when the middle-income and residential segments will become more important for both public participants and private intermediaries. Although it is true that new housing saw an upturn in 2014, demand for existing housing experienced growth too, and is becoming established as a competitive alternative, above all for the middle-income and high-end segments looking to locate within urban zones, for which reason, with the greater financing for these niche markets which we anticipate for 2015, the dynamics in the secondary housing market should take on new vigour.

Housing is the most substantial asset in value terms for most families in Mexico. Buying this kind of real estate is probably the biggest-ticket transaction which a family will conclude. For this reason, we propose a model to gain a better understanding of housing price dynamics. Bearing this aim in mind, we estimate what publicly available information might help us to understand the variation in housing prices. In the years of the real estate boom prior to the 2008 crisis, demand was the biggest influence on price increases. Today, at this stage in which the housing market is maturing, the costs which the supply side faces have a greater effect, even though demand remains important.

At **BBVA Research**, we have concerned ourselves with trying to gain a clearer insight into housing demand. This is why, on this occasion, we have incorporated an analysis of consumer expectations regarding the choice of applying for mortgage loans to acquire housing in Mexico. We do this by constructing a housing confidence index based on the National Survey of Consumer Confidence conducted by INEGI. On other occasions we have used the durable goods confidence index, but our estimates tell us that using the responses specific to the housing market enhances the accuracy of forecasting with regard to mortgage loans. While it is true that employment remains the most significant variable in finding out about housing demand, expectations gauged by using the housing confidence index provide key information by way of a leading indicator. Monitoring this will be of help in commercial housing planning, lending planning and even public policy.

Of all the assorted changes which the housing market has experienced of late, probably the most important is the change in the denomination of Infonavit loans from multiples of the minimum wage (Times Minimum Wage, TMW) to pesos. Peso loans benefit scheme participants, since they remove the risk of futile repayments, and also because they are granted at a lower interest rate. They nonetheless represent a risk to Infonavit, as it has to ensure that housing savings accounts earn positive real returns. This, together with other aspects, has led to financial soundness being treated as one of the central strategic themes from 2015. Maintaining such soundness is in the general interest within the housing market, primarily as regards the agency's scheme affiliates, but also for other players.

2. Situation

2.a. Construction made a comeback in 2014 and will grow in 2015

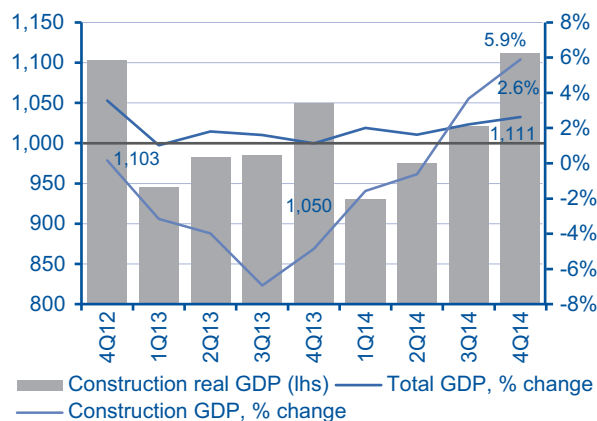
In our previous *Mexico Real Estate Outlook*, we forecast that the construction industry would close negatively in 2014 and noted that any potential growth would have been based on civil works under the ambitious National Infrastructure Programme. Nevertheless, the actual outcome had the last word over the economic forecast once again, and not only did construction conclude 2014 growing at 1.9% but it did so based on building work, while civil works continued in decline. Q4 witnessed a remarkable surge, with progress ahead of what had been seen previously over the year, which meant that the construction industry emerged from negative territory earlier than expected and, if it keeps this up, it could hit an expansion phase. Sustained growth requires both building and civil works to grow, otherwise, pace in the recovery of construction sector could break off.

Construction got off the ground in the second half of 2014

Contrary to expectations, construction sector closed 2014 showing growth of over 5%, propped up by building component. The sector gave us a year-end surprise by comfortably outstripping earlier growth. In Q4 alone GDP rose by MXN90bn, whereas since 4Q13 it had only advanced by MXN64bn. It thus left behind the slide of previous years, which had been faster-moving than in earlier cycles. Looking at its components, building is the sub-sector responsible for the recovery, while civil works is still behind. This we attribute to the fact that productive building is still growing, albeit at slower rates than in previous years, as well as to a recovery in the offing in residential building. By way of contrast, infrastructure projects are still progressing more slowly in spite of the major investments scheduled under the National Infrastructure Programme, while in the next few quarters civil works are likely to be under pressure due to budget cuts, although residential building will press on at a positive rate.

Figure 2a.1

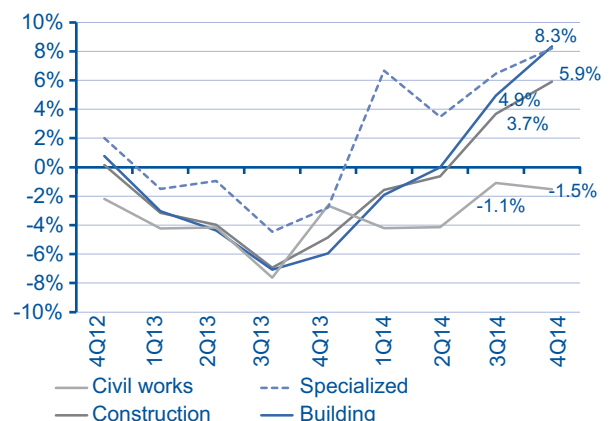
Construction Gross Domestic Product
Real billion MXN and Annual % change



Source: BBVA Research with data from the SCNM, Inegi

Figure 2a.2

Construction GDP breakdown
Annual % change



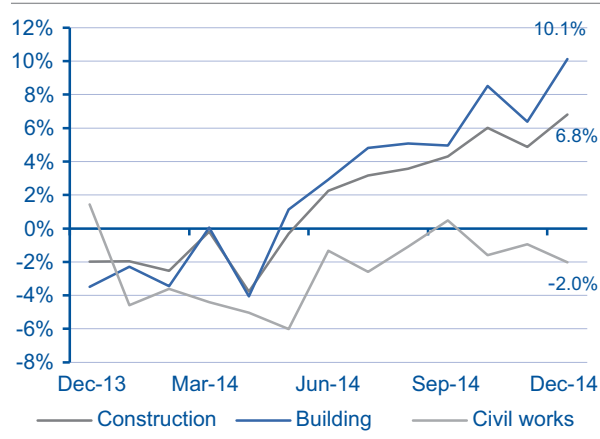
Source: BBVA Research with data from the SCNM, Inegi

Industrial construction activity started to offer glimpses of recovery in the sector from the end of 1H14, thanks to a pick-up in building activity. At the close of Q3, civil works appeared to be reviving, but this proved to be fleeting and this item ended the year with a fall. If we consider that most building production is funded by private resources,

this can be confirmed from the private sector's greater share in gross production value reported by construction companies. Conversely, public sector gross production has come down, this kind of construction tending to have a larger share within infrastructure projects.

Figure 2a.3

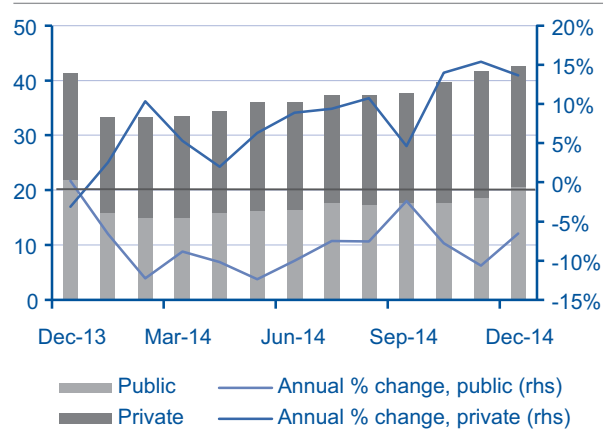
Industrial activity in construction
Annual % change



Source: BBVA Research with data from the SCNM, Inegi

Figure 2a.4

Construction value by sector
Real MXN bn and annual % change

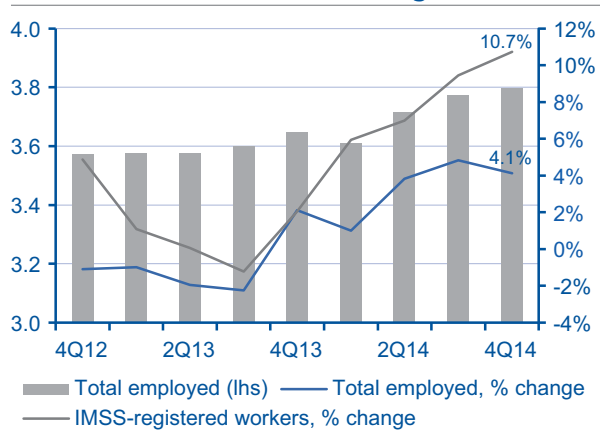


Source: BBVA Research with data from the ENEC, Inegi

A consequence of greater activity in the construction industry was that the number of workers engaged in the sector continues to rise, and in this last period progress has been greater. The total number of those in work is almost 3.8 million, with annual growth of 4.1%. We have in the past highlighted the job formalisation process in construction, and this trend has been maintained, strikingly so, as the IMSS registered 10% more construction workers. Along similar trends, sales of the key construction inputs are still on the rise, and for the first time in several years all four principal groups are showing positive rates. Manufactured inputs going into construction industry have been on the increase for over a year now. Several industries' processes uses many inputs manufactured within construction itself, and these already managed to stage a recovery in 2H14, having gone through a negative patch for two years. This is especially significant as an indicator that the sector is recovering, as it means that both final and intermediate construction work is moving positively.

Figure 2a.5

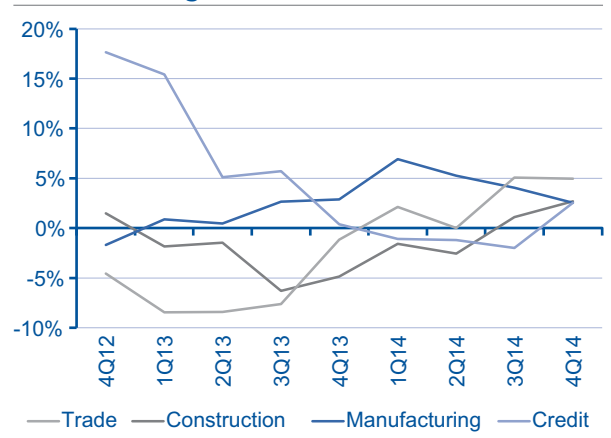
Construction sector employment
Million workers and annual % change



Source: BBVA Research with data from the ENOE, Inegi

Figure 2a.6

Key construction inputs
Annual % change

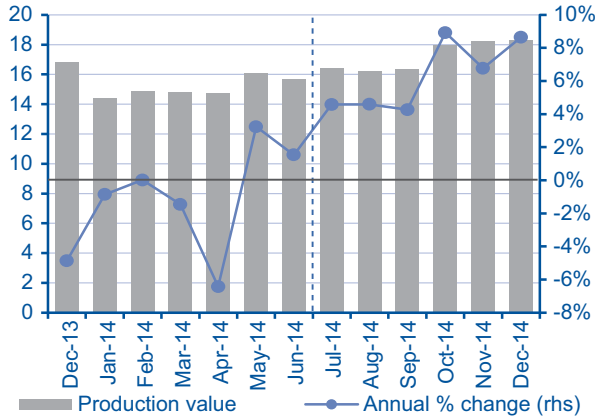


Source: BBVA Research with data from the Inegi

Once we have identified the gross value of building construction, we can see how this rose by a greater proportion in the last three months of 2014 than it had in previous months and was ahead of building work at the end of 2013. Within civil works, the maximum construction took place in the final two months of the year, but this was not enough to overtake work done in 2013, which, if we recall, even then showed less activity than in the previous year.

Figure 2a.7

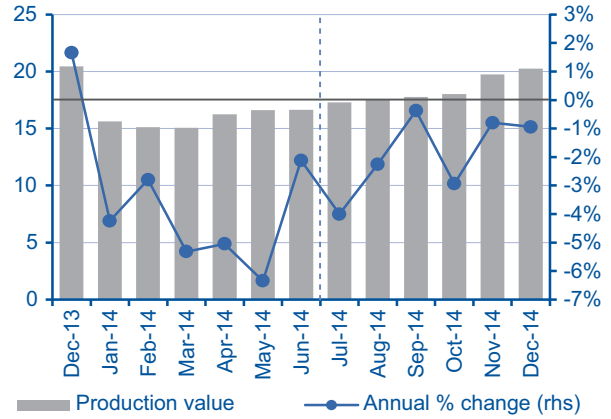
Value of building construction
Real MXN bn and annual % change



Source: BBVA Research with data from the ENEC, Inegi

Figure 2a.8

Value of infrastructure construction
Real MXN bn and annual % change

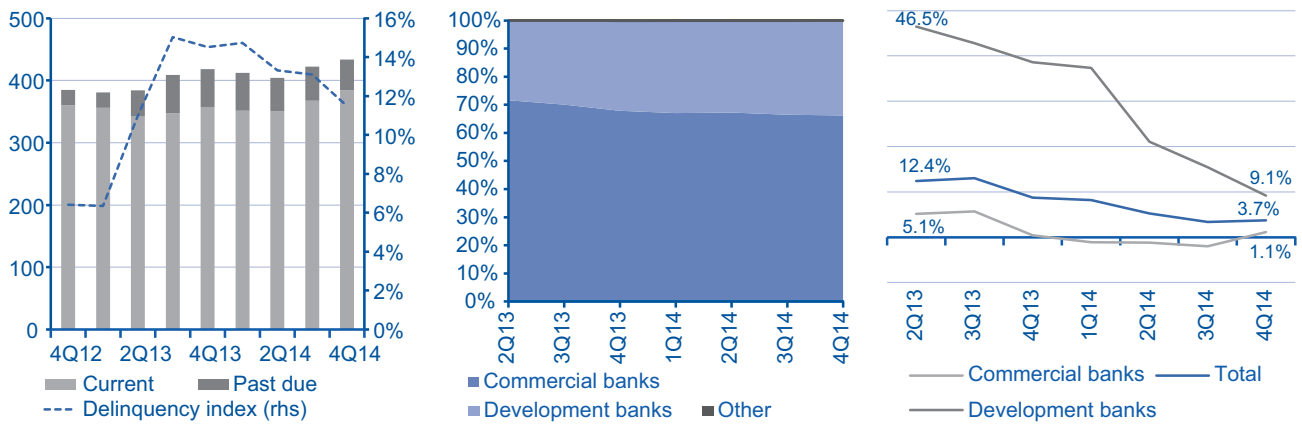


Source: BBVA Research with data from the ENEC, Inegi

Increased financing was influential in lifting construction activity. As we have said before, lending to the sector has been readily forthcoming in line with numbers of projects. The last two quarters of 2014 were particularly good for credit, which also saw a substantial increase compared to previous periods. Together with this rise in credit, the quality of the lending portfolio has improved, since the default rate has come down from 15% to 11% after the pressure felt in 2013. Development banks are still the arm of banking which has increased the supply of credit the most, but commercial banks are still the primary source of loans for construction companies.

Figure 2a.9, 2a.10 y 2a.11

Total real construction credit, share and annual % change
Constant MXN bn and %



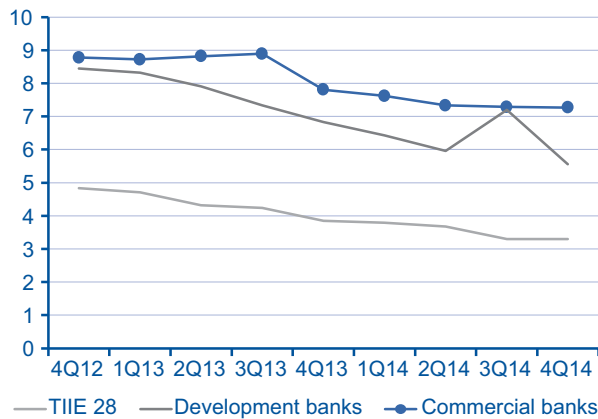
Source: BBVA Research with Bank of Mexico data

We attribute this encouraging state of affairs to two effects: first, greater involvement by development banks as a source of financing, and second, though more importantly, cheaper credit, as the interest rates offered by both the development and the commercial banks have come down. In the previous *Mexico Real Estate Outlook* we explained that the lower central bank benchmark rate has been reflected most rapidly in construction loans, as we can see from the falling rates at which new loans are being granted.

The lower interest rates offered by the banks in general and the increasing portfolio balance lead us to conclude that no restrictions on credit exist. Yet, although financing has become cheaper, new lending into the sector failed to progress in 1H14, which was a trend that was to change in H2. It is for this reason that we conclude that credit is flowing as soon as viable construction projects emerge.

Figure 2a.12

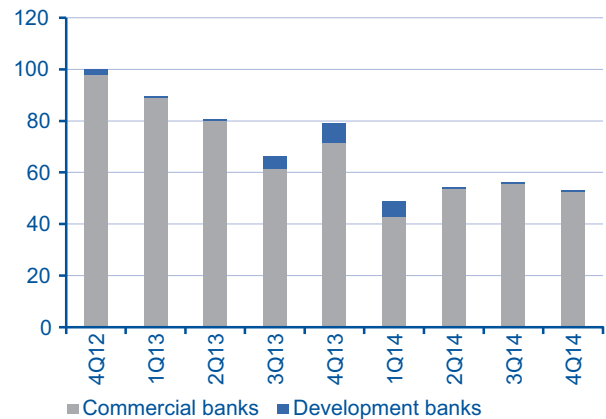
Interest rate on construction loans
Annual interest rate



Source: BBVA Research with CNBV data

Figure 2a.13

Loan origination to the construction industry
(Real MXN bn)



Source: BBVA Research with CNBV data

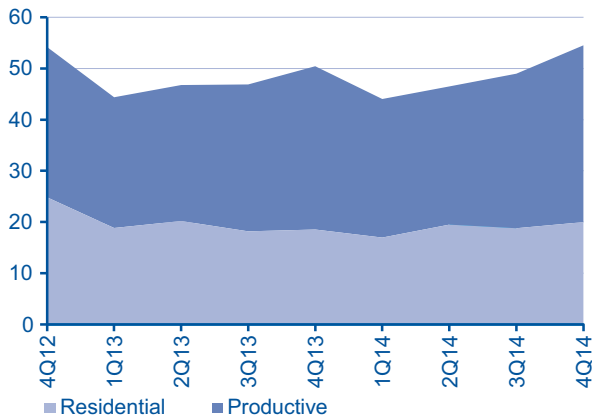
Although the development banks have stepped up their share in the balance of the construction lending portfolio, in 2H14 it was the commercial banks which originated almost the entire volume of bank lending, and the increase in new credit observable at the close of the year is from commercial banking activity.

The sector is making a comeback due to the recovery of residential building

From the end of 2013 up to mid-2014, we were expecting construction's recovery to be driven by civil works on account of the major infrastructure investment plans. However, the building component is recovering earlier than expected, though, and housing construction in particular means that the sector could pull through its negative phase sooner. The gross construction value which productive building shows has held in positive territory for several years now. Construction of office buildings, industrial premises, shopping centres and other similar structures slackened towards the end of 2013, but still grew. Then in the latter part of 2014 it appreciably gathered a little speed, which in turn meant that it has held on to the largest share within the building subsector. Even though residential building has lost something of its significance and its performance has been considerably poorer for some years now, over Q3 and Q4 in 2014 it almost managed to catch up with its productive counterpart. This resurrection of housing construction was prompted by the support initiatives which the federal government has overseen on several fronts.

Figure 2a.14

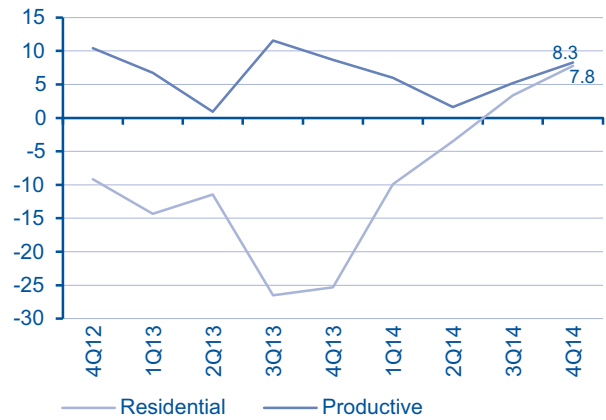
Value of building construction
Real MXN bn



Source: BBVA Research with data from the ENEC, Inegi

Figure 2a.15

Value of building construction
Annual % change

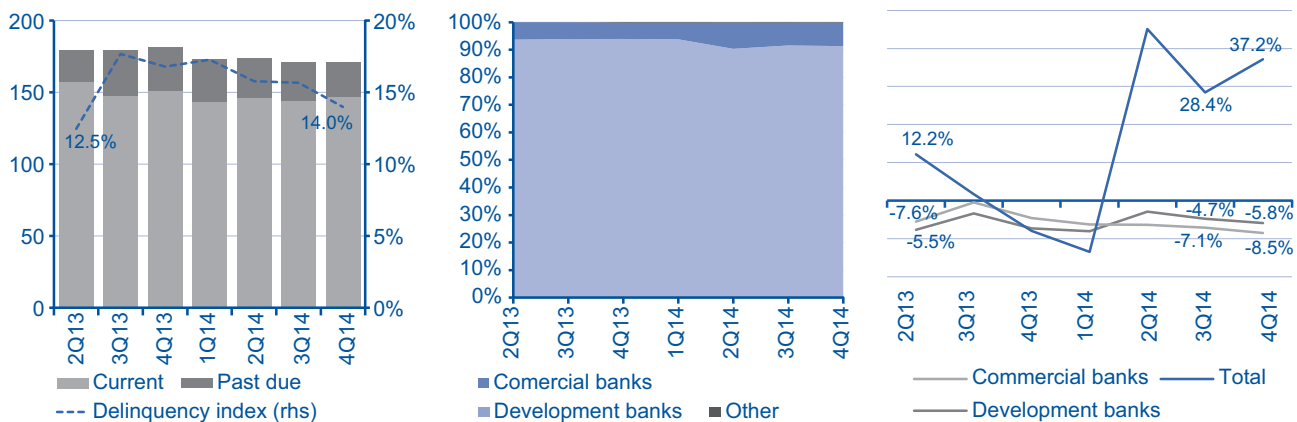


Source: BBVA Research with data from the ENEC, Inegi

The balance of building loans fell off marginally in 2H14 after a slowdown in productive building projects, and because of the lower interest flows brought about by the drop in rates applicable to loans of this nature. Portfolio arrears rose slightly to 14%, even though the past-due portfolio amount came down in real terms. By banking type, we note that while the default rate among commercial banks fell back from 18% to 13%, in the development bank sector this climbed from 5% to 14%, although its market share is smaller so the impact of this is not great.

Figure 2a.16, 2a.17 y 2a.18

Overall balance in real terms of building credit, share and annual % change
Constant MXN bn and %

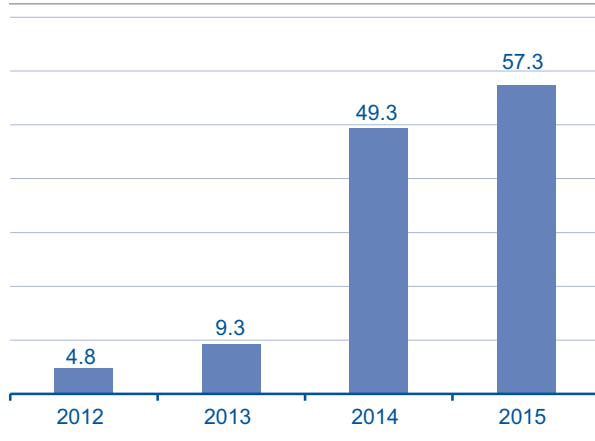


Source: BBVA Research with data from the Bank of Mexico

Economic conditions suggest that the encouraging performance by building could hold up in 2015. On the one hand, productive building will keep up thanks to heavier investment in the manufacturing sector, as well as in office buildings and shopping centres. On the other hand, scheduled construction by companies operating in the housing sector indicates an upturn in activity relative to 2014 and previous years. We estimate that at the start of 2015 the value of projected construction work is likely to top MXN50bn, which would be ahead of the lift-off observed in 2014. Added to this, economic agents face lower interest rates, given monetary policy circumstances and the stiff competition among banks for a greater share of this market, although we should all be alert to any changes in monetary policy.

Figure 2a.19

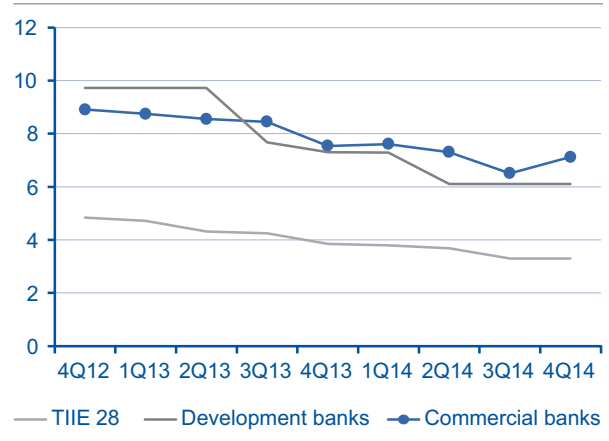
Value of residential building projects (Real MXN bn)



Source: BBVA Research with RUV data

Figure 2a.20

Interest rate applying to residential building Annual interest rate



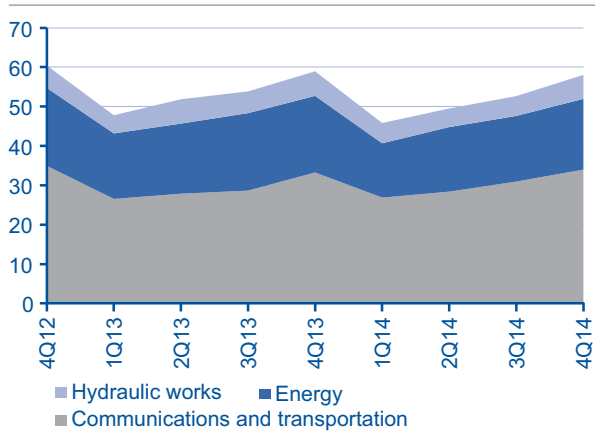
Source: BBVA Research with CNBV data

Communications and transportation lead the way in infrastructure

The National Infrastructure Programme has not lived up to expectations. Civil works are lagging behind, largely owing to lower spending on public infrastructure as well as many projects which have either not materialised or even been cancelled. The exception has been provided by communications and transportation infrastructure, which does not seem to have been only a temporary phenomenon as this grew throughout the whole of 2014. On the other hand, and contrary to expectations, the falling value of energy sector construction has not bottomed out yet.

Figure 2a.21

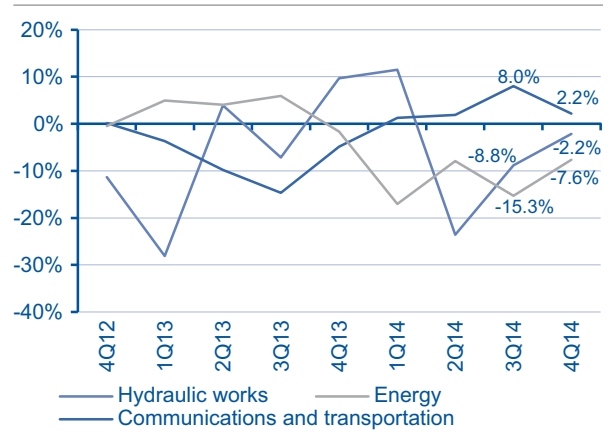
Value of infrastructure construction Real MXN bn



Source: BBVA Research with data from the ENEC, Inegi

Figure 2a.22

Value of infrastructure construction Annual rate

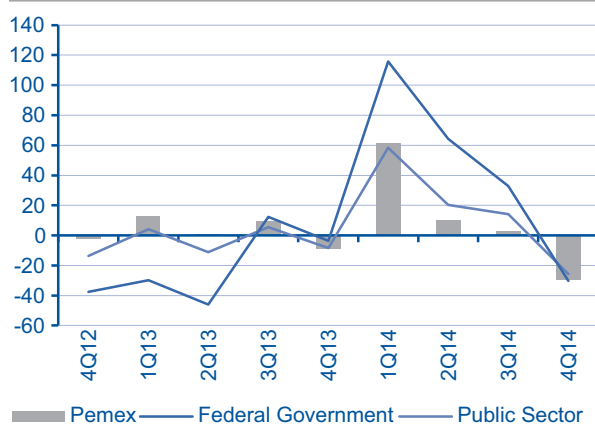


Source: BBVA Research with data from the ENEC, Inegi

2014 opened with a powerful stimulus to expenditure on physical investment, but this gradually fell off over the year. Then, in the last quarter of 2014 the spending earmarked for this form of investment fell away across the entire public sector, within the federal government and with regard to Pemex most of all. This is likely to be the reason behind the lower production among construction companies operating in the energy sector. In any event, going forward we expect that, despite the public spending cut which has already been announced, there will be scope for investment. According to the 2015 Federal Budget for Expenditure, physical investment could exceed MXN500bn. The energy sector could be the chief recipient of these funds, followed by communications and transportation.

Figure 2a.23

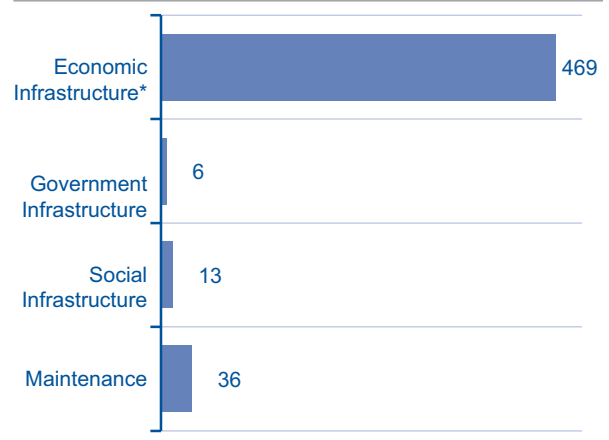
Physical investment expenditure
Real % change YoY



Source: BBVA Research with Inegi & Pemex data

Figure 2a.24

Infrastructure investment by the Federal Government (Real MXN bn)



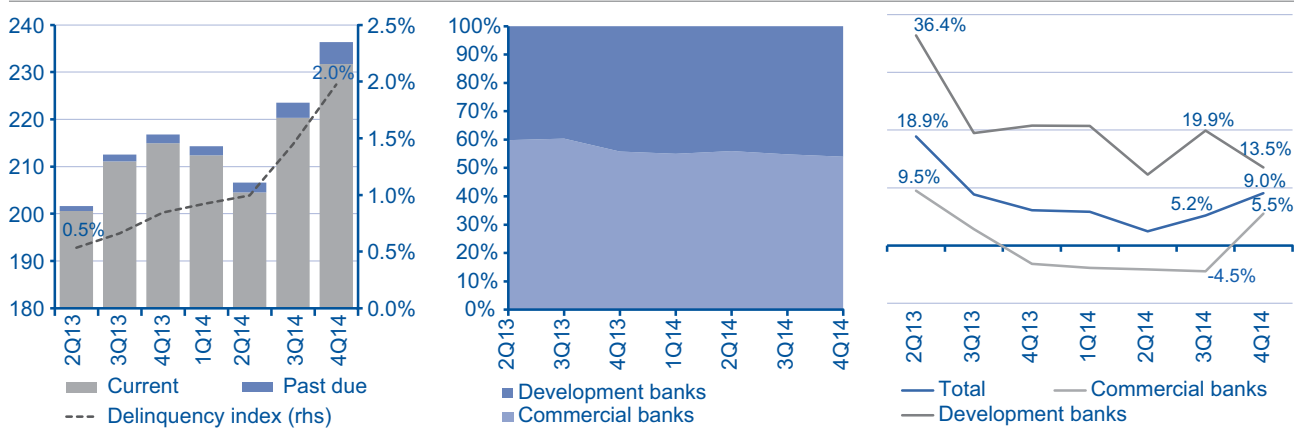
*Includes Pidiregas

Source: BBVA Research with PEF 2015, SHCP data

The balance of infrastructure loans grew impressively at the end of 2014. This seems to run counter to the lower activity in civil works, but it should be recalled that the bulk of bank infrastructure loans focussed on communications and transportation, which performed positively throughout the entire year, although this also illustrates that opportunities exist for credit markets to provide for other infrastructure work. Something else to note is the role of development banks within this category, as at the close of 2014 they almost caught up with the balance of the commercial banking portfolio and thus far this has not implied any loss of quality of their portfolio.

Figure 2a.25, 2a.26 y 2a.27

Real total balance of infrastructure credit, share and annual % change
Constant MXN bn and %



Source: BBVA Research with data from the Bank of Mexico

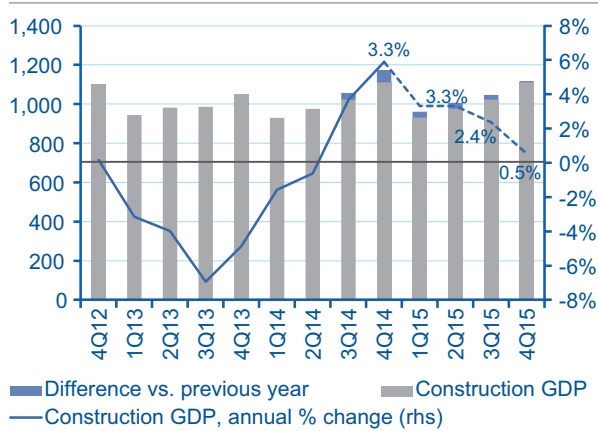
The challenge still facing construction in 2015

The construction sector's rapid recovery, which we saw at the end of 2014, is excellent news. This result rides on the wings of building and communications and transportation infrastructure. Looking ahead, we expect both components to continue to drive construction forward. As we have seen, plans exist for investment in residential construction, while in a similar vein the anticipated investments in industry could boost productive building. On the other hand, even though the public spending cuts hit major infrastructure projects, we think that we could see civil works back on track for growth in 2015. This would be based on a statistical effect, given the poor performance in previous years, but also on the fact that physical infrastructure investment projects are still in the frame, mainly in energy, and communications and transportation. If these projects come to fruition, construction could grow by over 2% in 2015.

Figure 2a.28

Construction GDP

Real MXN bn and annual % change

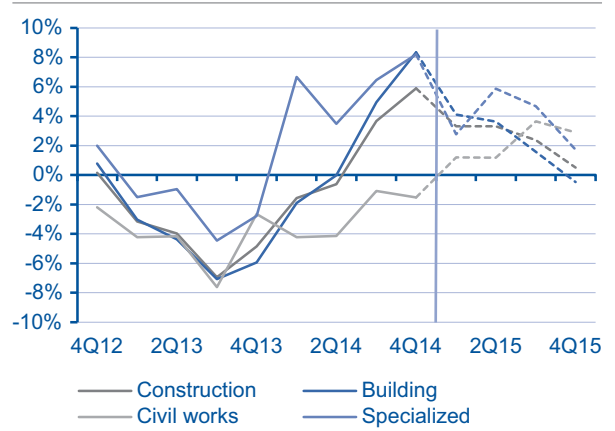


Source: BBVA Research with data from the Inegi

Figure 2a.29

Construction GDP breakdown

Annual % change



Source: BBVA Research with data from the Inegi

2.b. The demand for mortgage loans is diversifying

Introduction

In our previous *Mexico Real Estate Outlook*, we highlighted the increasing significance of the middle-income and residential segments in housing demand. Macroeconomic and competition circumstances have been helpful for the market, with historically low interest rates and mortgage terms of up to 20 years, which has resulted in greater borrowing power for bank customers. The fact that the Public housing agencies have turned towards high-end markets has been reflected in greater sums financed, which is a trend that we forecast will be continued in 2015.

Moreover, the housing market offers different stories for real estate, depending on usage. Existing homes have appreciated more quickly, due to the greater preference for them. Meanwhile new homes have increased in size among those segments eligible for subsidies, where their largest market niche is to be found.

The housing agencies are broadening their horizons

In 2014 new trends were defined, which point to market growth with a bias towards the middle-income and high-end segments. Placements of loans by the Public housing agencies show this, as although the increase in loan numbers was moderate, or even negative, the sum financed rose considerably. At the close of December 2014, mortgages originated had grown by 1.3% against 2013, while financing granted rose by a real 6.6% in the same period.

Table 2b.1

Mortgage business: loans and sum financed by organization '000 loans and 2014 MXN bn

Mortgage Origination	Number of loans (thousand)			Loan amount (MXN bn)			Average sum (MXN '000)		
	Dec-13	Dec-14	Annual % change	Dec-13	Dec-14	Real annual % change	Dec-13	Dec-14	Real annual % change
Public agencies	446.6	450.1	0.8	140.5	150.6	7.2	315	335	6.3
Infonavit	380.6	387.0	1.7	104.7	111.8	6.7	275	289	4.9
Fovissste	65.9	63.1	-4.3	35.8	38.8	8.5	543	616	13.3
Private intermediaries	91.3	94.9	4.0	103.8	109.8	5.8	1,137	1,157	1.8
Banks ¹	91.3	94.9	4.0	103.8	109.8	5.8	1,137	1,157	1.8
Subtotal	537.9	545.1	1.3	244.3	260.4	6.6	454	478	5.2
Co-financings ² (-)	25.3	26.1	3.0						
Total	512.6	519.0	1.3	244.3	260.4	6.6	477	502	5.3
<i>Published figures</i>									
Total Co-financings	55.5	71.3	28.5	34.0	38.8	14.4	612	545	-11.0
Infonavit total	30.2	45.2	49.8	12.5	16.5	31.7	414	364	-12.1
Other co-financings	25.3	26.1	3.0	21.5	22.4	4.3	848	858	1.2

¹ includes the loans arranged for employees of financial institutions (new and existing homes).

² Does not include the "Infonavit Total" and "Apoyo Infonavit". Does not include products for renovations and extensions.

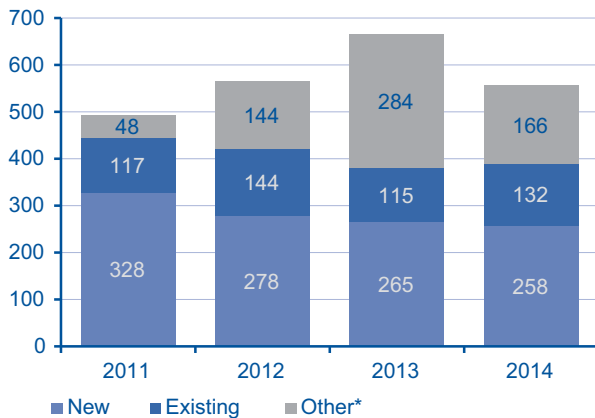
Source: BBVA Research with data from Infonavit, Fovissste ABM, AHM, the Bank of Mexico and CNBV

Among the Public housing agencies collectively, the number of loans granted increased by 0.8%, while there was a 7.2% rise in the sum financed in real terms. Although Fovissste registered a 4.3% fall in the number of mortgages, this provides a clearer indication of a demand for more expensive housing, as the Fund's average amount increased by over 13% in real terms, breaking through the MXN600,000 barrier.

With respect to Infonavit, the average amount reached almost MXN300,000, rising by 4.9% in real terms. In this case, diversification of financing products by Infonavit has intensified in the past two years, since loans for existing housing and for renovation work and extensions have accounted for more than 50% of lending placed. At the close of 2014, the agency had covered almost its entire annual operating programme (POA) and even overshot this in some segments with incomes of over 11 times the minimum wage, which reinforces the picture of greater activity in higher-priced segments.

Figure 2b.1

Infonavit: loans provided per product
‘000 loans



* Products for home improvements and self-build are included.
Source: BBVA Research with Infonavit data

Table 2b.2

Infonavit: loans provided by wage bracket
Loans as of December 2014

POA segment	Cum. monthly POA	Formalised		Total	% Gain
		House-holds*	Mejoravit		
Under 2	151,899	100,380	39,667	140,047	92%
2 to 3.99	216,985	140,104	70,181	210,285	97%
4 to 11	154,917	98,526	46,550	145,076	94%
Over 11	56,199	50,617	9,836	60,453	108%
Total	580,000	389,627	166,234	555,861	96%

*Includes new and existing homes
Note: Includes "Apoyo Infonavit" (Infonavit Support), which is why the figures do not square with Table 2b.1
Source: BBVA Research with data from Infonavit

This trend, which suggests catering for solutions other than new housing units, has altered the kind of housing that is being built and has indirectly spurred the existing homes market. As we will see in the next section, owners of such homes would be incentivised to invest funds in improving them and selling them off at a higher price, or else renting them out.

Is there a substitution effect between new and existing housing?

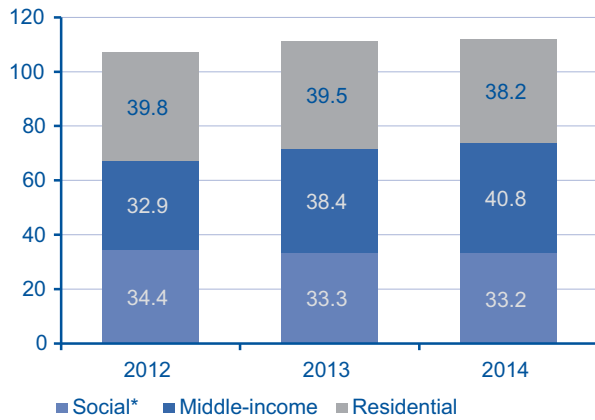
The increasingly discernible preference for existing housing among consumers is nothing new. We have attested in the last few years the growing propensity to place loans on the part of the public agencies and the banking sector in the market of used dwellings. While in 2011 the share of existing homes in Infonavit’s financing activity represented 26%, by the close of 2014 this had risen to 34%, where middle-income housing accounting for over 40% of the units sold were destined to financing existing housing.

Consumers are still showing a leaning towards existing homes within urban zones, which are consequently better-located as regards public services and centres of work, besides the fact that most of them have available urban infrastructure. This outcome has been brought about by subsidy policy, where more funding has been forthcoming for housing within the urban zones, and although this has involved a large part of the supply of new housing, existing housing has a competitive advantage, which is reflected in the decisions which borrowers have made. Among loans granted by Infonavit, existing homes represented 41% among the middle-income segments, while they also rose within the social housing segment from 26% in 2011 to 34% in 2014.

Even though the share of these has remained steady over the past two years, the choices in this direction made by Infonavit scheme affiliates have exceeded expectations: while Infonavit had estimated 97% of total credits would be located for new housing, the acquisition target was met thanks to the fact that existing housing beat the estimate for 2014 (under the 2014-18 Financial Plan) by 12%.

Figure 2b.2

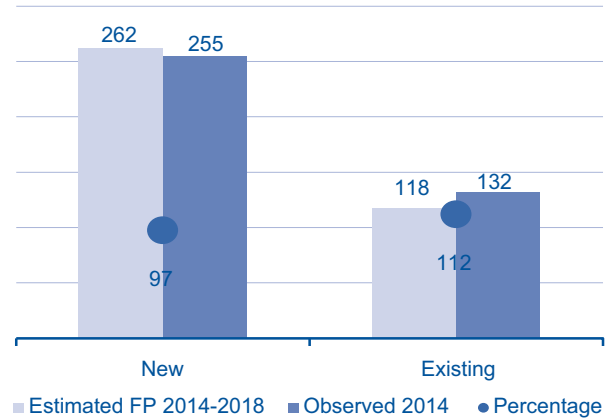
Infonavit: existing housing by segment
Share per segment (%)



* Economic, popular and traditional segments
Source: BBVA Research with Infonavit data

Figure 2b.3

Infonavit: 2014 lending target
Thousand loans and percentage

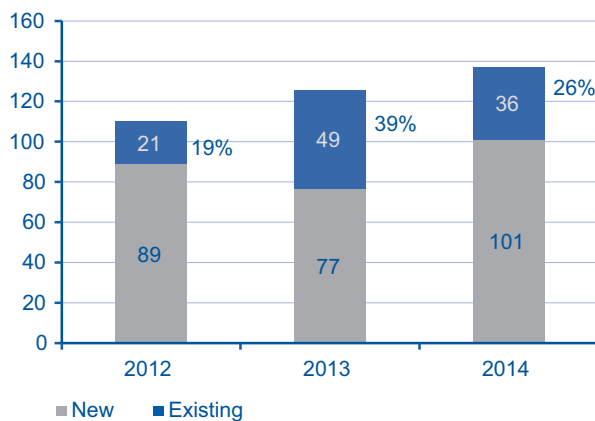


Source: BBVA Research with Infonavit data

On the other hand, the commercial banks increased their share of loans for existing units by 20 percentage points from 2012 to 2013, and closed 2014 with 26% of total mortgage loans granted. This was also in combination with a greater demand for loans for renovation work and extensions, which might have been used in the refurbishment of these homes, thereby increasing their value by a far greater proportion than in the case of new housing. On top of this, it should be borne in mind that an increasingly large proportion of loans granted by commercial banks have been provided for loan switching. The proportion of loans of this kind relative to the total for acquisition has climbed from 2% to over 8%. This is an effect of greater competition among banks with clear benefits for consumers, since loan costs can be brought down, although, in a way similar to the phenomenon of substitution in favour of existing housing, it reduces the new housing market's potential.

Figure 2b.4

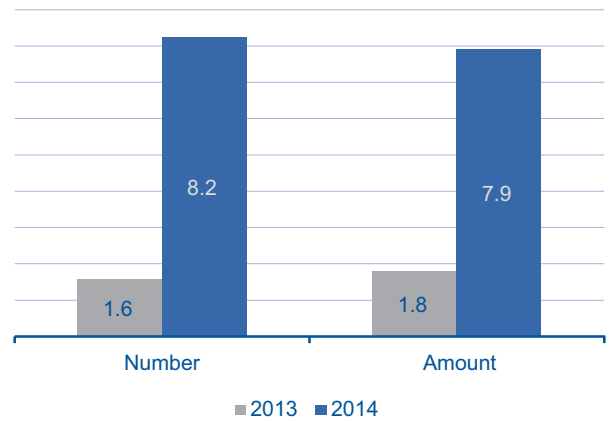
Commercial banks: loans according to usage
Thousand loans and share (%)



Source: BBVA Research with CNBV data

Figure 2b.5

Commercial banks: origination for loan switching
Ratio of loans for switching to those for buying



Source: BBVA Research with CNBV data

The greater preference for existing housing rather than new homes shows through in price dynamics. The SHF housing price index for existing homes confirms that from 2Q13, and up to 4Q14, the growth rate for the value of this form of real estate outstripped consumer price inflation. In 2014, the average appreciation of existing homes was

6.5%, while the average growth rate for new units was only 3.2%. On the other hand, the consumer price index rose by 3.9% over the same time.

Figure 2b6

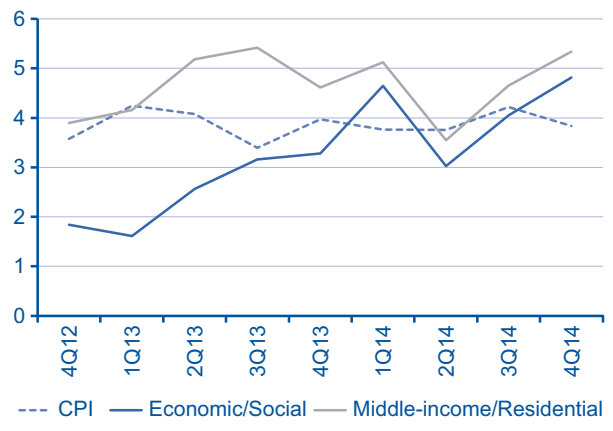
**Housing prices according to usage
Annual % change**



Source: BBVA Research with SHF data

Figure 2b7

**Housing prices by segment
Annual % change**



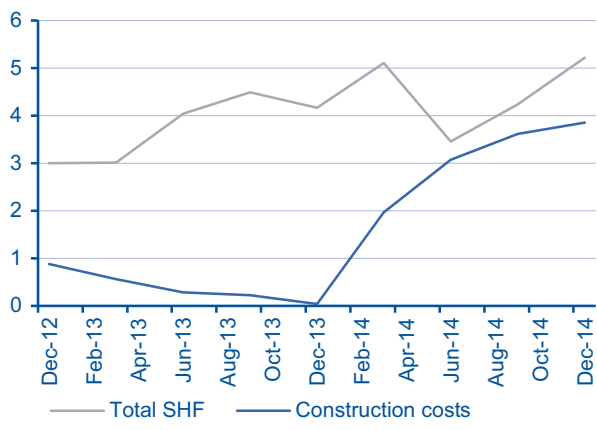
Source: BBVA Research with SHF data

New housing has changed to preserve its market

As has happened in more recent years, new housing faces competition from other housing alternatives as regards consumer preferences. Given this scenario, some of its facets have changed in a bid to become more competitive. Even so, in terms of appreciation, this could now be a better option.

Figure 2b8

**Housing prices and construction costs
Annual % change**



Source: BBVA Research with SHF & Inegi data

Figure 2b9

**Rent to price ratio for housing
2012=100**



Source: BBVA Research with SHF & Inegi data

Another way to examine the decision to buy a home is how this compares to the cost of occupying it. In other words, the value of the percentage ratio of paying rent to the price of housing should be greater than 100 to bring about an incentive to buy. Likewise an alternative way to analyse housing prices is to look at them relative to the cost of

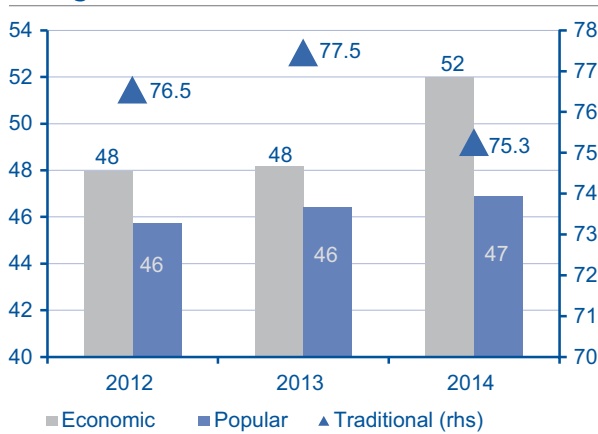
occupying the home. Below, we show the relationship between the housing occupancy cost index and the housing price index (the former is published by Inegi and the latter by the SHF). This ratio should equal 100 if the indices have the same dynamics. If, for example, buying were to be preferred to renting, this percentage ratio would show a value of less than 100. This ratio between the cost of renting a home and buying it could be an indicator of which of these options is the most suitable, in the short term, for anybody looking for a housing solution. If access to a mortgage loan is available and there are no barriers to mobility, but consumers choose to rent a home when this ratio is less than 100 or if housing appreciates faster than the level of rent. The logical financial strategy would be to choose to buy.

Behaviour of this kind has been uneven in recent months in terms of usage, given that the value of existing homes has grown at a faster rate than has that of new homes, as has already been explained, and the latter have appreciated at a slower pace than consumer prices. This could indicate that existing housing might stabilise if consumers reason that the cost of renting housing of this type is lower than that of buying it, at least in the short term. Figure 2.9 shows that, from 2013, when a greater number of existing homes and loans were in demand for renovations, the rent-to-price ratio came down faster than in the case of the same index for new homes, which remained far more stable in 2014.

Nonetheless, this is no guarantee of what might happen as there could be other factors in the decision to buy, such as capital asset value if the real estate is expected to keep on rising in value. Whatever the case, this indicator suggests that the appreciation of existing housing has reached a level where renting it is a viable option compared to buying it, at least compared to buying new housing. Using the cost of housing occupancy as a reference, the rent-to-price ratio for new housing has stabilised from mid-2012 and held stable over virtually the whole of 2014. On the other hand, existing housing has stuck to its appreciation trend, given that it is in shorter supply and has a rising demand, as we have said, besides the fact that this could incorporate extensions and renovations which also increase its value.

Figure 2b.10

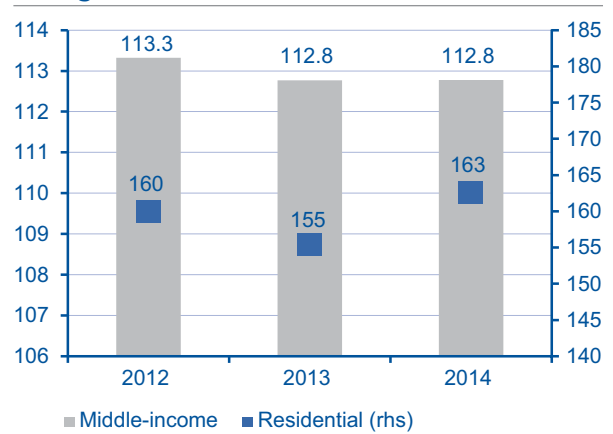
Built surface area, social housing average m²



Source: BBVA Research with RUV data

Figure 2b.11

Built surface area, middle-income housing average m²



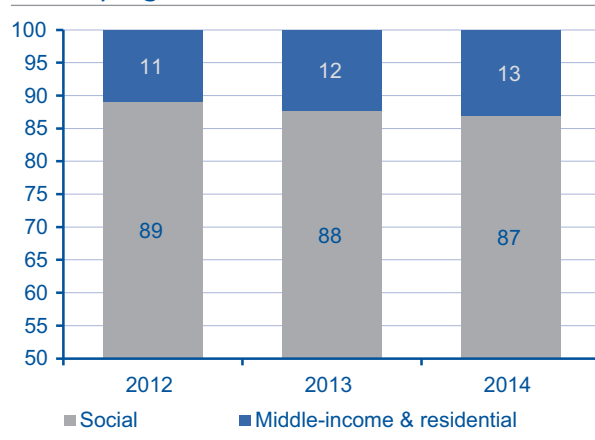
Source: BBVA Research with RUV data

A higher rate of appreciation for existing housing than for new housing is a consequence of a greater preference for the former than for the latter in relative terms. Nonetheless, price formation is not the only difference between these two housing solutions. It is likely that, given a broader range of options, those offering new housing have reacted by changing the characteristics of their real estate. On the one hand, among the low-income segments (economy and working-class), where coming by a subsidy is far more of a possibility, homes have increased in size. Whereas in 2012-

In 2013 the average built surface area of economic housing was 48m², in 2014 this had risen to 52m². In the working-class segment of up to 128 times the minimum wage, the trend is a rising one too, although there is only a difference of 2.6 square metres from 2011 to 2014. On the other hand, in the traditional and middle-income segments, where demand has risen more significantly, the size of buildings tends to be smaller. With regard to residential housing, the average built surface area has shown less variability.

Figure 2b.12

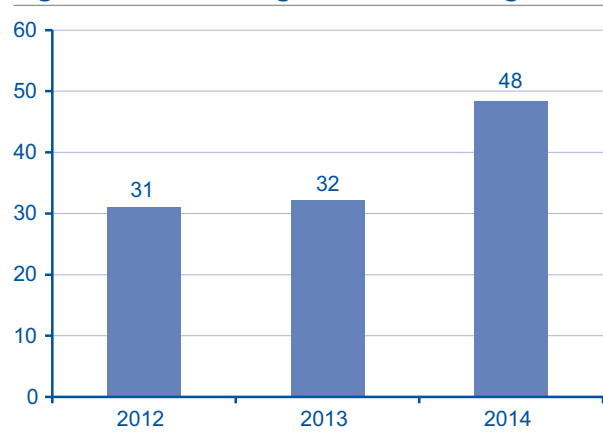
**Housing on the RUV (national register)
Share by segment**



Source: BBVA Research with data from the RUV

Figure 2b.13

Registered homes: middle-income and residential segments (Thousand registrations, annual figures)



Source: BBVA Research with data from the RUV

The significance of middle-income and residential housing is not only apparent from the distribution of mortgage loans, but also from the supply itself, which we can observe on the National Housing Register (RUV). Whereas it initially comprised over 90% social housing, today it offers a very clear picture of a consumer preference for high-end housing.¹ This could be as a result of a reaction by housing developers, who, on seeing the lower demand for social housing segments, made such housing more appealing by increasing its built surface area. We can find the opposite story in middle-income housing, where the high demand encourages the building of more units in less space, mostly within urban zones that are enclosed.

Although we estimate that the middle-income and residential segments are increasing their share within the housing market, which is shown by mortgage loan placement activity as well as projects recorded on the national housing register, it is also a fact that new houses within these segments tend to be included on the RUV due to efforts to include the greatest possible number of homes within this information system. As happens with other information systems, the value which the RUV can assign to all the players in the housing market will increase as the size of the database increases to scale up its coverage of the overall supply of housing. Because of this, not only should construction projects financed by the commercial banks and the public agencies be included, but the full complement of building ventures, even if they do not have financing as well as existing housing transactions.

¹ It should be remembered that only a fraction of construction projects in middle-income and residential segments are included on the national housing register (RUV). Unlike projects which are associated with Infonavit and Fovissste, which it is mandatory to register, those which are independent do not have to appear on the RUV.

Housing construction and the commercial banks will mean more units in 2015

The recovery of housing construction was only gradual in 2014, after inventories came down the previous year and stabilised at around 250,000 units. The number of RUV registrations provided a clear indication of the pick-up in the number of projects in 2H14, when the number of homes climbed from 350,000 units to a little over 400,000 at the end of the year.

Table 2b.3

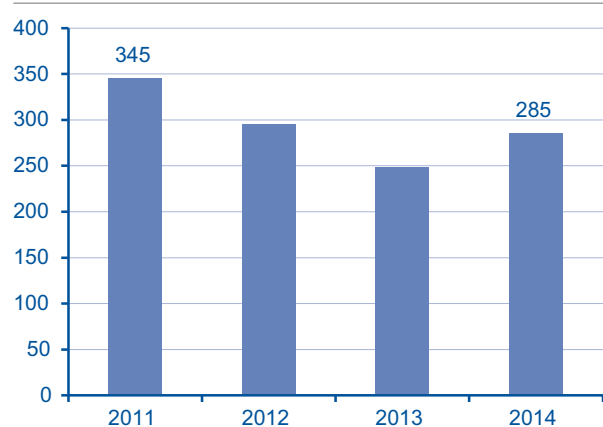
Homes filed with the RUV Units and % share by phase along the chain

Phase	2013		2014	
	House-holds*	% share	House-holds*	% share
Originated or in the process of origination	164,424	54	110,525	27
Completed	60,597	20	59,127	14
Undergoing construction	20,310	7	106,211	26
Construction has not commenced	8,524	3	56,384	14
Unreported and lacking verified construction work	44,041	14	78,642	19
Not validated & cancelled	7,074	2	2,932	1
Total	304,970	100	413,821	100

Source: BBVA Research with data from the RUV

Figure 2b.14

Inventory of completed homes Thousand units, YoY figures

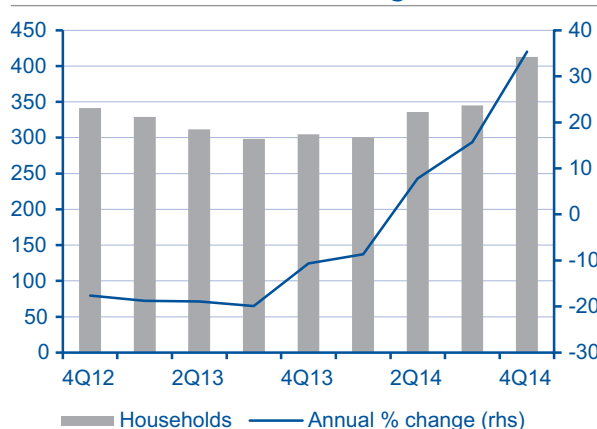


Source: BBVA Research with data from the RUV

We estimate that of total projects which were registered on the RUV in 2014, only around one third have begun the construction process. This is because house-builders wisely waited for inventories decreasing in the market, and thereby also brought about greater price appreciation on account of the higher demand relative to the existing supply. This explains the reason why a high percentage of registrations in 2013 were in the process of origination and barely 7% were undergoing construction.

Figure 2b.15

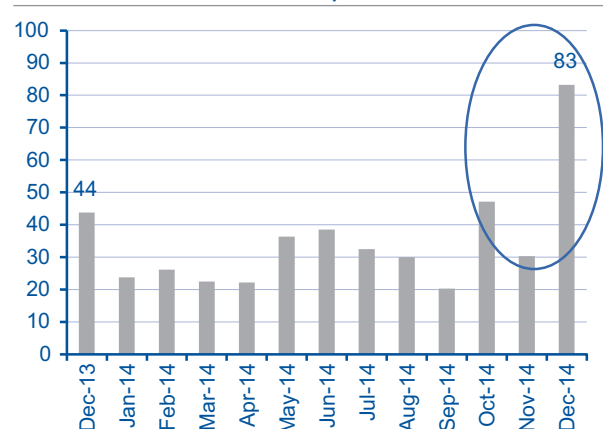
Housing registrations for new houses on the RUV Thousands of units, annualized figures



Source: BBVA Research with RUV data

Figure 2b.16

Housing registrations for new houses on the RUV Thousands of units, monthly flows

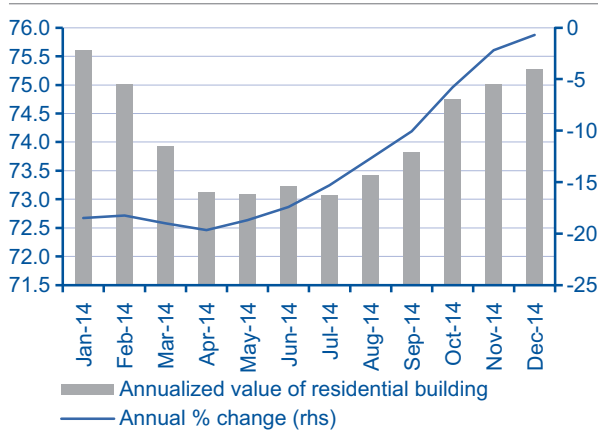


Source: BBVA Research with RUV data

At the close of 2014, the reactivation of projects experienced a considerable upturn, as in Q4 alone house-builders added over 160,000 units, which represents almost 40% of the 412,000 registrations made over the whole year. The encouraging prospect of greater demand and greater tax incentives to reactivate the supply were decisive in motivating house-builders to start anew on building work in 2015. Additionally, the greater involvement of financial intermediaries, both public and private, in developer construction loans activity has allowed house-builders to have funds available for their activities. Furthermore, it has been of help that the cost of loans for residential building work has come down with steadily decreasing interest rates.

Figure 2b.17

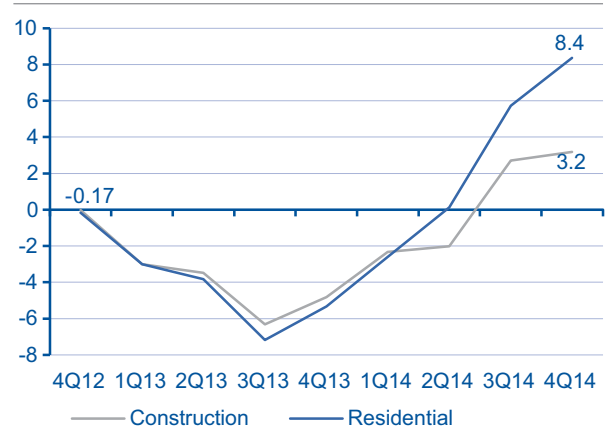
Value of residential building
Real MXN bn, YoY



Source: BBVA Research with ENEC, Inegi data

Figure 2b.18

Residential investment
Annual % change

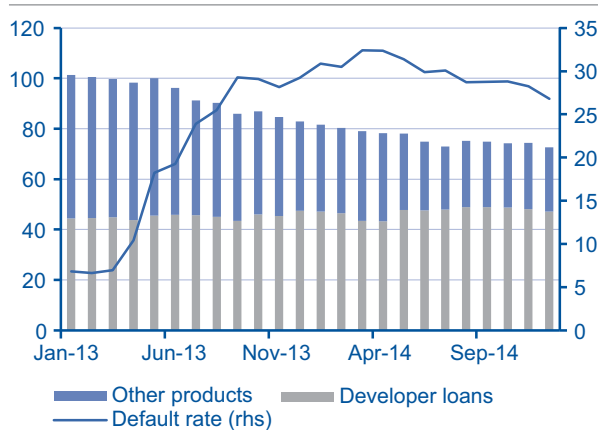


Source: BBVA Research with Inegi data

As a result, the production value of residential building work is now starting to show signs of picking up, and as of the close of 2014 the GDP component in construction had grown by little over 8% compared to the same quarter the year before. Meanwhile, residential investment, which represents almost 43% of construction investment, began to grow from 3Q14 after marking negative rates for several quarters.

Figure 2b.19

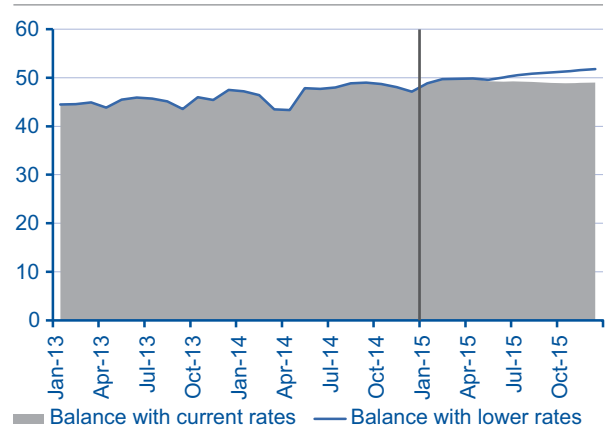
Balance of residential construction loans
MXN bn and default rate



Source: BBVA Research with CNBV data.

Figure 2b.20

Forecast developer construction loan balance
Real MXN bn



Source: BBVA Research with CNBV & Central Bank data

The balance of residential construction loans has responded well to the recovery of the housing production chain. In 2015, two of the major banks have announced that they will allocate around MXN70bn to financing residential

construction, while it is estimated that the amount of investment by builders for this year could be around MXN57.3bn.² Even though the balance of residential construction loans has dropped off over the past two years, this is due to the fact that the standstill in building work was a direct consequence of the overhang of inventories which we have already referred to in previous paragraphs. On top of this, the current construction model does not call for high-volume investments, since developments are far smaller and focus on high-end housing, which means that builders require shorter capital turnover times.

The developer construction loan continues to be the most viable product for housing development compared to other types of financing, which exhibit greater risk. During 2Q14, the balance of total residential building loans continued to diminish as a result of lower origination of loan products other than developer construction loans. On the other hand, developer construction loans showed modest growth rates in Q2, although we expect the greater momentum to show through in 2015, when a large proportion of new projects which have already been filed with the RUV begin their construction phase. We estimate that the balance of the developer construction loan portfolio will be approximately MXN50bn in 2015, with a growth rate slightly ahead of the economy. Even though the rate will be below the level observed for mortgage loans, it should be remembered that the nature of this product does not allow for rapid growth rates, due to the high repayments required to meet the shorter loan periods. By way of reference, the balance of developer construction loans is probably at a level on a par with those reached in 2007, at the height of the real estate boom.

There are positive signs of growth, although they should not be blown out of proportion

The pick-up in house-building represents a solid base that unquestionably offers high hopes for the sector. On the supply side, there are several measures which provide incentives for growth in the sector's production chain to take hold. For example, in construction, tax benefits will be brought in to regularise VAT owed by service providers who need this, which will mean that companies that have received the service can deduct this from the relevant Income Tax (ISR). On the other hand, the ISR can be covered in part-payments and not applied to the full sale amount, provided that the disposal has been agreed in instalments. At the same time, programmes will be set up to simplify paperwork and construction licence and permit costs, so that these become standardised processes. Benefits for subcontractors of real estate developers are also in the pipeline, which means that the passing on of VAT can be completely avoided. While a construction company that carried out the whole of the project work used not to pay VAT for the services it generated along the production chain, a company which contracted those services from a third party was previously liable to pay VAT. Thus, under this new approach the intention is to avoid passing on between 1 and 3 percent to the end price of housing. It should nonetheless be borne in mind that even though mortgage loans are still growing, new housing is still losing ground compared to other housing solutions.

Yet, although the conditions seem ideally suited to enhancing the supply of housing and financing, the sustained growth of demand also needs to be ensured. Including a greater number of state and municipal workers who require homes is helpful, but it is important to be precise about scaling construction requirements properly on a regional level, if a build-up of inventories is to be avoided and real estate values are to hold up, be this either existing or new housing. Wider availability of individual financing in pesos, as well as portability from one financial institution to another, is a sign of greater competition in a move towards improving the conditions for performing loans. All of these factors matter, but in the medium term they will have to be sustained, as we have already noted, by formal, long-term, but above all well-paid, employment.

This year we will see mortgage loans again increasing in terms of their amount, as regards both public agencies and the banks, thanks to the better credit terms which both are offering in terms of sum loaned and cost. The measures taken by the federal government to extend the base of housing consumers to state and municipal workers, as well as the fact that those involved in schemes run by public agencies can opt in favour of more attractive market loans - and even not have to wait for the result of the draw in the case of Fovissste - will boost housing demand. In this regard, cheaper residential construction loans and the large sums to be invested by the banks will allow housing developers to have funding available for viable projects. All this means that we are expecting housing to grow again this year, on all of its various fronts.

² See "Construction made a comeback in 2014 and will grow in 2015" in this issue.

Box 1: The situation of housing subsidy. A regional overview

Introduction

In previous *Mexico Real Estate Outlooks*, we have underlined the importance of building housing at a suitable rate, as well as enhancing the demand for the various housing solutions where this is required. In this way, regional equilibriums between relative supply and demand are ensured and consequently this is conducive to the sustained appreciation of real estate, while the market can adapt as swiftly as possible to any change regarding preferences, labour mobility and demographic trends. In this section, we take a look at the state housing scene from the angle of how subsidies for housing solutions are employed, and how they relate to housing construction and prices.

High concentration in only four states

On the National Housing Register (the RUV in Spanish), the states of Nuevo León, Jalisco, Guanajuato and Quintana Roo account for some 40% of residential building projects, which means that they are also likely to have the largest share in Mexico's supply of new homes. Although the National Housing Policy has brought about an increase in the number of alternative housing solutions, it also gives priority to new housing, for which reason these states can be expected to be the most likely candidates for receiving subsidies for this purpose. And so it was in 2014, when these states obtained

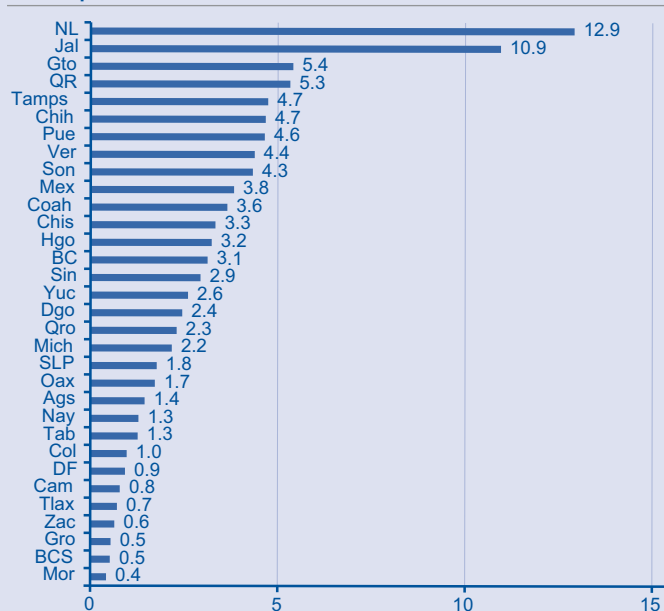
45% of the total subsidies to purchase new housing granted by the National Housing Commission (Conavi), as well as 35% of the funds for all the housing solutions taken into account. A high concentration may derive from the greater economic activity and growth in the urban zones where support is likely to be given.

In previous years Nuevo León and Jalisco had built up large inventories, which led to lower appreciation than was observed on average nationwide, as we have mentioned before. The greater volume of subsidies received should, therefore, have helped to reduce the accumulated stock of housing units, even more so when we consider that over 90% of the subsidies granted in Nuevo León, Jalisco and Quintana Roo were for new housing. Nonetheless, even within the states where there are substantial metropolitan areas, price behaviour has displayed differing patterns.

One example of the expansion of urban sprawl resulting from increased economic activity is in the state of Guanajuato, which has notably been host to major investments in the automotive sector. This is an industry that provides a springboard for manufacturing and other value chains, and in which the availability of land offers more potential for the cities in the Bajío region to grow. On the other hand, we see

Figure B1.1

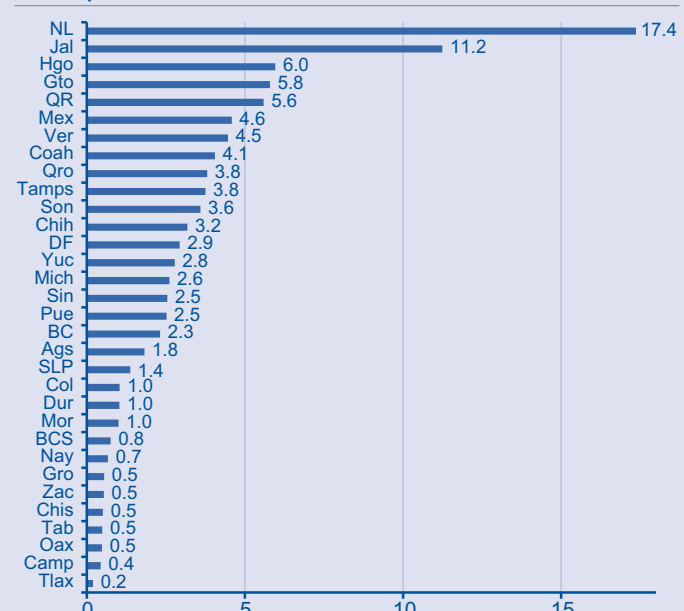
Total amount of subsidies granted, 2014
Share per state (%)



Source: BBVA Research with Conavi data

Figure B1.2

Concentration of RUV registrations, 2014
Share per state (%)



Source: BBVA Research with RUV data

states in central Mexico such as Hidalgo, Puebla, the State of Mexico and Querétaro, which do not have a large number of projects compared to other states, have nonetheless received substantial amounts in investment in recent years and this has meant that their placement rates for mortgage loans have increased. A balance has nevertheless been preserved in these markets between the levels of sales, inventories and building projects.

Meanwhile, the allocation of subsidies in some regions could have been prompted by the enlargement of surrounding areas eligible for support by the federal government, which would also have given rise to a greater amount of project filings with the RUV in 2014, which is in turn likely to have led to the growth of certain metropolitan areas into over spill zones beyond the city periphery.

What type of solutions are the subsidies being used for?

At present the National Housing Policy has focussed on diversifying the loan and subsidy options to address the population's housing needs more satisfactorily. This is why housing solutions have become more varied, as have the subsidies to provide them. Whereas in 2013 some 60% of subsidy activity were targeted to purchase new homes, in 2014 the share in the number of subsidies for this matter dropped to 55%, even at a time when more funding was being granted for this alternative. On the other hand, the number of subsidy campaigns involving existing homes

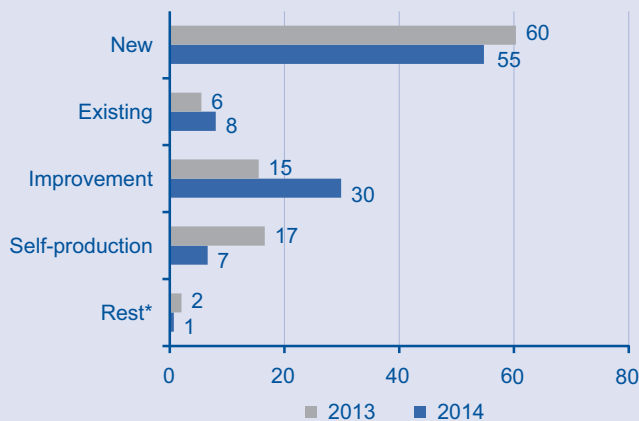
rose from 6% to 8% in the same period, whereas the share of subsidies for home improvements doubled from 15% to 30%. Conversely, the share of self-build support campaigns dropped from 17% in 2013 to a mere 7% in 2014, according to information from Conavi.

In recent years, we have seen how existing housing has become increasingly transcendent as an option within the spectrum of different family housing preferences. This has become a viable alternative in certain cities in Mexico where the shortage of land makes the spreading of urban sprawl problematic. This is true of the Federal District, Tlaxcala, Campeche and Guerrero, where the expansion of cities is limited by weather characteristics, the high transport costs generated, or simply because land for housing construction is going to scarce. This is confirmed by looking at the rise in subsidies used for this housing solution, in terms of both numbers and sums involved.

Even though there was increased diversification from 2013 to 2014 in terms of the kind of subsidy on offer, the distribution of the sum invested in such solutions was practically the same. Over 2013 and 2014, more than 70% of the amount involved in subsidies was used for new housing, while the share of subsidies for purchasing existing housing only rose from 7% to 10% of the total in the same years. The most significant change was in subsidies used for home improvements, where their share rose in terms of both number and amount within Conavi's overall activity.

Figure B1.3

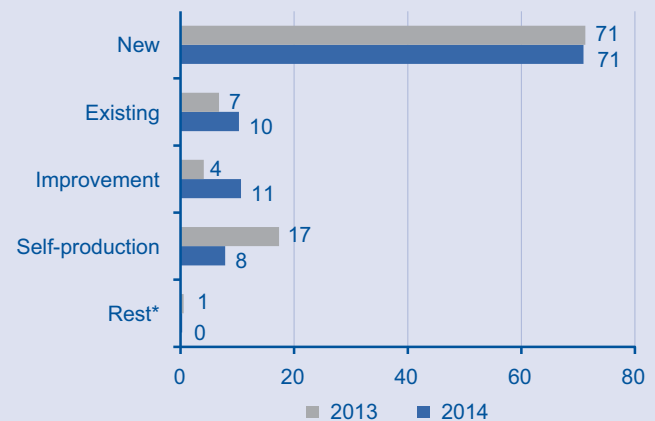
Conavi: subsidies by housing solution
Share by product (%)



*Includes land with services and others
Source: BBVA Research with Conavi data

Figure B1.4

Conavi: amount allocated by housing solution
Share by product (%)



*Includes land with services and others
Source: BBVA Research with Conavi data

The above clearly shows that new housing remains the mainstay of subsidy policy, and that this has been used to satisfy demand in regions close to major metropolitan zones or those in the process of growing. According to data from Infonavit, credits for purchasing existing housing represented 34% of the loans originated nationally in 2014. Nonetheless, in regional terms, this accounts for 40% or more of the total financing for home-buying from this agency in 19 of Mexico's states. These include Chiapas, Guerrero and Oaxaca, which are the states with the highest poverty rates in the country and recently ranked as the most needy nationwide as regards housing improvement, according to the housing deficit calculated by the Sociedad Hipotecaria Federal (SHF) in 2012.

Concentration of subsidies could persist

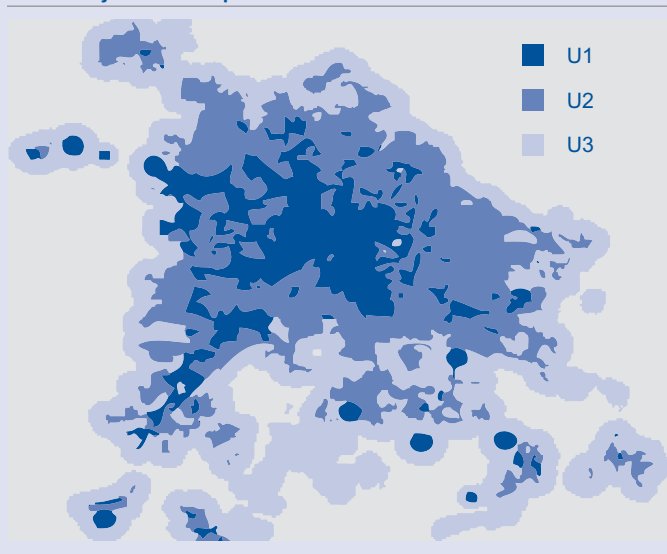
On the other hand, of total housing construction registrations with the RUV in 2014, over 50% were in only six states: Nuevo León, Jalisco, Hidalgo, Guanajuato, Quintana Roo and the State of Mexico. Of these states, Nuevo León, Jalisco and Quintana Roo together account for more than one third of the overall registrations. This appears to support the fact that in these states over 86% of the average origination for Infonavit housing purchase loans was used for new units in 2014.

This also seems to account for the enlargement of the urban sprawl control perimeters, for the purposes of determining eligibility for the subsidy via new housing. The maps below show the inclusion of areas hitherto protected from urban development. This is the case in the metropolitan area of Guadalajara, around which the perimeters have been extended westwards, where there is a reserve known as the "Spring Forest", and northwards, where the Huentitán canyon is located.

In Quintana Roo state, where new housing represented 91% of Infonavit loans in 2014, there would be greater scope for the urban sprawl to grow, since tourist activity and holiday homes constitute a sizeable market which could be extended southwards within the state, although these do not necessarily imply help for the more needy sections of the population. According to the SHF, Quintana Roo state is 26th in the housing backlog ranking for housing solutions overall, whereas Veracruz and Chiapas states top the national list of states with needs that require addressing.¹ Another major aspect to take into account directly concerns the pace of real estate appreciation.

Map B1.1

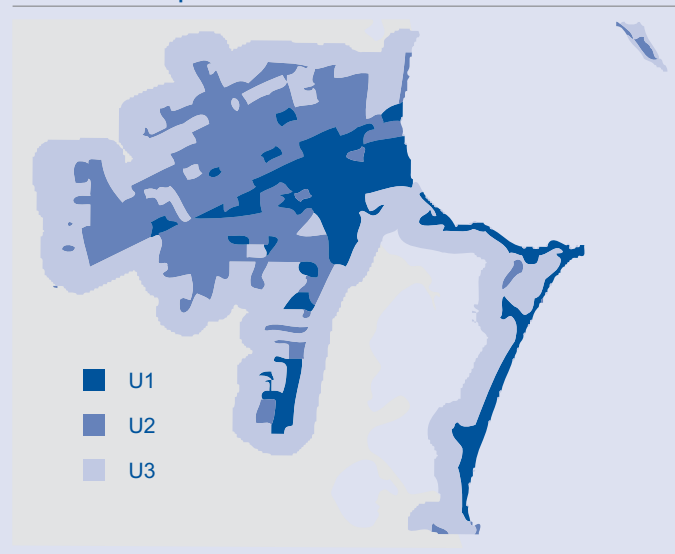
Conavi: urban sprawl perimeters for the Guadalajara metropolitan area



Source: BBVA Research with Conavi data

Map B1.2

Conavi: urban sprawl perimeters for the Cancún metropolitan area



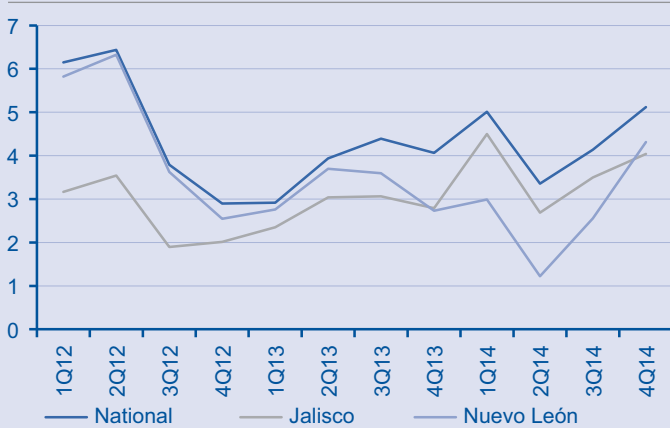
Source: BBVA Research with Conavi data

¹ SHF (2012). Mexico: Housing deficit, Demand for housing in 2012 and demographic dividend. April.

According to information from the SHF, the housing price index rose 5.1% in 2014, while in certain regions with higher concentrations of housing, such as Jalisco and Nuevo León, the yearend rise was 4.0% and 4.3% respectively. In the case of Guanajuato, it can be seen that since 2013 housing appreciation has been below the nationwide level as the supply has increased and it has received more subsidies for purchasing new housing. For Quintana Roo this is more significant, as annual appreciation was only 0.19% and even negative in the third quarter.

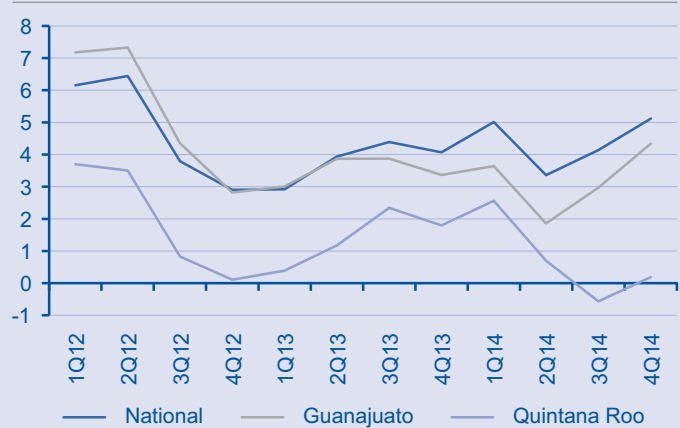
While it is true that such situations are on a regional scale, disproportionate supply growth should be avoided, as this could affect the valuation of real estate in other areas of the country where the balance between supply and demand is more appropriate. It is thus important for the market to keep in line with its fundamentals such as income growth and employment, which are the key variables which determine the cycle for housing demand and prices.

Figure B15
SHF housing price indexes
Annual % change



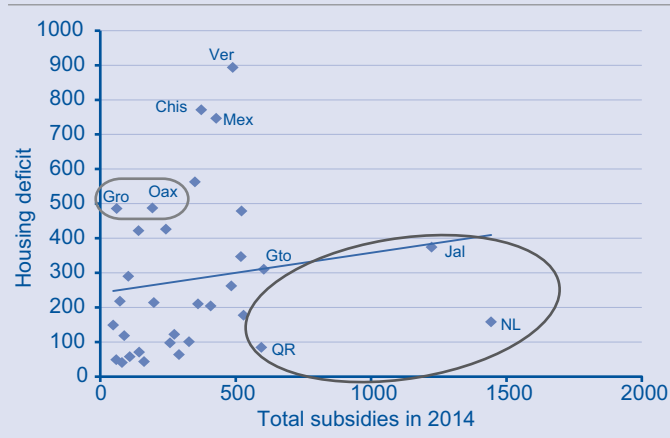
Source: BBVA Research with SHF data

Figure B16
SHF housing price indexes
Annual % change



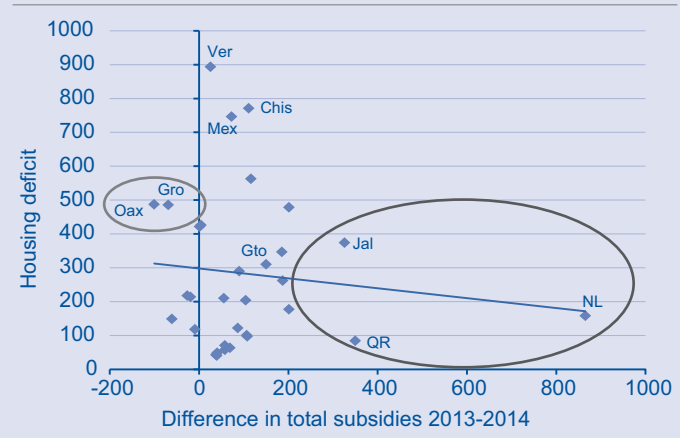
Source: BBVA Research with SHF data

Figure B17
Housing deficit and total subsidies in 2014
(Thousand homes and MXN mn)



Source: BBVA Research with SHF & Conavi data

Figure B18
Housing deficit and difference in total subsidies 2013-2014
(Thousand homes and MXN mn)



Source: BBVA Research with SHF & Conavi data

3. Special Topics

3.a Drivers of housing prices in Mexico

Introduction

Buying a home is one of the most important decisions a person will ever make in their entire life, among other aspects because of the asset value that houses represent. For this reason, how house prices move is important to families. Yet the significance of this is not confined to aggregate housing demand, but is also crucial to the supply of loans and, even from a risk standpoint, for financial intermediaries.

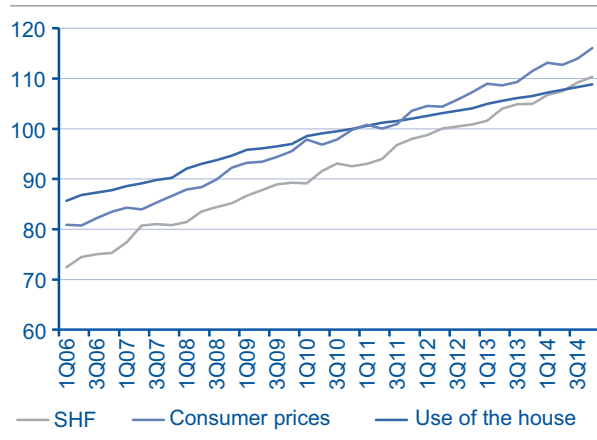
Housing price cycles in Mexico have been under-researched, partly because the statistical information on them is still in a state of development and also because the most significant real estate cycle, which ended with the 2008 crisis, offered no clear insight into all the structural changes outside demand. While it is true that the latter accounted for a large part of the price boom in the opening decade of this century, certain supply-side disequilibriums do help to explain the more recent cycles.

This is why, in this *Mexico Real Estate Outlook*, we look at the drivers of housing prices in Mexico for 2006-14. We examine housing prices compared to other indices, to find out about any effects that might be attributable to costs, as well as the demand for mortgage loans, which has maintained growth even after the last crisis. We also propose a model to gain an insight into how these elements interact with each other and to evaluate their impact in more recent price cycles, thereby offering some perspective with regard to drivers within the current economic situation.

Housing prices in the context of supply and demand

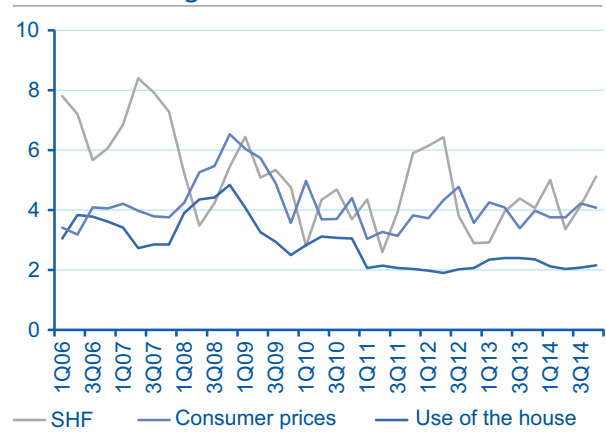
The real-estate boom in Mexico prior to the 2008 crisis was mainly prompted by the reforms to the Housing Law, which allowed workers to spend savings set aside for housing on co-financing products along with the banking system. The reforms triggered a demand for housing that had not been seen in decades. These circumstances have meant that, out of a total of 8.2 million loans granted by Infonavit to date since it was created in 1972, over 50% have been provided in the last 10 years.

Figure 3a1
Price indices



Source: BBVA Research with SHF & INEGI data

Figure 3a2
Price indices
Annual % change



Source: BBVA Research with SHF & INEGI data

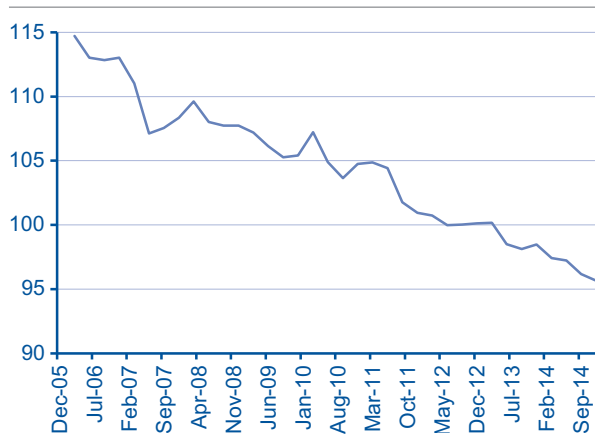
Along with this, the model for financing house-building, primarily via the developer's construction loan (*bridge loans*, still applicable) made it possible to consolidate the production chain in the sector. This thus ensured the placement of housing, which was built with the greatest of speed, while at the same time funds flowed to continue building units in great numbers.

Thus the favourable mix of supply and demand factors, in an industry that had been fairly lifeless for several years, spurred on the most significant cycle of housing appreciation in Mexico's recent history. According to information from the Sociedad Hipotecaria Federal (SHF), between 2006 and 2007 housing prices rose by 7.5% on average in those two years, while consumer prices grew 3.8% and the housing occupancy component (rents) only rose 3.3% over the same time.

This situation can be explained in two ways. First, consistent with economic theory, in a market in equilibrium the expected cost of owning a home is equal to the present value of expected flows, for example from renting it. If the rent-to-price ratio is greater than one, prices are overvalued, whereas in the opposite situation, when the ratio is less than one, housing prices are below the market equilibrium.

Figure 3a.3

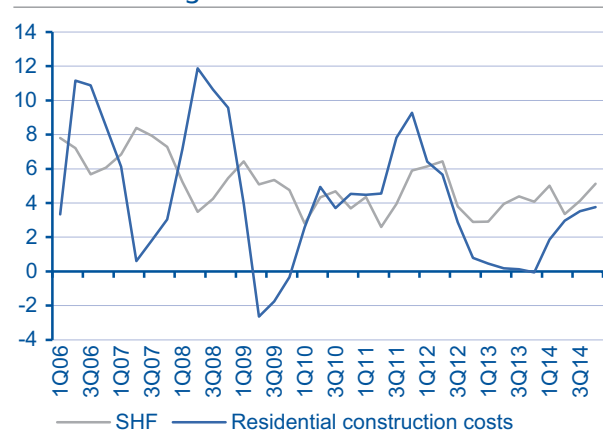
**Rent-to-price ratio for housing
2012 = 100 indices**



Source: BBVA Research with SHF & INEGI data

Figure 3a.4

**Housing prices and construction costs
Annual % change**



Source: BBVA Research with SHF & INEGI data

In the case of Mexico, in the years leading up to the 2008 crisis, liquidity conditions were very advantageous, with a guaranteed demand via the government housing agencies. The payroll discount also brought down the risk of arrears, which prompted the supply-side to leverage up. These factors taken together drove up the value of housing, which, as we know, also constitutes the mortgage loan collateral.

A second factor which also gave rise to overvaluation over these years relates to the construction costs which companies incurred. The large-scale production model which predominated at that time allowed them to acquire technology which they could use for several years, mostly because the construction model for those years was focused on social housing segment.¹ For this reason, construction costs did not offer a faithful view of housing price cycles. From 2010, when consumer demand began to branch out towards higher-end products, the pace of price increases came back more into line with costs. This is partly explained by a greater preference for housing among the middle-income and residential segments, as well as existing homes, which are generally located in places where there is a higher capital gain. The new production model, which increasingly tends to involve smaller developments, requires smaller sums in developers' construction loans. This has brought working capital turnover more into harmony with the economic cycle, and led to far lower leveraging by companies today.

¹ Existing housing accounted for less than 20% of transactions for those years

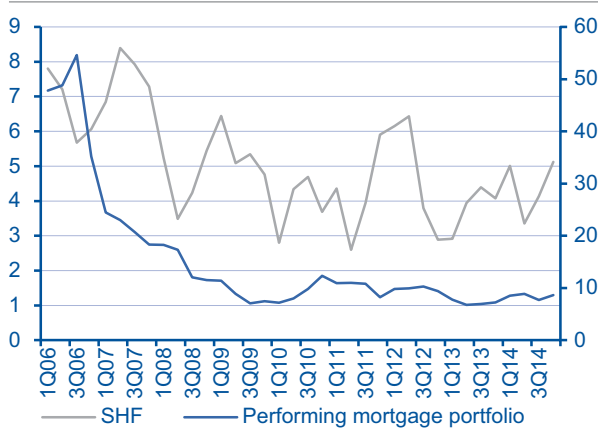
Bank financing, the trigger for housing demand

As we mentioned in the previous section, since halfway through the past decade mortgage loan terms offered by the commercial banks have contributed to housing price cycles, mainly in the middle-income and residential segments, which have registered the biggest rise since 2010. In the previous Mexico Real Estate Outlook (second half, 2014) we highlighted how housing affordability has improved across the whole country, thanks to historically low interest rates and loan periods of close to 20 years.

Between 2006 and 2008, the real estate boom was evident in double-digit growth rates in the mortgage loans balance. Nonetheless, in the years since the 2008 crisis this has kept up nominal growth rates approaching 10% YoY, charting a course which is similar to that followed by housing prices. Yet unlike in previous years, when growth was reflected more in the number of loans than in the sums involved, in the four most recent years the rise in the portfolio balance has principally been explained by growing sums financed, which also shows that consumers are increasingly demanding high-end housing.

Figure 3a.5

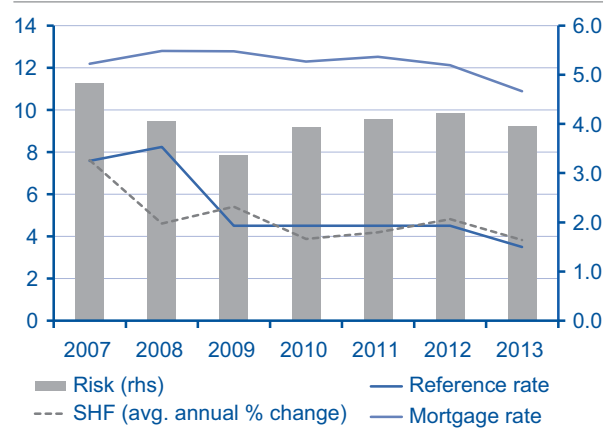
Performing mortgage loan portfolio and housing prices (Annual % change)



Source: BBVA Research with SHF, INEGI & CNBV data

Figure 3a.6

Interest rates, housing prices and portfolio risk (Annual % change)



Source: BBVA Research with SHF, INEGI & CNBV data

With regard to interest rates, these have been stickier with respect to housing price cycles. This is because the risk levels for commercial bank mortgages rose from 2% in 2007 to 3.2% in 2009. They subsequently came down, although this was also accompanied by a fall in margins. This mix of factors meant that there was limited transmission of the monetary policy rate through to the mortgage rate.²

Model estimation

Tsatsaronis & Zhu (2004) sort the drivers of housing prices into those which are short-term and those which are long-term.

- 1) Long-term drivers.** Among the factors which influence housing prices through demand are: family disposable income, population increase and the setting up of households, changes to the tax system (which can alter decisions about transactions involving the buying and selling of homes, whether in connection with accumulating wealth or on account of expectations of greater-than-forecast inflation), and long-term increases in construction costs (land and other inputs).

² See Real Estate Outlook (Second Half, 2014)

2) Short-term drivers. The immediate determinants of housing prices generally relate to local indicators. For example, variations in the stock of housing and/or increases in construction costs from exogenous shocks, which mainly have a short-term impact. The cost of occupying housing (renting) also falls within this category.

Given the above, the variables to consider in model estimation are: i) the Sociedad Hipotecaria Federal's housing price index (Pv_{iv}); ii) the housing occupancy cost component in the National Consumer Price Index (IPV_{iv}); iii) the general economic activity indicator (Y_t); iv) the commercial banking performing mortgage loan portfolio ($Cr_{v_{iv}}$); v) the real short-term interest rate (R_t), which is directly linked to the central bank's monetary policy, and vi) the residential construction cost index (ICR_t).

The general economic activity index is intended to assess the role of family disposable income, within which employment and wages are internalised.³ The housing occupancy cost component included in the National Consumer Price Index (INPC) means that it is possible to find out the pass-through effect for consumer prices, which in other countries has been found to contribute over two-thirds of housing price variability in the short term.⁴

The performing mortgage portfolio is intended to be an indicator of demand, although it should be stressed that this includes not only new mortgage origination but also debt release. Nevertheless, given that no sufficiently long data series is available for the origination component in individual terms, we are using this variable as representative.

Finally, the real interest rate reflects the cost of a mortgage loan, which, after stripping out price increases, will enable us to find out the real effect which monetary policy decisions have on housing prices, while also bearing in mind that, if expected inflation falls short of real estate appreciation, it could represent a driver for demand in the real estate market (Tsatsaronis, 2004).

A Vector Autoregression

Our initial approach to analysing housing prices is via a Vector Autoregression (VAR). Estimating in this way, it will be possible to confirm whether the selected variables have explanatory force in our particular case for study. The major advantage of VAR is that it does not impose any restriction on estimation, as it presupposes endogeneity for all of them, besides the fact that errors are uncorrelated with each other and exhibit constant variance. The multivariate autoregression model below is considered:

$$x_t = A_0 + A_1 x_{(t-1)} + A_2 x_{(t-2)} + \dots + A_p x_{(t-p)} + e_t$$

Where:

x_t = an (n*1) vector of variables with n variables included in the VAR.

A_0 = an (n*1) vector of intercepts.

A_i = (n*n) VAR coefficient matrices

e_t = an (n*1) vector with the error terms of the variables.

According to Sims (1980), one of the main advantages of using Vector Autoregression is a reduction in the possibility of leaving out key information, as otherwise there is a risk of not taking into account the lagged endogenous variable as an explanatory variable, since double causality could arise with regard to one of the variables. The fact that each of the equations can be estimated separately using Ordinary Least Squares (OLS), and that the errors might be correlated between equations, means that a SUR (Seemingly Unrelated Regression) model would not add greater efficiency since the regressions have the same number of variables.

The analysis determined the most appropriate number of lags according to two criteria. First, meeting the stability condition for the model coefficients, which ensures convergence given any error change towards a particular value. Second, the elimination of lags according to the Akaike statistic (1974), which indicates whether leaving lags out matters or not if the statistic diminishes after they are left out of estimation.

³ These variables are included individually in the model, but it was decided to use a more aggregated indicator due to problems of multicollinearity emerging.

⁴ Belgium, Canada, France, Germany, Italy, Spain and Switzerland

Applying the above criteria, it was found that estimation with most efficiency was to be found in a model with three lags, where the statistical significance of each of the variables in housing prices in Mexico can be observed. The results of the VAR are given in the table below.

Table 3a.1

VAR estimation

	Pv_{iv_t}	IPV_{iv_t}	Y_t	Crv_{iv_t}	R_t	ICR_t
$Pv_{iv_{t1}}$	0.151394 [0.66428]	-0.0088 [-0.13817]	-0.354538 [-0.56571]	0.506139 [1.22317]	-18.52165 [-1.91237]	-0.564685 [-1.80409]
$Pv_{iv_{t2}}$	-0.332254 [-1.41407]	-0.028506 [-0.43416]	0.153075 [0.23692]	0.339995 [1.44856]	21.06423 [2.10959]	-0.608332 [-1.88517]
$Pv_{iv_{t3}}$	-0.061975 [-0.26175]	0.072933 [1.10233]	-0.687426 [-1.05581]	-0.196883 [-0.83241]	-20.09177 [-1.99681]	-0.593177 [-1.82415]
$IPV_{iv_{t1}}$	2.504974 [2.64093]	-0.095378 [-0.35985]	-1.649898 [-0.63256]	0.888806 [0.93804]	-17.66735 [-0.43830]	-3.176454 [-2.43840]
$IPV_{iv_{t2}}$	-0.57063 [-0.54445]	0.058831 [0.20088]	-0.473954 [-0.16445]	-1.321448 [-1.26216]	56.00329 [1.25738]	-3.171956 [-2.20363]
$IPV_{iv_{t3}}$	0.42788 [0.59469]	-0.551673 [-2.74393]	0.884994 [0.44730]	-0.496855 [-0.69129]	-51.54757 [-1.68589]	-1.924364 [-1.94745]
Y_{t1}	0.100148 [1.09291]	-0.009142 [-0.35704]	-0.476562 [-1.89127]	0.214138 [2.33937]	4.186346 [1.07505]	0.133458 [1.06046]
Y_{t2}	0.082835 [0.75372]	-0.051722 [-1.68421]	-0.377606 [-1.24947]	0.344939 [3.14196]	9.653476 [2.06695]	-0.266038 [-1.76258]
Y_{t3}	0.113708 [1.06758]	-0.044024 [-1.47918]	-0.57495 [-1.96304]	0.189457 [1.78066]	2.177826 [0.48115]	-0.232572 [-1.58992]
$Crv_{iv_{t1}}$	-0.058646 [-0.30104]	-0.153609 [-2.82181]	0.687636 [1.28363]	-0.19125 [-0.98277]	0.968271 [0.11696]	0.000858 [0.00321]
$Crv_{iv_{t2}}$	0.232904 [1.52490]	0.00069 [0.01617]	0.284064 [0.67635]	0.07055 [0.46241]	20.60278 [3.17425]	-0.264589 [-1.26138]
$Crv_{iv_{t3}}$	0.496829 [2.90782]	-0.026912 [-0.56367]	-0.114976 [-0.24471]	-0.013804 [-0.08088]	3.636766 [0.50087]	-0.455769 [-1.94229]
R_{t1}	-0.014453 [-2.67473]	0.002488 [1.64769]	0.016 [1.07683]	0.009171 [1.69909]	0.497505 [2.16659]	0.01453 [1.95796]
R_{t2}	0.000634 [0.12790]	0.003198 [2.30994]	-0.007073 [-0.51911]	-0.009061 [-1.83052]	-0.6573 [-3.12145]	0.000234 [0.03432]
R_{t3}	-0.004255 [-0.69792]	-0.0018 [-1.05647]	-0.011465 [-0.68394]	0.012336 [2.02573]	-0.039177 [-0.15123]	0.017557 [2.09706]
ICR_{t1}	-0.036882 [-0.20880]	-0.110809 [-2.24497]	0.450831 [0.92815]	-0.319885 [-1.81289]	0.964091 [0.12844]	0.698059 [2.87751]
ICR_{t2}	0.273663 [0.99224]	0.146419 [1.89986]	-0.735258 [-0.96946]	0.045273 [0.16433]	-0.28524 [-0.02434]	0.321781 [0.84951]
ICR_{t3}	-0.171365 [-0.96736]	-0.06996 [-1.41331]	0.375565 [0.77097]	0.203964 [1.15260]	0.844866 [0.11223]	-0.238845 [-0.98172]
R^2	0.833861	0.893265	0.832532	0.890013	0.856033	0.995519
Akaike (AIC)	-6.810189	-9.360169	-4.787093	-6.812314	0.688639	-6.175637

Likelihood of the t statistic in brackets. To be significant, the p value should be greater than or equal to 1.9
Source: BBVA Research

According to the VAR results, housing prices are almost 50% explained by the increase in the INPC's housing occupancy component over the first three months, while the effect gradually trails off over the next four quarters. At the end of this period it accounts for 42% of variations.

Subsequently, the performing mortgage portfolio balance makes a 12.4% contribution to housing price variance, whereas the short-term real interest rate contributes around 10% in the first quarter. This nonetheless tends to increase over time more than the effect from the mortgage portfolio, which ought to be the indicator closest to housing demand.

Table 3a.2

Decomposition of variance

Contribution*	Quarter 3	Quarter 5	Quarter 7	Quarter 9
Inflation	49.5	45.3	42.2	42.1
GDP	1.7	4.3	4.0	4.1
Housing loans	12.4	11.4	10.3	10.0
Real interest rate	10.9	17.2	19.4	19.4

* Share % in variance of VAR errors
Source: BBVA Research

VAR estimation indicates that: housing prices are explained by income, housing demand (estimated by means of the performing balance of the commercial banking mortgage portfolio), the real short-term interest rate as a monetary policy instrument, and by construction costs index.

On the other hand, we find direct causality from the INPC's housing occupancy component to real estate prices. Additional pass-through channels could nevertheless exist on the supply side via costs. On the demand side, the ultimate effect could be estimated by means of an equations model, where, when the income component influences the mortgage portfolio balance, this would have a positive effect on real estate prices.

Equations system estimation

In keeping with the results in the previous section, estimation is proposed for a non-simultaneous equations model, where the dynamics of housing prices would be explained by two dynamic specifications. The system consists of the following expressions:

$$Pv_{iv_t} = \alpha_0 Pv_{iv_{(t-n)}} + \beta_1 IPv_{iv_{(t-n)}} + \beta_2 Crv_{iv_{(t-n)}} + \beta_3 R_{(t-n)} + \epsilon_t \tag{1}$$

$$Crv_{iv_t} = \delta_0 Crv_{iv_{(t-n)}} + \gamma_1 Y_{(t-n)} + \gamma_2 ICR_{(t-n)} + u_t \tag{2}$$

Where:

Pv_{iv_t} = Is the Sociedad Hipotecaria Federal's housing price index

IPv_{iv_t} = Is the housing occupancy component in the National Consumer Price Index

Crv_{iv_t} = Is the performing balance of the commercial banking mortgage portfolio

R_t = Is the short-term real reference rate

Y_t = Is gross domestic product at constant prices

ICR_t = Is the residential construction cost index

ϵ_t, u_t are the error terms in equations (1) and (2)

The variables are stationary and taken quarterly, while the expression t-n represents the number of lags used for each of the variables. The dynamics of expressions (1) and (2) therefore tell us that housing prices are determined by the housing occupancy (rent) component, the demand for bank loans and the real interest rate. Income in the economy and residential construction costs would, in turn, have an effect via the demand for bank loans, which would be

represented by means of a partial adjustment relationship. In other words, as regards the short term, we have the following effects:

Table 3a.3

Short-term effects

	$IPViv_t$	$Crviv_t$	R_t	Y_t	ICR_{t-n}
$Pviv_t$	$\frac{dPviv_t}{dIPviv_{t-n}}$	$\frac{dPviv_t}{dCrviv_{t-n}}$	$\frac{dPviv_t}{dCrviv_{t-n}} \times \frac{dCrviv_t}{dICR_{t-n}}$	$\frac{dPviv_t}{dCrviv_{t-n}} \times \frac{dCrviv_t}{dY_{t-n}}$	$\frac{dPviv_t}{dR_{t-n}}$
	$=\beta_1$	$=\beta_2$	$=\beta_3$	$=\beta_2 \times \gamma_1$	$=\beta_2 \times \gamma_2$
$Crviv_t$				$\frac{dCrviv_t}{dY_{t-n}}$	$\frac{dCrviv_t}{dICR_{t-n}}$
				$=\gamma_1$	$=\gamma_2$

Source: BBVA Research

According to Table 3a.3, the effects of the housing occupancy cost and the demand for mortgage loans are given by the parameters $\beta_1, \beta_2 > 0$. As these are indicators of demand in the market, we expect there to be a positive relationship affecting short-term real-estate prices. On the other hand, the real interest rate effect is given by β_3 , which we expect to be less than zero, as, given an increase in the real cost of taking out a bank loan, demand would tend to diminish and, with this, so would housing prices.

The results from the model confirm that the effect of the housing occupancy component closely relates to prices for housing. For each percentage point of a rise in this component of the INPC, housing prices would climb by 0.67% in the short term. On the other hand, the demand for mortgage loans has a positive effect of 0.15% on prices for each percentage point of a rise.

With respect to the real interest rate, we observe the opposite effect, i.e. for each percentage point of decrease, housing prices tend to rise by 0.01%. Finally, income and construction costs raise prices by 0.13% and 0.17% respectively for each additional percentage point of increase in these variables. This confirms that, in the short term, construction costs exert greater pressure on housing prices than a demand shock motivated by greater family income.

On the way towards long-term equilibrium, the short-term effects can be permanent or can fade away over time. This means that, irrespective of the immediate effects given any shock, supply or demand factors can play a different role over a time horizon which is sufficiently long to deter the initial impact. For our system of equations, the long-term expressions are as follows:

Table 3a.4

Long-term effects

	$IPViv_t$	$Crviv_t$	R_t	Y_t	ICR_{t-n}
$Pviv_t$	$\frac{\beta_1}{1 - \alpha_0}$	$\frac{\beta_2}{1 - \alpha_0}$	$\frac{\beta_3}{1 - \alpha_0}$	$\frac{\beta_2}{1 - \alpha_0} \times \frac{\gamma_1}{1 - \delta_0}$	$\frac{\beta_2}{1 - \alpha_0} \times \frac{\gamma_2}{1 - \delta_0}$
$Crviv_t$				$\frac{\gamma_1}{1 - \delta_0}$	$\frac{\gamma_2}{1 - \delta_0}$

Source: BBVA Research

In the long term, the effect of a positive housing demand shock on prices diminishes to 0.09%. Nevertheless, the impact of a rise in the housing occupancy component is far more persistent and remains at 0.43%. On the other hand, the effect of a lower interest rate practically disappears in the long term, which can be explained by the fact that for most of the period over which our estimation runs, the benchmark rate was held unchanged. Expectations of downward stickiness were thus brought about, and it was then possible for the effect on the mortgage market to be limited during the period.

As regards family income, the positive effect remains in the long term, although it does drop down to 0.02%. It is worth noting that the effect of a rise in construction costs continues to show through in housing prices and, although it also dilutes by a considerable proportion since the initial impact, this continues to be larger than the effect which is produced on the demand side (0.03%).

This would explain why the rise in housing prices since 2010 is synchronised to a greater degree, not only with the economic cycle of income but also with supply components, which results in more rational decisions to buy being made by consumers and also in greater certainty on the supply side.

Conclusions

Housing prices in Mexico experienced their biggest boom in 2006-08, when a surge in demand was triggered by the reforms to the Housing Law. Certain supply factors, however, have been significant in shaping housing price cycles. Construction costs have moved more in step with the appreciation of real estate from 2010, when the typical consumer began to demand higher-end housing, which in turn led to the positive trend in price increases being sustained.

An important aspect to consider is that housing prices have moved more closely into line with the market equilibrium at the same time as they have harnessed themselves to the rises in other indices, such as that used to gauge the cost of housing occupancy (rent), while they have maintained growth rates that have outstripped consumer prices. This has meant that the value of the security used by the banks remains assured and that this is helping to keep the mortgage portfolio in good health.

Lending terms, which improved with the real-estate boom, remain unbeatable at the end of 2014, with mortgage rates at less than 10% and loan periods of almost 20 years. Even though mortgage rates have displayed a certain degree of stickiness in relation to monetary policy decisions, this is because margins have shrunk, whereas risk has tended to increase as a result of higher-value loans being granted.

The results for the model have confirmed the importance of income in price determination, as well as mortgage loan demand. Nevertheless, the residential construction cost effect is more significant in both the short and long term. This partly explains why, in the past four years, the rise in the SHF housing price index has traced a path which is similar to that followed by construction costs, which also indicates a greater preference for the middle-income and residential housing segments.

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3.b The significance of consumer expectations in mortgage lending

When analysing the demand for a good or service, we tend to base ourselves on consumer preferences, income, credit and prices. In the specific case of housing, family income and the price of the units involved, as well as the cost of borrowing and access to financing, are the key variables which we check when we want to discover how demand behaves and what to expect looking forward. From a broader perspective, economic analysis lays emphasis on the role of expectations, on both the supply and demand sides, in market dynamics. In this part of the *Mexico Real Estate Outlook*, we look at whether consumer expectations have an effect on the housing market via mortgage lending.

The usefulness of currently published confidence indexes

For the purposes of identifying how the population perceives economic conditions as regards their families and the country, both now and looking to the future, the National Institute of Statistics and Geography (Inegi) publishes its monthly Consumer Confidence Index (the ICC). This indicator is constructed in conjunction with the central bank, and each month's dataset is drawn from the results of the National Survey of Consumer Confidence (ENCO) from April 2001 to the present date. The ICC is a composite of five sub-indices which are constructed from the same number of questions about both the present situation and expectations in relation to Mexico's economy and the respondent's household, as well as the potential consumption of durable goods. The questions are:

- Compared to the financial situation of the members of this household 12 months ago, how do you rate your situation now?
- How do you see the financial situation of the members of this household in 12 months' time compared to now?
- How do you rate the country's economic situation today compared with 12 months ago?
- How do you see the country's economic situation in 12 months' time compared to now?
- Comparing the economic situation now with one year ago, what do you think the chances are of you or any members of this household in considering buying items such as furniture, a television, a washing-machine or other household electrical appliances etc.?

The first four questions have six possible responses and only the last one, on buying durable goods, has four options, as per the following tables.

Response	Weight
Much better	1.00
Better	0.75
The same	0.50
Worse	0.25
Far worse	0.00
Don't know	Distributed proportionally

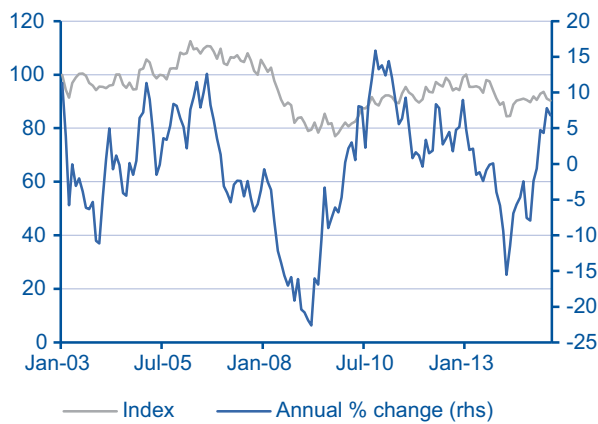
Response	Weight
Greater	1.00
The same	0.50
Less	0.00
Don't know	Distributed proportionally

The most used indices in economic analysis tend to be the general index and the durable goods index. The first of these comprises the responses for all five questions and the second only those for the final question. We can observe in the figure featuring the ICC that from 2003 to 2008 there was an upward trend until the economic crisis at the end of the last decade. From 2010 a recovery is apparent, which stops short of previous levels and drops back again slightly in the last few months of 2013.

The story is similar for the durable goods confidence index (ICBD), except that the fall throughout the economic crisis was more pronounced. Even though it is true that from the current decade there is an upturn in this index, it is even further from the level reached during 2006 and 2007. The reason for this could be that this is a question about the chances of buying these goods from a personal standpoint, without taking into account the outlook as regards the rest of the economy. This is precisely why this index tends to be followed separately, both because it is intended to find out about consumption trends regarding a particular group of goods and because it concerns an outlook which is likely to be closer to the view in the household regarding its particular chances of buying, since it takes account of its specific circumstances.

Figure 3b.1

General Consumer Confidence Index
2003 = 100 index and annual % change



Source: BBVA Research with ENCO, Inegi data

Figure 3b.2

Durable Goods Consumer Confidence
2003 = 100 index and annual % change

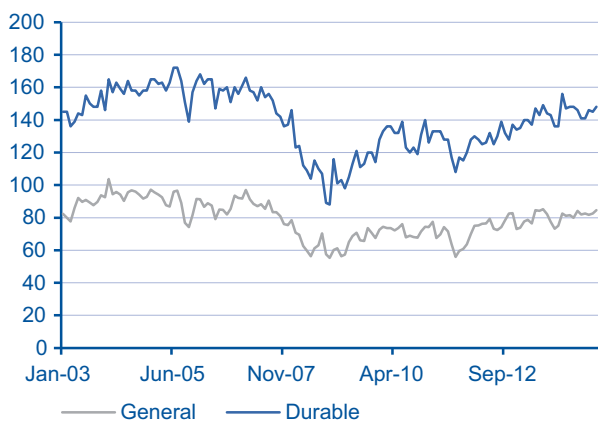


Source: BBVA Research with ENCO, Inegi data

The construction of confidence indices for economic analysis emerged from the ideas of George Katona, who in 1975 published the contention that consumers do not only spend as a function of income and prices, but also taking into account their expectations over their future financial situation. Two confidence indices are constructed in the United States which take their lead from Katona's paper: the Consumer Sentiment Index is published by the University of Michigan, while the Conference Board constructs the Consumer Confidence Index.

Figure 3b.3

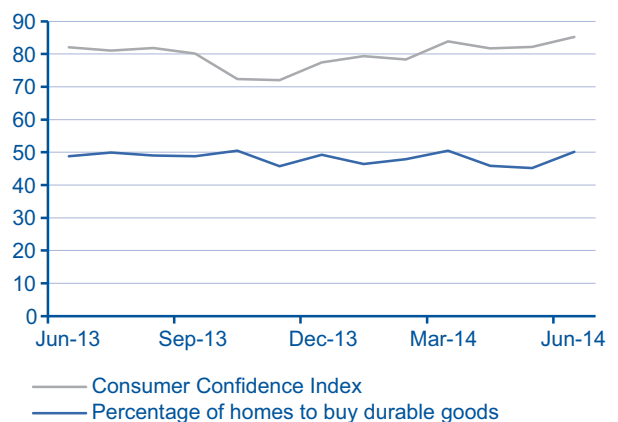
U.S. Consumer Sentiment Index
Index



Source: BBVA Research with University of Michigan data

Figure 3b.4

U.S. Consumer Confidence Index
1985 = 100 index and homes percentage



Source: BBVA Research with The Conference Board data

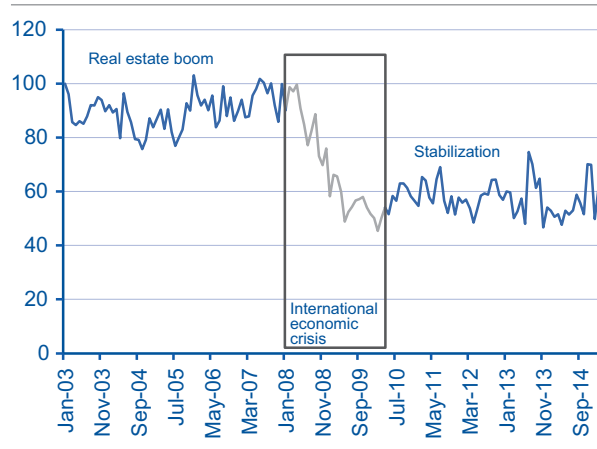
Some studies have evaluated the contribution of confidence indices to economic analysis, particularly as regards durable goods indices. Mainly drawing on the work of Garner (1991), it is thought that in the case of the United States the contribution of the indices mentioned in relation to durable goods is minimal when set against other variables in forecasting durable goods consumption. The author maintains that the greater contribution of the Consumer Sentiment Index in connection with durable goods is under exceptional circumstances, given that these are unanticipated events. In another paper, although this time applied to the UK economy, Smith (2009) concludes that including the Consumer Sentiment Index does not improve forecasts in relation to consumer spending growth when real time data are used.

A specific confidence index for the housing market in Mexico

Even though the ICC includes the durable goods confidence index, no specific index exists for the housing market. The ENCO survey features a specific question about the intention to buy or renovate a house, thus: "Are you or any member of this household planning to buy, build or renovate a house in the next two years?" The wording of the question suggests that the replies given by respondents could be followed up to find out about expectations of taking out a loan to buy, build or renovate a house in this timeframe, for which reason, based on the ICC's methodology, we have calculated a confidence index for the housing market (ICV) according to the replies in the ENCO survey. The time covered in this index runs from 2003 to February 2015, which is the period for which data was available when it was constructed.

Figure 3b.5

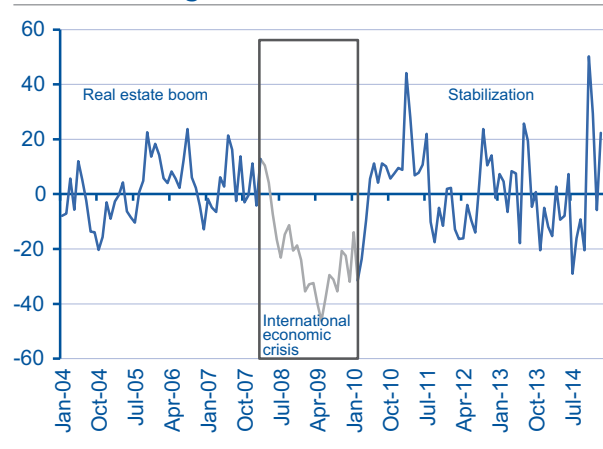
Housing Confidence Index
2003 = 100 index



Source: BBVA Research with ENCO, Inegi data

Figure 3b.6

Housing Confidence Index
Annual % change of the index



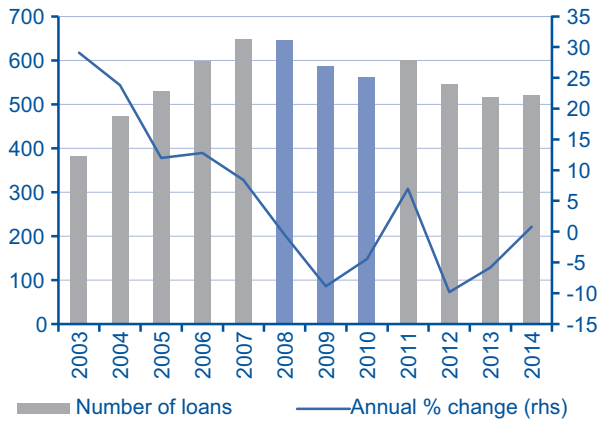
Source: BBVA Research with ENCO, Inegi data

The ICV starts in 2003, when the real estate boom was also in its infancy. It was during that period when the population entertained the highest hopes of buying, building or renovating a home. From 2008, given the international economic crisis, uncertainty built up over consumption of this asset, which was reflected in a considerable drop in the ICV. Then, in the present decade there is a notable restoration of public confidence regarding housing matters, although this has not reached the levels seen during the housing boom. The ICV currently indicates a relative settling of expectations, though at a level which is lower than was seen in 2012.

Awareness of the dynamics of the population's expectations about the chances of buying, building or renovating a home is important, both for economic agents operating in the construction sector and for those who provide the financing. It should be borne in mind that mortgage lending is the means most commonly used when buying housing, whether this is new or existing, although such loans are also used by people to build their own homes and for renovation work. The ICV also lends weight to the idea that Infonavit made the right decision by designing its renovation loan product, since confidence started to rise in 2010 and in 2011 the number of loans for renovation work granted by the agency handsomely beat even its own estimate for this type of credit.

Figure 3b.7

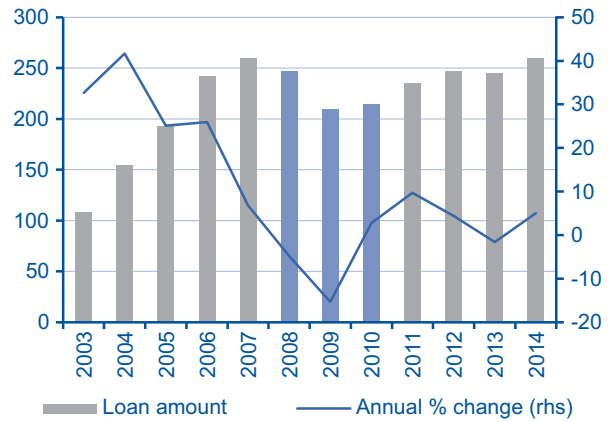
Number of mortgage loans
Thousands of credits and annual % change



Source: BBVA Research with Infonavit, Fovissste, ABM & CNBV data

Figure 3b.8

Mortgage loan amount
Billions of pesos and annual % change



Source: BBVA Research with Infonavit, Fovissste, ABM & CNBV data

It can be seen graphically that in those years when confidence rose, both the number of mortgage loans and the sums involved within the sector increased markedly. Afterwards, with the loss of confidence which the ICV illustrates, mortgage lending suffered a sharp fall, which was true in both numbers and amount when expressed in real terms as well. Now that the period of economic crisis has ended and what we term the stabilisation phase has begun in the housing market, the number of mortgage loans remains relatively constant, although below levels observed throughout the real estate boom. In contrast, the sum financed in loans has in fact recovered, which we largely attribute to the increase in the involvement of the commercial banks through lending greater amounts. This has been due to the significant fall in the cost of borrowing and lending conditions that are conducive to obtaining larger sums of credit.

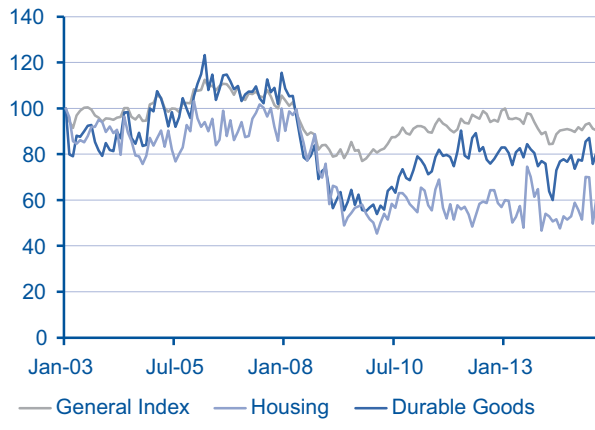
Given the other confidence indexes, is a specific index for housing useful?

One of the reasons why the ICC is distinguished from the durable goods index is that the respondent's expectations regarding the general economic situation can differ from the person's own particular situation and their own intentions with respect to buying this kind of good. In a similar vein, expectations about buying, building or renovating housing can vary considerably compared to the chances of buying durable goods, both because a greater sum is involved and because this tends to require a longer time horizon to be realised. For most families, acquiring a home is the bigger-ticket buying decision of the two, for which reason it is one that is usually taken with more care than when buying household goods. Evidence of this is that there are differences among the three indexes. For example the ICV showed the deepest fall during the 2008 economic crisis, followed by the durable goods index (ICBD); whereas the ICC offered the smallest setback. Once the economic crisis was over, the ICC began to recover at the same time as the ICBD, but the ICV still does not indicate a clear upward trend.¹

¹ We can also observe that although there is a high correlation among the three indexes, this is greatest between the ICC and the durable goods index (96%), whereas the ICV's correlation comes down to 72% with the ICC and 78% with the durable goods index.

Figure 3b.9

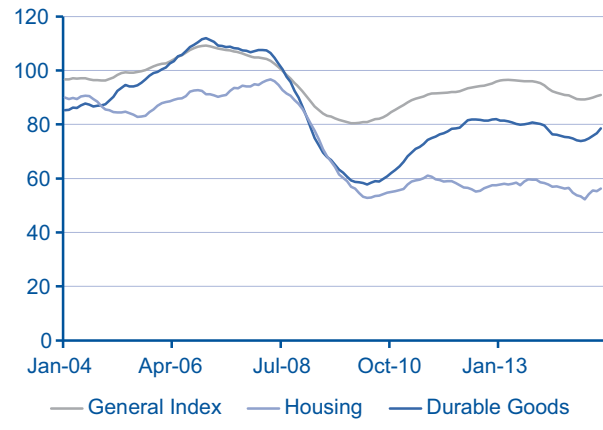
**Consumer Confidence Indices
2003 = 100 index**



Source: BBVA Research with ENCO, Inegi data

Figure 3b.10

**Consumer Confidence Indices
12-months moving average**



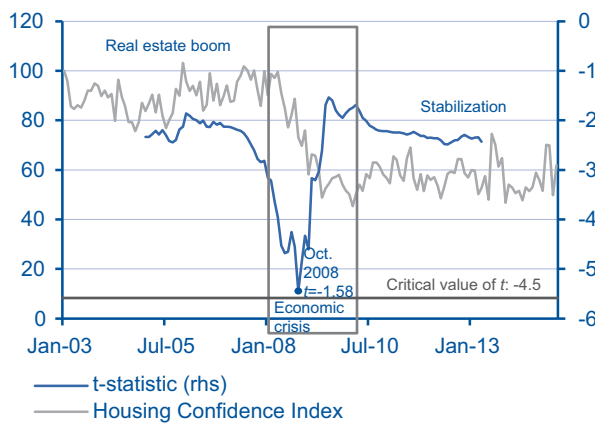
Source: BBVA Research with ENCO, Inegi data

On the other hand, the purpose of finding out about people’s consumption expectations is to be able to predict changes in demand for that particular good. This is why the ICV should be expected a priori to offer a better explanation of variations in the housing market than the ICBD, and a relatively even better one compared to the general index. We nonetheless apply some statistical methods to estimate the index’s contribution to predicting housing demand cycles.

Given the marked fall in the index in 2008, there might be a structural change in how expectations behave. For this reason we apply the Zivot-Andrews test to the ICV. The test-result shows that the most likely structural break point is October 2008, a month after the Lehman Brothers began its bankruptcy process² and within the quarter for which a negative GDP rate for Mexico’s economy³ was reported for the first time. Based on this result, we will test the usefulness of the ICV from that date in terms of how it relates to loans to buy housing from both public agencies and the commercial banks.

Figure 3b.11

**ICV and t-statistic for Zivot-Andrews test
Base: 2003=100 and t-statistic**



Source: BBVA Research with ENCO, Inegi data

Table 3b.1

**Zivot-Andrews test
Statistics**

Minimum t-statistic	-5.44 in October 2008
Critical values of <i>t</i>	
Significance	<i>t</i>
1%	-5.34
5%	-4.80
10%	-4.58
Observations:	146

Source: BBVA Research with ENCO, Inegi data

² See <http://www.nytimes.com/2008/09/15/business/15lehman.html?pagewanted=all&r=0>

³ In the third quarter of 2008 the quarterly rate of variation of seasonally-adjusted GDP was zero, but in Q4 that year this was -1.9%.

Garner (1991) analyses both confidence indices published in the United States and calculates their contribution to forecasting durable goods consumption in different ways. The first is by inspection, comparing charts of both indices with respect to durable goods consumption. As has been shown some lines above in this document, the ICV coincides graphically with the origination for the number of mortgage loans and the sum loaned for these, for which reason the housing index is so far consistent with lending activity for housing buying purposes. This same author tests the correlation between the various lags in the indices and durable goods consumption in the United States. In this case, the correlation is not statistically different from zero. In contrast, when calculating the correlation of the ICV with mortgage lending in Mexico, lags 12, 14, and 15 correlate positively with the mortgage loan amount. These same lags as well as 21 and 24 are also positive and statistically significant in the case of the number of loans. We can therefore say that the ICV could be a leading indicator for mortgage lending with an interval of between one and two years (which coincides with the wording of the question in the ENCO survey).

Table 3b.2

Correlation coefficients between the ICV and the number and amount of mortgage loans

Number of loans			Loan amount		
Lag	Correlation	Probability	Lag	Correlation	Probability
0*	0.23	0.04	0*	0.30	0.01
1	0.02	0.84	1	0.12	0.30
2	0.13	0.27	2	0.18	0.12
3*	0.22	0.05	3*	0.23	0.05
4	0.13	0.27	4	0.14	0.23
5	0.06	0.63	5	0.10	0.38
6	0.07	0.52	6	0.10	0.41
7	0.08	0.47	7	0.09	0.42
8	0.16	0.17	8	0.18	0.13
9	0.18	0.11	9*	0.22	0.05
10	0.16	0.16	10*	0.22	0.05
11	0.09	0.44	11	0.12	0.32
12*	0.20	0.07	12*	0.25	0.03
13	0.11	0.35	13	0.13	0.28
14*	0.20	0.08	14*	0.22	0.05
15*	0.26	0.02	15*	0.27	0.02
16	0.16	0.16	16	0.17	0.14
17	0.13	0.27	17	0.13	0.27
18	0.15	0.20	18	0.11	0.33
19	0.13	0.26	19	0.09	0.43
20	0.17	0.13	20	0.12	0.32
21*	0.20	0.09	21	0.13	0.26
22	0.19	0.10	22	0.11	0.36
23	0.15	0.18	23	0.07	0.54
24*	0.23	0.04	24	0.13	0.26

Note: lags statistically different from zero are given with an asterisk
 Source: BBVA Research with Inegi, Infonavit, Fovissste & CNBV data

We additionally compare the mortgage loan forecasting model that we use periodically at **BBVA Research** to the same model but adding the ICV. The result suggests to us that it does actually provide greater information and enhances the adjustment of estimated to observed data. The statistics from both models show that the forecasting model improves when the ICV is included. The estimation made using a Vector Autoregression model enables higher precision detection of the intertemporal causality of exogenous variables over a broader time horizon. Consequently, one of its basic characteristics is that it is over-parametrised, as not all of the lags considered for the variables can be statistically significant. Nonetheless, once it is certain that the errors have minimum variance and are normally distributed, estimation becomes consistent. In our case, the model is constructed with simulation of a system of equations for the number and sum financed for mortgage loans. The table shows that when the ICV is added to the original model the parameters of this variable are significant, while being more lagged than the other variables, particularly formal employment. This is because the housing confidence index has greater built-in certainty with respect to the decision to buy real estate, since the notions of long-term employment and stable income in the case of families take longer to become established. This advance indicator can therefore accurately anticipate consumers' perceptions in connection with the medium-term stability of their finances.

Table 3b.3

VAR estimation. Mortgage loans to buy housing

	Model with ICV		Model without ICV	
	Loans _t	Amount _t	Loans _t	Amount _t
Economic Activity _t	5.9512 [3.7517]	6.2734 [4.7615]	5.3006 [3.0343]	5.9022 [3.9122]
Employment _{t-2}	11.4721 [2.2916]	6.8422 [1.6455]	11.4136 [1.9701]	4.6513 [0.9296]
Employment _{t-10}	11.2925 [2.0508]	14.0648 [3.0753]	12.1884 [1.8890]	13.2797 [2.3832]
ICV _{t-13}	0.3996 [2.6218]	0.2864 [2.2628]		
ICV _{t-15}	0.3217 [2.2708]	0.342 [2.9071]		
R ²	0.956	0.9621	0.9465	0.9501
R ² adjusted	0.9214	0.9322	0.903	0.9097
Akaike (AIC)	-1.4296	-1.8008	-1.2054	-1.4986
Normality Test	0.4666	0.4481	0.63	0.3173

Notes: the Infonavit Total product is not included.

Probability of the t-statistic in brackets; to be significant the value should be greater than or equal to 1.9.

The errors satisfy the convergence test. * The probability should be greater than 0.05 to accept normality

Source: BBVA Research

This result contrasts with the previous results for the durable goods confidence indices, where their contribution is minimal and does not improve modelling. We attribute this to the fact that the decision to buy a house might depend more on long-term expectations, in the sense that the sum involved is the highest that most families spend in Mexico, so a high proportion of these acquisitions are made using loans where the loan periods are longer than in the case of financing for consumption, even for durable goods. Even so, this in itself suggests that further investigation should be made into whether the sum and the loan period have effects on expectations.

Conclusion: the Housing Confidence Index is useful for gaining a better insight into mortgage loan demand

In this section we have presented the Housing Confidence Index (ICV) as an indicator to obtain a better understanding of housing demand in the Mexican market. Although in some cases the conclusion has been that confidence indexes make little or no contribution to forecasting models, this was not the case with the ICV. This index shows a good fit with the dynamics that mortgage lending has exhibited for over 10 years. Our estimation also shows that it does in fact, provide information which offers a good idea of how families might behave with respect to the decision of applying for loans to buy housing in Mexico. Although it is not the only thing, nor the most important item to consider in defining housing demand, it does help towards a better understanding of this side of the market.

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3.c The Infonavit 2015-19 Financial Plan. Financial soundness and a greater amount of lending are key features

In previous years, we have seen the dilemma between quality and quantity that faces Infonavit. Actions of various kinds have been taken to supplement the initial approach, which focuses on loans on a large scale given the existing housing backlog, with one that addresses specific needs and demand expectations among the affiliates.

Consequently, we have seen that the supply of loans has diversified, and continues to do so now with the change in the denomination of loans to pesos and the raising of the upper financing limit. These changes do, however, require the agency to take stock of its long-term financial soundness if it is to continue to perform its task, primarily on the social level of providing housing solutions for those who have no other alternatives.

It is with this in mind that Infonavit has been adapting its strategy plan for 2015 to 2019. Previously, the approach was oriented toward quality of life, sustainable development and giving consideration to the life-cycle of workers in what the agency offered. Without departing from this, it now blends this perspective with financial sustainability, which means that Infonavit's strategy is now based on four core themes:

1. Fortifying the agency's financial soundness by taking a long-term view involving better management and administration of the assets in the National Housing Fund.
2. Offering better comprehensive housing solutions with financial support for workers and their families, and accompanying them at every stage of their working lives.
3. Providing efficient returns for the SCV (Housing Savings Account) by means of schemes which complement the amassing of savings for each worker's retirement in keeping with their needs, expectations and decisions.
4. Being a team that is focused on creating value via a culture of excellence and quality of service.

We will focus on the first two points, which have a direct impact on the real estate market. In combination with an analysis of the 2015-19 Financial Plan, we review the 2015 Annual Operating Programme to familiarise ourselves with the estimates for loan placement.

Financial soundness with a long-term view

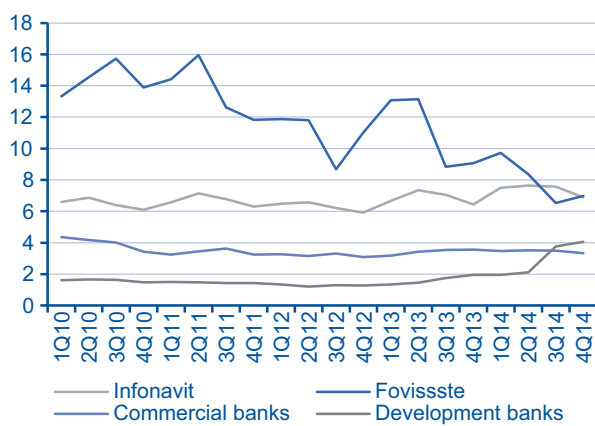
The new aspect in this 2015-19 Financial Plan is treating the agency's financial soundness as one of the central strategic themes. Infonavit's importance for the housing market is undeniable, both for its scheme members to be able to afford some kind of housing solution and for those who offer such solutions, for which reason this strategic theme is especially significant for the housing market. It is for this reason that various tasks are included, which are mainly aimed at risk management and compliance with the standard regulatory measures in the financial sector. Setting up General Risk Coordination in 2014 and including the regulatory framework from the General Circular for Development Organisations and Entities (CUOEF), that was issued by the National Banking and Securities Commission (CNBV), are the two measures which are likely to make the biggest impact on achieving the objective of financial soundness, both of which relate closely to each other.

General Risk Coordination will help in managing credit, operational, market and liquidity risk. Two situations where such coordination offers immediate scope for action are those concerning impairment of the loans portfolio and the risk of a mismatch. Even though the ratio of the past-due portfolio to the total remains stable, this is above the level seen in commercial banking, and more so if the under deferral portfolio is taken into consideration. Meanwhile, the risk of a mismatch could arise from a greater proportion of loans in pesos compared to those in multiples of the minimum wage (times minimum wage, TMW), while the Housing Savings Account (SCV) has to earn positive real returns, which have hitherto been covered using the income over and above the minimum wage provided by the rates on the loans denominated in this unit. Similarly, even though it is not a regulatory obligation, application of the CUOEF by the agency will help to standardise risk management measures in line with the rest of the financial sector, for example, with regard to prudential criteria, rating the portfolio for setting up reserves, in-house control systems and rating the loans portfolio.

On the other hand, there is the practice of charging higher rates on loans for higher-income workers, so as to be able to provide a rate below the cost rate for low-income participants, which is known as a cross-subsidy since it reallocates funds from one group to another. Infonavit has maintained that it applies this subsidy to fulfil its social duty so that the low-income segment, which tends to have problems in obtaining loans in the market, can access financing for a housing solution. Now, besides this reason, it is recognised that this subsidy is necessary to preserve the organisation’s own financial sustainability, which therefore requires that the average portfolio rate should be above the cost rate. Even so, this risk could become lower in 2015, if expectations are fulfilled that only 47% of loans will now target scheme members with incomes of less than 4 TMW, in contrast to the previous figure of 66%.

Figure 3c.1

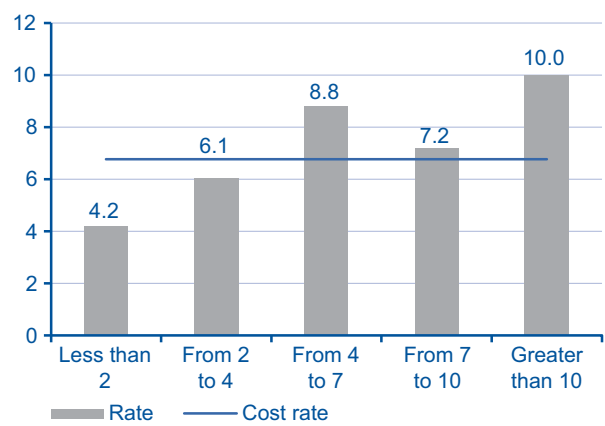
Default rate for the housing portfolio
Default index %



Source: BBVA Research with Infonavit, Fovissste and Banxico

Figure 3c.2

Infonavit: cost rate and portfolio
Annual interest rate %



Source: Plan Financiero 2014-2018, Infonavit (Infonavit financial plan 2014-2018)

Within this strategic theme, a bigger contribution to the Support Fund for Workers’ Housing Needs (Farvit) is also taken into consideration, where a portion of the agency’s cash resources is managed. The new investment system assumes that cash will be accumulated owing to a decrease in housing demand, meaning that there should be a plan in place to obtain better returns from such funds. The goal, naturally, is to do this to fulfil the duty of providing positive real returns for the SCV. Infonavit will also actively pursue the issuance of Cedevis for the sake of balance sheet housekeeping, and intends to raise MXN5bn this year by using this instrument.

Better comprehensive housing solutions for workers and their families

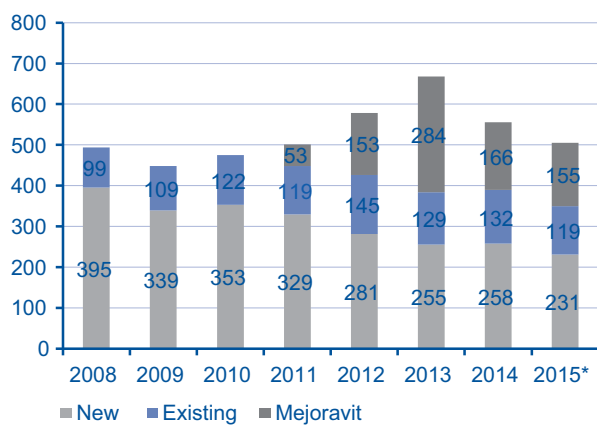
Since the beginning of this decade, the range of Infonavit products on offer has broadened, to address the needs of its scheme participants more satisfactorily as part of an ongoing trend, while the preferences and needs of workers are determined on the basis of the Infonavit National Housing Survey. The first product within the diversification process was the renovation loan, the demand for which far outstripped expected levels in the year that it was launched. The product reached a high point in 2013 with 284,000 loans, while for 2015 some 155,000 loans of this kind are expected to be placed for a total amount of MXN4.8bn. This estimate, which is based on information gathered from workers by Infonavit, bears testament to how established this product has become. Within the range of loan products, the second loan is set to continue, where the rules for allocation have seen a reduction of the time requirement for having been registered with Infonavit from five years to only two years, while the time that has to have elapsed between the first and the second loan drops from one year to only six months. The most eagerly-awaited development, which is likely to make the biggest impact in 2015, will be the peso-denominated loan. The benefit for Infonavit affiliates of changing from a TMW loan to one denominated in pesos is that the risk of making repayments in vain is removed. That is to say, whenever a borrower pays off a full monthly instalment, the debt is guaranteed to be reduced, while

the rate would also come down to an annual 12%. Given the risk to the balance sheet which moving all origination from TMW to pesos implies, it becomes understandable why Infonavit has planned for a target of 140,000 loans of this type instead of applying this format to all new loans, even though, on 29 January 2015, Infonavit did in fact announce that all loans it would originate would be in pesos, as a response to the National Housing Policy that had been announced on 21 January as well. Another recent measure that is intended to cater for housing demand more satisfactorily is to provide for portability of the Housing Savings Account (SCV) between Infonavit and Fovissste, and co-financing between both agencies. In the first case, the worker will be able to pool the balances of their accounts at the agency that suits them best, while in the second case spouses that are members of Fovissste will not have to wait for the draw to obtain financing. Both measures are to the advantage of workers, but even so, if portability of the SCV can be extended to another credit institution which offers better financial terms, the benefits for workers will be greater, as they will be able to access cheaper loans.

With the idea of living up to affiliates' expectations in mind, and besides widening its range of products based on their preferences, Infonavit should also give some thought to the sum and volume of loans that will be applied for. As in other years, there is an initial housing deficit, which is estimated at some 9.8 million, of which 1.8 million cases involve affiliates Infonavit, yet this is recognised as potential demand, which does not necessarily mean that it will be reflected in loans for housing solutions. Nonetheless, this does acknowledge that a large proportion of this pent-up demand seeks financing for housing. Added to this existing potential group, around 950,000 households are expected to emerge each year, of which perhaps 300,000 would presumably be registered with Infonavit.

Figure 3c.3

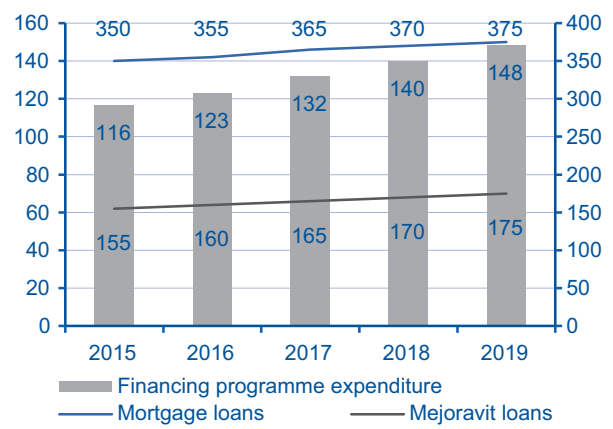
Infonavit loan origination
Thousands of loans



* Estimated for 2015
Source: BBVA Research with Infonavit data

Figure 3c.4

Financing programme expenditure
Billions of pesos and thousands of loans



Source: Plan Financiero 2014-2018, Infonavit

Specifically, in 2014 an increase in effective demand was clearly illustrated by the number of purchase loans, though not as regards the total for loan products. The number of purchase loans stopped falling at the close of 2014, having dropped back every year since 2008. Total purchase loans came down from 494,000 to 384,000 in 2013, although last year they then rose to 390,000. Nevertheless, for 2015 some 360,000 purchase loans are expected to be placed, which implies a lower level of placement for this product. If we bear in mind that Infonavit has no restrictions on liquidity (i.e. that it has the capacity to finance all the applications that qualify), the lower level of origination is likely to be simply because a smaller number of workers is approaching it for loans of this kind. In last year's recovery, which was observed across the whole market, loans for new housing also saw substantial progress in residential construction. Although this only increased by 3,000 new housing units, the good news is that the fall stopped, yet loans for this kind of real estate could fall back once more in 2015, as only 231,000 are expected to be placed, compared to 258,000 in 2014. In the next few years leading up to 2019, more purchase loans are expected to be granted, although without reaching the figure of 390,000 from last year.

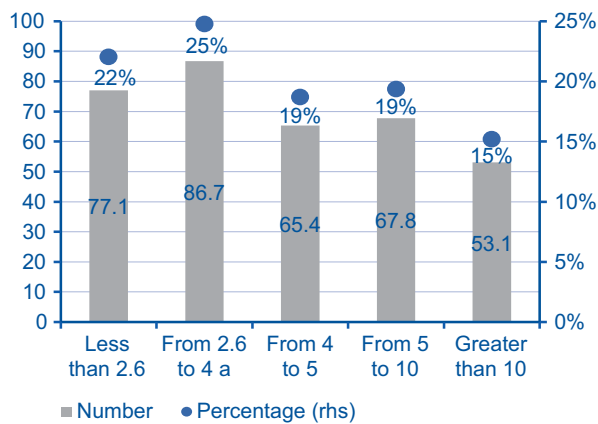
The dynamics will be different when we consider the amount financed instead of the number of loans. At the close of 2014, Infonavit had increased its total amount of purchase loans by 6.7% in real terms. This trend is expected for every year from 2015 to 2019, when financing expenditure should top MXN140bn. It is anticipated that in 2015 a total of MXN116bn will be placed, with an average loan sum of MXN333,000, which will be over 10% more than the average loan in 2014. This situation arises from the increase in the upper limit on loans from MXN483,000 to MXN850,000, and a lower proportion of low-income segments within the total demand. Therefore, in Infonavit's case too one can observe greater participation by the middle-income and residential segments compared to previous years, as is happening within the banking sector.

The 2015 Annual Operating Programme (POA)

Infonavit expects to place 505,000 loans to a value of MXN116.4bn in 2015. This figure is an indication and not a constraint, because if the applications which meet all the requirements exceed this number, there are available funds to cover a larger supply of lending. Most of the loans originated have been for workers with incomes of below 4 TMW, although this is expected to change in 2015 from 66% to 47% of the total number of loans and 40% of the lending volume for this segment. At the end of 2014, less demand was noted from low-income workers. According to the 2014 Annual Operating Programme (POA), loan origination was 8% ahead of estimates for the segment having incomes of over 11 TMW, although it fell short for the other segments, while it was even further below estimates for incomes of less than 2 TMW. On the other hand, for 2015 greater demand is expected among the middle- and high-income segments, where the number and volume of purchase loans for both new and existing housing will be focused.

Figure 3c.5

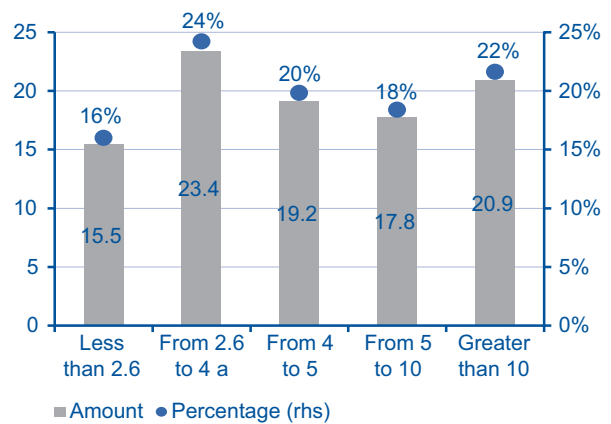
2015 distribution by income in TMW
Thousands of loans and percentage



Source: Plan de Labores y Financiamientos 2015

Figure 3c.6

2015 distribution by income in TMW
Loan amount and percentage

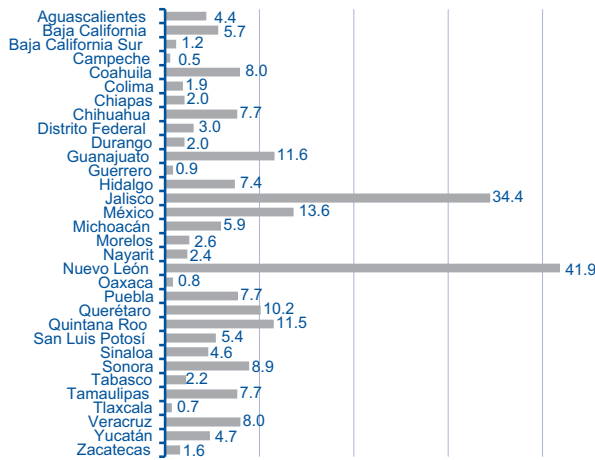


Source: Plan de Labores y Financiamientos 2015

The expected distribution by state of purchase loans for new housing is very different from the case of existing housing. Ex ante it could be thought that new housing might present greater opportunities in cities with larger urban zones and areas of land left idle, while loans for existing housing might be used more in denser urban zones such as the Federal District. According to the placement estimates in Infonavit's 2015 Action and Financing Plan, this seems to be so in most cases. Nuevo León and Jalisco states should account for most of the new housing loans, with 33% of the overall figure for such loans between them. In contrast, existing home loans should present a less concentrated distribution. The Federal District ought to receive almost 8% of loans, though it should be very closely followed by Baja California and Coahuila states. Other states that should also play a big part as regards this type of housing are likely to be Nuevo León, Chihuahua and the State of Mexico. This is partly explained by the fact that the average price of housing in the Federal District is higher than the level usually financed through Infonavit, for which reason, although it has a more extensive pool of housing, its statistics in this respect have not managed to pull clear of the figures in other states.

Figure 3c.7

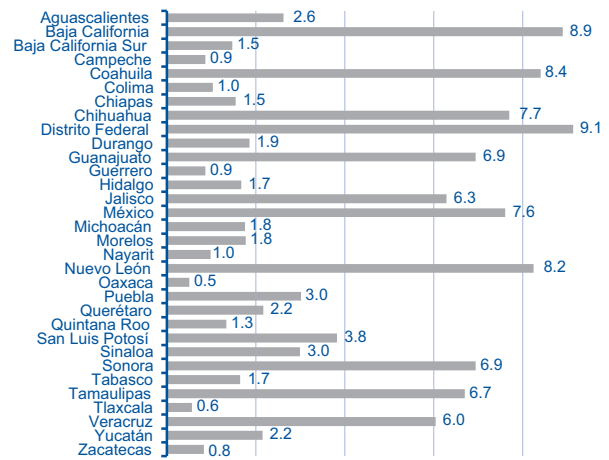
2015 Infonavit new housing origination
Thousands of loans



Source: Plan de Labores y Financiamientos 2015

Figure 3c.8

2015 Infonavit existing housing origination
Thousands of loans



Source: Plan de Labores y Financiamientos 2015

In previous years Infonavit estimates with respect to loan origination have matched real events quite closely. As a rule, over 90% of the POA is fulfilled, even though there appears to be some difference with regard to the distribution by income segment. Several measures have been taken to incentivise greater loan amounts, for which reason the POA can be expected to be fulfilled for middle- and high-income segments.

Conclusion: a lower number of loans but a greater amount of financing will be placed in 2015

Treating financial soundness as a central theme of Infonavit’s strategy is a good sign for the market overall, and not just this particular organisation. Most people have come by a housing solution through Infonavit, mainly low-income workers. Nonetheless, financial health is not only beneficial for its affiliates, but also for housing construction firms, marketers and even the banks, which gain a portion of the market via co-financing arrangements. There are areas where less participation by Infonavit could in fact lead to greater efficiency in the market, such as allowing portability, so that borrowers can take their mortgages to the banks and consequently pay less for their existing loans, or in being able to use the balance in the SCV at the credit institution which suits the worker best. Even so, there is no question that, thanks to Infonavit’s participation, the housing market has developed, in addition to which mention should also be made of the role also played by the SCV also at the retirement stage.

On the other hand, Infonavit estimates for loan placement during 2015 indicate that there is likely to be a contraction in the number of financings but the amount of financing should continue to grow. The lower level of activity in terms of loan numbers is merely due to a demand correction and not to any choking off of the supply of loans on the part of the agency, as it has the necessary funds to satisfy greater demand. The income distribution in the POA lends weight to the view that the housing market intends to cater more for the middle-income and residential segments, and not only for social housing, which has been given priority for some years now, and rightly so, as this is the segment that matters most for the majority of workers affiliate to Infonavit.

4. Statistical Appendix

Table 1

Annual macroeconomic indicators

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015p
Real GDP¹ (annual % change)	3.3	5.0	3.1	1.2	-4.5	5.1	4.0	3.8	1.7	2.1	2.5
Private consumption, real (annual % change)	4.7	5.5	3.0	1.7	-6.3	5.7	4.8	4.7	2.5	2.0	2.5
Government consumption, real (annual % change)	2.9	3.3	2.4	3.2	2.3	1.6	2.5	3.3	1.6	2.5	1.8
Investment in construction, real (annual % change)	3.4	7.4	5.1	6.2	-5.7	-0.2	3.0	2.0	-4.4	0.5	1.5
Residential	4.1	10.7	4.0	2.4	-11.6	-0.6	4.1	1.4	-4.9	3.0	2.1
Non-residential	2.8	4.5	6.1	9.6	-0.7	0.1	2.3	2.5	-4.1	-1.4	1.1
Formal private employment (IMSS) ² , total	12,966	13,574	14,145	14,436	13,994	14,524	15,154	15,856	16,409	16,913	17,478
Annual % change	3.2	4.7	4.2	2.1	-3.1	3.8	4.3	4.6	3.5	3.1	3.3
Avg. salary of cont. (IMSS, nominal pesos per day, avge.)	1899	2000	211.0	222.3	231.6	239.2	249.3	260.1	270.2	282.1	
Annual % change	2.6	1.2	-44.6	10.7	9.7	7.5	7.8	8.6	7.8	8.6	
Real total wages (IMSS, annual % change)	5.9	6.0	-42.3	13.0	6.4	10.6	13.0	14.1	11.6	12.5	
Minimum general salary (daily, nominal pesos)	45.2	47.1	48.9	50.8	53.2	55.8	58.1	60.5	63.1	65.6	
% real annual change	1.1	-0.1	0.1	-1.3	-0.4	0.6	1.0	-0.1	0.4	-0.1	
Consumer prices (end of period, annual % change)	3.3	4.1	3.8	6.5	3.6	4.4	3.8	3.6	4.0	4.1	
TIIE 28 average (%)		7.5	7.7	8.1	6.7	4.9	4.8	4.8	4.3	3.5	
10-year interest rate, 10 year Govt bond (M10)		8.3	7.8	8.3	8.0	6.9	6.8	5.7	5.7	6.0	

¹ Seasonally adjusted series.² Thousands of people

Source: BBVA Bancomer with Banco de Mexico, Conasami, INEGI and IMSS

Table 2

Annual construction and housing indicators

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015p
Real GDP (annual % change)	3.6	8.7	4.7	3.8	-6.1	-0.5	4.1	2.5	-4.8	1.9	2.5
Building	2.4	10.9	3.5	2.0	-11.1	-0.4	4.3	2.7	-5.2	3.0	2.3
Civil engineering and major works	10.4	2.9	11.2	20.0	6.7	3.6	2.9	1.0	-4.7	-2.7	2.5
Specialized construction work	1.2	3.5	2.8	-12.4	4.8	1.9	5.6	4.3	-2.5	6.2	3.5
Construc. empl. (IMSS, thousands people, avg.)	1,019.9	1,132.8	1,203.8	1,209.5	1,103.6	1,145.5	1,199.5	1,275.2	1,289.8	1,383.5	
Annual % change	5.2	11.1	6.3	0.5	-8.8	3.8	4.7	6.3	1.1	7.3	
Hydraulic cement prod. (tons, ann. % change)	11.1	7.7	0.9	-2.8	-3.1	-2.9	1.5	2.1	-5.9	4.1	
Nat'l. cement consumption (tons, ann. % chge.)	10.1	6.7	0.0	-3.7	-6.1	-5.3	1.4	2.5	-6.0	3.9	
Construc. comp.¹ (real prod. value, ann. % chge.)	4.2	220.3	2.2	-2.2	-8.6	3.3	3.2	3.4	-3.7	0.0	
Building	9.0	230.3	6.5	-2.3	-18.6	-5.3	6.3	2.0	-5.6	3.0	
Public works	0.2	229.0	-2.1	-1.5	8.0	9.8	0.3	0.5	-4.4	-3.0	
Water, irrigation and sanitation	-1.3	135.2	-23.4	4.3	4.9	3.7	10.5	1.9	-6.0	-6.9	
Electricity and communications	-28.4	216.3	-12.6	15.4	8.2	27.0	21.4	-6.8	-2.2	-11.0	
Transportation	6.9	283.4	6.6	6.3	9.5	8.0	-2.8	-2.7	-7.8	2.9	
Oil and petrochemicals	5.7	211.2	-4.2	-24.3	5.3	9.5	-7.7	14.7	3.6	-10.2	
Other	-0.8	136.9	-3.2	-6.0	-31.5	21.5	6.2	36.4	10.6	2.3	
Resid. construc. prices, general (ann. % change)	0.6	11.8	2.9	13.1	-1.0	4.8	9.3	0.4	-0.7	4.3	
Construction materials (annual % change)	-0.2	14.1	2.6	15.5	-1.8	5.2	10.6	-0.2	-1.4	4.5	
Labor (annual % change)	3.8	3.8	4.4	3.5	3.1	3.3	3.8	3.2	2.9	3.5	
Rental equipment (annual % change)	2.8	2.8	2.9	6.9	1.8	3.2	5.3	-0.2	1.4	4.1	

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

Source: BBVA Bancomer with Banco de Mexico, INEGI, IMSS.

Table 3

Annual housing credit indicators

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of loans granted (thousands)											
Total	476.0	567.5	670.8	725.7	746.5	632.8	639.7	599.3	571.0	537.9	545.1
Infonavit	306.0	376.4	421.7	458.7	494.1	447.5	475.0	445.5	421.9	380.6	387.0
Fovissste	59.4	48.7	76.6	68.4	90.1	100.1	87.8	75.2	64.3	65.9	63.1
Commercial banks and others	110.6	142.4	172.5	198.6	162.3	85.2	76.9	78.6	84.8	91.3	94.9
Reduction ¹		38.1	73.7	79.2	80.8	39.4	30.7	23.4	26.7	25.3	26.1
Individual credits	472.8	529.4	597.1	646.5	665.6	593.4	609.0	575.9	544.3	512.6	519.0
Financing flow (billions of pesos, December 2014 prices)											
Total	146.6	193.9	273.5	306.3	319.3	261.2	247.1	254.5	247.2	244.3	260.3
Infonavit	88.4	112.7	127.4	136.9	144.7	126.1	129.6	136.0	120.3	104.7	111.6
Fovissste	25.6	22.2	35.0	29.9	37.5	57.7	49.3	39.3	35.9	35.8	38.8
Commercial Banks and others	32.6	59.0	111.1	139.6	137.1	77.3	68.1	79.2	91.0	103.8	109.8
Commercial banks current loan portfolio											
Balance end of period (billion pesos, Dec. 2014 prices)	351.2	406.5	466.1	493.0	465.4	434.0	461.5	476.7	499.0	494.6	516.3
Past-due loans index (%)	7.0	2.4	2.0	2.5	3.2	4.4	3.4	3.2	3.1	3.5	3.3

¹ It refers to financing (loans and grants) that are considered in two or more institutions.

Source: BBVA Bancomer with Banco de Mexico, CNBV, Infonavit, Fovissste and ABM.

Table 4

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

	12'I	II	III	IV	13'I	II	III	IV	14'I	II	III	IV
National	6.2	6.4	3.8	2.9	2.9	3.9	4.4	4.1	5.0	3.4	4.1	5.1
Aguascalientes	5.0	5.2	2.7	1.9	2.2	3.3	4.9	5.0	6.4	5.2	5.4	6.7
Baja California	6.4	6.1	2.5	2.0	2.1	3.2	4.0	3.3	4.2	2.7	3.5	4.2
Baja California Sur	7.3	7.8	5.1	4.5	4.8	5.1	4.6	3.1	2.7	0.8	1.3	2.4
Campeche	7.1	8.0	5.5	4.8	5.7	6.2	6.0	4.9	4.4	2.4	3.3	4.7
Chiapas	6.7	7.0	4.5	3.7	3.6	4.4	4.4	3.9	4.8	2.9	3.8	4.7
Chihuahua	3.9	5.1	3.0	2.3	3.1	4.5	5.1	4.5	4.2	1.9	2.4	3.9
Coahuila	7.0	7.2	4.1	3.3	3.7	4.5	4.9	4.3	4.8	3.3	4.5	5.5
Colima	6.5	6.6	3.8	2.9	2.7	3.7	4.1	3.9	5.1	3.5	4.2	5.0
Distrito Federal	8.7	9.7	7.0	5.8	5.3	6.6	7.2	7.0	8.2	6.8	7.8	9.2
Durango	6.9	6.7	3.4	1.9	2.0	3.6	4.7	5.4	7.1	5.6	7.0	8.1
Guanajuato	7.2	7.3	4.4	2.8	3.0	3.9	3.9	3.4	3.6	1.9	3.0	4.3
Guerrero	4.6	5.0	3.2	2.9	2.9	4.0	4.7	4.9	6.3	5.1	5.3	5.2
Hidalgo	9.1	8.3	4.1	1.7	1.4	2.8	3.3	3.3	3.9	1.5	2.3	3.7
Jalisco	3.2	3.5	1.9	2.0	2.3	3.0	3.1	2.8	4.5	2.7	3.5	4.0
Mexico	5.0	5.5	3.3	2.8	2.7	3.8	4.6	4.7	6.1	4.8	5.2	5.4
Michoacán	7.0	6.8	3.7	2.0	2.5	4.0	4.5	4.3	4.4	2.1	2.9	4.1
Morelos	6.4	6.3	3.3	2.2	2.1	3.8	5.1	5.0	5.8	3.9	3.6	3.7
Nayarit	6.7	7.1	4.2	2.8	2.6	3.1	2.6	1.1	1.1	-0.8	-0.2	1.5
Nuevo León	5.8	6.3	3.6	2.5	2.8	3.7	3.6	2.7	3.0	1.2	2.6	4.3
Oaxaca	7.8	7.1	3.2	1.5	2.3	4.4	5.8	5.6	6.0	3.9	4.4	5.5
Puebla	7.4	6.4	2.8	1.9	2.3	4.3	5.7	5.0	5.9	3.9	4.2	5.0
Querétaro	4.5	4.8	2.7	2.4	2.4	3.9	4.9	5.3	6.7	5.2	5.6	5.4
Quintana Roo	3.7	3.5	0.8	0.1	0.4	1.2	2.3	1.8	2.6	0.7	-0.6	0.2
San Luis Potosí	8.0	8.0	5.0	3.4	3.3	4.1	3.9	3.2	3.3	1.3	2.3	3.6
Sinaloa	7.6	7.8	5.2	4.0	3.6	4.0	3.6	2.7	2.9	0.9	1.7	2.9
Sonora	7.0	7.4	4.5	3.4	3.1	3.8	4.1	3.8	4.9	3.4	4.3	5.3
Tabasco	7.6	7.1	3.6	2.4	2.9	4.1	4.9	4.8	5.9	4.8	6.3	7.2
Tamaulipas	5.9	5.8	2.8	1.2	1.3	2.4	2.7	3.1	5.0	4.2	6.5	8.2
Tlaxcala	7.6	6.7	2.8	0.6	0.9	3.3	5.0	5.6	7.2	5.2	6.1	7.7
Veracruz	6.5	7.2	4.9	4.0	4.0	4.6	4.3	3.8	4.5	2.5	3.5	4.6
Yucatán	7.1	8.0	5.3	4.2	4.3	4.9	5.3	4.4	4.6	3.0	3.7	5.2
Zacatecas	5.5	7.1	4.6	3.7	3.8	4.2	4.8	4.2	4.9	3.5	4.5	6.5

Source: BBVA with SHF data

Table 5

Quarterly macroeconomic indicators

	11'IV	12'I	II	III	IV	13'I	II	III	IV	14'I	II	III	IV
Real GDP (annual % change)	4.2	3.8	4.5	3.3	3.4	3.3	0.7	1.6	1.0	0.9	2.8	2.2	2.6
Real private consumption, (annual % change)	4.2	6.2	4.8	3.3	4.4	3.9	2.5	2.5	1.0	0.5	2.4	2.2	2.7
Real government consumption, (ann. % change)	4.1	4.4	4.7	2.4	1.7	1.0	0.6	2.1	2.7	2.2	2.1	3.8	1.8
Real const. investment, (annual % change)	6.5	2.5	3.6	2.3	0.0	-3.0	-3.5	-6.3	-4.8	-2.3	-2.0	2.7	3.2
Residential	4.1	2.1	3.3	0.5	-0.2	-3.0	-3.8	-7.2	-5.3	-2.6	0.1	5.7	8.4
Non-residential	8.4	2.8	3.8	3.7	0.1	-3.0	-3.2	-5.7	-4.4	-2.1	-3.6	0.5	-0.6

Source: BBVA Research with INEGI data

Table 6

Quarterly construction and housing indicators

	11'IV	12'I	II	III	IV	13'I	II	III	IV	14'I	II	III	IV
Construction GDP, real. (annual % change)	4.8	3.3	4.1	2.5	0.2	-3.2	-4.0	-6.9	-4.9	-1.6	-0.6	3.7	5.9
Building	4.9	3.6	4.9	1.9	0.8	-3.0	-4.4	-7.1	-5.9	-1.9	0.0	4.9	8.3
Construction engineering and major works	3.7	2.5	1.7	2.4	-2.2	-4.2	-4.2	-7.6	-2.7	-4.2	-4.1	-1.1	-1.5
Specialized construction work	7.1	3.4	4.4	7.2	2.0	-1.5	-1.0	-4.5	-2.8	6.7	3.5	6.4	8.2
Construction companies ¹ (annual % change)	3.8	1.8	5.3	7.2	1.5	-1.8	-1.5	-6.3	-4.9	-1.6	-2.6	1.1	2.7
Building	7.3	1.4	5.8	2.5	0.5	-3.4	-4.8	-7.1	-6.9	-0.8	-0.6	4.5	8.1
Public works	-0.2	-1.6	0.3	6.0	-1.2	-4.1	-3.9	-7.3	-2.4	-4.1	-4.5	-2.2	-1.5
Water, irrigation and sanitation	14.5	9.3	9.3	5.7	-11.3	-28.1	3.9	-7.1	9.7	11.5	-23.6	-8.8	-2.2
Electricity & communications	24.4	-2.6	-6.1	-1.8	-16.5	-10.8	-11.4	7.6	6.6	-11.0	-6.6	-18.9	-6.6
Transportation	-4.4	-7.0	-4.8	1.2	-0.2	-4.0	-9.3	-13.6	-4.1	0.2	0.8	8.5	2.1
Oil and petrochemicals	-7.5	9.6	17.3	26.5	11.1	16.6	11.8	-0.2	-7.8	-16.3	-5.5	-12.5	-7.1
Other	11.7	34.3	55.6	51.3	24.4	21.6	37.0	3.9	-7.7	7.7	-1.6	3.1	0.6

Source: BBVA Research with INEGI and Banco de México data

Table 7

Quarterly housing market indicators

	11'IV	12'I	II	III	IV	13'I	II	III	IV	14'I	II	III	IV
Home sales by organization (thousands of credits)													
Infonavit	123.7	102.1	115.4	108.7	95.8	82.7	99.9	92.1	106.0	71.8	92.8	100.2	122.3
Fovissste	31.9	14.5	19.9	15.7	14.2	12.6	18.0	16.0	19.2	13.7	16.8	11.1	21.5
Banks	14.6	13.1	13.9	15.3	15.7	13.1	16.1	17.4	19.4	15.0	16.2	17.7	19.9
Total	170.2	129.7	149.3	139.7	125.6	108.5	133.9	125.5	144.6	100.5	125.8	129.0	163.7
Financing (billions of December 2014 pesos)													
Infonavit	37.1	28.7	31.9	30.8	28.9	22.9	27.0	25.3	29.6	19.9	26.4	28.9	36.5
Fovissste	16.7	7.9	11.2	8.8	8.1	6.6	9.8	8.8	10.6	7.8	10.2	6.9	13.9
Banks	23.1	20.1	21.9	24.1	25.0	19.5	24.8	27.5	31.9	23.2	26.3	28.8	31.6
Infonavit: number of credits to buy a house (thousands)													
Economic + Popular ²	86.7	74.5	84.3	74.9	59.3	60.3	70.1	62.2	72.1	51.3	61.3	69.8	87.5
Traditional	27.2	19.7	22.7	23.9	26.2	15.4	20.5	19.9	21.7	14.1	19.0	19.0	21.5
Middle income	7.8	6.1	6.6	7.7	8.0	5.6	7.4	7.8	9.4	5.0	10.1	9.0	10.5
Residential	1.8	1.5	1.5	1.8	1.9	1.3	1.6	1.9	2.3	1.2	2.1	2.1	2.3
Residential Plus	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.5	0.2	0.4	0.4	0.4
Total	123.7	102.1	115.4	108.7	95.8	82.7	99.9	92.1	106.0	71.8	92.8	100.2	122.3

Source: BBVA Research with Banco de México, CNBV, Infonavit, Fovissste and Asociación de Bancos de México (ABM). data

Table 8

Quarterly housing credit indicators

Commercial banks current loan portfolio													
Past-due loans index (%)	3.2	3.3	3.1	3.3	3.1	3.2	3.4	3.5	3.5	3.5	3.5	3.5	3.3

¹ Consider 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 Research with INEGI, and Banco de México data.

Table 9

Monthly macroeconomic indicators

	S.13	O	N	D	J.14	F	M	A	M	J	J	A	S	O	N	D
IGAE (annual % change)	12	16	0.3	1.7	1.0	1.7	3.4	0.4	1.8	2.9	2.5	1.3	3.0	2.6	2.0	3.2
Real construction vol. (ann. % change)¹	-8.2	-7.7	-4.9	-2.0	-2.0	-2.5	-0.2	-3.8	-0.3	2.3	3.2	3.6	4.3	6.0	4.9	6.8
Building	-7.9	-7.7	-6.6	-3.5	-2.3	-3.5	0.0	-4.0	1.1	2.9	4.8	5.1	5.0	8.5	6.4	10.1
Civil engineering and major works	-9.8	-8.8	-0.6	1.4	-4.6	-3.6	-4.4	-5.0	-6.0	-1.3	-2.6	-1.1	0.5	-1.6	-0.9	-2.0
Specialized construction work	-5.6	-4.8	-3.0	-0.2	6.2	6.2	7.6	1.0	3.4	6.0	5.7	4.5	9.2	7.3	9.6	7.6
Formal private empl. (IMSS, mills)²	16,509	16,652	16,773	16,525	16,547	16,673	16,781	16,837	16,885	16,929	16,966	17,024	17,180	17,352	17,475	17,240
Annual % change	3.0	2.9	2.9	2.9	2.7	2.7	3.1	3.0	3.2	3.5	3.7	3.7	4.1	4.2	4.2	4.3
Average salary quote³	2691	2678	2684	2681	282.3	282.0	280.1	280.3	283.3	282.6	285.8	284.8	281.6	280.0	281.5	280.9
Real annual % change	7.2	7.1	7.4	7.8	8.5	8.4	8.0	7.8	8.0	8.3	9.0	9.0	9.0	9.1	9.2	9.1
Real total wages (IMSS, ann. % chge.)	10.4	10.3	10.6	10.9	11.5	11.4	11.3	11.0	11.5	12.0	13.0	13.0	13.5	13.7	13.8	13.8
Minimum general wage (daily, pesos)	631	631	631	631	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6
CPI (end of period, annual % change)	3.4	3.4	3.6	4.0	4.5	4.2	3.8	3.5	3.5	3.8	4.1	4.1	4.2	4.3	4.2	4.1
TIIE 28 (average, %)	4.1	4.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.4	3.3	3.3	3.3	3.3	3.3	3.3
10-year Gov. bond interest rate (MIO)	6.1	6.0	6.2	6.4	6.6	6.3	6.2	6.2	5.8	5.7	5.8	5.7	6.1	5.9	5.8	5.9

¹ industrial activity index

² Thousands of persons

³ Nominal pesos per day for the number of members of the IMSS

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

Table 10

Monthly construction and housing indicators

	S.13	O	N	D	J.14	F	M	A	M	J	J	A	S	O	N	D
Construction emp. (IMSS, thousands)	1,321	1,350	1,351	1,267	1,278	1,302	1,317	1,331	1,355	1,373	1,403	1,420	1,445	1,486	1,490	1,403
Annual % change	-1.2	-0.2	1.6	2.0	2.2	3.4	5.9	4.7	6.5	7.0	8.2	8.2	9.4	10.1	10.3	10.7
Cement sales (tons, annual % change)	-16.3	-9.3	-3.5	2.8	-0.1	-1.5	6.2	-3.7	2.6	-0.7	1.9	8.6	11.0	7.5	6.1	11.7
Cement consum. per inhab. (ann. % chg.)³	-16.6	-9.6	-3.9	2.4	-0.4	-1.8	5.8	-4.0	2.3	-0.9	1.9	8.6	11.0	7.5	6.1	11.7
Construction prices (annual % change)	-0.5	-0.5	-0.8	-0.7	0.5	0.8	1.6	1.9	2.3	2.9	3.9	4.1	4.1	4.2	4.4	4.5
Materials (annual % change)	-1.2	-1.2	-1.5	-1.4	0.0	0.3	1.3	1.6	2.0	2.9	4.0	4.3	4.3	4.3	4.5	4.5
Labor (annual % change)	3.0	2.9	2.9	2.9	3.4	2.9	2.8	3.0	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Machinery Rental (annual % change)	1.5	1.4	1.1	1.4	3.0	3.6	4.0	4.2	4.0	3.2	3.6	4.1	4.1	4.6	3.8	5.1

³ The volume of cement production is used as a proxy for consumption
 Source: BBVA Research with Banco de México, INEGI, and IMSS data

Table 11

Monthly housing credit indicators

	S.13	O	N	D	J.14	F	M	A	M	J	J	A	S	O	N	D
Comm. banks loan portf. (bal., bn pesos*)	493.7	492.3	494.0	494.6	494.3	494.7	500.6	502.3	509.7	508.4	505.2	507.6	510.2	511.7	514.3	516.3
Annual % change	3.4	3.2	3.8	3.1	2.4	3.7	4.6	4.5	4.6	4.9	3.3	3.2	3.4	3.9	4.1	4.4
Total annual cost (CAT)	13.7	13.5	13.3	13.4	13.5	13.4	13.4	13.4	13.3	13.4	13.3	13.3	13.3	13.3	13.3	13.3

* December 2014 pesos

Source: BBVA Research with Banco de México and INEGI data

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