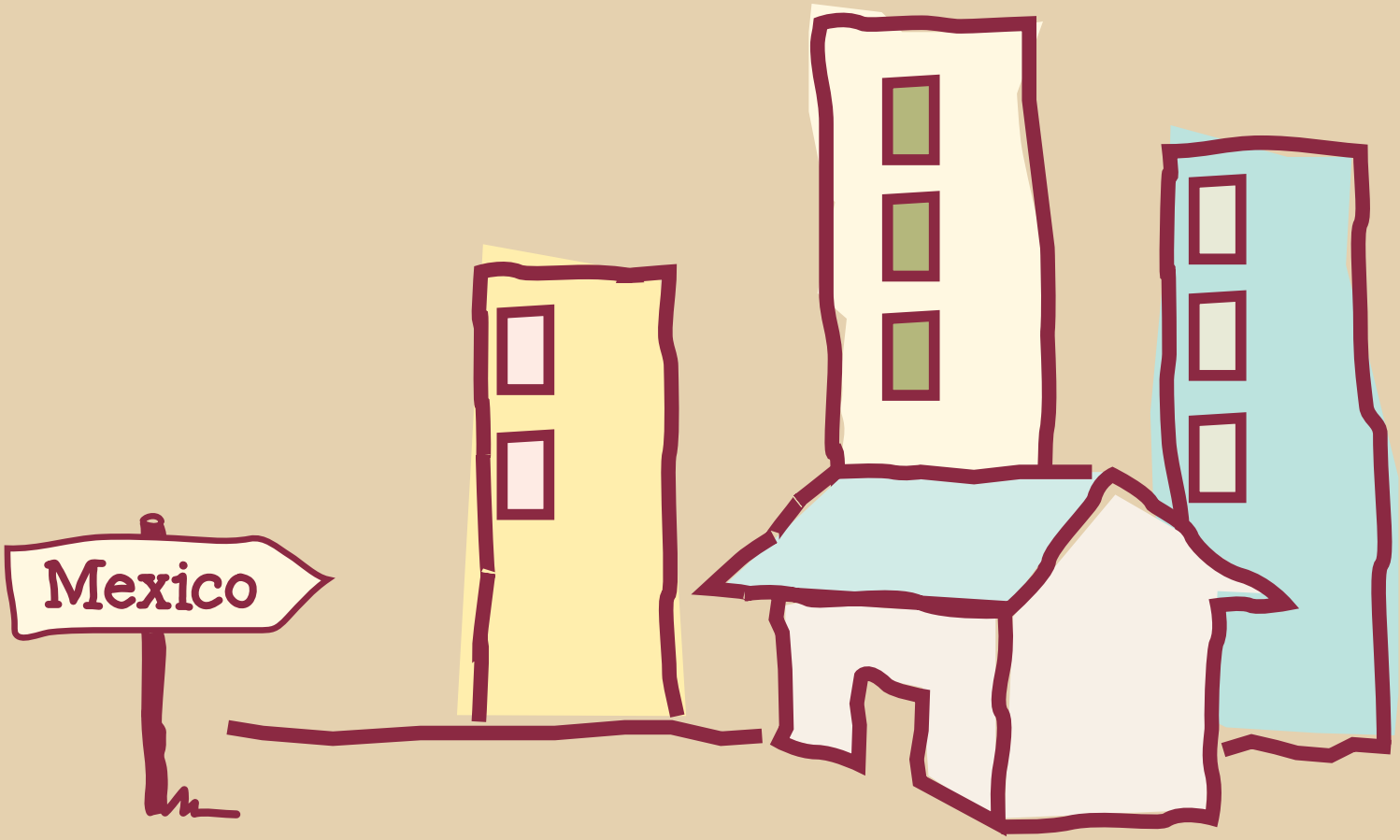
BBVA Bancomer

Real Estate Watch

Economic Research Department

January 2009



Editorial

2009 will be one of challenges for the housing sector in Mexico. The downturn in the Mexican economy will deepen and become generalized, and there is considerable uncertainty concerning the degree of its adjustment, mainly as a result of international conditions. Even though we would have to characterize 2008 as a good period for housing, since in general the sector maintained its rhythm of sales at levels close to their historical highs, during the year the differentiated effects on a regional level and by segments became increasingly evident. Since 2007 a lower growth rate began to be noted in the areas most influenced by the U.S. economy, such as the country's northern border and some beach destinations. This year, it is likely that the trend toward moderate growth will become generalized, and its scope will greatly depend on the evolution of the U.S. economy.

The government has adopted the correct measures to maintain the sector's dynamism. The availability of financing from public housing agencies has been maintained, particularly in the cases of Infonavit and Sociedad Hipotecaria Federal (the Federal Mortgage Agency), subsidies (such as the Green Mortgage program) will be strengthened and generalized, and it is possible that interest rates will remain unchanged for the low-income segments of the population. Contrary to what occurred in other similar episodes, the idea is to cushion the effects for the low-income strata of the population that are more vulnerable to changes in the economic environment. The private sector also continues to offer financing with more selective criteria, but maintaining fixed interest rates and long-term resources.

2009 also must be perceived as one of opportunities. The process of adaptation to the new economic environment already began a few months ago. The rhythm of new housing starts has significantly slowed down and inventories, particularly for low and medium-income segments of the population, have decreased. In a scenario of soft moderation in economic activity, these trends will continue, which could be an element for a more rapid recovery in the medium term. In the short term, there will be greater competition for buyers and the low levels of job creation and their eventual reduction will impact real demand for housing, with probable additional downward price adjustments. Developers are moving ahead, adapting and adjusting projects to the real demand for housing. There will be a financial clearing process and it is possible that some homebuilders, those with high operating costs or experiencing financial vulnerability might leave the sector. Sector loan allocating processes will be fine-tuned and financial companies will probably concentrate.

These elements point to two essential characteristics of this year. First, we will be experiencing the low end of the housing cycle, but the structural bases of the sector are solid and we do not anticipate a halt in activity, but rather reduced growth. Secondly, there will be a medium term consolidation of the sector, and competition will generate financial improvement for homebuilders and financial companies. The issues of the transformation and modernization of the sector should not be forgotten: we raise two questions for reflection, the supply of land, as a limiting factor in housing construction, and sustainable comprehensive urban developments, as an interesting case of new urban models with characteristics that can be adapted to other segments of the market.

Contents

Closing date: January 9, 2009

January 2009

Short-term

Special Articles

This publication was prepared by:

Editor: Adolfo Albo a.albo@bbva.bancomer.com

Leonardo González leonardo.gonzalez@bbva.bancomer.com

Octavio Gutiérrez o.gutierrez3@bbva.bancomer.com

Ociel Hernández o.hernandez@bbva.bancomer.com

Alma Martínez alma.martinez@bbva.bancomer.com

Fco. Javier Morales francisco.morales@bbva.bancomer.com

Cecilia Posadas c.posadas@bbva.bancomer.com

Eduardo Torres e.torres@bbva.bancomer.com

Art: Fernando Tamayo fernando.tamayo@bbva.bancomer.com

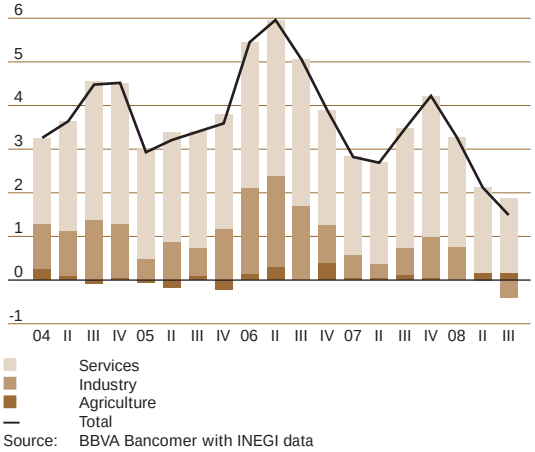
Editorial Board:

Baralides Alberdi, Adolfo Albo, Eduardo Osuna, Víctor M. Requejo, Julio Sáenz, Ignacio San Martín, Isidoro Sánchez, Jorge Sicilia

* We thank Alejandro Morales of Hipotecaria Nacional for the search and interpretation of statistical information

GDP: Components and Contribution to Growth

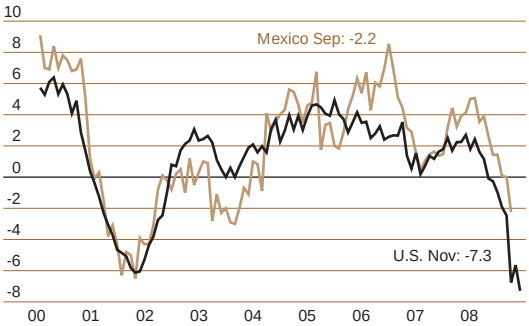
Annual % change and percentage points



Source: BBVA Bancomer with INEGI data

Manufacturing Production

Annual % change, seasonally-adjusted series



Source: BBVA Bancomer with INEGI and U.S. Federal Reserve data

The Mexican economy is experiencing a complicated cycle with regard to growth, which has originated basically in external factors. Currently, our country has greater structural solidity compared to past episodes of international slowdown, which will help mitigate the deterioration in the U.S. Despite this, economic activities directed to the domestic market (such as is the case of the construction industry) will tend to feel the effects of this cycle, even though its adjustment will be lower than with other similar cycles. Within this context, it is important to characterize the nature of the current process of the economic slowdown in Mexico in order to understand its potential magnitude, the activities that could be most affected, how and when there could be a recovery, and the main risks that the country will be facing going forward.

Thus, following is a description of the recent performance of the economy, as is the economic-financial outlook for the next two years, and the main risks and opportunities that could occur in the current environment.

Characterizing the current cycle of the economy

Economic Activity: In Mexico, a moderation of economic activity was observed throughout 2008, posting annual growth of 3.3%, 2.1% and 1.6% in the first three quarters of the year. In line with the events in the U.S. (declaration of a recession by NBER), the GDP figures confirm that the "turning point" for the Mexican economy was observed at the end of 2007, reflecting the high synchronization between both economies. In its origin, the lower growth was derived from the external market, but gradually it has also been transmitted to the domestic market and has led to a generalization in practically all the components of aggregate demand.

The industrial sector has been one of the most affected within the current context, due both to the linkage with the U.S. and sensitivity to the global financial instability. Despite this, the slowdown in industrial supply has not been homogenous: electric production stands out due to its favorable evolution (7.8% and 2.1% in the first and second quarters of the year), and, because of its contraction, mining (cumulative contraction of 12% in two years, because of a decrease in oil extraction and mining strikes); while the rest are showing a generalized slowdown.

In manufacturing, of note is the performance in automobile and auto parts production, which contributes 14.4% of total exports and 18.5% of manufacturing exports. Although GDP growth in this sector was high in the first half of the year (an annual 19%), it began to give signs of a sharp slowdown by the third quarter (1.86%). This implied that growth in the whole of the manufacturing industry will slow down from 3.5% (first half) to -0.2% (third quarter). It should be noted that the production of durable goods —such as automobiles— is highly sensitive to changes in buyers' income, to financing availability and conditions, to external competition, and to the strategy of global manufacturers (i.e. automobiles) as to their production decisions among the different countries where they have a presence. This is

why the contraction in the estimated personal income in the U.S. implies a greater drop in the production of durable goods both in that country and in Mexico.

The risks are greater going forward, particularly if we consider that the situation of some of the U.S. auto assembly companies has deteriorated recently, even considering the help packages provided by the U.S. government for this sector. The restructuring of the automobile sector in the NAFTA region will be imminent, which could imply a drop in production of that important region in the short term, but without ruling out Mexico's opportunity to later increase its share in regional production due to its lower costs.

The services sector continues to be characterized for showing greater expansion than the average for the economy as a whole (see graph). This has been possible to a great extent due to the macroeconomic stability achieved in recent years resulting from the solid economic fundamentals reflected in relatively anchored inflation (observed and expected) compared to the past; on lower operating risks in the economy; and, as a last instance, on a broader penetration of the financial markets in the economy. Despite this, provision of services has not been inert to the lower strength of the industrial sector, since its last impulse since the end of 2007 has implied lower demand for related services (to companies, transportation, leasing, etc.), which implies that it has slowed down,—though at a slower pace—its growth of 5.2% in the fourth quarter of 2007 to 2.8% in the third quarter of 2008.

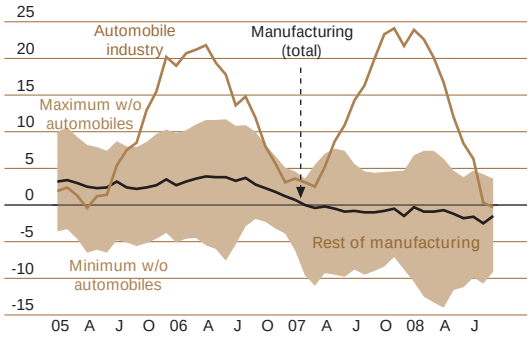
In this environment, the creation of new formal jobs has posted a gradual slowdown throughout the last 27 months: by November 2008, its annual percentage change was 0.8% (equivalent to 116,000 jobs) which is significantly lower than its maximum in July 2006, with an annual expansion of (700,000 new jobs). The lower growth rate in employment is generalized, but, with differences among the productive sectors: services for companies and commerce (4.9% and 3.4%, respectively) show favorable growth; but the construction and manufacturing sectors lost 27,000 and 185,000 jobs, respectively.

Construction Industry: Construction has lost momentum as of the middle of 2006, with very low expansion in recent quarters and negative in the third quarter of 2008 (an annual -1.1%). In particular, the sharpest drop in said period was registered in specialized construction jobs (an annual -4.7%) which, together with the decrease in building (-1.1%) point to the lower appetite in private investment. For its part, the relatively better performance of public works in that quarter (an annual -0.05%) is explained by the incipient boost of public investment projects to infrastructure that has been limited up to now by the delay in exercising spending. It is worthwhile to underscore that the annual adjustment downward in the third quarter of 2008 is the highest observed in construction since 2002.

The paltry strength in construction can be explained by: (1) the slowdown in total wages since June 2006, which moderated mortgage loans and demand for housing; (2) the rise in prices of raw material during the early months of 2008, which affected producers' cost structure as well as their production strength at slightly more pres-

GDP: Components and Contribution to Growth

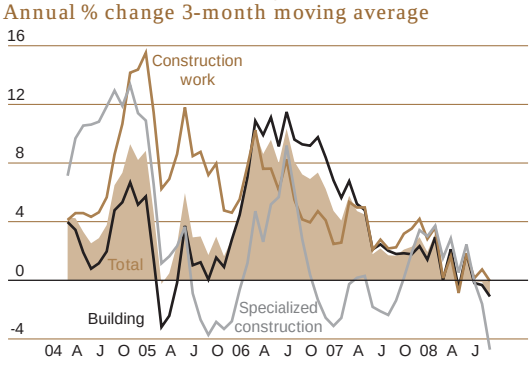
Annual % change and percentage points



Source: BBVA Bancomer with INEGI data

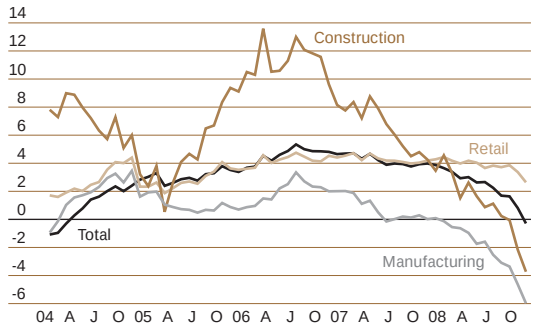
Construction Industry

Annual % change 3-month moving average



Source: BBVA Bancomer with INEGI data

Private Formal Employment
Annual % change



Source: BBVA Bancomer with IMSS data

GDP: Supply and Demand
Annual % change, seasonally-adjusted series

	4Q07	1Q08	2Q08	3Q08
GDP	**4.2**	**3.3**	**2.1**	**1.8**
Total demand	5.2	5.1	3.4	3.3
Domestic	4.2	3.8	3.5	3.9
Consumption	4.0	3.7	2.7	3.3
Private	4.3	4.2	3.0	3.3
Public	2.6	0.7	0.9	-0.2
Investment	4.9	4.1	6.3	7.9
Foreign	7.7	7.1	5.2	2.3
Imports	8.4	9.9	8.2	8.1

Source: BBVA Bancomer with INEGI data

sured prices; and (3) the drop in private demand for investment in non-residential construction in face of economic growth below the potential.

Inflation. Inflation was strongly pressured upward in such a way that it rose from an annual 3.76% at the end of 2007 to 6.53% in December 2008. Although there was pressure in almost all the components of the NCPI, of note were the increases in processed foods, housing services and government-regulated prices on energy products (gasoline, electricity and natural gas). These rises had their origin in a prolonged rise in prices in raw materials (in food, energy and industrial products) which implied higher domestic costs in the economy. Even though in the third quarter of the year international prices began to decrease in face of the recession in the U.S., they have not materialized into lower inflation for the consumer in Mexico, because of the recent depreciation in the exchange rate and the uncertainty surrounding its future course.

Outlook: slow recovery for the second half of 2009

The international economic outlook implies a deteriorated environment in the U.S. where doubts persist regarding the efficiency of the rescue programs in that economy and the duration of the low-growth cycle. This marks a complicated scenario of high uncertainty for the Mexican economy. Thus, our base scenario considers a contraction in U.S. GDP during 2009 (-0.8% vs. 1.4% estimated for 2008) and a gradual recovery toward 2010 (1.1%). In Mexico, this base scenario implies that GDP growth in Mexico would be around 1.8%, 0.0% and 1.5% for 2008, 2009 and 2010, respectively.

For Mexico, these estimates imply slow growth at the end of 2008 and stagnation in the first half of 2009, with a subsequent recovery in synchrony with the U.S. economy. In particular for 2009, the evolution in domestic activity will be determined first by the strength in foreign demand, the availability of foreign resources for financing productive activity, the performance of commodity prices (particularly oil), the progress in structural reforms and the implementation of public spending on infrastructure policy.

As for the components of supply, the characteristics of the international slowdown would imply that industry as a whole will contract an annual -2.5% during 2009 with manufacturing contraction at -2.0%, in view of the weakness in demand in the U.S. Construction could grow marginally (0.3%) thanks to the potential boost of public spending on infrastructure and to housing programs for the low-income population. In turn, services could increase 0.6% in 2009 still supported by a domestic sector that is stronger than the external. On the side of demand, low expansion is foreseeable in all of its components. In particular, it cannot be ruled out that domestic consumption will continue to grow (an annual 0.9%) higher than investment (0.3%) and that foreign trade will have a negative net contribution.

As regards inflation and following its high levels at the end of 2008, conditions exist to observe a marked decrease as of the second quarter of 2009, and close the year at around 4%. Among the elements that would spur this performance, we underscore: (1) the international

slowdown will lead to moderate prices abroad in raw materials and, therefore, lead to a better cost profile; (2) the recent stabilization of the exchange rate; and (3) the slowdown in domestic demand which will tend to counteract the past supply shocks in the economy.

Structural solidity in Mexico, but the risks tend toward lower growth

For the first time in the recent history of the Mexican economy, prudence in fiscal and monetary policies adopted in recent years have provided greater structural strength and will allow minimizing the adverse effects of the international slowdown. Outstanding among the strengths achieved in recent years are: (1) budgetary control by the government, which allows providing public finances with greater stability in the medium-term; (2) low risk on public sector debt, due to its low level, low exposure to foreign exchange fluctuations, and longer maturity terms; (3) the reputation of Banco de Mexico in its objective of reducing inflation which translates into more reduced inflationary risk premiums than in the past; (4) current account deficit possible to be financed with stable resources (i.e. foreign investment, reserves, etc.); and (5) greater depth of the financial markets, which allows for the economic planning of long-term productive projects (practically non-existent in past decades).

This progress has allowed that, in face of an international crisis—such as that currently observed—, adjustments on the domestic markets (financial, products, labor) will not be as catastrophic as in the past. Despite this, it is prudent to point out that, given the conditions of external weakness and uncertainty regarding its future evolution, the risk of lower growth due to a more acute and prolonged recession in the U.S. and the possibility that its counter-cycle programs should turn out to be inefficient cannot be ruled out. In addition, among other risks that could emerge, we emphasize: (1) greater restriction on the international financial markets; (2) low appetite of foreign investment on infrastructure in view of the lack of international financial resources and a deteriorated short-term outlook; and (3) a marked rebound in the current account deficit in view of higher growth in Mexico than in the U.S. (a risk especially for 2010).

Economic Projections

	2007	2008	2009
GDP Mexico[1]	3.2	1.8	-1.7 – 0.0
GDP USA[1]	2.2	1.4	-1.5 – -0.8
Inflation (eop)			
NCPI	3.8	6.5	4.0 – 5.2
Core	4.1	5.7	3.7 – 4.9
Interest rates			
Bank funding[2]	7.5	8.25	5.5 – 7.0
M10 [average]	7.84	8.38	6.8 – 8.3
Exchange rate[3]	10.9	11.2	13.3 – 13.9

1 Real annual % change
2 End of period
3 Fix, pesos per dollar, average
Source: BBVA Bancomer

Complexity of Prices in the Construction Industry for 2009: Economic Slowdown and Decline in International Prices vs. Higher Exchange Costs

The construction industry in Mexico faces a complex environment in relation to the costs of its inputs, which will, in turn, affect its prices in the domestic market. On the one hand, the international slowdown has resulted in lower prices for the sector's key inputs; on the other hand, the increases in the peso-dollar exchange rate and uncertainty on its future have meant that these reductions are not translating into a better cost structure in pesos for the sector's suppliers.

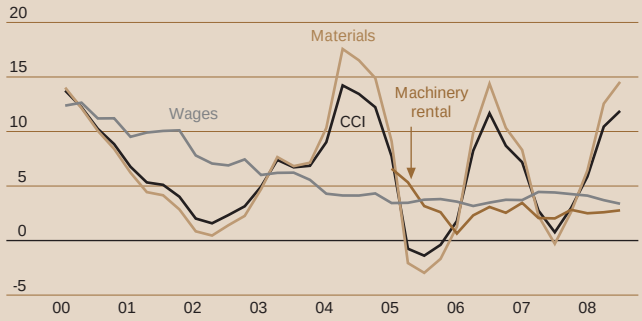
Coupled with this, the outlook of a greater slowdown in the economy and reduced job creation for 2009—ergo lower real demand for homes—point to a cycle of lower growth in home prices for the final consumer. Thus, given this environment, it is logical to ask what will be the most likely evolution in international and domestic costs of building materials; and what their potential impact might be on the growth of national housing prices under the current cycle of low economic growth.

Key elements in construction costs in 2009

Since 2003, internal construction costs have mainly been determined by the external prices of inputs more than by the industry's domestic factors, and 2008 was no exception. Indeed, the Banco de México's Construction Costs Index (CCI) posted 9.6% annual average growth through December 2008, which can be attributed to increases in prices of building materials (11.4%), and to a less extent to wage hikes (3.5%) for which the growth in prices was very much below headline inflation for the period (6.53% of the NCPI).

Inflation: Construction and Component Costs

Annual % change



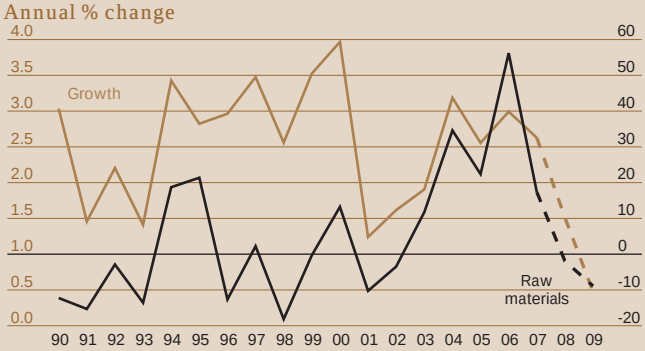
Source: BBVA Bancomer with Banco de México data

a) International reference points for external inputs: it is important to emphasize that since 2003, the growth in external prices for important construction industry inputs has experienced sharper up and down cycles than the growth in domestic prices of building materials. In addition, it should be emphasized that the persistence of price growth of domestic materials is greater and takes time to respond to declines in international benchmark prices. Thus, it should be noted that the increase in the annual growth in the Construction Costs Index through August 2008 incorporates international rises in the prices of building materials during 2007 and the beginning of 2008 and, only began to reflect the international declines registered in the second three months of the year in the third quarter.

Thus, it is important to emphasize that international prices of raw materials through the second quarter of 2008 posed declines of such scope (average: -14.6% annual) that even with the weakening of the peso, a decrease of -11.7% was registered in their value in peso terms for this period. The downward resistance in the growth of the Construction Costs Index in the second part of 2008 can be explained by the uncertainty on the extent and duration of the peso's depreciation.

Growth in Developed Countries and Metallic Raw Materials

Annual % change



Source: BBVA Bancomer with IMF data

Going forward, the depression in the developed countries (i.e. the United States and Canada) will contribute to the continued downward adjustment in prices of raw materials, especially in oil inputs (v.gr. asphalt, paints, and plastics) and for metallic inputs (v.gr. copper and steel). For example, while the International Monetary Fund's Raw Material Index grew an annual 37.3% in 2008, the IMF estimates that it will decrease -4.9% in 2009. Taking this into consideration and assuming that the exchange rate could stabilize at its current levels, the raw materials component of the Construction Costs Index could assume similar dynamics as registered in 2005 and grow at close to an annual average 10.4% in 2008 and close to 1% for 2009.

b) Labor: The costs of wages over the year have posted increases very much below the growth in headline inflation (yearly average of 5.1% in 2008), clocking in at an average 3.1% for machinery rental and 3.7% for labor. This component of the construction costs structure tends to reflect the internal conditions of the economy and its displayed incipient weakness.

For this current year, the net expansion of the supply of labor in the country coupled with the downtrend in interest rates that we foresee for 2009, suggests to us that the annual growth in these costs will tend to decline and be in an annual range of between 2.5% and 3%.

c) Elements of demand in infrastructure: the international slowdown, mainly in the United States, will tend to translate into lower investment in construction (residential and non-residential) and, therefore, in a reduced demand for building materials. Nevertheless, the aggressive program of spending on infrastructure in the United States, coupled with the growth in infrastructure in Mexico (transportation and energy resources), could cushion the declines in the prices of some of the above-mentioned construction inputs. Even considering the demand for inputs for public work projects, a drop in the Construction Costs Index for 2009 continues to be likely.

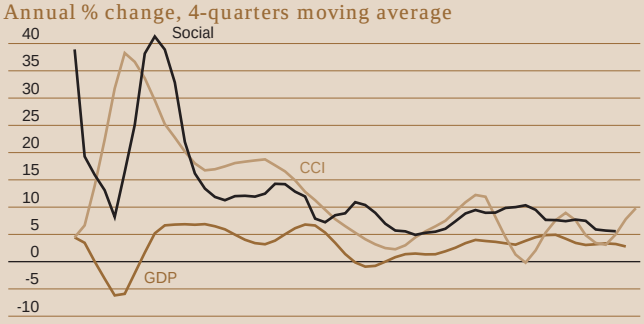
Key elements for housing prices in 2009

The dynamics of housing prices for final consumers tend to reflect a range of variables both of a local nature (real regional demand, urban infrastructure, local costs, etc.) as well as of a national nature (interest rates, economic growth, etc.). Without ruling out regional differences due to factors specific to each locality, on an aggregate level it is possible to anticipate that throughout 2009 the conditions will be in place to register—in aggregate terms— lower growth in housing prices for the final consumer.

Nevertheless, the evolution of homebuilders' sale prices will not be uniform among types of housing (entry-level, low cost, average, residential and residential plus), since these categories respond differently to the macroeconomic conditions of supply and demand. There is statistical evidence that indicates that since 1995, the prices of social and low-cost housing are more sensitive to demand factors, such as the conditions of family income and the growth of the economy than is the case in the residential and residential plus markets. At the same time, housing supply factors (costs measured through the Construction Costs Index) have a greater impact on the dynamics of housing prices for the higher income social strata than is the case for low-income families.

GDP, Construction Costs and Price of Social Housing

Annual % change, 4-quarters moving average



Source: BBVA Bancomer with Banco de México and INEGI data

In other words, this evidence suggests that for 2009, the low growth in GDP will imply that, potentially, the contraction in demand for housing in the social and low-income segments would be greater than in the higher income categories. Public programs (Infonavit and Fovisste) and subsidies that increase families' accessibility to housing, could reduce this effect. At the same time, the potential contraction in variable costs (attributable to a probable decrease in the Construction Costs Index) implies an expansion of housing supply that is relatively greater for the residential and residential plus segments. High inventory levels in these housing categories would also cushion the result.

Sensitivity of Supply and Demand

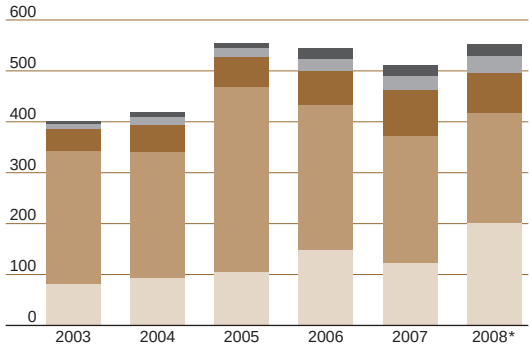
Type of housing	Demand Increase GDP[1]	Supply Increase CCI[2]
Social and low cost	0.64	0.49
Medium	0.03	0.39
Residential	0.17	0.55
Residential plus	—	0.84

1 Increase of the equilibrium price with a change of +1% of GDP, percentage points
2 Increase of the equilibrium price with a change of +1% in CCI, percentage points
Source: Own calculations in a quarterly sample from 1995 to 2Q08, significant values at 90%

This means that under the current environment, uncertainty in relation to the real estate market will more affect real demand than construction. From this, we arrive at the conclusion that public programs directed toward the sector be focused on the low-income strata to resolve this potential asymmetry in the housing market.

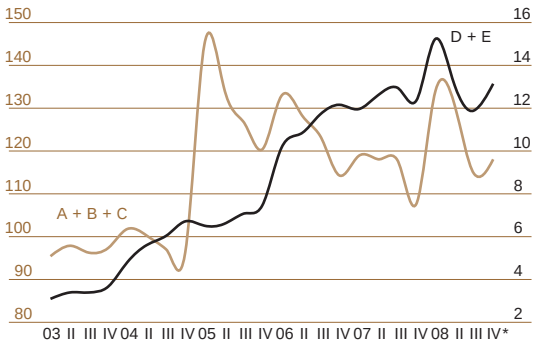
Octavio Gutiérrez o.gutierrez3@bbva.bancomer.com

Housing Sales at the National Level
Thousand of units



* Projection with figures through the third quarter
Source: BBVA Bancomer with Softec data

Housing Sales
Thousands of units



* Estimated
Source: BBVA Bancomer with Softec data

In the real estate market, the time for growth has been left behind. For some segments and regions, 2008 has been a year of significant adjustment, where a series of factors have been added that are starting to moderate housing sales. First, some surpluses in home supply that have been localized and transitory; second, the start and gradual deepening of the slowdown in the U.S., which has finally been transformed into a global restriction of loans that have ended having an impact on the strength of domestic demand of the Mexican economy in the second half of this past year. Although, fortunately, the housing contraction is not generalized, the challenge for 2009 will be to adapt to an environment of lower growth, considering at all times real demand, attending more precisely to client preferences. This section analyzes, on the one hand, the trends observed in 2008 in the different housing segments for the main cities of the country, and, on the other, the reaction of developers to the changes in market conditions to offer a perspective of what we could expect for this year.

Infonavit an essential element for growth in 2008

The year 2008 was one of marked contrasts for the real estate market. On the one hand, the Infonavit, following two years of having fallen short of its projections, reached its goal[1] of 500,000 loans. Even if the bulk of its market continues to be the population earning up to six minimum wages, the key to growth in recent years has been the gradual incorporation of the population with income higher than that level, as well as the flexibility of its financing policies. Thus, for example, the share of programs directed to said segments, Apoyo Infonavit (Infonavit Support) and Confinavit, went from representing less than 1% of the total loans of the institute in 2003 to 24% in 2008 (See inset on Infonavit financing). The Infonavit boost was enough, at a national level, for home sales to return to their maximum levels that they had reached in 2006.

By grouping home sales according to their price range, it can be seen that the contribution to growth in 2008 was boosted by the low- and medium-income levels. In particular, segment "A" —housing with a value of up to P$250,000— which, in the Infonavit includes loan products for low-cost housing and a part of the traditional loans.[2]

There are various reasons that could explain the rally in segment "A". Of note is the 15% expansion in the target goal for placing Infonavit loans for the population of up to four minimum wages[3], being that for total loans, the goal remained unchanged at 500,000. Also having a bearing were subsidies existing for the population that acquires this type of housing, which facilitated access and reduced the financing risk.[4] Other elements that could have been present include: first, the increase in the housing supply for this segment, limited in recent

1 When they have been formalized and approved.
2 Traditional loans for low-income workers in the range of 2 to 4 minimum wages.
3 In the 2 to 4 minimum-wage segment, expansion was 44%.
4 For 2008, the housing subsidy granted for homes of up to $255,000 pesos, for the population earning below four minimum wages, was of P$40,000, also offering a guarantee for non-compliance; the down payment of the worker is of only P$10,000.

years by the relative scarcity of land; second, the eventual and more intense allocation to the population subject to social security and similar benefits (such as IMSS, ISSSTE, etc.)

What can be said about the rest of the segments? At the beginning of 2008, the sales figures suggested a recovery, although as of the second quarter the trend reverted. At the end, the result for 2008 was the contraction for segments B and C, homes within the range of P$250,000 to P$480,000 and from P$480,000 to P$1,200,000, respectively. For segments D and E, corresponding to homes priced at over P$1,200,000 and P$2.7 million, respectively, the result was relative stagnation.

Beach locations, the most affected

The real estate market for cities in beach locations was the one that most felt the effects of the slowdown in 2008. The real estate crisis in the U.S. put a brake on sales in the residences for foreigners market, while the contraction in tourism activity limited the capacity to acquire a home by the inhabitants of those cities. The exception corresponds to segment "A" which showed strength; the rest of the homes directed toward the medium-low income population was lagging. In the case of homes for the higher-income population, the rising trend halted as of mid-2007 and has reverted since then. For segment "E", sales through the third quarter turned out to be 15% lower than one year before, thereby making it the most affected segment.

In turn, the real estate market along the border area has had a strong boost in segment "A", which is somewhat surprising, given the impact of the economic slowdown in the U.S. on the regional economies (review inset on mortgage default). Similar to beach cities, the rest of the segments in the border cities practically showed stagnation during the year. This strengthens the expectation in the sense that increased housing sales for segment "A" are linked to a great extent to the availability of land supply to build this housing segment.

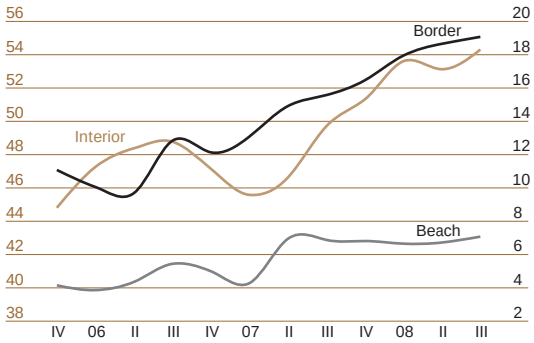
Finally, cities in the interior, relatively less affected by the economic environment in the U.S. and where close to 70% of housing sales take place at a national level, showed a trend of modest increase, in particular in those of low-medium price; through October. Sales registered an average rise of 16% in segments A, B, and C (38% rise in A, 18% in C) and a 4% contraction in segments D and E.

In 2008, inventories generally remained at the same levels of the year before. Those corresponding to higher income (D and E) increased from 20 to 23 months on average. In contrast, for the medium-low segments (A, B and C), they were reduced in 2008: Measured in sales months required to use up the stock on hand, these went from 20 in 2007 to 18 in October 2008.

The response of the developers

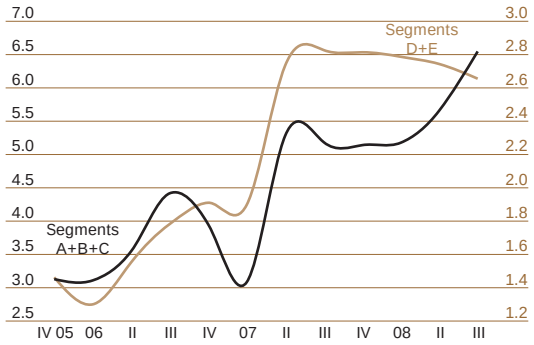
In addition to the adjustment in sales, developers had to face the increase in production costs: according to the producer price index regarding construction, the cost of residential building went from

Housing Sales by Geographic Area
Thousands of units



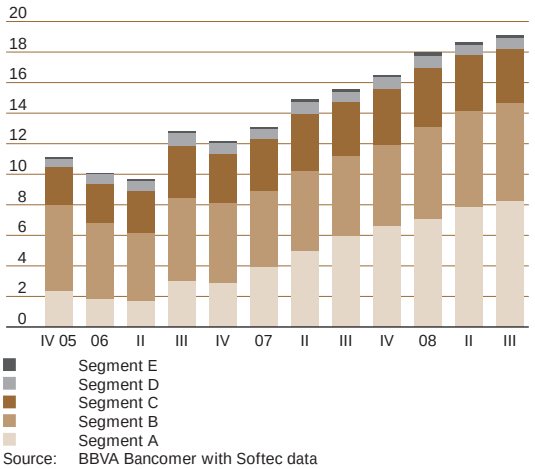
Source: BBVA Bancomer with Softec data

Housing Sales in Beach Cities
Thousands of units



Source: BBVA Bancomer with Softec data

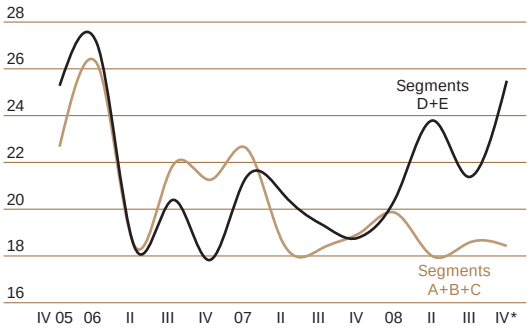
Housing Sales, Border Cities
Thousands of units



Source: BBVA Bancomer with Softec data

Housing Inventories

Months required to use up to stock



* Data through October
Source: BBVA Bancomer with Softec data

Housing Prices

Thousands of pesos per meter^2 at October 2008 prices

	2006	2007	2008*	Annual % chg. 2007	Annual % chg. 2008*
Avge.	**7.2**	**7.4**	**7.2**	**2.8**	**-2.5**
A	5.5	5.7	5.5	3.0	-2.6
B	6.4	6.5	6.3	2.3	-3.0
C	8.6	8.7	8.5	1.4	-2.6
D	12.1	12.4	12.1	2.5	-2.4
E	17.2	18.4	18.3	7.5	-0.7

* Projection with figures through October
Source: BBVA Bancomer with Softec data

Housing Size

	Average M^2 2002	Average M^2 2007	Average M^2 2008*	Annual % chg. Avge. 02-07	Annual % chg. 08/07
A	49.9	41.9	40.7	-3.2	-3.0
B	62.5	59.1	58.0	-1.1	-1.9
C	105.6	97.2	94.2	-1.6	-3.1
D	186.2	152.2	147.4	-3.7	-3.2
E	302.0	237.6	248.1	-4.3	4.4

* Projection with figures through October
Source: BBVA Bancomer with Softec data

averaging 3.6% in 2007 to 9.7% through November 2008. What strategies were followed by developers to face this environment in sales and the rise in costs? Starting with the prices, measured in value per square meter and adjusted by inflation in the construction sector, at a national level, the result in 2008 was practically a return to the 2006 levels; that is, in all the segments, a reduction was registered in the prices in real terms. The more modest drop came in segment E of "only" 0.7%, while the most significant was that in segment B, 3%. Thus, even in the segments with a strong rise in sales, developers were not able to transfer the rise in their costs to the housing prices, so that the effect was to absorb part of said increase through lower margins.

In view of the inability to transfer the total cost increase to the buyer in the final housing price, an alternative has been to reduce the size of the projects. In reality, this has been the trend throughout the last few years, but in 2008 it intensified, especially in the mid-range and low segments. Thus, for example, between 2002 and 2007, segments B and C showed annual average reductions from 1.1% to 1.6%, but in 2008, these were between 1.9% and 3.1%, respectively, which is practically double. The strategy was different in the high-income (E) segment where the combination of a reduction in sales, greater competition and more demanding consumers drove developers to increase the average size of projects by 10.4 m^2 annually, whereas between 2002 and 2007 there had been an annual average reduction of 7.6 m^2.

In view of an environment of uncertainty and reduced trust by participants, a third strategy has consisted in putting a brake on the housing construction rate. Taking as an indicator, the number of developments started per quarter[5], a marked reduction in the building of new housing units is observed: in the third quarter of 2008, recently started homes represented only half of those observed the previous year.

If taken as a proportion of the segment sales, new construction offers a parameter of the reduction of available inventory for the coming quarters. Considered by segments, it can be seen that the most significant drop has been that of the highest income (E) segment. For the rest of the segments, construction has been relatively greater, although barely sufficient to maintain the inventory.

Undoubtedly this trend toward moderation in new home construction, in addition to reflecting the difficulties within the sector, in particular for lower scale builders, will have repercussions on the market during 2009. It is possible, depending on the moderation of economic activity and employment that it could contribute to relieve the sector in a scenario of low moderation in economic activity, which constitutes our base scenario considering a faster reduction of inventories. This could permit a quicker recovery of the housing sector, perhaps toward the second half of 2009. However, a risk scenario of a more pronounced drop in economic activity would be present, which could lead to a new rise in inventories.

5 Based on the sample made by the Softec Company in 36 cities in the country.

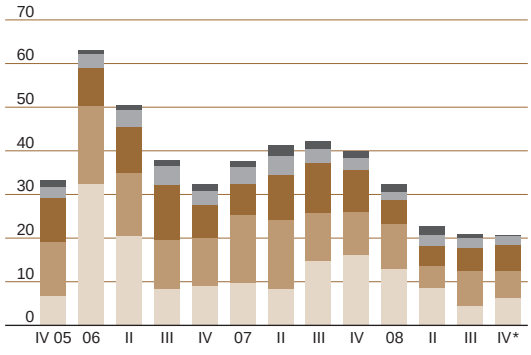
Conclusions

To summarize, it can be said that in 2008 the main driving force for the real estate market was the housing segment for the population at the lower base of the income pyramid, where federal government support has played a central role. The rest of the segments felt the effects of price increases in construction and the slowdown in economic activity, particularly in cities with a greater exposure to the cycle in the United States, such as those along the border area and beach locations. The developers ended up absorbing part of the increase in construction costs, through lower profit margins, reducing the size of housing units and putting a brake on the construction of new units.

What can we expect for 2009? Undoubtedly, there will be important challenges. Downward adjustments in sales could be extended to a greater number of cities and segments. Even though, on other occasions, the low and mid-range segments are those that have shown a greater vulnerability to changes in the environment, this time an intent will be made to mitigate its effects. In particular, for the lower-income population, it is probable that interest rates will remain unchanged in public housing agencies such as the Infonavit and Fovissste, there will be availability of financing and subsidies will be applied. In this context, the various agencies seek to comply with the financing goals, with a double purpose: to continue covering the need for housing and to boost construction activity as a mechanism to counteract the economic slowdown. In the case of the medium and high segments, a greater adjustment in relative terms could be seen, due to a rise in interest rates, more selective loans and a more pronounced demand in specific niches, such as that of tourism and in the border areas.

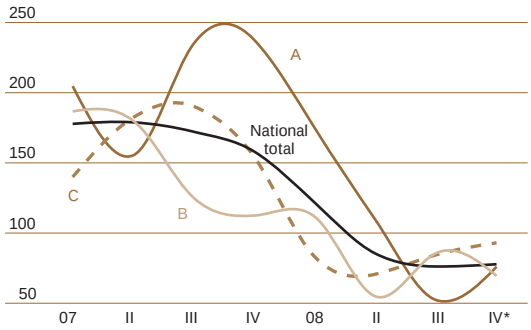
With regard to developers, these should face a more competitive market, with greater purchasing options (due to increased inventories), more selective and a reduced number of customers. In the end, those who manage to identify their clients' needs better and have a more solid financial structure will be able to emerge unscathed from the drop in the cycle. The important part will be to adapt to this new environment with a vision for the medium term.

New Housing Construction
Started in this quarter, thousands



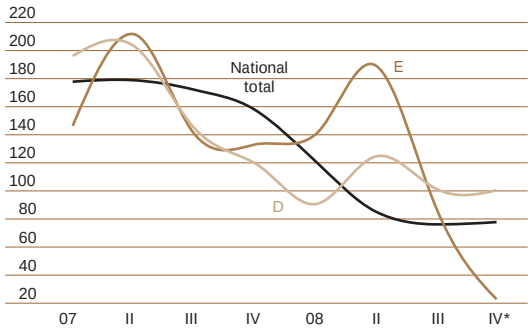
* Projection with figures through October
Source: BBVA Bancomer with Softec data

New Housing Construction
% of sales, current quarter



* Projection with figures through the third quarter
Source: BBVA Bancomer with Softec data

New Housing Construction
% of sales, current quarter



* Projection with figure through the third quarter
Source: BBVA Bancomer with Softec data

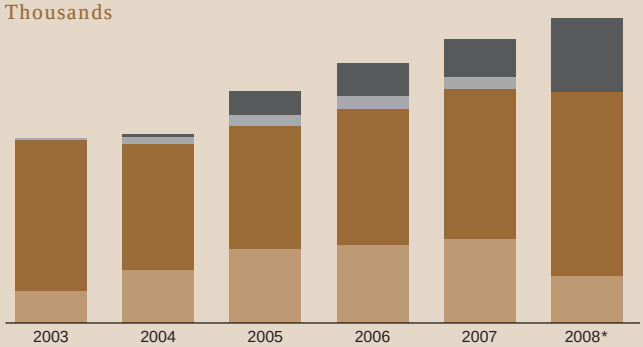
Infonavit, Key to Anti-cyclical Policy in 2009

Infonavit plays a central role in housing promotion on a national level. Despite the complications of the economic and financial environment, Infonavit (the national workers' housing fund agency) obtained favorable results in 2008, and the figures still show an important potential for growth derived from the housing shortfalls that still persist. In 2009, in response to the challenge of a period marked by a greater economic downturn and the reduced availability of credit, it will be important for Infonavit to prioritize its financial resources based on the needs of the lower-income sectors it attends to, maintaining consistency with the new institutional guidelines that have been formulated. This article seeks to identify the areas of greatest opportunity for Infonavit financing, based on its results by housing segment and region in 2008 and the guidelines that will define the agency's operation in the next few years, subject to the economic and financial conditions that will prevail during the current year.

2008, a good year

For Infonavit, 2008 was a highly successful year. It reached its goal of placing 500,000 loans (the highest figure to date), which should be acknowledged as an achievement given the environment characterized by a downturn in activity and high financial volatility throughout most of the year. In fact, it was the only one of the public housing agencies that achieved its goal, with the others falling considerably short of their targets. The strategy of expanding the number of loans available for the low-income strata of the population, as well as extending and making loan procedures more flexible for the middle-income sectors proved to be successful, so much so that in some segments the annual placement goal was reached in the third quarter of the year.

Infonavit Credit
Thousands



Cofinavit
Apoyo Infonavit (Infonavit Support)
Traditional
Low cost
* Figures through December 7
Source: BBVA Bancomer with Infonavit data

Number of Loans Granted by Housing Agencies
Thousands of annual flows

	2007	2008 goal	Accum. Oct08	Goal met*	2009 goal	Differ. 09-08
Total housing acquisition	815	933	803	86%	635	-298
Social (low-cost)	709	722	604	84%	630	-92
Infonavit	441	500	500	100%	500	0
SHF	33	108	27	25%	30	-78
Fovissste	55	114	58	51%	100	-14
Fonhapo	180	218	18	8%	n.d	83
Medium and residential	63	155	183	118%	120	-35
Banks and Sofoles	63	155	183	118%	120	-35
Others	44	56	16	28%	15	-41
Reduction+	-181	n.a.	-212		n.a.	
Equivalence	634		578			

\+ Refers to loans that involve two or more institutions
* The goal met thus far is through Dec. 14, 2008 for Infonavit; the rest through Oct.
Source: BBVA Bancomer with Conafovi data and news reports

In relation to the different population segments that Infonavit serves, the demand for credits from those earning between two and four times the minimum wage considerably exceeded the agency's expectations, which were already high (the goal proposed for this wage category was 44% higher than in 2007) and 58% of the loans granted in the year were channeled to this segment. Meanwhile, under the co-financing program, the number of loans was practically double the projected number for those earning six times the minimum wage and triple for those with income levels 11 times or more above the minimum wage.

Infonavit Loans: Allocated vs 2008 Goal
Thousands

	2007 registered	2008 Goal	2008 Registered
Infonavit alone	381	403	379
Up to 1.9 mw	138	115	81
2 to 3.9 mw	131	195	211
Traditional	111	93	88
Co-financing	60	97	121
Up to 6.9 mw	—	27	52
7 to 10.9 mw	—	55	27
Greater than 11 mw	—	15	41
Apoyo Infonavit	18	—	—
Total	**459**	**500**	**500**

Note: Co-financing by wage categories began in 2008, the year in which Apoyo Infonavit ceased to operate
Source: BBVA Bancomer with Infonavit data

On a state level, despite the unfavorable economic environment, the greatest dynamism in the demand for credit came from the border region. For the traditional credit programs, the placement goal was surpassed by 60%, while for co-financing, demand was 72% greater than projected. The housing deficit in the region is evident, although risk has also increased, given the area's

strong dependence on U.S. economic conditions (see inset article on mortgage loan delinquency).

In 2009 priorities are being redirected

In its 2009-2013 Financial Plan, the Infonavit introduced some important changes in the direction of its programs and goals. To begin with, in its mission and institutional vision, it incorporated environmental protection (sustainable housing), social integration, and even financial education. Based on such considerations some important programs emerge, with a strong impact on housing development in the medium term. On the level of environmental protection, all the federal subsidies applied for the population earning up to and including four times the minimum wage will be channeled through what is known as the Green Mortgage program, to promote energy efficiency and the use of renewable sources of energy[1]. The strategy is in line with the federal government's goal to have built a million ecological homes by the end of the current administration.

Secondly, Infonavit seeks to promote a more active participation on the part of municipal governments in improving the conditions for housing development. Through the Municipal Housing Qualification Program (PCMV), municipalities will be evaluated regarding aspects such as public services (transportation, solid waste disposal, security), planning and maintenance of urban infrastructure, land reserves management, as well as quality in government administration (transparency and accountability). The information for Infonavit affiliates on the degree to which each municipality fulfills the criteria established by the program[2], for which follow-up will be provided annually, could be an important element in housing development in the medium term. Finally, vertical construction will be promoted (buildings of from four to six stories in an initial phase) in the low- and middle-income segments, through incentives for homebuilders, in order to contribute to boosting population density in the cities and making better use of the existing infrastructure.

What will the credit strategy be for 2009?

The economic downturn and the international financial crisis have had an impact on Infonavit's finances, which is reflected, among other indicators, in a lower access to financing. Although Cedevis, or securitizations, in 2008 were right on the mark, at 97% of their target, 15,000 million pesos, for 2009 projections from this source are of only 10,000 million pesos. Even more, this amount is explicitly labeled as contingent to international financial conditions, and therefore is not included in the base scenario of mortgages for this year. In addition to the securitizations, the possibility of issuing hedged bonds[3] is being analyzed. Credit investment, considering only Infonavit's resources, will involve P$97 billion, a 4.5% increase in real terms over 2008 levels.

The base scenario for placements in 2009 is for 450,000 loans (the figure could rise to 500,000 if securitizations or bond issues are made), with a priority placed on the low-income population, maintaining subsidies and increasing the percentage of assigned loans. As a percentage of the total, loans to workers earning between two and four times the minimum wage will increase from 39% in 2008 to 43% in 2009. At the same time, the plan is to increase the capitalization index (ratio of patrimony of the loan portfolio). To quote the Institute "*The above will imply being more efficient in the subsidy strategy that the loan portfolio has, so that the lending rate covers the minimum operating costs and generates a surplus to provide the required capital*" (p.7). Lending rates will be increased (now in a range of 4% to 11%), especially for those with relatively high incomes; it is likely that they will remain at current levels for the lower-income population strata.

Conclusions

Maintaining Infonavit financing and strengthening its subsidies (such as the Green Mortgage program) is one of the federal government's main strategies for dealing with the environment marked by the downturn this year, above all in the regions of the country most exposed to the U.S. economic cycle, such as the northern border and the tourist areas, as well as the most vulnerable sectors of the population. The 28% increase in financing for low-cost housing (Infonavit and Fovissste) will help. The organizational change that will be implemented as of the current year promises to ensure a more solid financial institution and to have a significant medium-term impact in terms of urban development, social welfare, and housing programs based on environmental protection.

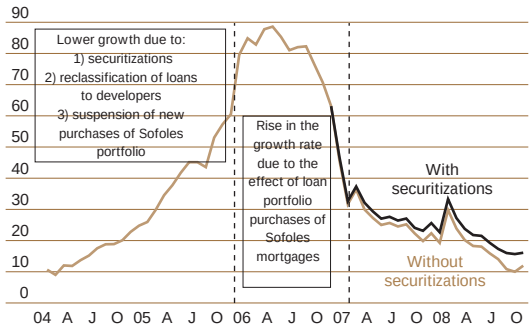
Eduardo Torres e.torres@bbva.bancomer.com
Alma Martínez alma.martinez@bbva.bancomer.com

1 See inset on the Green Mortgage program. Based on solar water heaters and energy-saving light bulbs, Infonavit estimates that housing units could obtain savings from P$50,000 to P$85,000 in utility payments during the life of the loan.

2 The program will be based on establishing goals, organized around four elements: inhabitability, competitiveness, government administration, and solvency.

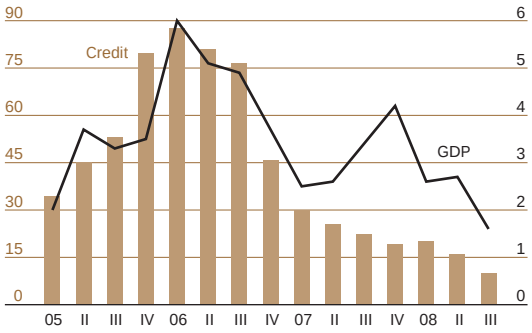
3 Contrary to the securitizations, the mortgages remain in the balance sheets of the originator (in the event of the latter's insolvency, the mortgage flows will only be used to pay the bond) and the placements can be made in different currencies and terms (with which the universe of potential investors is expanded). Under this new program, and based on the experience of other countries in terms of the amounts to be placed (up to 4% of total assets), potential revenue is estimated to be up to P$20 billion.

Current Housing Bank Loans
Real annual % change



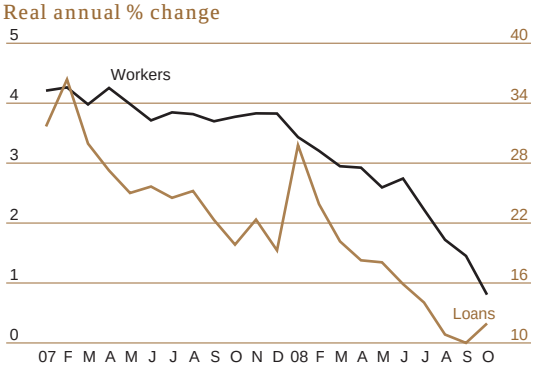
Source: BBVA Bancomer with Banco de México data

GDP and Bank Credit for Housing
Real annual % change



Source: BBVA Bancomer with Banco de México and INEGI data

Bank Loans for Housing and Permanent IMSS-Affiliated Workers
Real annual % change



Source: BBVA Bancomer with Banco de México and STPS data

Bank loans with less moderation

Since the end of 2006, the growth rate in bank loans for housing has slowed down. This is due to several reasons, both financial and economic. In the former, of note are the portfolio purchases made by the banks of the mortgage Sofoles. These operations temporarily increased the growth rate of housing bank loans, mainly in 2006. Once this effect came to an end, the growth rate began to decline. Another factor also having a bearing on its performance was the reclassification of the loan portfolio granted to real estate developers. This portfolio stopped being considered as a housing loan to then be catalogued as loans to companies. This took place as of January 2007. Also securitizations of housing loans have reduced its strength, because these transactions imply that the balance of bank loans is reduced. All these transactions have a primarily statistical effect.

It should be mentioned that the bank loan balance with housing securitizations rose a real 103.3% from December 2005 to November 2008, giving signs of the important availability of financing during the period. In less than three years, this credit was doubled. It is complicated to maintain high growth rates, because to a great extent, part of this financing was absorbed by a significant lag in housing, which allowed covering an important part of the historic housing deficit. In the future, as the economy recovers and approaches its potential growth, real housing demand will translate into more sustainable credit growth rates that will be mainly determined by the formation of families and the generation of jobs.

The first graph illustrates, the growth rate of bank housing loans with and without securitizations. In both cases the rate slows down, which is accentuated as of 2Q08. The performance of this type of credit has been influenced by the macroeconomic environment that prevailed throughout that year, characterized by lower GDP growth. In 2008, lower growth in the economy was accompanied by lower growth of housing loans, as illustrated in the second graph.

Lower GDP growth means lower growth of income and formal employment in the economy. This implies limited market growth for those who can obtain a housing loan in terms of delimited loan risk. In this sense, the third graph illustrates the drop in the growth rate of the number of permanent affiliated workers in the Mexican Social Security Institute (IMSS for its Spanish initials) throughout 2008. These workers represent the segment of low loan-risk population that works in the formal sector of the economy who could apply for a housing bank loan because they have a stable source of income. Thus, the moderate growth in formal employment has also limited the expansion of housing loans.

Another factor associated with lower strength in housing loans is the rise in inflation. The graph on the next page shows that at the same time that annual inflation has gone from 4% to a higher rate, the growth rate of housing loans has decreased. This ratio could be

indicating that higher inflation reduces the payment capacity of families, which is reflected on lower demand for this type of credit.

It should be mentioned that the lower strength in housing loans that has been seen basically up to 3Q08 has been associated with the gradual deterioration of the referred macroeconomic variables, which illustrates that its moderation is derived from factors mainly linked to demand for housing. The joint effect of these factors (lower growth of GDP and employment, together with higher inflation) is the main determining factor for the lower growth of housing loans.

Given the less favorable new macroeconomic environment that is anticipated for the near future, it is to be expected that the criteria used by the banks for granting housing loans will become stricter as an additional precautionary measure to reduce loan risk. This is a supply measure that could, on the one hand, continue to moderate the growth of bank loans for housing, and on the other, could help preserve the quality of the loan portfolio for this type of credit going forward.

Real Estate Sofoles Loans

The balance of housing loans granted by Sofoles has decreased. First, this has been the result of the loan portfolio sales that some of these realized in favor of the banks, and, second, of mortgage loan securitizations that were carried out as of the end of 2003. With these transactions, the Sofoles have sought to obtain funds to increase their lending activity within the context of limited resources that they have faced in recent years.

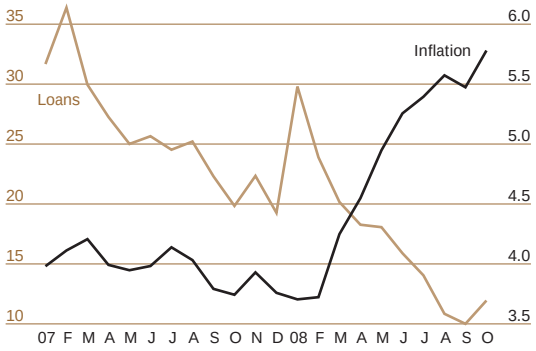
As can be seen in the second graph, as of January 2007, loans granted by the real estate Sofoles, taking into account the securitizations, once again registered positive growth rates, since the arithmetic effect of their loan portfolio sales ended. The real annual average growth rate from January 2007 to September 2008 was 1.5%, which reflects the limited resources that these have had to continue expanding their lending activity.

The graph presents the growth rate of the loan balance granted by real estate Sofoles, with and without securitizations through September 2008. The October datum was not included because from September to October 2008, the loan portfolio balance of the real estate Sofoles reported monthly by Banco de México decreased by 33.7%. This was due to the fact that in October, one of the most important real estate Sofol (a limited purpose financial corporation) on the market was transformed into a Sofom (a multiple purpose financial corporation), which is an unregulated entity. This change in status, exempts it from the obligation to report financial information. This situation will make the follow-up and analysis of housing loans of non-bank origin more difficult.

Total Financing for Housing

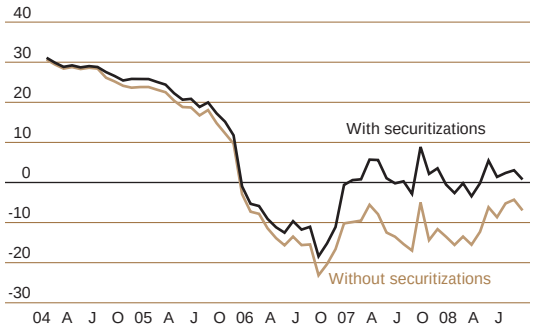
The available indicators of total housing financing refer to two components. The first is credit granted by private entities (banks, Sofoles and the securitized portfolio of those entities), and the sec-

Housing Loans and Annual Inflation
Real annual % change



Source: BBVA Bancomer with Banco de México data

Mortgage Sofoles
Real annual % change of the balance



Source: BBVA Bancomer with Banco de México and SHF data

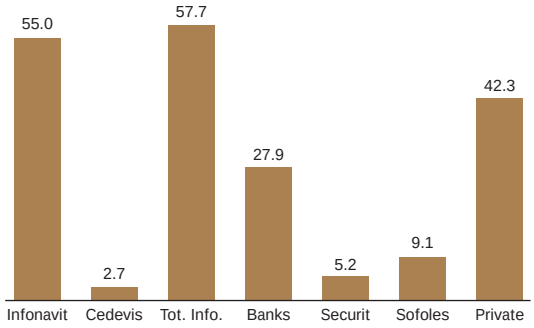
Federal Mortgage Society (SHF): Renewed Impulse for Housing Loans

The Organic Law of the SHF, reformed in August 2008 with the aim of allowing that institution to continue promoting the development of the primary loan market, granting direct loans for construction, acquisition and improvement of housing. The reform also stipulated that the SHF participate in granting loans under unusual circumstances in the markets, with the aim of maintaining the liquidity and healthy operation of the housing loans sector. Thanks to these modifications, the SHF will continue to grant loans directly to financial intermediaries (sofoles and sofomes) that grant housing loans. In the previous law, an eight-year term was stipulated for these operations. In the new law, the objective of the SHF is maintained to boost the development of the secondary market (securitizations) as it had been doing up to now.

These modifications have to be evaluated in a positive way, because they allow maintaining housing financing, mainly for the low- and medium-income segments. Under these reforms, in October 2008, the SHF announced that it would support the housing sector with resources of up to P$40 billion. These funds will be used so that there will be sufficient liquidity in the sector, in addition to providing resources to finance housing production. These resources will be forthcoming from its income as a development bank directly from the market and from loans from multilateral international organisms. An example of the latter is the loan that it received in November 2008 from the IDB (International Development Bank), for a total amount of US$2.5 billion, which is added to the US$1 billion loan that the World Bank also granted the SHF recently.*

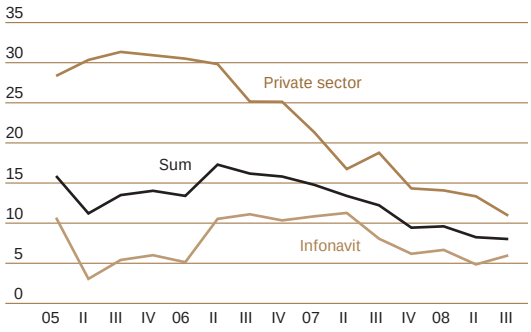
* See box of the steps taken for support of housing financing.
Source: BBVA Bancomer

Housing Loans by Granting Entity
Relative % share in the total balance through 3Q08



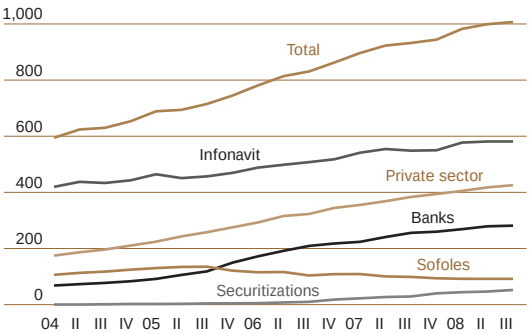
Total Info. Current loan portfolio of Infonavit + Cedevis
Banks Current loan portfolio in pesos of commercial banks
Securit Total securitizations of bank and Sofoles housing loans
Sofoles Current loan portfolio of real estate Sofoles
Private Banks + Sofoles + securitizations of banks and Sofoles
Source: BBVA Bancomer with Banco de México and Infonavit data

Housing Loans
Total, Private Sector* and Infonavit**
Real annual % change of the current loans balance



* Current bank loans in pesos+Sofoles current loans+securitizations
** Includes current loan portfolio plus Cedevis offerings
Source: BBVA Bancomer with Banco de México and Infonavit data

Housing Loans by Granting Entity
Balances through 3Q08 in billions of Oct. 2008 pesos



Source: BBVA Bancomer with Banco de México data

ond corresponds to financing granted by government entities. Of the latter, the public information corresponds to Infonavit, the National Workers' Housing Fund Institute, and to the Cedevis, debt securities denominated housing certificates, backed by mortgages issued by the Infonavit itself. The historic information of the housing loans granted by the Fovissste to government workers or of loans granted by housing entities of the States is not available. In this sense, the information available on loans granted by the public sector for housing is limited.

It should be mentioned that, due to the magnitude of its balance, the Infonavit is the main government agency that grants housing loans. As indicated in the first graph, at the end of the third quarter of 2008, the Infonavit current loan portfolio represented 55% of the total loan balance granted for housing. This is due in part to the fact that the segment of the population that has had access and can have access to an Infonavit loan is broad, in addition that this credit forms part of the network of the country's social security and well being.

A certain part of the bank housing loan market and of the Sofoles can complement the Infonavit loans through financing programs established with this Institute (Infonavit Co-financing and Support). In this case, customers receiving loans based on any of the two programs mentioned must also have additional income to complete the loan received. That is, he who receives exclusively an Infonavit loan may settle it based on the obligatory housing fees that companies of the private sector must contribute in favor of their workers.

On the other hand, whoever receives a loan from a bank or a Sofol under the protection of the Infonavit Co-Financing and Support Program, in addition to using the obligatory fees that companies have to make to Infonavit, they also have to make their own contribution in order to settle the loan received. This leads the bank and Sofoles loan market for housing to be smaller in size than that of the Infonavit.

The second graph indicates that since 2007 the real annual growth rate of housing loans granted by the private sector and those granted by the Infonavit has moderated. To the extent that the macroeconomic environment of 2009 is less favorable, loans granted by the private sector will continue to slow down. For their part, loans granted by the Infonavit will continue to grow at rates similar to those registered in the last four quarters, because of the appropriate strategy followed by the Institute.

As can be seen in the third graph, the total current housing loan balance granted by the private sector and by the Infonavit (the National Workers' Housing Fund Institute) is high. As a proportion of GDP, it stood at 8.2% through the third quarter of 2008. Of that total, 3.5% of GDP corresponded to loans granted by the private sector and the remaining 4.7% was granted by the Infonavit.

The outlook for bank housing loans

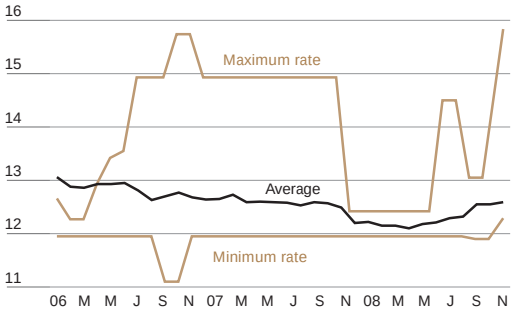
The complex macroeconomic environment expected for 2009 is not too favorable for the dynamic expansion of bank housing loans. To the extent in which employment in the formal sector of the economy

grows at reduced rates, or could even stagnate, it will cause the future expansion in housing loans to be limited, being that the number of customers that can qualify to obtain a housing loan will not increase, or, if it does, it will do so in a reduced manner. At the same time, the performance of interest rates will be an additional factor that could inhibit growth of this type of credit.

The moment GDP grows at higher rates once again, permanent employment in the formal sector of the economy will also grow significantly, and average interest rates will stabilize and even decrease. Then there will be sufficient elements that will allow expecting a higher growth rate of bank housing loans. In our base scenario, these conditions will begin to materialize toward the second half of 2009.

Interest Rates on Housing Loans

Annual %



Source: BBVA Bancomer with Banco de México data

Bank Interest Rates: Moderate Rise in 2008

The minimum annual housing interest rate through October was not modified, and, even in September and October, it had a minimum decrease of five basis points (bp). However, in November, it rose to 12.30%.

For its part, the maximum interest rate rose 202 bp from June to July to stand at 14.50%. This new maximum interest rate lasted only two months, since, as of September, it has dropped 145 bp to stand a 13.05%. Perhaps at this time, more important than the rise in this interest rate has been the short time that it lasted prior to dropping significantly, which could be related with the performance of demand for financing. By November, the maximum rate rose to 15.93%, which is an increase of 288 bp in one month.

It should be noted that the average interest rate reached its minimum level in April 2008, standing at 12.55% in October 2008, and, in November, it rose slightly to stand at 12.64%.

The slow increase in the interest rate of housing loans could be related to a lower extent with the slowdown in the growth rate of the balance of housing credit.

Source: BBVA Bancomer

Measures to limit the Effects of Risk Aversion and the Economic Downturn in the Real Estate Sector

The global financial crisis has had strong repercussions on the financial markets in Mexico. The sharp depreciation of the peso and the sudden desire to invest in more liquid assets, have strongly pressured the corporate credit market and up until a few weeks ago have resulted in a substantial increase in the slope of the government bond yield curve. At the same time, the downturn in economic activity in Mexico that has been gradually occurring since 2007 and which to a large extent corresponds to the lower economic growth in the United States, is affecting the different credit components. Not only are we witnessing reduced dynamism in credit activity, but also a revaluation of the credit risk perceived by financial institutions, which is resulting in a rapid fall in the real growth of financial activity.

The real estate sector has not been immune to these economic and financial developments. The number of loans is growing at lower rates and delinquency is now on the rise (although still at low levels). The result of the recession in the United States and other advanced economies is an expectation of a less favorable panorama for the Mexican economy. Therefore, the risks of experiencing an even greater contraction in the sector are not low and, in this sense, the problems of liquidity and real estate financing could increase. In fact, alternative sources of financing, such as the securitization of mortgage loans, registered less activity in the final months of 2008. Of a total of 21.30 billion securitized pesos in 2007, through November of 2008 slightly less than 13.41 billion pesos had been placed.

With the aim of boosting liquidity in the sector, mainly in Sofoles and Sofomes, in addition to providing resources for housing construction, especially for the low-income segments of the population, Sociedad Hipotecaria Federal (SHF, the Federal Mortgage Society) has introduced measures that seek to contribute to reducing the distortions that have arisen in the financing of the real estate sector in the past few months and thus continue supplying credit in the sector and as a result, aiding the dynamism of housing construction.

Immediate measures...

According to the "Program to Promote Growth and Employment" announced by the federal government, Sociedad Hipotecaria Federal (SHF) will have resources at its disposal for up to 40 billion pesos to support the stability of home financing. The funds will flow from its capacity to grant credit based on its financial balance sheet. It should be recalled that a modification was introduced into the SHF Organic Law this past August to allow the housing agency to continue granting credit and guarantees for the acquisition and improvement of homes to non-bank financial intermediaries, such as the Sofoles.

The idea is that these resources be obtained through funds obtained either directly from the market or from multilateral institutions. To begin with, the World Bank has already channeled one billion dollars. In addition, this past November 26, the injection of 2.80 billion dollars from the Inter-American Development Bank (IDB) was agreed upon, to complete the support package for the sector. These 2.80 billion dollars will be part of three support programs earmarked for activities of the mortgage and real estate sector. Of the total, 2.50 billion dollars are part of a credit line that will be available for a period of 10 years. This first loan will be assigned to the SHF, and the idea is that this housing agency will use these resources to offer credit lines to intermediaries, as well as to maintain the liquidity of the secondary markets. This loan has a 25 year term, with a five year grace period, and a libor based variable interest rate.

In addition, the IDB created the "Facilities to Support Mortgage Financing in Mexico", which has the aim of making 150 million dollars available. These resources will be available to eligible banks and, in general, suppliers of mortgage financing (the term is for up to three years). The loan seeks to support intermediate credit through partial credit guarantees or acquisition of notes. It will also finance up to 15% of mature residential mortgages backed by securities. Together with the International Financial Corporation (IFC of the World Bank group), a total of 300 million dollars will be made available for such purposes.

The IDB will support the Infonavit placements for up to 185 million dollars for a three year period. Thus, the three approved operations that are aimed at the real estate and mortgage sector, seek to maintain liquidity in these markets in an extremely difficult context for the industry, and given a scenario that complicates efficiency in the allocation of financing resources.

Finally, on January 7, in the framework of the National Agreement for the Family Economy and Employment, additional support measures were announced for the housing sector. Financing from Infonavit and Fovissste will be increased by 28% and for SHF by 40%. In addition, close to 7.40 billion pesos will be earmarked as direct subsidies for low-cost housing and 750 million pesos will be provided to replace old household appliances with new ones.

Sufficient resources?

The amount of available resources from the federal government to support the real estate sector, with the injection of funds through loans and/or guarantees granted by multilateral institutions, is undeniably important. These financial support measures will reduce the risks of a collapse of the home financing system. Nevertheless, in a context of a strong economic downturn and international financial uncertainty that could lead to additional risk scenarios, these resources might not be sufficient to reactivate the growth of credit in real terms; that is, sufficient to allow the sector to be part of the anti-cyclical boost in the economy. Economic uncertainty is high and in that sense, with a view toward the future, the effect of the amount of liquidity projected to be injected into the system should be evaluated. This is one of the issues whose evolution should be followed during 2009.

Ociel Hernández o.hernandez@bbva.bancomer.com

Characteristics of Mortgage Default

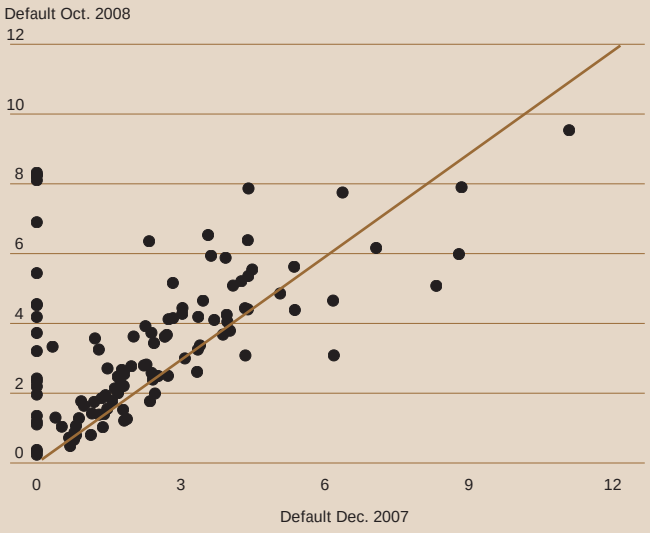
To what extent are the dynamics in real estate sector activity reflected in the behavior of banking system variables, specifically, mortgage loan default? As was described in the section on the analysis of the sector, a series of factors have been noted that can explain the more tempered growth in sales and in the construction of new homes, but what element or elements are most important in this regard?: housing oversupply?, the degree of exposure to the U.S. economy?, the slowdown of the Mexican economy?, or are there some other elements at play?. In this article we will offer a detailed analysis of bank mortgage loan default, by city and housing segment, which reveals some interesting patterns.

Mortgage loan default has increased

The fact of the matter is that mortgage loan default has increased in 2008. Figures from the National Banking and Securities Commission (CNBV) show that for the banking system as a whole, the past-due mortgage loan portfolio rose from 3.1% at the close of 2007 to 3.4% in October 2008. An increased has also been registered in the number of cities where default levels have either begun to appear or have risen. However, a more detailed examination reveals its high degree of concentration, with 26 cities accounting for 85% of the increase in past-due mortgage loans in 2008 compared to the close of 2007.

Mortgage Loan Default

Non-performing loans on a municipal level*



* Cities that in October 2008 had some level of non-performing loans compared with December 2007

Source: BBVA Bancomer

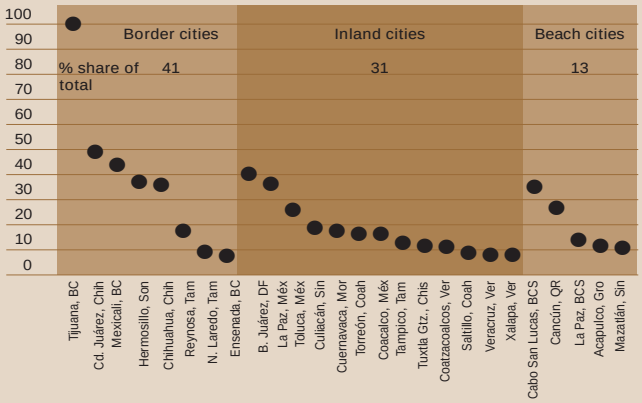
What are these cities and what do they have in common? Classified by categories according to their geographical location, the cities that most contributed to the increase in mortgage loan default levels in 2008 were the border cities, with 41%, followed by inland cities with, 31%, and beach locations with 13%. In the first group, in order of importance, are cities such as Tijuana, Ciudad Juárez, Mexicali, Reynosa, Nuevo Laredo, and Ensenada. There are other northern Mexican cities in the list that, although they are not located along the border, do have strong industrial ties to the U.S. economy, among them Chihuahua, Hermosillo, Torreón, Saltillo, Tampico, and Culiacán. Equally tied to the U.S. economy, but because of tourism, are different beach destinations, such as Los Cabos, Cancún, La Paz (Southern Baja California), Mazatlán, and even Acapulco. This group of cities accounts for close to two thirds of the increase in mortgage loan default.

The rest of cities that make up the group with the greatest contribution to the increase in mortgage loan default levels are mainly located in the center of the country, specifically, in the Federal District (the Benito Juárez municipality); the State of Mexico (La Paz, Toluca, and Coacalco); and Morelos (Cuernavaca). To complete the list, cities in southeast Mexico also appear on the list, in Veracruz (Veracruz, Coatzacoalcos, and Xalapa) and Chiapas (Tuxtla Gutiérrez).

It is important to note that in all of the above-mentioned cities, revenue from remittances is below the national average and the rates of international emigration are, according to the criteria of the National Population Council (Conapo), low or very low. That is, in the growth in mortgage loan default levels, remittances do not seem to represent an explanatory factor in their behavior[1].

Where is the Increase in Mortgage Loan Default Concentrated?*

Relative share index, scale of 0 to 100



* 85% of the increase in non-performing mortgage loans in 2008 (Oct.) vs the close of 2007

Source: BBVA Bancomer

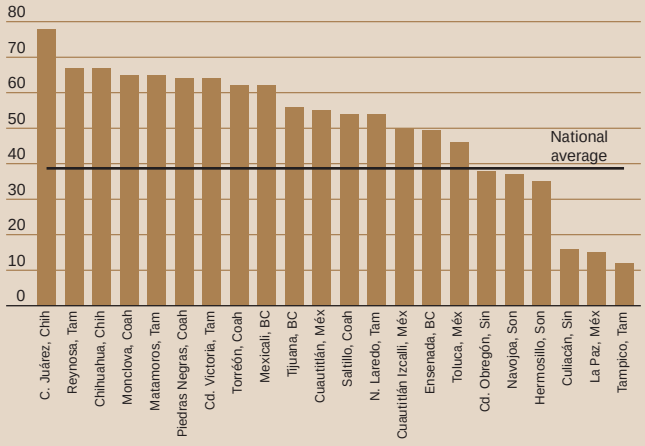
1 It should be mentioned, however, that for low-income housing segments, there are cities with strong migration and in which mortgage loan default have increased considerably. Like La Piedad, Michoacán; Guadalupe Victoria, Durango; San Francisco del Rincón, Guanajuato; Ojinaga, Chihuahua; and Rincón de Romos, Aguascalientes.

In turn, employment seems to be the key variable in the increase in mortgage loan default, at least in those areas with a strong industrial link with the United States. The structure and dynamics of employment in the cities with greater problems of non-performing loans, both in northern Mexico as well as some localities in the center of the country (such as Toluca and Cuautitlán, in the state of Mexico), indicate that companies with 500 and more employees[2] have a particularly high relative weight. While on a national level the companies in this category (500 and more workers) account for close to 39% of total employment, in the above-mentioned cities the corresponding figure exceeds 50% on average.

The increase in the unemployment rate is also clear. For example, according to the National Work and Employment Survey (ENOE for Encuesta Nacional de Ocupación and Employment), through the third quarter of 2008, the unemployment rate on a national level was 4.2% (measured in relation to the economically active population), but in the cities of northern Mexico (Chihuahua, Culiacán, Hermosillo, La Paz, Saltillo, San Luis Potosí, Tampico, and Tijuana) the figure was 5%. A year previously (third quarter of 2007) the unemployment rate in these cities was lower than the national average (3.8% vs. 3.9% respectively).

Employment in Cities with High Mortgage Loan Default

% share in total employment generated by large companies*



* More than 500 employees
Source: BBVA Bancomer with INEGI data

Another element that emerges from the analysis of mortgage loan default is the differentiated behavior among the housing segments. In the period under discussion, from December 2007 to October 2008, for housing earmarked for the low and middle-income strata of the population, the non-performing loan index rose from 3% to 3.9%, while for those with medium-high and high income levels, the corresponding figures were lower, from 2.1% to 2.7%. This shows the greater vulnerability of the low-income population strata to changes in the economic environment.

Finally, the increase in mortgage loan default in the above-mentioned cities is consistent with other real estate market indicators that also display weakness. In particular in the border region and in beach areas, housing sales have all but stopped and as a result, inventories have risen considerably.

Conclusions

It is true that mortgage loan default has increased, but it is clearly differentiated on a regional level and by segments. Of particular importance is its high level of concentration in northern Mexico and specifically in a limited number of localities that in some specific cases maintain strong links with the United States and in which a potential additional explanation could involve public security considerations. Another region that has also posted an increase in loan default levels are the beach localities. The figures back the expectation that, at least during 2008, the impact of the slowdown in the United States has been greater on the non-performing mortgage loan portfolio in those states with a high degree of integration with the U.S. economy, both in terms of industry (through maquiladoras) as well as tourism. The behavior of remittances does not appear as an explanatory element.

It should be emphasized that, at least in terms of the banking sector, the increase in mortgage loan default seems to be more tied to cyclical (external) conditions than to a relaxation in standards for granting loans. This is confirmed by the fact that on the level of population segments, the low-income strata have experienced a greater rise in mortgage loan default. Therefore, the efforts of the federal government in strengthening attention to this segment of the population through special support programs, maintaining subsidies, preferential interest rates, and assigning a high percentage of the public housing agency's credit goals should be recognized.

Eduardo Torres e.torres@bbva.bancomer.com
Alma Martínez alma.martinez@bbva.bancomer.com

2 Granting that if they are of this size, in these areas, they are either maquiladoras or perhaps auto plants.

Leonardo González leonardo.gonzalez@bbva.bancomer.com
Adolfo Albo a.albo@bbva.bancomer.com

Urban Land Market for Housing Construction

Introduction

The land market is the main restriction for the development and growth of the urban housing market in Mexico. This represents a bottleneck for maintaining the dynamics of the housing industry and a growth rate in the medium term in accordance with the need for housing and the urbanization trends in the cities. The relative shortage of housing, which has been reflected in an increase in prices, has worsened in the recent growth cycle (2002-07) despite the considerable efforts by the government to promote the housing sector, the massive participation by homebuilders and housing agencies, and the abundant supply of credit. At present, there are around 85,000 hectares of land in Mexico for housing construction according to data from an inventory of this asset[1], which is enough to satisfy demand up to 2012. The most negative effects of the restriction in land occur in the lower-income segments of the market.

In general, this market is characterized by having loopholes of legal uncertainty with regard to the supply of public services, lack of security in terms of property rights due to the illegal makeshift construction of homes or the process of regularizing land ownership for semi-communal *ejido* or communal land; inconsistencies in the Registry of Public Property (RPP) and deficient state and municipal cadastral appraisals. These factors increase the transaction costs of land for housing acquisition. In particular, the strategy of accumulating plots of land by homebuilders is the main long-term tool to be able to compete in the housing market. Therefore, the government's role is key for a more flexible operation of the land market and for making a more abundant supply of land available, providing urban infrastructure and services, building codes and more expeditious municipal zoning plans that come together in a long-term vision of urban development. The supply of land should be flexible, allowing housing developers greater accessibility to land, and the state (state and federal governments) should increase its share of the appreciation value of the land derived from investments in infrastructure and the provision of urban services. For consumers, improvement is needed in the guarantees and property rights of the housing stock and increases in housing prices should be avoided due to the problems regarding land acquisition.

In this context, this article analyzes the land market and its uses, specifically reviewing its degree of flexibility; that is, its capacity for expansion, its connectivity to the potential supply of housing based on the country's urbanization trends. The analysis was conducted on a state level and by housing segments. The study is comprised of the following sections: 1) urbanization and growth of cities in Mexico, 2) potential supply of housing: elasticity in density and appreciation value of land for residential use and 3) conclusions.

1) Urbanization and growth of cities in Mexico

The dynamics of urbanization are the determining factors in the demand for land, both for housing as well as commercial use. Generally speaking, in any part of the world the expansion of cities can be explained by both economic factors as well as geographical and social considerations. In the available literature on this topic, six essential variables are identified: 1)

1 The Department of Social Development (Sedesol) based on the urban plans of the main municipalities analyzes the situation of the land market through an inventory of land fit for housing construction and defines the urban uses of such land in the cities of the National Urban System.

environment (mountains, water resources, climate, etc), 2) demographics (migration, the natural growth of the population, degree of urbanization, hierarchical position of the city, etc), 3) economic growth (job creation, level of household income, degree of development of real estate finances, etc.), 4) transportation system (availability, transportation costs in relation to household income, quality of streets and highways, public transportation system, access to new technologies, etc), 5) the population's preferences for "proximity" (owning their own home, urban amenities, proximity to the work place) and horizontal vs. vertical development and 6) urban governance (sovereignty of local governments, federalism, public ownership of the land, availability of infrastructure, effectiveness of property taxes, metropolitan urban planning agency, etc).

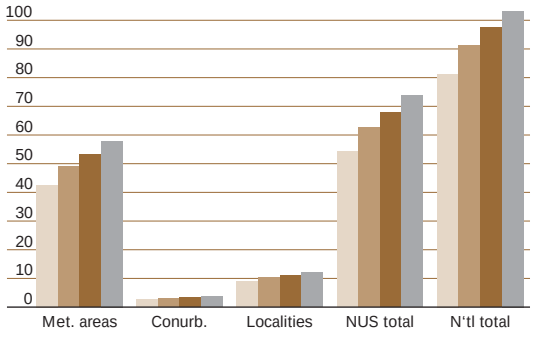
The degree of urban concentration or agglomeration has important implications for the level of activity and growth expectations for the economy as a whole[2]. According to the World Bank, two types of cities can be identified on a global level: a) in the developing countries, where there will be rapid urban growth. It is expected that the urban population will double by 2030, equivalent to 3.97 billion inhabitants worldwide. As part of this dynamic, for the cities with more than 100,000 inhabitants, the population is expected to triple; b) cities in the industrialized countries will experience a modest, but significant growth of 11%. An essential characteristic will be the area per inhabitant and during this period it is expected that it will increase 2.5 times, both due to the growth in housing as well as the services offered. In total, for 2030 in both developed as well as developing nations, cities will consume between 5% and 7% of the available agricultural land.

In the case of Mexico, the greatest demand for land for housing comes from the metropolitan areas, accounting for 57.8% of the total, corresponding to cities of more than 100,000 inhabitants. This is followed by communities with less than 15,000 inhabitants, which account for 24.2% of demand. According to the Department of Social Development (*Sedesol*), it is estimated that land requirements for housing construction for 2012 for the low-income segments of the population, (those earning three times the minimum wage or less), will be 45,071 hectares, which represents 54.4% of the total land requirement for housing.

Urban Demographics in Mexico

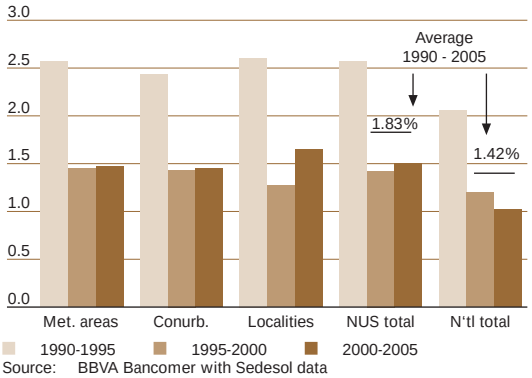
From 1990 to date, sustained growth has been registered in the National Urban System (NUS), which is comprised of three categories of cities: metropolitan areas, conurbations (urban area or agglomeration comprising a number of cities, large towns and larger urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area) and localities, which are defined by the degree of population density. In 2005, the National Urban System or NUS accounted for 70% of the country's total population. While the average growth of the country's population between 1990-2005 was 1.42%, for the NUS the corresponding figure was higher, at 1.83%, in which the most important increase occurred between 1990-95, at 2.5%. Currently, almost 60 million people reside in the country's metropolitan areas, with nine cities having a population of more than one million inhabit-

Population of the Urban System
Millions



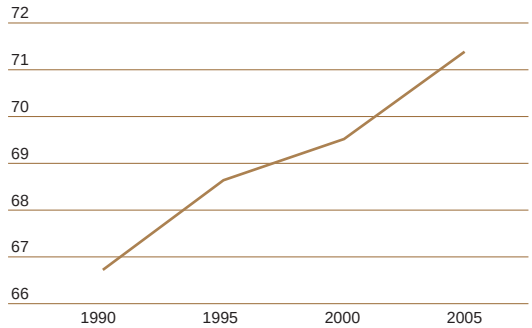
Source: BBVA Bancomer with Sedesol data

Population Growth of the Urban System
%



Source: BBVA Bancomer with Sedesol data

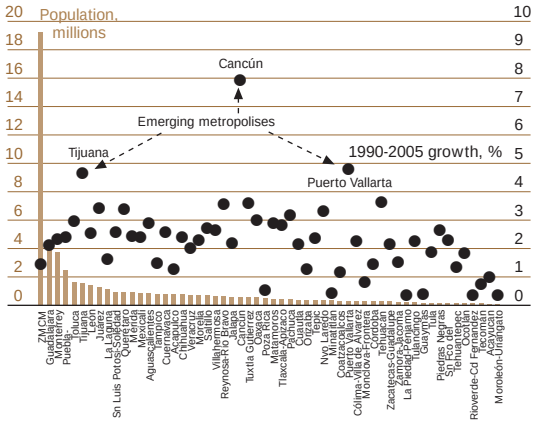
National Urban System of Mexico
NUS / total population, %



Source: BBVA Bancomer with Sedesol data

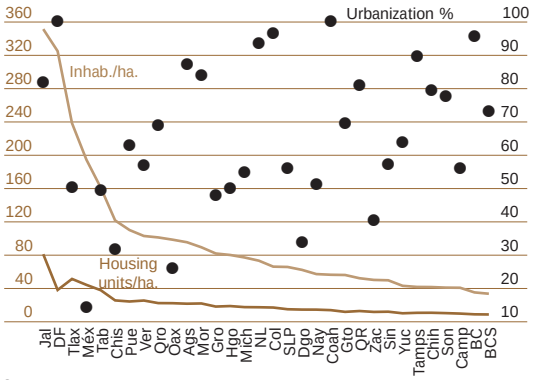
2 Henderson, J. V. (2003). "*The urbanization process and economic growth: the So-What question*"; Journal of Economic Growth, 8, 47-71.

NUS Metropolitan Market



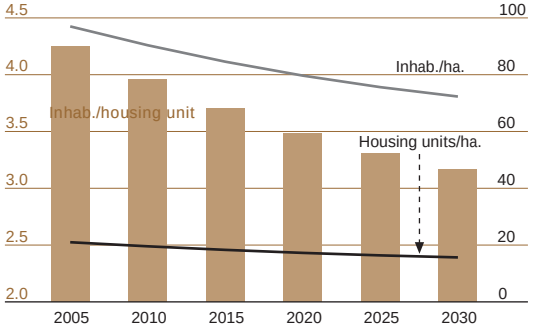
Source: BBVA Bancomer with Sedesol data

Urbanization and Housing Density in Mexico



Source: BBVA Bancomer

Projection of Urban Densities in Mexico



Source: BBVA Bancomer with Conapo data

ants.[3] The metropolitan areas have grown at an average rate of 2.2% from 1990-2005, in which a considerable number of emerging cities can be identified, with the most important examples being Cancún, Tijuana, and Puerto Vallarta, with population increases between 5% and 8% in the same period.

Urbanization trends toward the future point to a process of re-densification of the NUS, mainly due to lower housing occupation rates. While in 2005, there were 4.24 inhabitants per housing unit, in 2030 it is estimated that the figure will drop to 3.16. The degree of urbanization in Mexico is currently 65% and there are presently 15 states above the national average in this regard. Jalisco is the state with the highest population density, at 352 inhabitants per hectare and a degree of urbanization slightly above 80%. At the other end of the spectrum we have Southern Baja California, which is 72% urbanized and has 34 inhabitants per hectare. The Federal District is 100% urbanized, with a population density of 325 inhabitants per hectare; it is located in the center of the Mexico City Metropolitan Area, while its conurbations in the adjacent State of Mexico have lower degrees of urban densification.

Based on the densification and urbanization trends, two basic conclusions emerge that should be considered in designing public policies: 1) better planned growth should be achieved with the development of intermediate cities that encourage the mobility or relocation of the population within the NUS and 2) the land market should be more flexible in terms of acquisition and use in housing construction, both for new housing developments as well as a reclassification of zoning regulations that would promote the re-densification of cities, for example, through the development of vertical housing construction.

2) Potential housing supply: elasticity in density and appreciation value of land for housing

The purpose of this study is to offer an approximation of the degree of flexibility of the land market in Mexico, on a state level and by housing segment. It should be noted that one of the restrictions faced in providing an analysis of the real estate sector in Mexico is the availability of information. Therefore, housing potential is estimated based on current urbanization trends that are considered as a proxy for demand for land. Two growth scenarios for the housing stock are defined, through which the elasticity value of the land and the population density of the cities of the NUS are estimated[4]. With regard to the numbers used, information from the National Population Council (Conapo) is employed

3 The NUS is comprised of 358 cities classified in 56 metropolitan areas, 64 conurbations, and 238 localities. The latter represent 16% of the system and the conurbations only 5%, and therefore, the metropolitan areas account for 79%. Specifically, the nine main metropolitan areas with more than a million inhabitants account for 25% of the urban system.

4 For the calculation of the estimates on the potential housing supply, it was necessary to adjust the potential supply of land to a condition that limits the depreciation of the real estate stock (land and housing) based on the notion derived from the growth of cities that argues that the latter become stabilized at a critical point, which is why there are no negative variations in the potential availability of urban land or housing existing in each location, as could be inferred from the urban growth trends derived from Conapo's population projections. For example, in response to a negative population growth rate of the NUS by 2030, this would imply the destruction of the housing reserve and the elimination of land fit for construction in the cities. Specifically, this condition involves the price of the urban land being analyzed through the Hotelling rule, that is, the marginal cost of land fit for urbanization is growing with respect to the additional use of urbanizable land, and therefore the relative shortage of this input increases to the extent that housing construction posts sustained growth over time (see, Hotelling H. (1931) "*The economics of exhaustible resources*" Journal of Political Economy).
In case more detailed information is required on the parameters of the supply of land weighted by the quality of urbanization and projections on population growth and the housing stock in the NUS, it is suggested that a request be explicitly sent in this regard to the editorial board, which, due to space considerations, this information was not thoroughly developed in this article.

as a base, with which potential housing demand is projected based on demographic or population growth trends (up to the 2030) and at the same time considering the expected housing stock for 2020. This is based on the assumption that the population densities of the NUS (national, state and municipal) will be constant for each local system, although they vary over time depending on the long-term trends in household formation and the number of occupants per housing unit.

In relation to land prices, there are two reference points: cadastral values on a national level and those based on the land inventory. The cost of land represents between 5% and 20% of the final value of a home, which in turn varies according to the housing segment[5] considered. There are also restrictions on the availability of information on the prices of this real estate asset due to the deficiencies in the cadastral bases used for such calculations and the appraisals available on the specific value of the land. In this context, an equivalence has been calculated on the value ranges of land for home construction with the segments considered in the housing stock, with As corresponding to the price of the land used for housing construction in segment A, and so forth, as illustrated in the chart that presents prices for 2008 and their equivalence in minimum wages in the "A" geographical area.

5 See the Department of Social Development's Land Inventory, which presents the supply of land fit for constriction with the corresponding qualitative classification and type of use in the NUS.

Range in Land Values for Housing Use*

	From	To
Value in monthly minimum wages		
As	10	26
Bs	26	48
Cs	48	120
Ds	38	267
Es	267	
At 2008 prices		
As	15,612	40,950
Bs	41,206	76,781
Cs	77,037	191,952
Ds	60,065	427,413
Es	427,669	higher

* Values calculated on the basis of the minimum wage in zone "A"
Source: BBVA Bancomer

Land Elasticity with Respect to Value

E(P,S)	P(a,b)	P(b, c)	P(c, d)	P(d, e)	P(a,b)	P(b, c)	P(c, d)	P(d, e)
National	**e**	**e**	**e**	**e**	**2.7**	**2.3**	**2.2**	**7.6**
Aguascalientes	i	i	i	u	0.5	0.4	0.4	1.3
Baja California	e	e	e	e	90.6	76.9	75.5	258.7
Baja California Sur	e	e	e	e	2.7	2.3	2.3	7.8
Campeche	e	e	e	e	2.1	1.8	1.8	6.1
Coahuila	e	e	e	e	12.8	10.8	10.6	36.4
Colima	e	e	e	e	15.4	13.0	12.8	43.9
Chiapas	u	u	u	e	1.2	1.0	1.0	3.3
Chihuahua	e	e	e	e	1.8	1.5	1.5	5.2
Distrito Federal	e	e	e	e	8.2	7.0	6.8	23.4
Durango	e	e	e	e	4.1	3.4	3.4	11.6
Guanajuato	e	e	e	e	2.7	2.3	2.3	7.8
Guerrero	u	i	i	e	0.5	0.5	0.5	1.6
Hidalgo	e	e	e	e	3.3	2.8	2.7	9.4
Jalisco	e	e	e	e	2.4	2.0	2.0	6.9
México	e	e	e	e	3.1	2.6	2.6	8.8
Michoacán	e	e	e	e	3.9	3.3	3.3	11.1
Morelos	e	e	e	e	6.7	5.7	5.6	19.3
Nayarit	e	u	u	e	1.7	1.4	1.4	4.8
Nuevo León	u	u	u	e	1.1	0.9	0.9	3.1
Oaxaca	i	i	i	u	0.5	0.4	0.4	1.3
Puebla	e	e	e	e	3.1	2.7	2.6	8.9
Querétaro	e	e	e	e	5.1	4.3	4.2	14.5
Quintana Roo	e	e	e	e	9.6	8.2	8.0	27.5
San Luis Potosí	e	e	e	e	2.4	2.0	2.0	6.9
Sinaloa	e	e	e	e	4.0	3.4	3.3	11.3
Sonora	i	i	i	u	0.4	0.4	0.4	1.2
Tabasco	e	e	e	e	5.8	4.9	4.8	16.4
Tamaulipas	e	e	e	e	5.0	4.3	4.2	14.3
Tlaxcala	e	e	e	e	2.9	2.5	2.4	8.3
Veracruz	e	e	e	e	3.5	3.0	2.9	10.0
Yucatán	i	i	i	i	0.1	0.1	0.1	0.4
Zacatecas	e	e	e	e	21.1	17.9	17.6	60.3

Note: e: elastic (1,n); i: inelastic (0, 1); u: unitary (1) Source: BBVA Bancomer

An additional criteria used in the study is the land classification made by Sedesol, based on its quality, defined by the accessibility of the property and the availability of public services (specifically, sewage lines, drinking water, and electrification). The following classification is used: (a) representative, which represents 77% of the plots of land (Accessibility (high) and very low level of availability of services); (b) quality plus + (Average accessibility and high level of availability of public services), which accounts for 12% of the total, and (c) residual, with 11% of the supply of land for residential use. Three sub-cases are included for classifying residual urban properties as a whole: low, mixed and not specified (NE), whose percentage shares are 2%, 3%, and 6%, respectively. The location of the land holdings are explicitly considered under the intra-urban and peripheral area modalities. Then, each case of the 358 cities included in the NUS is evaluated to obtain the corresponding elasticities.

In the previous chart, data on the land markets of the NUS are presented by state with their land-value elasticity in relation to variations in price. As a result, this is an approximate indicator of the value of land in each urban area and housing segment. For a first series of cities we identified the states whose markets could be termed inelastic for most of the ranges of land values, which appear in the previous section. The states in this category are Aguascalientes, Chiapas, Guerrero, Nuevo León, Oaxaca,

Elasticity of Land with Regard to Housing Density

E(P,S)	ID(l,m)	ID(m,h)	PD(l,m)	PD(m,h)	D(I, P)	ID(l,m)	ID(m,h)	PD(l,m)	PD(m,h)	D(I, P)
National	**i**	**e**	**e**	**e**	**u**	**0.8**	**5.6**	**15.2**	**9.4**	**1.0**
Aguascalientes	i	i	e	e	i	0.1	1.0	2.7	1.6	0.2
Baja California	e	e	e	e	e	28.2	189.6	515.4	318.6	32.7
Baja California Sur	i	e	e	e	u	0.9	5.7	15.5	9.6	1.0
Campeche	i	e	e	e	i	0.7	4.4	12.1	7.5	0.8
Coahuila	e	e	e	e	e	4.0	26.7	72.6	44.9	4.6
Colima	e	e	e	e	e	4.8	32.2	87.4	54.1	5.6
Chiapas	i	e	e	e	i	0.4	2.4	6.6	4.1	0.4
Chihuahua	i	e	e	e	i	0.6	3.8	10.3	6.4	0.7
Distrito Federal	e	e	e	e	e	2.6	17.2	46.7	28.9	3.0
Durango	e	e	e	e	e	1.3	8.5	23.1	14.3	1.5
Guanajuato	i	e	e	e	u	0.8	5.7	15.5	9.6	1.0
Guerrero	i	u	e	e	i	0.2	1.1	3.1	1.9	0.2
Hidalgo	u	e	e	e	u	1.0	6.9	18.7	11.6	1.2
Jalisco	i	e	e	e	i	0.8	5.0	13.7	8.5	0.9
México	u	e	e	e	u	1.0	6.5	17.6	10.9	1.1
Michoacán	u	e	e	e	u	1.2	8.2	22.2	13.7	1.4
Morelos	e	e	e	e	e	2.1	14.1	38.4	23.7	2.4
Nayarit	u	e	e	e	u	0.5	3.5	9.5	5.9	0.6
Nuevo León	i	e	e	e	i	0.3	2.3	6.2	3.8	0.4
Oaxaca	i	u	e	e	i	0.1	1.0	2.6	1.6	0.2
Puebla	u	e	e	e	u	1.0	6.5	17.8	11.0	1.1
Querétaro	e	e	e	e	e	1.6	10.6	28.9	17.8	1.8
Quintana Roo	e	e	e	e	e	3.0	20.2	54.8	33.9	3.5
San Luis Potosí	u	e	e	e	u	0.7	5.0	13.7	8.5	0.9
Sinaloa	u	e	e	e	u	1.2	8.3	22.5	13.9	1.4
Sonora	i	u	e	u	i	0.1	0.9	2.4	1.5	0.2
Tabasco	e	e	e	e	e	1.8	12.1	32.8	20.3	2.1
Tamaulipas	e	e	e	e	e	1.6	10.5	28.6	17.7	1.8
Tlaxcala	u	e	e	e	u	0.9	6.1	16.5	10.2	1.0
Veracruz	u	e	e	e	u	1.1	7.4	20.0	12.4	1.3
Yucatán	i	i	u	i	i	0.0	0.3	0.7	0.5	0.0
Zacatecas	e	e	e	e	e	6.6	44.2	120.2	74.3	7.6

Note: e: elastic (1,n); i: inelastic (0, 1); u: unitary (1) Source: BBVA Bancomer

Sonora, and Yucatan. On the other end of the spectrum, we identified the most elastic markets, namely, Northern Baja California, Tabasco, Colima, Tamaulipas, Quintana Roo, Zacatecas, Querétaro, Morelos, and Coahuila. For the remaining, it should be emphasized that in the Federal District (Mexico City), segments A and D are elastic, and the high end segments (D, E) are relatively elastic, mainly in Northern Baja California, Zacatecas, Quintana Roo, and Coahuila.

In general, a greater degree of flexibility is observed in the D and E segments, which indicates the existence of a higher generation of appreciation value. In the case of the A, B, and C segments, we have a market with restrictions and, therefore, a smaller rhythm of creation of urban land appreciation value.

To analyze the sensitivity of the land market to the degree of urbanization, the elasticity of land prices was calculated in relation to variations in population density and the geographical location in the city of the properties either as intra-urban or peripheral area categories. This is an approximate indicator of the flexibility of the plots of land susceptible to being urbanized for residential use based on population density and location in the city. For this exercise, we found that the most inelastic markets were Aguascalientes, San Luis Potosí, Chiapas, Sonora, Yucatan, Guerrero, Nuevo León, and Oaxaca, while the most elastic were Northern Baja California and Zacatecas. Specifically, plots of land located in the downtown areas of cities with high population density are elastic in the Federal District, Colima, Morelos, Quintana Roo, Tabasco, and Zacatecas. And land located in peripheral areas with low population density is elastic in Colima, the Federal District, Durango, Morelos, Quintana Roo, and Zacatecas.

If we strictly evaluate land-urban location elasticity, we find that the domestic market is inelastic, with the exception of Northern Baja California. Therefore, if the instruments of re-densification are oriented toward a vertical intra-urban model, then the current state of the domestic land market will present restrictions to this development and growth plan in almost all the cities of the NUS. That is, the system of intra-urban land plots is inelastic to urbanization in peripheral areas.

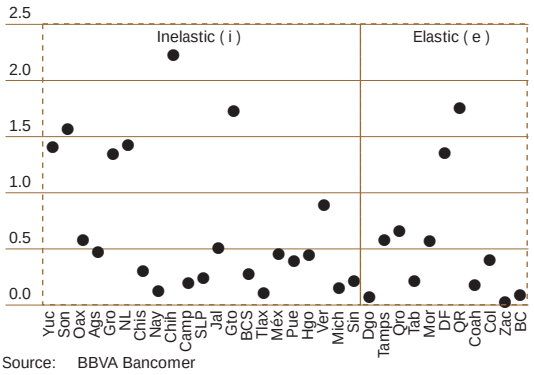
The estimate of the expected housing stock shows us that potential supply is polarized by the degree of flexibility of the land market. Only 11 states are elastic, representing 27% of the total supply of housing. For example, of the three main metropolitan areas, only the Federal District has a greater degree of flexibility in land use, which will allow achieving a long-term rhythm of housing construction consistent with a program of vertical growth and geographical densification. In addition, the cases of Chihuahua and Guanajuato should be highlighted as states that have greater restrictions in land susceptible for housing construction because they belong to the most inelastic segment in the market.

Conclusions

Given the current state of deficit and high transaction costs for housing construction, the recommendation has been made to make the land market more flexible. Today there is a consensus that this is the main restriction or bottleneck for the development of the sector. We feel that the land market is relatively inelastic[6] due to the series of restrictions and administrative efforts necessary to obtain land

Potential Housing Supply and Elasticity of the Land Market

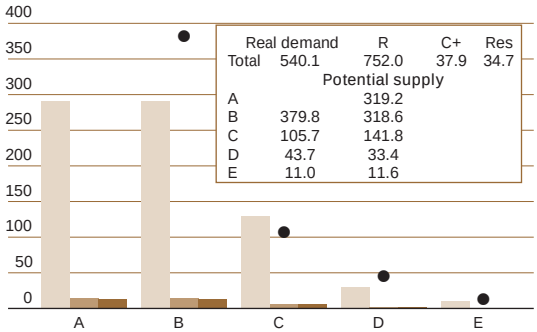
Millions of units



Source: BBVA Bancomer

Potential Supply and Real Demand for Housing

Average number of units annually, thousands



R Representative
C+ Quality
Res Residual
Source: BBVA Bancomer

6 Even though quantitatively, with the indicators used in this study, it is considered as elastic.

susceptible for urbanization. Therefore, the redefinition of the use of land that is fit for housing and urban development (with mixed and sustainable use) is indispensable for guaranteeing an orderly growth of cities. Variables such as the legal uncertainty surrounding property rights; weak cadastral policies and low collection levels of property taxes; the need for better incentives for municipalities in the creation of available land reserves and the provision of infrastructure; the transfer of the cost of investments in urban infrastructure and services from the private homebuilders and developers to the price paid by the final consumer; or the restrictions to the growth of the cities resulting from the slowness of legal procedures in the case of communal lands, considerably restrict real estate transactions from being realized, even given the presence of real demand or natural growth trends of the cities, all of which is reflected in low land elasticity. In addition, the current state of indicators on prices, value appreciation, and land value is very precarious. It would also be

Potential Housing Supply (2005-2030)

Units per housing segment and quality of urban land* of the NUS by state

Housing units	Representative	Annual avge.	Quality +	Annual avge.	Residual	Annual avge.	
Total	**18,799,611**	**751,984**	**946,682**	**37,867**	**867,792**	**34,712**	
A	7,276,866	291,075	366,437	14,657	335,901	13,436	
B	7,264,115	290,565	365,795	14,632	335,312	13,412	
C	3,232,968	129,319	162,801	6,512	149,234	5,969	
D	762,107	30,484	38,377	1,535	35,179	1,407	
E	263,554	10,542	13,272	531	12,166	487	
	Total per state	Annual avge.	A	B	C	D	E
Nacional	**20,614,085**	**824,563**	**7,979,204**	**7,965,223**	**3,545,004**	**835,663**	**288,991**
Chihuahua	2,214,834	88,593	857,308	855,806	380,885	89,786	31,050
Quintana Roo	1,739,998	69,600	673,510	672,330	299,227	70,537	24,393
Guanajuato	1,719,767	68,791	665,679	664,513	295,748	69,717	24,110
Sonora	1,559,764	62,391	603,746	602,688	268,233	63,230	21,866
Nuevo León	1,412,350	56,494	546,686	545,728	242,882	57,255	19,800
Yucatán	1,396,946	55,878	540,723	539,776	240,233	56,630	19,584
Distrito Federal	1,342,483	53,699	519,642	518,731	230,867	54,422	18,820
Guerrero	1,334,547	53,382	516,570	515,665	229,502	54,101	18,709
Veracruz	880,175	35,207	340,694	340,097	151,364	35,681	12,339
Querétaro	647,440	25,898	250,608	250,169	111,340	26,246	9,077
Oaxaca	573,067	22,923	221,820	221,431	98,550	23,231	8,034
Tamaulipas	566,817	22,673	219,401	219,017	97,476	22,978	7,946
Morelos	556,650	22,266	215,465	215,088	95,727	22,566	7,804
Jalisco	501,694	20,068	194,193	193,853	86,276	20,338	7,033
Aguascalientes	464,699	18,588	179,874	179,558	79,914	18,838	6,515
México	441,936	17,677	171,063	170,763	76,000	17,915	6,196
Hidalgo	435,361	17,414	168,518	168,222	74,869	17,649	6,103
Colima	394,687	15,787	152,774	152,506	67,874	16,000	5,533
Puebla	383,479	15,339	148,435	148,175	65,947	15,546	5,376
Chiapas	291,706	11,668	112,912	112,714	50,165	11,825	4,089
Baja California Sur	267,308	10,692	103,468	103,287	45,969	10,836	3,747
San Luis Potosí	227,606	9,104	88,101	87,946	39,141	9,227	3,191
Tabasco	204,011	8,160	78,968	78,829	35,084	8,270	2,860
Sinaloa	200,150	8,006	77,473	77,337	34,420	8,114	2,806
Campeche	187,210	7,488	72,464	72,337	32,194	7,589	2,625
Coahuila	167,388	6,696	64,792	64,678	28,786	6,786	2,347
Michoacán	137,373	5,495	53,174	53,081	23,624	5,569	1,926
Nayarit	115,058	4,602	44,536	44,458	19,786	4,664	1,613
Tlaxcala	96,245	3,850	37,254	37,189	16,551	3,902	1,349
Baja California	79,502	3,180	30,773	30,720	13,672	3,223	1,115
Durango	60,566	2,423	23,444	23,403	10,416	2,455	849
Zacatecas	13,267	531	5,135	5,126	2,282	538	186

* Quality of urban land in three categories: Representative (77%), Quality + (12%), and Residual (11%) Source: BBVA Bancomer

advisable to improve the system of information in this market with the aim of offering more consistent signals to the sector's participants.

The potential supply of housing is conditioned on the quality of the land that is fit for construction. Three types have been defined based on their accessibility (high, medium, and low) and the quality of the public services, drinking water, sewage lines, and electrification. It is estimated that the domestic market's expected production is 750,000 homes annually using representative urban land (77%), in which almost 80% corresponds to segments A and B. The land market is inelastic; although there are urban niches and segments with such a degree of flexibility that there is a greater rate of appreciation value generation, mainly in the high-end categories (C, D, and E). The potential and real demand for housing, given the state of the market's systemic deficit, can be met in the long term through the implementation of public policies and instruments that encourage the availability of a larger quantity of land that is fit for construction in each of the country's urban areas through the creation of land reserves with lower transaction costs for the acquisition of grass or wooded land on the part of the homebuilders and at the same time, encourage a change in the definition of the use of land, for example in the definition and promotion of the development of vertical cities.

Therefore, if the medium-term growth strategy for the cities is to promote vertical construction and the redensification of land, then allowing the mixed use of land fit for construction is the most appropriate plan for urban development. Based on this recommendation, housing construction would be undertaken by taking advantage of the economies of scale of the urbanization of each city, promoting new centers of activity and the generation of employment, congestion would decrease due to a reduction in transportation flow and, in general, a more rapid convergence could occur with the global criteria of sustainability of the cities.

This article offers an estimate of the potential housing supply for the NUS, in which we calculated the elasticity of land for each housing segment and the quality of land plots. This is a qualitative approximation that serves as a guide for the specific application of public policies that boost the flexibility of this market for the acquisition of land in Mexico[7].

Bibliographic References

Chiu R., Turner B. and Whitehead C. (2007). "*Land use regulation: transferring lessons from developed countries*". Urban Research Symposium 2007 on Urban Land Use and Land. The World Bank, Washington D.C.

Henderson V. (2007). "*Taking land around the world: the effect of residential land market regulations on urban welfare*". Urban Research Symposium 2007 on Urban Land Use and Land. The World Bank, Washington D.C.

Perló C. M. (1999). "*Land value capture in Mexico*". Lincoln Institute of Land Policy. Working Paper (WP99PC1)

Peterson G. E. (2008). "*Unlocking land values to finance urban infrastructure*". The World Bank (PPIAF), Trends and Policy Options No. 7. Washington D.C.

7 A previous study on this topic was published in *Situación Inmobiliaria México* of Nov. 2004.

Leonardo González leonardo.gonzalez@bbva.bancomer.com
Adolfo Albo a.albo@bbva.bancomer.com

Urban Macro-Developments and Sustainable Low-cost Housing

Introduction: the benefits of a new urban model

Mexico is showing a potentially high demand for housing in the coming decades. This is due to the dynamics of the population, such as the formation of new families but also to the existence of a persistent historic housing deficit—mainly low-cost housing for the low-income population—. This housing deficit[1] is mainly located in small communities that are geographically dispersed and more remote from work centers, which represent a weak loan history, with a significant presence of the informal segment linked to housing self-construction. In some cases, this deficit has been covered by irregular settlements in areas that, due to their location and nature, are risky.

On the other hand, the higher prices of land susceptible and suitable for conversion into a housing development, and the limitations of the potential supply of basic services infrastructure—to provide them opportunely and with the needed coverage—have been factors that are essential determining factors for the location of low-cost housing developments. Consequently, during the recent housing expansion cycle, part of the new developments has been established at a considerable distance from the work centers and basic public services, such as education, health and entertainment, limiting the benefits, particularly for the low-income residents of those sites.

Also, the phenomenon of climate change grows in importance: each day, prioritizing environmental care in the building of housing by using clean technologies and mortgage instruments that promote the acquisition of sustainable low-cost housing. Within this context, an original and novel alternative emerges of "Making a City" under sustainable economic and environmental criteria such as saving energy and water, and with a better control of solid waste disposal, which will have a considerable impact on emissions of Greenhouse Effect Gases (GEGs). The current administration is proposing the construction of these "satellite cities" through the linking of municipal governments, state housing organizations (OREVIS for their Spanish initials), private developers and financial institutions. The plan is for this to materialize through so-called Sustainable Urban Macro-Developments or Sustainable Comprehensive Urban Developments (DUIS for their Spanish initials). The essential contribution of these projects is that they would be directed toward new urban models, better integrated socially and economically, and sustainable from an ecological standpoint.

It is also important to mention that this new plan is allowing innovation in financing plans. Mexico is beginning to make inroads in the Emerging International Carbon Bonds Market (CBM), which could lower the financing cost of the projects. This recent financial market allows obtaining resources from other countries when their developments include those characteristics that will reduce carbon emissions and Greenhouse Effect Gases (GEG). An equally important element in the DUIS is that through the stimulus of a new urban model, the necessary conditions can be facilitated for a sustained generation of an increase in the real estate

1 We suggest consulting the issue of "*Real Estate Watch Mexico*", September 2008, where the definition of the housing deficit, available statistics on the subject, such as some estimates inherent to this important concept of the sector, are analyzed in detail. In previous issues, also appearing are estimates of the potential and real demand, at a State level, and by income segments.

value. Since housing constitutes an essential asset of families' net worth, a more efficient model that will mitigate the problems observed in the current developments should be reflected in long-term benefits.

In this context, we analyzed DUIS in this article, within the new urbanization trend that should be promoted in Mexico. Thus, some of the questioning is as follows: What is the contribution of these macro developments to the new phase of Mexico's housing sector? What is the strategy for achieving a better provision of infrastructure, services and amenities in the DUIS? How will it be possible to link these developments with the work centers and the generation of economic activity so as to achieve self-sufficient development in terms of job generation and housing expansion? How is the institutional framework designed in order to foster sustainability? What are the main criteria for sustainability that would be applied in residential building? How do the public-private co-investment financial mechanisms operate in providing sustainable urban infrastructure? What are the financial guarantees and the linkage with international financial organizations? What is the number of homes in the low-cost segment that is expected to be built in the Macro Developments? What is the linkage with federal government subsidy programs? What will be the expected increase in real estate value in the DUIS?

To approach these questions, the sections that make up this article are as follows: 1) new competitive and sustainable cities in view of climate change, 2) a new framework for housing sustainability: the DUIS (Sustainable Comprehensive Urban Developments), and 3) "Making a City", toward the economic sustainability for infrastructure provision and mobility toward job centers, to finally end with a brief evaluation of the subject.

The importance of the new sustainable cities in view of climate change[2]

Toward 2030, as projected by the Sedesol (the Department of Social Development), the building of homes in the country will intensify in cities and urban populations. Currently, 76.4% of the population is located in towns of more than 15,000 inhabitants. Around 30% of the population lives under conditions of urban insecurity, exposed to hurricanes and flooding. The irregular occupation of the land, due to informal settlements where homes are self-constructed, continues to be a common practice in the national urban sector The population of the NUS will rise from 73.7 million persons in 2005 to 76.5 million in 2030, which implies 3.8% growth, while the housing stock, according to the National Population Counsel (Conapo for its Spanish initials), will increase 56% in the same period.

The persistence of climate change is an additional challenge for urban competitiveness. The urbanization process linked to the housing market requires development policies to be set forth again so that they will increase efficiency in cities, generating a higher level of global competitiveness. Thus, it is a necessary condition in this new dynamics to define long-term growth strategies under sustainable

2 The phenomenon of Climate Change is generated as of the impact of greenhouse effect gases (GEG) in the atmosphere. This phenomenon is produced in the lowest layer, the troposphere, where temperature is modulated and the "greenhouse effect" is harbored—which absorbs infrared radiation through gases such as carbon dioxide (CO_2), water vapor, nitrous oxide (N_2O), Methane (CH_4) and chlorineflurocarbons (CFC´s).

The importance of Moving toward a New Phase in the Housing Sector in Mexico

As we have commented on other occasions, the housing market in Mexico has experienced a very positive growth and expansion cycle (2002-07). Substantial progress has been made in the conditions of accessibility to housing through improvements in financial conditions. Institutional reforms have allowed an abundant supply of mortgage loans: real estate promotion has been favored with downward interest rates and longer terms to satisfy potential demand. Nevertheless, it is recommendable to move on to a "new phase" in housing that would allow offering the consumer throughout the country urban developments integrated with the growing nodes of the cities, endowing a higher level and better quality of infrastructure, satisfying, in the best way, the needs of the population—centers of work, entertainment, health, education, etc.—. For developers, financiers, and public administrators it is vital to offer them better "signals" by means of more realistic goals of the public agencies and the best indicators of the current situation of the sector, which would allow, among other aspects, better planning, a determination of real demand, in terms of families' payment capacity, a better synchronization between housing supply and demand, etc. An example of important information, of enormous impact, refers to providing consistent and periodic information on the housing deficit.* Also, reducing the cost of transactions derived from housing acquisitions would allow continuing to improve accessibility to housing. Also, accelerating integration with the Carbon Bonds Market and promoting the complementary ecological amenities in the traditional developments. All of this could facilitate better quality urban models.

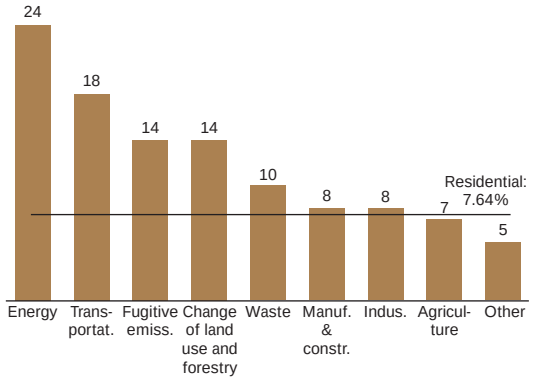
On the supply side, we observed an increase in prices relative to land that is appropriate for housing development and the provision of infrastructure, which constitutes restrictions to urban development. The scarcity of land use with public services at competitive prices, as well as legal restrictions on land use—limitations to construction schemes—derive in a disintegrated growth of cities. This also raises prices for the provision of public services—light, water, transportation, security, and trash collection, education, health, etc.—. In particular, there are legal restrictions in the housing market due to the existence of transaction costs in its acquisition phase of land for urbanization purposes. This is why participants in the sector should improve the degree of coordination in their decision making through a comprehensive plan of measures that will allow accelerating growth of the land market, offering better guarantees and eliminating those bottlenecks, mainly in providing the supply of urbanized land apt for housing.

* We still observe that a housing deficit exists, both for remodeling as well as for new housing that is mainly located in urban concentrations of fewer than one million inhabitants, of low urban concentration in geographically dispersed areas with low income levels and that have no affiliation in social security, which is presumably why they are in the informal economy (see "*Real Estate Watch*", September 2008)

Source: BBVA Bancomer

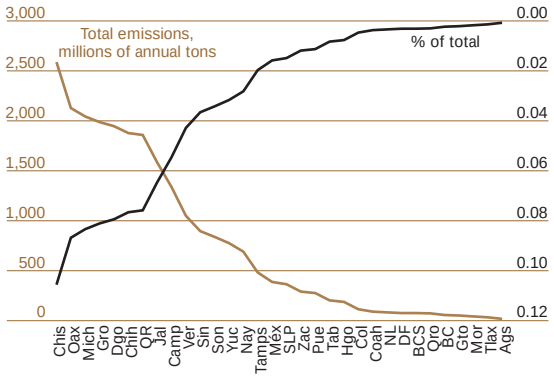
Greenhouse Effect Gases (GEGs) by Sector

% of total



Source: BBVA Bancomer with Semarnat data

CO_2 Emissions



Source: BBVA Bancomer with Semarnat data

Housing Sector Bottlenecks

1. Rise in price of the cost of land for urban low-cost housing
2. Transfer of investment on infrastructure to housing cost
3. Restrictions of the local governments for provision of infrastructure
4. Absence of land developers

Source: BBVA Bancomer

urban planning schemes, with an emphasis on environmental protection. For example, GEG emissions are concentrated in cities, where currently 70% of the total is generated. Mexico's relative contribution to the global system is of 1.5% of total GEG and the country ranks 13th in total volume of emissions, and 93rd in emissions per capita. In recent years, we can speak of deterioration. For example, in the period between 1950-00, Mexico ranked 15th for emissions derived from the generation and use of energy, and 16th derived from deforestation. For 2005, the last observation available, 93.6 million tons/annually were registered in the whole country in the air derived from the oil, petrochemical, and electric power generation sector.[3]

To summarize, in view of the global urbanization trend and the development stage of the real estate sector in Mexico, there is the need to propose a "new paradigm" that will promote the comprehensive growth of cities with an emphasis on an improved linkage of the housing real estate market with economic, social, etc. activity. In view of a housing growth trend in the coming decades, priority should be given to planning, to considering the optimum use of natural resources, to attending the situation of urban poverty, to improving construction design and techniques, to investing on infrastructure of services and public works, to providing the necessary outfitting for the good operation and integration of the local markets and to applying new financial instruments to facilitate the viability of new sustainable urban models.

The DUIS (Sustainable Comprehensive Urban Developments) a new institutional framework for sustainability in low-cost housing

The Sustainable Comprehensive Urban Developments (DUIS) are, as their name indicates, urbanization programs and comprehensive housing solutions to "Making a City". The aim is to achieve the linkage to nuclei of employment, industrial and commercial activity, and the provision of urban services. These have been planned as a response to the main bottlenecks that have been identified in the sector and which are as follows: 1) raising the cost of the land to build low-cost urban housing; 2) transferring the cost of the investment in urban infrastructure made by the developers to the housing price of the final user; 3) operating restrictions by local governments in order to meet the demands for land reserves, infrastructure, education and health provision, road systems, transportation, etc.; 4) the absence of "land developers".[4]

The evaluation and management of these macro projects is defined under comprehensive programs of regional, urban and architectural planning with the aim of regulating the land, in view of the expansion trend of cities, with the participation of the three government orders, so as to achieve equilibrium between urbanization and environmental protection. These sustainable criteria[5] in regional development are defined by the following public agencies: the Department of Social Development (Sedesol). The Department of Environmental and Natural Resources (Semarnat), the Department of Energy (Sener),

3 According to the World Tourism Organization (WTO), the contribution of CO_2 by tourist sub-sectors is 5% of world emissions.

4 Currently, the mechanism for the acquisition of land reserves for Urban Development is directed toward the program of "bridge loans" for building, and, therefore, no investment is made for land acquisition apt for urbanization and then marketed.

5 See document on investment guide and application for DUIS projects (Sustainable Comprehensive Urban Developments) of the Federal Mortgage Society (SHF).

the National Housing Commission (Conavi), Banobras, the National Workers' Housing Fund Institute (Infonavit), and the Federal Mortgage Society (SHF). This system also includes the participation of real estate developers, states, municipalities, landowners and financial intermediaries (see box on Green Mortgage).

The basic principles of the DUIS are as follows:

a) To build low-cost ecological housing for the low-income population (at least 40% of the total for the low-income segment).
b) To provide sustainable urban infrastructure
c) Urban integration with existing job centers such as industrial and commercial clusters.
d) Comprehensive strategies for accessibility, mobility and transportation for the inhabitants.
e) The existence of outfitting for social services, and for health and education.
f) Evaluation of the rational use of natural resources and environmental protection.
g) Promoting incorporation into the Carbon Bonds Market (CBM)

Also, the national water and energy programs are in line with sustainability as a reaction to climate change to improve land regulation, to define land use in terms of the availability of hydric resources, to relocate human settlements, to reforest and carry out land retention works, to improve the payment of environmental services and to promote protection of the environment through lower energy consumption (see box: Eco-technologies in the construction of sustainable housing).

The institutional financial program for the DUIS is comprised of five sequential phases that are as follows: 1) acquisition of land reserves; 2) provision of basic infrastructure; 3) outfitting and acquisition of macro-lots; 4) urbanization and construction; and 5) the individualization of mortgages. At each realization stage of the DUIS, there are programs of additional public incentives to link developers, municipal governments, state housing institutes, commercial banks and Sofoles. Development banking, through Nacional Financiera (Nafin), Banobras and SHF (Federal Mortgage Society), which have an important participation in granting guarantees and funding at each financing phase.

At the date of this report, there are 20 DUIS projects registered, which implies a potential investment of P$218 billion; for land and infrastructure P$29 billion. These will imply on average 33 homes for 146 inhabitants/Ha and an investment per home of P$160,300 per Ha, for land and infrastructure of P$705,900 per Ha. The average construction will be of almost 68,000 housing units for each mega-project, which is why it is expected that 6 million inhabitants will benefit with at least 543,900 sustainable low-cost homes (40% of the total).

"Making a City", toward economic sustainability through the provision of infrastructure and mobility toward employment centers

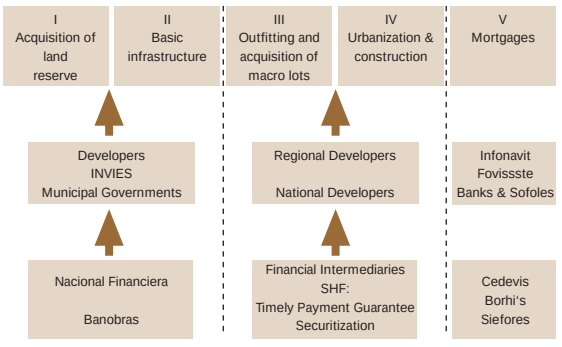
The economic sustainability of Macro Developments is defined by the capacity and facilities of the population to have access to employment nuclei. In this sense, the investment and quality of the infrastructure of services and urban outfitting that can be provided will be a determining factor for materializing the projects in the concept of " Making

Government Incentives to DUIS

Agency	Objective
Sedesol	Regulation of urban development
Semarnat	Environmental sustainability criteria
Sener	Provision and use of electric energy
Banobras	Financing and guarantees for infrastructure
SHF	Funding and guarantees to DUIS
Infonavit	Green Mortgage
Conavi	Subsidies, guidelines and indications for housing development

Source: BBVA Bancomer with Conavi data

Institutional Financial Plan for DUIS



Source: BBVA Bancomer

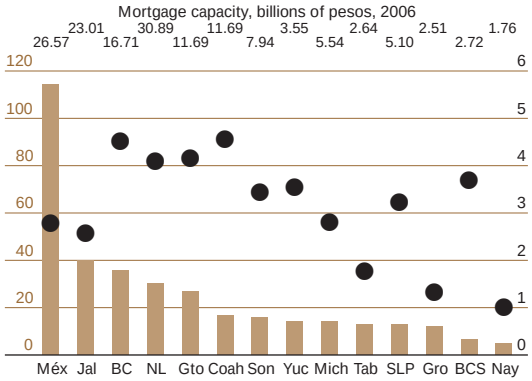
Sustainable Comprehensive Urban Development

Projects in force through 2008*
Total investment: 218 billion pesos
Investment in land & infrastructure: 29 billion pesos

	I	II	III	IV	III
Total	**41,082**	**1,360**	**100.0**	**6,013**	**100.0**
B.California (1)	13,400	244	17.9	1,552	25.8
Nuevo León(1)	2,400	200	14.7	800	13.3
México(1)	4,077	180	13.2	720	12.0
Jalisco(1)	6,000	177	13.0	706	11.7
Sonora(2)	5,000	156	11.5	624	10.4
Yucatán(3)	3,000	120	8.8	480	8.0
Sonora(1)	1,000	53	3.9	210	3.5
Coahuila(1)	1,000	30	2.2	120	2.0
San Luis Potosí(1)	700	30	2.2	120	2.0
México(2)	430	27	2.0	108	1.8
B.California Sur(1)	615	25	1.8	98	1.6
Yucatán(2)	614	16	1.2	64	1.1
Guanajuato(1)	300	15	1.1	60	1.0
Yucatán(1)	504	14	1.0	56	0.9
Tabasco(1)	348	14	1.0	56	0.9
Guerrero(1)	524	13	1.0	52	0.9
Baja California(2)	300	12	0.9	48	0.8
Michoacán(1)	300	12	0.9	48	0.8
Nayarit(1)	300	12	0.9	48	0.8
Sonora(3)	270	11	0.8	43	0.7

I	Area, hectares
II	Thousands of homes**
III	% of total
IV	Population, thousands**
*	Some projects have not been presented to the DUIS evaluation committee
**	Considers the estimate for phases I and II of the Macro Developments
( )	Number of projects
Source:	BBVA Bancomer with SHF data

Potential Regional Market



Potential demand, thousands of annual units, left
• GDP 1993-2004, average %, right
Source: BBVA Bancomer

a City", which will also be sustainable with a long-term regional and environmental impact. This will allow the location of industrial clusters, commercial areas and activities of employment-generation services for the DUIS inhabitants and achieve the integration between the housing and work niche in each sustainable market.

In this context, we conducted a comparative analysis of the potential of the DUIS that are registered. We conducted it from a State perspective, and, then, we compared it at a national level to then have a reference of the sample registered and of the country as a whole. To this end, we considered the potential demand for housing, the mortgage capacity (CPH) and average GDP growth of each State with the presence of the DUIS. In this analysis, we observed that the State of Mexico is the State with the greatest potential, since it has a CPH of around P$25 billion, average GDP growth of around 3% annually and a potential housing demand of almost 115,000 units annually. Also of note is the State of Nuevo Leon which has the highest CPH among the selected States and also GDP growth of around 4.5% annually.

While the annual potential demand in the country is of 660,000 housing units and the actual or real demand is 82% of this, due to the existence of restrictions in the CPH of the population,[6] in this sustainable model, the housing agglomeration and residential occupation present improvements compared to national levels. For example, the average population density in satellite cities is 18 inhab/ha, while the national average is 50 inhab/ha and the expectation is that every sustainable home would be occupied by 4.42 persons for 33 homes per hectare. The case of the State of Mexico should be underscored in that it has a population density of almost 600 inhab/ha while its DUIS would stand at around 44 inhab/ha.

The expected regional impact of each Macro Project, from the standpoint of demand coverage will depend on real demand and the sustainable potential housing supply in each State. In particular, we observe that the DUIS will have a marginally greater effect at a national level in all the States in cities where it has a presence. In Michoacán and Sonora, the regional coverage is higher than 12 years of potential annual demand, while in Jalisco, Nuevo Leon and San Luis Potosí, its incidence would be lower than one annual period, which is why for the latter states it would be necessary to complement them with traditional housing promotion programs. In the case of Nuevo Leon and Coahuila, given their higher level of real demand, greater activity of the DUIS would be desirable.

From an environmental standpoint, we have considerable expected benefits[7] derived from the sustainable model of housing urbanization. A general approximation, indicates to us that just the low-cost hous-

6 In the issue of "*Real Estate Watch*" (September 2007), an analysis is made of the Mortgage Capacity of employment and a model of real demand is estimated for the housing market in Mexico.

7 The estimate of the expected ecological benefits was calculated with the information available under the assumptions that low-cost housing is built with the use of eco-technologies (construction quota, 40%) and under the environmental parameters of water, energy and gas applicable to Mexico City. Given that the environmental conditions of every Macro Project vary according to its regional location, these estimates may vary for each DUIS. Nevertheless, they are an initial quantitative approximation for obtaining a qualitative valuation of the magnitude and ecological impact of the sustainable model applied to the housing market. These aggregates correspond, in particular, to 40% of the housing units built with eco-technologies and inhabited by families of which the consumption of water, energy and gas is at the average range, which generates savings per source estimated under the assumption that they are located In Mexico City.

ing stock, under the assumption that it would be totally occupied, would generate a monthly savings of P$0.23 billion, which implies an investment in eco-technologies of around P$14.1 billion. Also observed are the benefits in the consumption of water, energy and gas, as well as in CO_2 emissions. The latter would represent 0.3% of the potential annual emissions of the country.

On the other hand, the location of the DUIS in the future should consider real demand and mortgage payment capacity (CPH) of the States of the country. Among the 15 States with the highest mortgage payment capacity and a high level of real demand, only six have a project of this type: Nuevo Leon, Jalisco, Baja California, Coahuila, and Guanajuato. Under this criterion of economic viability, the States of Coahuila, Tamaulipas, Veracruz, Sonora, Puebla, Querétaro, Sinaloa, and Michoacán have mortgage characteristics and real regional demand that would make the implementation of new projects of sustainable housing viable.

Conclusions: the advantage of promoting a new urban model

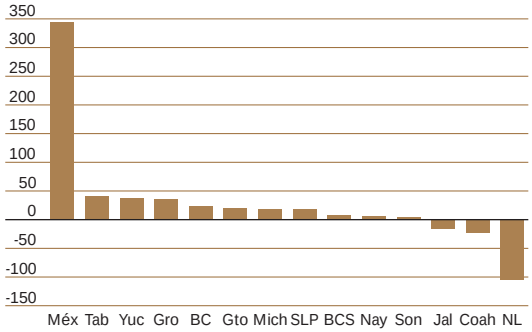
The new institutional model of the real estate sector in Mexico to develop real estate cities under sustainable criteria—DUIS—is a valuable and timely opportunity to achieve orderly growth with environmental quality, accessibility to employment and urban services, in view of the current expansion rate of the cities in the country'. The DUIS offer a program of institutional linkage to "Making a City" under sustainability criteria. These have high participation in building low-cost housing with ecological technologies—which will facilitate Mexico's integration with the guidelines of the National Strategy in view of Climate Change—; they also allow the integration of the Macro Projects into the cities through the generation of employment, a network of access to housing and the generation of commercial and industrial activity and of services to the population. There are mortgage instruments that are adapted for these projects such as the Green Mortgage—to finance sustainable housing—, and the integration with the International Carbon Bonds Market. The expected regional impact has estimated benefits in terms of the environment and coverage of the housing deficit. It could be expected that, eventually, the consolidation of the DUIS as an urbanization model in the country could facilitate sustained generation of growth in value for this type of developments, both for housing and for commercial activities that it might have and consequently also for the local markets that surround them.

In this way, the benefits of these developments are evident and unquestionable, although achieving an important coordination of efforts from the various participants is required, which is why it is necessary to align incentives in a precise manner and in the right direction for which accurate planning and execution are required. In this sense, the determining factor of these projects is that each characteristic of the projects can materialize adequately, in such a way that the projects can be made possible as a new urban development model in the country; hence, its importance.

In addition to this sustainable plan, we should consider the economic situation of the housing market, which raises the need for considering a new phase for the cycle of the sector. It is desirable to accelerate this emerging phase; as opposed to the growth phase of 2002-07; it is immersed in a sharp macroeconomic slowdown, as well as a lower

Real Housing Deficit

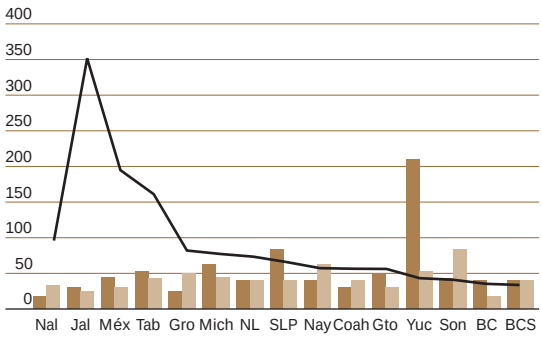
Thousands of units, 2012



Source: BBVA Bancomer

Regional Agglomeration: Population and Housing Density

Units



DUIS population density, inhabitants/hectare
Housing density, housing units/hectare
NUS population density, inhabitants/hectare

Source: BBVA Bancomer

generalized rate of housing sales with the presence of an oversupply and expectations of a high degree of uncertainty.

In this situation, the provision of urban infrastructure—within the framework of the National Infrastructure Plan—are strategic pieces to spur private participation in the realization of the provision of services, outfitting, and the provision of urban goods for growth in the cities that would not only generate activity in the sector, but also have some mitigating effects on the economic slowdown. The linkage of the local markets will be of enormous importance. Through programs of water service, solid waste disposal and mass transportation they can allow designing a network of better integrated cities that will facilitate better maintenance and design of services for the population. Thus, 2009 can offer the start of some of these projects, be it for urban development of the new complexes or their connection with the existing ones.

Sustainable Comprehensive Urban Development*

States with DUIS

	National	Mexico	Jalisco	Baja California	Nuevo León	Guanajuato	Coahuila	Sonora
Housing Demand								
Potential Demand (PD), annual units	660,146	114,154	39,738	35,700	30,335	26,643	16,842	15,886
Real Demand, % of PD	81.8	39.5	107.8	86.4	169.7	84.9	126.9	94.7
Segment, thousands of pesos per unit								
Estimated value of PD, thousands of pesos								
B	421.6	851.0	312.2	389.5	198.3	396.3	265.2	355.4
C	918.8	1,940.1	711.8	888.0	452.1	903.4	604.5	810.3
D	1,936.0	4,469.1	1,639.5	2,045.6	1,041.4	2,081.1	1,392.5	1,866.5
E	2,813.5	7,784.9	2,856.0	3,563.4	1,814.1	3,625.2	2,425.7	3,251.4
NUS Entity Density, inhab./ha.	96	195	352	35	73	56	56	41
DUIS								
Homes, units	1,349,030	207,000	177,010	256,000	200,000	15,000	30,000	208,500
Density, inhab./ha.	18	44	30	40	40	50	30	43
Housing density, units/ha.	33.10	29.5	24.8	18.2	40.0	30.0	40.0	83.3
Housing occupation, inhab./unit	4.42	4.0	4.0	6.4	4.0	4.0	4.0	4.0
Estimated coverage, years of PD	0.24	1.6	0.3	6.8	0.4	1.1	1.5	12.6
Estimated investment, millions of pesos	247,000.0	37,900.6	32,409.6	46,872.2	36,618.9	2,746.4	5,492.8	38,175.2

	Yucatán	Michoacán	Tabasco	S. Luis Potosí	Guerrero	B.California Sur	Nayarit
Housing Demand							
Potential Demand (PD), annual units	14,229	14,061	12,991	12,845	12,047	6,462	4,895
Real Demand, % of PD	48.5	73.9	35.7	72.8	40.4	78.0	72.8
Segment, thousands of pesos per unit							
Estimated value of PD, thousands of pesos							
B	694.2	455.5	941.9	462.1	832.0	431.7	462.2
C	1,582.6	1,038.5	2,147.3	1,053.5	1,896.9	984.1	1,053.7
D	3,645.6	2,392.2	4,946.4	2,426.8	4,369.5	2,266.9	2,427.1
E	6,350.5	4,167.1	8,616.4	4,227.3	7,611.4	3,948.9	4,227.9
NUS Entity Density, inhab./ha.	43	77	161	66	82	34	57
DUIS							
Homes, units	150,000.0	12,000.0	13,920.0	30,000.0	13,000.0	24,600.0	12,000.0
Density, inhab./ha.	210.0	62.8	52.5	83.3	24.8	40.0	40.0
Housing density, units/ha.	52.5	44.2	42.9	40.0	50.0	40.0	62.8
Housing occupation, inhab./unit	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Estimated coverage, years of PD	3.7	12.8	2.3	0.9	1.2	1.9	5.5
Estimated investment, millions of pesos	27,464.2	2,197.1	2,548.7	5,492.8	2,380.2	4,504.1	2,197.1

* Projects under evaluation by the Technical DUIS Evaluation Committee, September 2008
Source: BBVA Bancomer with SHF data

Finally, the DUIS can also have additional medium-term effects on the rest of the real estate sector of the country. Despite the fact that they are complex and long-term projects, they could become specific examples of new niches of the sector, those that manage to translate their benefits into realities will make other agents of the sector reflect and thereby generate incentives to adapt some of its characteristics to the traditional projects or to other new ones that could appear, such as, for example, to once again re-densify the existing cities with new urban regulations that present the possibility of exploiting the urban land and the existing infrastructure and that present the possibility of exploring, for example, vertical housing models, like those observed in other countries such as Chile, Spain or even Mexico in the 70's and 80's—with important adaptations to the new realities—.To summarize, the DUIS are a positive step; their experience must be followed to enrich Mexico's urban model in favor of new and better alternatives to those already existing.

Bibliographic references:

Comisión Nacional de Vivienda (2008). "*Criterios e indicadores para los desarrollos habitacionales sustentables en México*" ("*Criteria and indicators for sustainable housing developments in Mexico*"). Mexico.

Comisión Nacional de Vivienda (2008). "*Código de Edificación de Vivienda: criterios técnicos para los desarrollos habitacionales sustentables*" ("*Housing Construction Code: technical criteria for sustainable housing developments*"). Mexico.

Comisión Nacional de Vivienda (2008). "*Guía metodológica para el uso de tecnologías ahorradoras de energía y agua en las viviendas de interés social en México*" ("*Methodological Guide for the use of energy and water-saving technologies in low-cost housing in Mexico*"). Mexico.

Comisión Intersecretarial de Cambio Climático (2007, Síntesis-Ejecutiva). (Intersecretarial Commission for Climate Change (2007, Executive Synthesis) "*Estrategia Nacional de Cambio Climático*" ("*National Strategy for Climate Change*"). Mexico.

World Bank (2008). "*Sustainable Infrastructure Action Plan 2009-2011*". Washington DC, U.S.

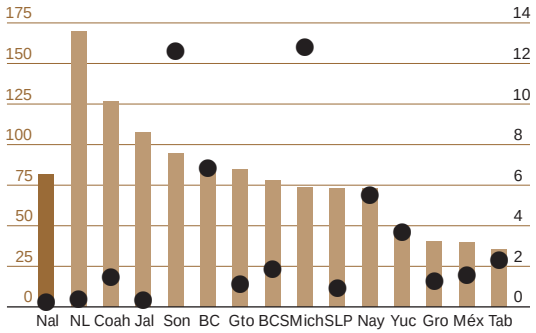
Gobierno de México (2007) (Mexican Government (2007). "*Programa Nacional de Infraestructura 2007-12*" ("*National Infrastructure Program 2007-12*"). Mexico.

Henderson, J. V. (2003). "*The urbanization process and economic growth: the so-what question*"; Journal of Economic Growth, 8, 47-71.

Shlomo A., Stephen C. S. and Daniel L. C. (2002). "*The Dynamics of Global Urban Expansion*". Transport and Urban Development Department. The World Bank.

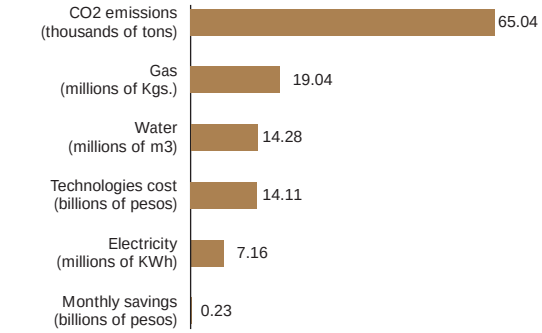
Strange T. and Bayley A. (2008). "*Sustainable Development, linking economy, society, environment*". OCDE.

Expected Regional Impact of DUIS



Source: BBVA Bancomer

Expected Environmental Benefits from DUIS



Source: BBVA Bancomer

States with Greatest Potential

	MPC* (billion pesos)	Real demand* (units)
Mexico City	76.8	101,357.4
Nuevo León	30.9	51,482.5
México	26.6	45,146.4
Jalisco	23.0	42,838.3
Baja California	16.7	30,845.1
Chihuahua	14.6	26,146.4
Tamaulipas	12.8	24,115.5
Coahuila	11.7	21,376.6
Guanajuato	11.7	22,627.1
Veracruz	9.1	15,887.0
Sonora	7.9	15,043.1
Puebla	8.9	14,515.0
Querétaro	8.7	14,011.8
Sinaloa	6.0	12,586.8
Michoacán	5.5	10,388.9

* 2005 estimates of Mortgage Payment Capacity
Note: States with DUIS in **bold**
Source: BBVA Bancomer

The Green Mortgage, Incentives for Ecological Housing

Introduction: toward sustainable urban development

In 2008, the National Workers Housing Fund Institute (Infonavit for its Spanish initials) introduced a new subsidy which is reflected in preferential conditions for acquiring certified ecological housing: the Green Mortgage. It is expected that, gradually, within a period of three years, all homes financed by the public sector will have this option and, also in that time lapse, the standards for the certificates will be stricter and with a greater ecological impact. These new subsidies have appeared due to the importance of the subject within the framework of the Mechanisms for Clean Development (MCD) subscribed in the Kyoto Protocol[1] and the National Strategy in face of Climate Change. The aim of motivating the use of eco-technologies was to save energy (gas and electricity) and water use in the home. The use of technologies of solar heaters, light-saving lamps, water-saving valves, thermal isolators, and high efficiency air conditioners will allow considerable savings of water, light and gas during the useful life of the home. Also by this, Mexico is allowed to participate in the Carbon Bond Market to reduce the effect of greenhouse gas emissions. The goal is to place 800,000 ecological mortgages during this Administration. There has been a growing participation on the part of developers to increase the supply of housing built with eco-technologies

How does the Green Mortgage operate? What are its goals? What progress has been made in assigning Green Mortgages?

In particular, the mortgage instrument for acquiring ecological housing through the Green Mortgage provides Infonavit beneficiaries with the possibility of obtaining an additional amount of up to P$16,000 to the traditional mortgage of the Institute. This increases the payment capacity and expands the amortization term in such a way that the beneficiaries' cash flows are maintained constant. It should be mentioned that the present net value of the ecological residential acquisition is positive due to the savings obtained in the maintenance services from having equipped the eco-technologies. During 2008, the average amount of an ecological home mortgage was of P$244,000. We estimate that in an approximate period of nine years of savings in water, light and gas from the basic eco-technologies, the surcharge amount of this sustainable home would be covered, which is of approximately an additional monthly P$349, equivalent to a surcharge of approximately P$20,000. Currently, the Infonavit has a registered housing supply with Green Mortgages equivalent to 3,041 of the total supply of 17,200 homes, which is equivalent to 17%, promoted by 50 companies in 22 states, which link 44 municipalities. These, in turn, are certified by government authorities[2] prior to being offered to the beneficiaries, specifically the Conae which verifies solar heaters, the FIDE which evaluates power-saving light bulbs, thermal isolators and high-efficiency air conditioners, and the Conagua which oversees water saving mechanisms.

The sum of the Green Mortgage and Sustainable Subsidies[3] instruments has a multiplying effect of potential housing demand. For the typical case of an economic home—according to the Infonavit classification—we have that the value of the home equipped with eco-technologies received an average subsidy of 33% of the value of the home and the Institute finances the remaining 67%. For a traditional low-income home, this sustainable subsidy represents 18% and finances 82% of the value of this home. Through October 2008, 1,159 green mortgages had been assigned, which represents an investment of P$283 million in total and for eco-technologies, P$12 million. Of these, 69% of the loans have been assigned during the Infonavit pilot project phase. A sample for considering the potential of the market and the rate at which it can grow is to consider that Mexico has a potential for the reduction of Greenhouse Effect Gases (GEI for its Spanish initials) of 80 million tons annually, while at the placing rate observed, it would be expected to obtain a decrease in emissions of only 1,134 tons annually, which nevertheless permits savings to borrowers equivalent to P$3.6 billion.

Green Mortgage, Infonavit
Assigned through October 2008

	No. of mortgages	% share
Pilot program	798	68.9%
Ecological housing subsidy	2	0.2%
Traditional housing subsidy	32	2.8%
Green Mortgage	327	28.2%
Total	**1,159**	**100.0%**

Source: BBVA Bancomer with Infonavit data

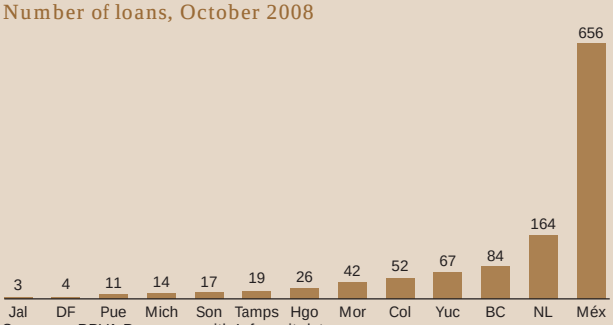
1 The Kyoto Protocol on climate change is an international agreement of which the aim is to reduce the emissions of six gases that are provoking global warming at an approximate percentage of 5%, between 2008 and 2012 compared to 1990 emissions.

2 Public institutions charged with applying sustainability criteria and certifying ecological homes: The National Ecology Institute (INE), the National Energy Savings Commission (Conae), the National Water Commission (Conagua), the Environmental and Natural Resources Ministry (Semarnat), the National Autonomous University of Mexico (UNAM) and the Electric Energy Savings Trust (FIDE).

3 This federal subsidy will be 20% higher under the compliance of the sustainability criteria or housing verticality.

To date, Green Mortgages have been assigned in only 14 states of the country. Of note is the case of the state of Morelos with 656 green-mortgage placements, which means 56% of the total loans to date. The Federal District and the State of Mexico register the lowest placement rate with 4 and 3 Green Mortgages, respectively

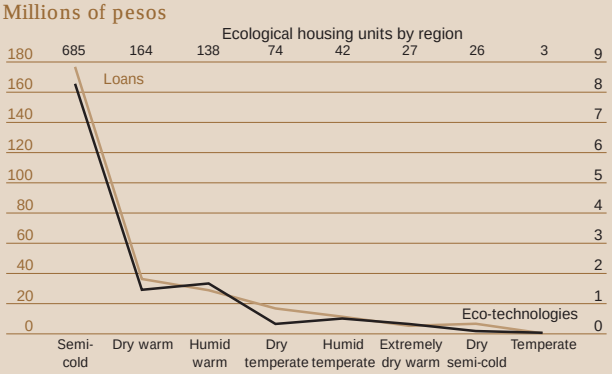
Green Mortgages by Federal State
Number of loans, October 2008



Source: BBVA Bancomer with Infonavit data

Sustainable investment depends on the type of the bio-climate region where it is made. In Mexico's case, in accordance with the Conavi, there are eight classified regions: dry semi-cold, semi-cold, dry temperate, temperate, humid temperate, dry warm, extremely dry warm, and humid warm. If we understand ecological housing investment as the sum of mortgage loan investment and on eco-technologies for building homes, we have that the region which has obtained the highest volume of resources is that of the semi-cold bio-climate with P$177 million in green mortgages and P$8.3 million invested in eco-technologies.

Sustainable Ecological Investment by Region
Millions of pesos



Source: BBVA Bancomer with Infonavit data

The supply of ecological housing is still in a development stage in the market. Currently, it is almost 18% of the housing supply registered by the Infonavit (see chart of housing supply by region), where 17,240 homes and 3,041 ecological homes are registered. There is clear emphasis on ecological building in the dry temperate bio-climatic region with 1,256 units, although 44% of the supply is ecological in the warm semi-humid region.

Housing Supply by Region

	Total housing	Ecological housing	% of ecological housing
Humid warm	1,590	24	1.51
Dry warm	1,575	578	36.70
Extremely dry warm	1,643	300	18.26
Semi-humid warm	222	98	44.14
Semi-cold	6,162	573	9.30
Humid semi-cold	19	19	100.00
Dry semi-cold	161	52	32.30
Temperate	142	34	23.94
Humid temperate	284	107	37.68
Dry temperate	5,442	1,256	23.08
Total	**17,240**	**3,041**	**17.64**

Source: BBVA Bancomer with Infonavit data

Evaluation and Outlook

We believe that the potential for rapid growth of a sustainable housing supply and the reduction of greenhouse gases in an "emerging niche", as is ecological housing also, will depend mainly on the sum of the economic and ecological benefits that it grants—perceived and real—. As for the former, net savings can be identified for the user of the home, derived from the initial investment, maintenance savings and the effect on the increased value of the home. Among the latter, inter-related are the effectiveness of the Sectorial Program of this Administration—application of the sustainability criteria on the developments—, the participation of the promoters and developers in the use of eco-technologies, the furtherance of environmental protection among Infonavit beneficiaries, and the speed of Mexico's integration into the carbon bonds market.

The Green Mortgage is an ecological mortgage instrument that represents an option for Infonavit beneficiaries. It is a new instrument important for Mexico's incorporation into the carbon bond markets (see chart on the Carbon Bonds Market), the detonation of investment in eco-technologies for building, and it is an incentive for generating a reduction in CO_2 emissions. It is recommendable to gradually incorporate stricter ecological criteria that approach international standards that are found at the frontier of the use of state of the art technology that will extend to higher value homes, not only the low-cost ones, but more extensively to all the developments, both the new and those already existing.

Leonardo González leonardo.gonzalez@bbva.bancomer.com

Environmental Technologies for Housing Construction

"Clean technologies" seek to generate a balance between the environment and new housing stock. They use alternative sources of energy, and involve the design of devices to save on water and gas, and a better management of solid wastes. Housing environmental technologies should be linked to each phase of the process, such as the construction of the housing project, the use that the housing unit is given, and the maintenance of each community. In Mexico, household energy consumption represents 25% of the national total[1] and water has a very high per capita consumption level, among other reasons because it is subsidized[2]. The final aim of the use of these technologies is to achieve a decrease in greenhouse gas effect emissions generated by the housing sector, which currently represents 8% of the national total.

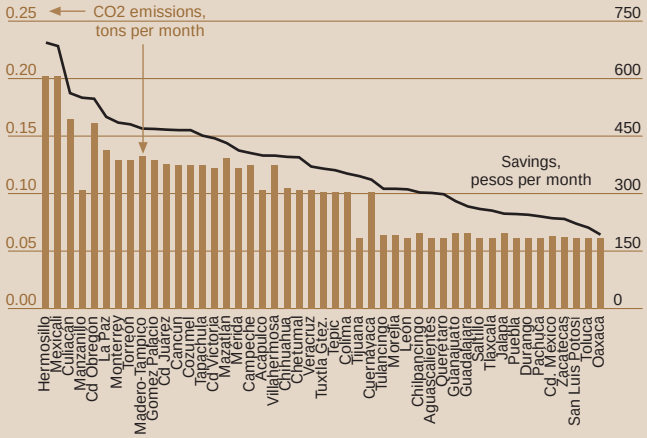
Environmental Technologies for Social Housing, Mexico City

	House[1]	Heat[2]	Air[3]	Water[4]
Gas (kg)	26.84	26.84		
Electricity (KWh)	10.10		10.10	
Water (m^3)	20.13			20.13
CO^2 Emissions (kg)	91.71	80.50	6.74	4.47
Savings (pesos, monthly)	325.71	250.00	22.21	53.50
Technology costs (pesos/household)	19,891	11,489	7,985	418
Comment	40% in macro-developments	20 year useful life	FIDE certification	9 lts/min flow

1 Total social housing
2 Solar water heater
3 Air conditioning and thermal roofing
4 Showers, WC (dual), and water faucets
Source: BBVA Bancomer with Infonavit data

For example, in Mexico City a housing project equipped with these technologies saves 26.84 Kg of gas, 10.1 KWh of electricity, 20.13 m^3 of water, and 91.71 Kg of CO_2 per household. This results in monthly savings of P$325.71 per household. The cost of these technologies is P$19,891 per household. In these housing projects the installation of a solar water heater, air conditioning, and thermal roofing is being considered, along with devices that save water (showers, WC (dual), and faucets) in each entry level type home. The solar-powered water heaters that save on gas have an average useful life of 20 years, and all energy savers must be certified by the Electric Power Savings Trust (FIDE); the water-saving devices generate a flow of 9 liters per minute. It should be noted that Hermosillo, Mexicali, and Culiacán are the cities with the greatest bioclimatic impact based on about 0.2 tons of CO_2 a month with a savings of almost P$700 per household. On the other side of the ledger, San Luis Potosí, Toluca, and Oaxaca are the cities with fewer greenhouse gas emissions, with around 0.06 tons of CO_2 monthly and a savings of P$190 to P$220 per household. The cities that, based on their bioclimatic characteristics, have a higher ratio between the decrease in greenhouse gas emissions and benefits to users, with savings above P$500 per household, are Manzanillo, Tijuana, and León.

Savings with Environmental Technologies and CO^2 Emissions



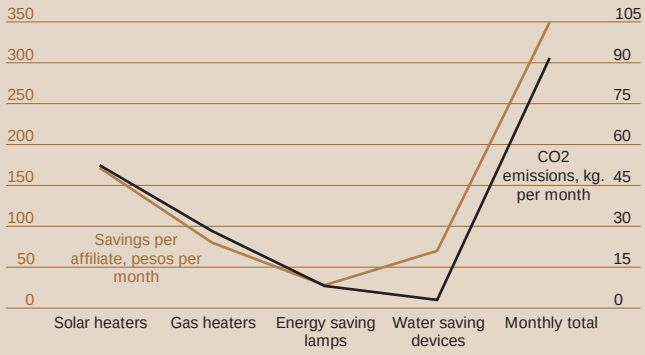
Source: BBVA Bancomer with Conavi data

Evaluation and benefits in the use of environmental technologies

The benefits from the use of environmental technologies in green housing construction are obtained from the decrease in carbon dioxide emissions and from savings in maintenance costs of sustainable users. If we evaluate the environmental impact of homes financed through the Green Mortgage program, with an average loan of P$245,000, the monthly savings on energy costs are P$349.50, which translates into a monthly decrease of 91.8 kg in greenhouse gas emissions. In the case of each environmental technology device, we find that solar heaters simultaneously produce both a greater savings per household, of P$171.6 monthly, and a lower generation of carbon dioxide, at 52.4 kg. per month. In the case of gas heaters, the savings are P$80 monthly and 28.2 kg of emissions, while energy saving lamps reduce greenhouse gas emissions by 8.1 kg a month with monthly savings of P$28, while water heaters save P$70 and 3 kg of CO_2.

1 Energy consumption varies according to the bioclimatic region, although the average breaks down as follows: 61% of the energy is used in cooking, 28% for heating water, 5% for lighting, and 3% for cooling.
2 The lower-income population consumes from 33 to 46 lts. daily per inhabitant at a cost of P$40 per m^3, while the higher-income segment consumes 200 lts daily and pays relatively cheaper rates.

Benefits of Environmental Technologies



Source: BBVA Bancomer with Infonavit data

Benefits of Environmental Technologies

	Savings per affiliate ($, monthly)*	CO^2 emissions (kg per month)
Solar heaters	171.6	52.4
Gas heaters	80.0	28.3
Energy saving lamps	28.0	8.1
Water saving devices	70.0	3.0
Monthly total	**349.5**	**91.8**

* Green Mortgage of P$245,000
Source: BBVA Bancomer with Infonavit data

Environmental Savings on a Household Level

	Gas (kg)	Electric. (KWh)	Subsidy ($ / KWh)	Water (m^3)	Total
Monthly per household	25.68	21.33	30.28	9.57	
800,000 homes	20,542.8	17,061.1	24,226.8	7,656.0	
Cost/savings unit	70.10	473.05		20.67	563.82
Monthly savings goal (millions)	1,440.00	8,070.83	-24.23	158.25	9,644.85

Source: BBVA Bancomer with Infonavit data

The potential benefits of the use of environmental technologies for housing are considerable and their use should be extended to the entire housing stock. For example, in warm areas they could generate a considerable environmental effect. The expected result from the sustainable guidelines, the adoption of standards for ecological construction, the use and marketing of ecological technologies in the building of entry-level housing, and the benefits in the decrease of greenhouse gas emissions is the platform to allow for entry into the carbon bonds market, a more extensive use of ecological housing, and greater benefits for users.

Leonardo González leonardo.gonzalez@bbva.bancomer.com

The Carbon Bonds Market: an Alternative to Supplement Financing of Housing Projects

Global warming is a phenomenon with considerable economic, social, and environmental implications that led to the 1997 Kyoto protocols for the reduction of greenhouse gas emissions. Based on these agreements, a carbon bond market has emerged, in which international certificates for the reduction and control of these gas emissions are traded internationally. The origin of this market is in the industrialized countries, which can supplement the financing of projects to fulfill their commitments to reduce these greenhouse gas emissions. A wide variety of projects in different regions can be financed, both in industrialized countries as well as in developing nations—for example, Mexico—to achieve compliance with the agreed-upon commitments. The areas where projects can be financed include renewable sources of energy, solid waste disposal management, changes in the use of fuels, transportation, and energy efficiency. The latter category includes the improvements in housing that are beginning to be implemented in Mexico and which are described in the article on environmental technologies.

Clean Development Mechanism (CDM)

Criteria	Indicators
Environment	
Climate change	Reduction of greenhouse gases
Atmospheric degradation	Reduction of gases causing acid rain
	Ozone layer protection
Soil	
	Acidification
	Change in use
	Landfills, use of manure as fertilizer
Economic and social	
Employment	Generation of local jobs
Social services	Education and health care centers
Local development	Creation of specialized companies
	Development of infrastructure
Technology	Use of renewable energy
Renewable energy	Cleaner technologies
Housing & transportation	Improve energy efficiency
	Hydroelectric, wind, biomass, solar, natural gas, biofuels
	Process re-engineering
	Power and lighting for energy efficiency
	Environmental technologies for low-cost housing

Source: BBVA Bancomer with Semarnat data

This market is in an initial stage and its aim is to establish ownership rights on the atmosphere, which up until the emergence of this market was considered to be of "public domain"[1]. That is, it was felt that any person or institution could use the air and therefore, others were not excluded from its use. The carbon bond market is based on two main points: a) locating the source for reducing emissions is irrelevant for the global atmospheric stabilization of the concentration of greenhouse gases, b) the broad diversity of the sources of the potential reduction of emissions comes from different options for reducing such emissions at a lower cost, as well as potential earnings for agencies, nations, and regulated sectors to effectively reduce carbon emissions.

CDM that can be Financed with Carbon Bonds

Renewable energy	Hydroelectric
	Wind
	Biomass
	Solar
Waste management	Landfills, use of manure as fertilizer
Change in fuels	Substitution of gasoline by natural gas
	Use of biofuels
Transportation	New technologies and change in model
Energy efficiency	Process re-engineering
	Lighting
	Power
	Environmental technologies for housing
	Improvement in electric power generating plants

Source: BBVA Bancomer with SHF data

During recent years, the emerging global carbon market has posted rapid growth. In 2007 alone, its value topped 100 billion dollars, more than twice as much as in the previous year. Its characteristics include being a market in rapid growth, with limited supply, high transaction costs, long approval processes, and being mainly based on clean development projects, instead of carbon bonds. This trend has been accompanied by a better identification of and greater participation by agents and institutions based on important regulatory modifications to rules on emission caps and trading policies in countries such as Australia, Japan, and Canada.

The transactions in this market are conducted basically through agreements between agencies to trade greenhouse gas emission bonds. They are carried out mainly in two categories: 1) Emission Permits based on control levels set by the regulation; and 2) Greenhouse Gas Emissions Reduction in some specific project in which the decrease can be verified. The Emission Permits are very homogeneous assets, which facilitates the definition and trading of financial instruments for the primary market. Nevertheless, the development of a secondary market is vital to closing the gap in specific projects and to generate the incentives to achieve a recurring

1 A public good is an economic good that is non-rivaled and non-excluding. The consumption of the good by one individual does not impair the future or simultaneous use of the good by others.

supply in standardized bonds for buyers[2]. The definition of emission controls and trading mechanisms will allow for more regular price formation and the development of a more extensive market. It should be added that the recent global financial crisis has put a hold on the growth of this market, but its medium-term potential remains intact. In 2008 it was estimated that transactions were undertaken for 4 billion tons of CO_2 ($GtCO_2$), when the reduction of emissions necessary for 2050 is 50 $GtCO_2$. Due to the global financial crisis, it would be logical to expect a lower growth rate in transactions for 2009 and in addition, there could be a delay in some agreements considered for this year with a view toward holding a new international summit in 2012.[3]

Carbon Bond Market

Participants	
Supply	Emerging economies with CDM projects
Demand	Companies and governments of industrialized countries with a commitment to reducing emissions
Intermediaries	Brokers
	Financial entities (banks)
	Project developers
	Brokerage firms
	World Bank
Type of transactions	
	Immediate
	Futures contracts, Certificate of Emission Reduction
	Purchase agreements for emission reduction rights

Source: BBVA Bancomer with SHF data

In Mexico, the links between the carbon bond market and housing construction are still in a very incipient phase, but promising in the medium term. Broad potential exists to encourage new "clean investments", in a first stage through public home financing agencies such as Infonavit, but which could be expanded to other segments of the housing market. Financial innovation based on carbon is a growing proposition and is rapidly expanding under the format of investment funds based on sustainable projects. It should be mentioned that the main global banks have established analysis and trading teams for main positions in carbon-related projects with trading desks to seek arbitration opportunities in the market. They also offer risk transfer products through guarantees for carbon bonds in the secondary market. These transactions are conducted through the placement of coupons based on future carbon credits[4].

In the case of Mexico, the housing and transportation markets are an immediate primary source of greenhouse gas emissions. The incentive to acquire an ecological home, through the Green Mortgage program, and its implications for the reduction of greenhouse gas emissions will expand Mexico's participation in the carbon bond market. This market offers enormous potential for the sustainable development of housing and in the medium term could enable the country to enter other important fields of environmental protection. Preliminary estimates by Sociedad Hipotecaria Federal (SHF, the Federal Mortgage Agency) indicate an annual potential of 625 million dollars, equivalent to 22% of investment in sustainable comprehensive urban developments, which implies a reduction of gas emissions of close to 80 million tons annually.

Currently, despite the complications of the international financial markets, Mexico is managing to enter the carbon bond market with two projects, one in real estate and the other ecological. The former is the sustainable city of Valle de las Palmas, in Tijuana, Baja California, developed by URBI, which operates under a clean development program with plans to build 165,000 housing units with an estimated decrease of 3-4 tons annually in CO_2 emissions. In this macro housing development, environmental technologies will be used in construction, which implies important energy savings in providing water from Mexicali, investment in waste water treatment plants to diminish methane concentrations, and the use of additives in concrete with the aim of reducing the use of cement. This housing development is located near an industrial cluster with a Toyota plant, as well as a campus of the University of Baja California. The marketing of gas emissions is still not fully defined. It could be undertaken through the use of emission permits or by entering the carbon futures market. The estimated earnings from joining this project are very preliminarily set at 27 million dollars annually with total investment in

2 The spectrum of main buyers of carbon bonds is as follows: Private European clients, governments interested in fulfilling the Kyoto goals, Japanese companies under the criteria of voluntary commitments, intermediaries and banks, carbon investment funds, U.S. multinationals with operations in Europe or Japan or within the Regional Greenhouse Gas Initiative in the United States, retailers regulated in Australia, and U.S. companies under the criteria of the Chicago Climate Exchange (CXX).

3 Tremendous uncertainty still exists in regarding the expansion of future demand in which international negotiations on the ratification of a subsequent phase to the 1997-2012 Kyoto Protocol will be important to provide it with continuity and to guarantee the expansion of the carbon market.

4 Financial innovation in the carbon market corresponds to future carbon contracts, delivery guarantees in the primary market to buyers in the secondary market, derivatives based on the basket of carbon bonds, insurance and guarantees to protect risk investments of prepayments, price fluctuations, delivery risk, and eligibility of projects and credits under different regulatory policies, ecological credit cards, etc.

infrastructure in this program projected to be 1.10 billion dollars by 2030.

A second project, which corresponds[5] to the protected land in the region of Los Tuxtlas in Veracruz, was developed through the National Forest Commission (Conafor) and the World Bank. The initial goal of the project is to reforest 15,000 hectares of tropical rain forest and woodland and to protect the rest of the land, in order to constitute a protected territorial area of at least 18,400 hectares. This project arose in response to the intensity of deforestation in this area. To date, 3.20 billion pesos have been invested, granted to 2,600 semi-communal land holdings known as *ejidos*, local communities, small land owners. and lumberjack associations. According to preliminary estimates, for 2012, the estimated annual income from the project would be 1.5 million dollars, which could increase to up to 4.6 million dollars yearly, as a result of both the reforestation efforts as well as the reduction of greenhouse gas emissions.

Bibliographical References

The World Bank (2008). "*State and Trends of the Carbon Market 2008* ". Washington, D.C.

Programa Synergy (2005). "*Metodologías para la Implementación de los Mecanismos flexibles de Kioto*". Guía de Mecanismo de Desarrollo Limpio en Latinoamérica. ("*Methodologies for the Implementation of the Kyoto Flexible Mechanisms*". Mechanism Guide for Clean Development in Latin America) Madrid, Spain.

Leonardo González leonardo.gonzalez@bbva.bancomer.com

5 This project is designed under the registry of Clean Development Mechanism.

Statistical Appendix

Annual Macroeconomic Indicators

	2000	2001	2002	2003	2004	2005	2006	2007	2008e	2009f
Real GDP[1]										
Annual % change	6.6	-0.2	0.8	1.3	4.0	3.1	4.9	3.2	**1.8**	**0.0**
Real Private Consumption										
Annual % change	8.2	2.5	1.6	2.2	5.6	4.8	5.6	4.2	**2.8**	**0.7**
Real Government Consumption										
Annual % change	2.4	-2.0	-0.3	0.8	-2.8	3.5	0.3	1.0	**2.3**	**2.0**
Real Investment in Construction (Annual % change)	6.1									
Residential		-4.6	3.5	3.2	5.1	2.5	8.0	3.3	**0.0**	**0.3**
Non-residential					3.7	2.5	8.9	3.2	**-0.8**	**-1.9**
Total Private Formal Employment (IMSS)[2]					6.1	2.5	7.4	3.3	**0.6**	**1.9**
Average, millions of persons	12,607	12,541	12,436	12,369	12,506	12,893	13,486	14,046	**14,064**	**14,064**
Annual % change	5.9	-0.5	-0.8	-0.5	1.1	3.1	4.6	4.2	**0.1**	**0.0**
Average Wage for Social Security Contrib. (IMSS)										
Average nominal pesos daily	129.6	146.2	158.0	168.4	178.6	188.9	198.5	209.2		
Real annual % change	5.6	8.0	2.3	2.5	0.8	2.3	1.0	1.6		
Real Total Wages (IMSS)										
Annual % change	11.8	7.5	1.4	1.9	2.0	5.5	5.6	5.8		
General Minimum Wage (daily)										
Nominal Pesos	35.12	37.57	39.74	41.53	43.30	45.24	47.05	48.88	50.8	**53.2**
Real annual % change	1.0	2.5	0.1	0.5	-0.9	1.1	-0.1	0.1	-2.2	
Consumer Prices (end of period)										
Annual % change	9.0	4.4	5.7	4.0	5.2	3.3	4.1	3.8	6.5	**4.0**
28-day TIIE, average (%)	17.0	12.9	8.2	6.8	7.1	9.6	7.5	7.7	8.2	**5.9**
10-Year Government Bond interest rate (M10)		10.8	10.1	9.0	9.5	9.4	8.4	7.8	8.5	**6.6**

Annual Construction and Housing Indicators

	2000	2001	2002	2003	2004	2005	2006	2007	2008e	2009f
Real Construction GDP (annual % change)	4.2	-5.7	2.1	3.3	5.3	2.5	7.9	3.0	**0.0**	**0.3**
Construction					3.6	0.8	9.4	3.2		
Civil Engineering or Heavy Works Construction					7.8	7.3	6.1	3.5		
Specialized works for construction					10.5	-0.6	2.7	-0.1		
Construction Employment (IMSS)										
Total (average, thousands of persons)	933.4	900.5	896.0	907.8	969.4	1,020.1	1,133.1	1,203.8		
Annual % change	na	-3.5	-0.5	1.3	6.8	5.2	11.1	6.2		
Hydraulic Cement Production (metric tons)										
Annual % change	6.0	-4.3	2.4	0.8	4.0	6.8	7.5	1.6		
National Cement Consumption (metric tons)										
Annual % change	4.6	-5.5	1.2	-0.3	2.9	5.8	6.6	0.7		
Construction Companies[3]										
Real production value (annual % change)										
Total					1.7	4.2	7.5	2.8		
Construction					16.2	9.0	9.5	9.2		
Public works					-6.0	0.2	8.7	-3.2		
Water, irrigation and drainage					31.2	-1.3	-18.5	-22.0		
Electricity and communications					-15.3	-28.4	12.5	-15.2		
Transportation					-16.8	6.9	6.9	7.8		
Oil and petrochemistry					-0.2	5.7	26.3	-5.6		
Others					-16.4	-0.9	-6.9	-5.8		
Residential Construction Prices (annual % change)										
General	7.6	3.5	3.5	6.9	12.2	-0.4	8.5	3.0		
Construction Material	6.9	2.2	2.7	7.2	14.8	-1.6	10.0	2.6		
Labor	11.2	10.1	7.6	5.4	4.4	3.7	4.0	4.4		

na not available
e estimated
f forecast
1 The INEGI modified its registration methodology in the SCN based on 2003=100. The previous data are under review by the INEGI Meanwhile, they are presented based on 1993=100
2 The IMSS modified its methodology to register the number of affiliated workers. As of 2003, said modification is reflected. The previous data are under review by the IMSS itself.
3 Considers the affiliated and non-affiliated firms with the Mexican Chamber of the Construction Industry.
Source: BBVA Bancomer with Banco de México, Conasami, INEGI, and IMSS data

Annual Housing Market Indicators

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008[3]
Housing Sales (thousands of units)											
Total	155.3	242.0	282.2	253.2	343.6	400.5	418.6	554.9	544.4	512.4	419.6
Segment A	73.3	103.3	93.1	63.4	75.6	83.2	94.2	105.3	148.6	124.0	154.8
Segment B	71.4	127.1	172.1	162.2	223.8	259.5	246.4	363.2	285.5	248.4	164.7
Segment C	6.8	7.4	12.0	21.3	34.3	44.2	54.8	58.8	65.5	90.1	59.9
Segment D	2.3	2.2	2.8	3.7	6.4	9.1	13.8	18.9	23.5	28.5	23.1
Segment E	1.6	1.9	2.1	2.6	3.6	4.4	9.4	8.8	21.3	21.3	17.1
Housing Price (thousands of constant pesos[2], average)											
Average****	415.5	391.4	406.2	456.6	488.7	490.9	524.2	521.8	593.8	648.9	606.0
Segment A	264.6	259.1	257.3	265.9	256.9	239.9	227.3	239.8	235.6	242.5	217.3
Segment B	368.3	368.9	381.9	376.5	398.2	392.3	372.1	403.8	382.3	387.7	364.2
Segment C	1,022.3	987.9	859.2	879.0	888.0	884.8	815.9	811.3	793.4	807.8	752.9
Segment D	2,218.1	2,085.6	1,962.7	1,974.7	1,987.9	1,938.9	1,805.2	1,862.3	1,799.3	1,806.8	1,704.5
Segment E	4,271.1	4,788.4	4,428.7	4,473.4	4,506.3	4,062.6	3,917.1	3,976.8	3,987.7	3,833.6	4,454.5
Housing Price per Sq. Mt. (constant pesos[2], average)											
Average****	5,894	5,740	5,859	6,107	6,240	6,619	6,503	6,840	7,150	7,350	7,165
Segment A	5,268	5,066	4,990	5,260	4,989	5,200	5,105	5,735	5,487	5,652	5,503
Segment B	5,901	5,861	5,997	5,923	6,010	6,407	6,112	6,489	6,374	6,520	6,327
Segment C	8,472	8,105	7,810	8,103	8,614	8,485	8,218	8,274	8,559	8,677	8,452
Segment D	9,810	12,512	10,765	10,886	11,074	11,918	10,890	11,149	12,095	12,394	12,090
Segment E	17,641	17,140	15,572	15,107	15,553	16,204	14,372	15,769	17,156	18,444	18,321

Annual Housing Financing Indicators

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008[4]
Number of Loans and Subsidies Granted (thousands)											
Total	196.3	279.5	331.9	326.8	400.3	500.7	532.0	525.6	655.5	636.9	474.8
Infonavit	105.6	195.4	250.1	200.5	268.7	291.4	300.8	371.7	418.0	456.0	383.9
Fovissste	15.3	17.9	24.3	26.6	11.1	66.4	59.4	48.7	76.5	70.5	58.3
Fonhapo	5.5	6.4	6.7	21.1	24.1	23.1	31.0	33.0	91.5	35.7	18.2
SHF/Fovi	55.4	59.1	46.7	47.6	46.1	54.2	65.3	54.4	37.1	32.6	27.4
Commercial Banks and Sofoles	2.0	0.8	0.8	3.7	9.7	20.7	37.5	49.0	92.8	191.2	183.3
Others**			3.2	27.3	40.5	44.8	37.9	21.5	17.3	14.4	15.8
Reduction***								-52.8	-77.7	-163.5	-212.0
Financing Flow (billions of pesos*)											
Total	43.5	65.6	84.2	85.6	100.5	142.4	157.7	174.2	232.5	255.9	210.2
Infonavit	25.2	48.1	61.8	50.8	66.2	69.4	69.8	88.9	100.6	108.0	85.0
Fovissste	3.3	4.3	5.0	6.8	4.6	21.7	20.2	17.5	27.6	23.6	18.6
Fonhapo	0.5	0.5	0.8	0.1	1.3	1.4	2.2	1.9	4.1	2.0	1.4
SHF/Fovi	7.3	6.0	9.3	17.0	13.2	17.5	24.2	19.3	12.5	12.2	9.6
Commercial Banks and Sofoles	1.8	0.7	0.9	3.2	7.7	13.4	25.8	46.6	87.7	110.2	95.5
Commercial Banks Current Loan Portfolio											
End of Period Balances (billions of pesos*)	52.4	51.2	50.2	49.4	50.9	56.4	73.6	135.8	204.4	251.3	
Default Index (%)	33.4	22.3	13.7	12.6	11.2	8.4	6.1	3.2	2.9	3.1	

Note: Price ranges expressed in times monthly minimum wage (tmmw). Segment A (61-160 tmmw); B (161-300); C (301-750); D (751-1,670) and E (1,671 and more). MMW=1,599.6 pesos in 2008 in zone "A"
* November 2008 pesos
** Fonhapo, Sedesol, state agencies, Banobras, Issfam, Pemex and CFE
*** Refers to financing transactions (loans and subsidies) that are being considered in two or more institutions
**** Weighted price by sales volume
1 Refers to annual goal
2 November 2008 producer prices
3 Third quarter
4 October
Source: BBVA Bancomer with Banco de México, Softec, CNBV, and Conavi data

Quarterly Macroeconomic Indicators

	I'06	II'06	III'06	IV'06	I'07	II'07	III'07	IV'07	I'08	II'08	III'08
Real GDP[1]											
Annual % change	6.0	5.1	4.9	3.7	2.5	2.6	3.4	4.2	2.6	2.7	1.6
Real Private Consumption											
Annual % change	6.1	5.8	6.1	4.3	4.4	4.2	4.1	4.2	3.9	3.2	3.3
Real Government Consumption											
Annual % change	2.2	1.3	-0.8	-1.3	-0.6	-0.1	1.9	2.7	0.6	0.7	-0.2
Real Invest. in Const. (ann. % change)	10.3	7.9	7.3	6.8	6.3	2.1	2.0	3.0	0.3	1.7	-0.6
Residential	11.2	8.7	8.4	7.6	6.4	2.1	2.0	2.6	0.2	1.7	-1.1
Non-Residential	9.6	7.3	6.5	6.2	6.1	2.1	2.0	3.3	0.4	1.7	-0.2

Quarterly Construction and Housing Indicators

	I'06	II'06	III'06	IV'06	I'07	II'07	III'07	IV'07	I'08	II'08	III'08
Real Const. GDP (ann. % change)	10.1	8.0	7.2	6.2	5.8	1.8	1.7	3.0	-0.1	1.7	-1.1
Construction	10.8	9.2	9.2	8.4	6.8	2.1	1.8	2.3	-0.3	1.7	-1.1
Civil Engineering & Heavy Const.	10.2	6.2	4.1	4.1	5.4	2.1	2.3	4.2	-0.1	1.6	0.0
Special Works for Construction	4.7	5.7	2.8	-2.5	-0.2	-1.9	-1.4	3.4	1.4	2.3	-4.7
Construction Companies[2]											
Real production value (annual % change)											
Total	7.5	7.4	8.3	6.9	3.7	2.3	2.3	2.8	0.4	1.9	-1.8
Construction	4.4	6.4	13.6	13.2	10.5	9.3	8.6	8.6	5.2	3.1	-4.0
Public Works	12.8	13.4	7.2	3.2	-1.9	-4.3	-3.5	-2.8	-5.0	0.3	1.1
Water, irrigation and drainage	-12.9	-22.0	-14.3	-23.6	-28.2	-27.8	-16.1	-16.8	5.6	28.5	3.4
Electricity and communications	9.5	-3.4	9.4	43.0	-10.4	-26.5	-10.1	-12.0	3.2	31.7	8.5
Transportation	4.4	14.2	4.8	4.9	5.8	4.0	17.3	4.4	12.0	14.9	14.2
Oil and petrochemistry	45.8	41.8	19.3	7.7	3.5	0.8	-20.2	-4.4	-29.2	-32.1	-22.6
Others	0.8	-11.1	-10.5	-5.8	-7.2	-6.6	-6.3	-3.6	-4.4	1.9	-1.7

Housing Market Quarterly Indicators

	I'06	II'06	III'06	IV'06	I'07	II'07	III'07	IV'07	I'08	II'08	III'08
Average Housing Price (thousands of pesos[3], eop)											
Segment A	237.5	231.4	224.5	233.1	242.3	242.2	233.7	238.8	229.4	221.7	220.2
Segment B	390.6	368.4	362.9	379.3	381.2	387.3	391.3	398.2	388.1	368.5	367.7
Segment C	787.7	766.8	769.7	786.4	804.4	806.7	822.8	816.8	803.8	760.1	762.0
Segment D	1,821.0	1,736.9	2,101.8	1,828.1	1,877.0	1,846.2	1,855.2	1,859.5	1,794.7	1,744.7	1,752.9
Segment E	4,286.9	4,141.8	4,084.5	4,245.3	4,316.2	4,588.3	4,667.2	4,815.2	4,691.8	4,558.1	4,531.3
Average Housing Price per Sq. Mt. (pesos[3], eop)											
Segment A	5,642	5,380	5,336	5,613	5,771	5,622	5,696	5,743	5,631	5,425	5,450
Segment B	6,469	6,138	6,141	6,317	6,388	6,482	6,709	6,790	6,655	6,359	6,374
Segment C	8,208	7,893	7,919	8,116	8,259	8,272	8,440	8,472	8,417	8,171	8,094
Segment D	11,937	11,468	11,321	11,698	11,791	12,240	12,469	12,393	12,117	11,961	11,835
Segment E	17,648	16,943	17,024	17,563	18,049	19,650	19,566	20,117	19,206	18,573	17,807

Quarterly Housing Financing Indicators

	I'06	II'06	III'06	IV'06	I'07	II'07	III'07	IV'07	I'08	II'08	III'08
Commercial Banks Current Loan Portfolio											
Default Index (%)	3.0	2.9	2.8	2.7	3.0	3.1	3.1	3.1	2.9	3.1	3.4

1 Base 2003 = 100
2 Considers the affiliated and non-affiliated firms with the Mexican Chamber of the Construction Industry. Real production value, annual % change
3 November 2008 producer prices
Note: Price ranges expressed in times monthly minimum wage (tmmw). Segment A (61-160 tmmw); B (161-300); C (301-750); D (751-1,670) and E (1,671 and more). MMW=1,599.6 pesos in 2008 in zone "A"
* November 2008 pesos
Source: BBVA Bancomer with INEGI, Softec, and Banco de México data

Monthly Macroeconomic Indicators

	Jan'08	Feb'08	Mar'08	Apr'08	May'08	Jun'08	Jul'08	Aug'08	Sep'08	Oct'08	Nov'08
GEAI (Global Economic Activity Index)											
Annual % change	3.7	5.8	-1.6	6.6	0.9	1.1	3.0	0.1	1.9		
Real Construction Volume (annual % change)	1.0	6.1	-6.6	6.6	-1.7	0.8	0.7	-1.8	-2.6	-2.9	
Construction	0.3	6.6	-6.8	6.6	-1.4	0.4	0.5	-1.9	-3.0	-2.8	
Civil Engineering and Heavy Works Construction	2.1	5.3	-6.9	6.5	-2.2	1.2	1.4	-0.4	-1.0	-1.8	
Specialized Construction works	2.5	5.2	-3.1	6.5	-1.8	2.6	-1.1	-6.3	-5.3	-8.1	
Total Private Formal Employment (IMSS)[1]											
Total (thousands of persons)	14,173	14,248	14,253	14,335	14,338	14,390	14,402	14,387	14,441	14,476	14,408
Annual % change	3.6	3.4	2.9	3.0	2.6	2.7	2.3	1.7	1.6	0.8	-0.3
Average Wage for Social Security Contrib. (IMSS)											
Nominal daily pesos	217.1	218.6	219.1	218.4	220.8	220.6	222.5	222.3	220.6	219.9	
Real annual % change	8.0	8.2	10.2	9.7	10.5	10.9	11.2	11.8	11.3	11.9	
Real Total Wages (IMSS)											
Annual % change	11.9	11.9	13.4	13.0	13.4	13.8	13.7	13.7	13.1	12.8	
General Minimum Wage (daily)											
Nominal Pesos	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8
Consumer Prices (end of period)											
Annual % change	3.7	3.7	4.2	4.5	4.9	5.3	5.4	5.6	5.5	5.8	6.2
28-day TIIE, average (%)	7.9	7.9	7.9	7.9	7.9	8.0	8.3	8.6	8.7	8.7	8.7
10-Year Government Bonds Interest Rate (M10)	7.7	7.5	7.7	7.7	7.7	8.3	9.3	8.6	8.6	8.5	9.8

Monthly Construction and Housing Indicators

	Jan'08	Feb'08	Mar'08	Apr'08	May'08	Jun'08	Jul'08	Aug'08	Sep'08	Oct'08	Nov'08
Construction Employment (IMSS)											
Total (thousands of persons)	1,185	1,200	1,189	1,216	1,222	1,230	1,244	1,247	1,240	1,236	1,207
Annual % change	4.6	3.3	1.5	2.6	1.6	0.9	1.1	0.2	-0.1	-2.2	-3.7
Hydraulic Cement Production (metric tons)											
Annual % change	-8.8	8.7	-3.4	11.2	0.8	-4.9	-1.8	-7.1	-10.8	-1.2	
Cement Consumption per Inhabitant (kg.)[2]											
Annual % change	-9.5	7.8	-4.2	10.3	0.0	-5.7	-2.6	-7.9	-11.5	-2.0	
Residential Construction Prices											
General (annual % change)	4.1	6.3	7.2	8.7	10.7	11.9	12.7	12.3	10.6	10.8	11.3
Materials (annual % change)	4.2	7.0	8.1	10.3	12.9	14.5	15.7	15.1	12.9	13.0	13.6
Labor (annual % change)	4.1	4.2	4.0	3.8	3.9	3.4	3.3	3.3	3.4	3.6	3.9

Housing Financing Monthly Indicators

	Jan'08	Feb'08	Mar'08	Apr'08	May'08	Jun'08	Jul'08	Aug'08	Sep'08	Oct'08	Nov'08
Commercial Banks Current Loan Portfolio											
Balances, billions of pesos*	243.7	248.0	250.3	254.4	258.1	262.6	268.5	269.6	274.5	281.6	
Annual % change	39.6	33.3	30.6	29.3	30.0	28.4	26.7	23.5	22.4	25.3	
Loan Portfolio Sofoles											
Balances, billions of pesos*	66.8	69.6	70.1	70.0	69.6	71.1	72.8	74.6	75.7	51.4	
Annual % change	0.5	2.8	3.9	12.4	15.4	15.7	21.2	20.3	17.6	-20.4	
Average CAT in pesos at a fixed rate	14.23	14.12	14.11	14.03	14.09	14.16	14.24	14.17	14.49	14.48	14.59

1 The IMSS modified its methodology for registering the number of affiliated workers. As of 2003, said modification is reflected. The previous data are under review by the IMSS Itself
2 The cement production volume was used as a consumption equivalent
* November 2008 pesos
Source: BBVA Bancomer with Banco de México, Conasami, INEGI, IMSS, CNBV data

BBVA Bancomer

For further information please contact:

Economic Research Department Av. Universidad 1200 Col. Xoco 03339 México D.F. Tel. (52) (55) 5621 5994 Fax (52) (55) 5621 3297 www.bancomer.com

Economic Research Department BBVA Group

Chief Economist
José Luis Escrivá

Unit Heads
North America: Jorge Sicilia
Mexico: Adolfo Albo
Macroeconomic Analysis Mexico: Julián Cubero
United States: Nathaniel Karp

Emerging Markets: Alicia García-Herrero
Emerging Markets Analysis: Sonsoles Castillo
South America and Chile: Joaquín Vial
Argentina: Ernesto Gaba
Colombia: Juana Téllez
Peru: Hugo Perea
Venezuela: Oscar Carvallo
China: Li-Gang Liu
Asia exc. China: Ya-Lan Liu

Economic and Financial Scenarios: Mayte Ledo
Cuantitative Analysis: Giovanni di Placido
Global Trends: David Tuesta
Financial Scenarios: Daniel Navia
Sector Analysis: Ana Rubio

Spain and Europe: Rafael Domenech
Europe: Miguel Jiménez
Spain: Miguel Cardoso

North America Economic Research Dept.

Jorge Sicilia j.sicilia@bbva.bancomer.com

Mexico
Adolfo Albo a.albo@bbva.bancomer.com
David Aylett david.aylett@bbva.bancomer.com
Leonardo González leonardo.gonzalez@bbva.bancomer.com
Carlos Herrera carlos.herrera@bbva.bancomer.com
Alma Martínez alma.martinez@bbva.bancomer.com
Fco. Javier Morales francisco.morales@bbva.bancomer.com
Juan Luis Ordaz juan.ordaz@bbva.bancomer.com
Eduardo Torres e.torres@bbva.bancomer.com

Macroeconomic Analysis Mexico
Julián Cubero julian.cubero@bbva.bancomer.com
Javier Amador javier.amador@bbva.bancomer.com
Fernando González f.gonzalez8@bbva.bancomer.com
Octavio Gutiérrez o.gutierrez3@bbva.bancomer.com
Ociel Hernández o.hernandez@bbva.bancomer.com
Cecilia Posadas c.posadas@bbva.bancomer.com
Pedro Uriz pedro.uriz2@bbva.bancomer.com

United States
Nathaniel Karp nathaniel.karp@compassbank.com
Marcial Nava marcial.nava@compassbank.com
Ignacio San Martín ignacio.sanmartin@compassbank.com

Art
Elisa Sánchez elisa.sanchez@bbva.bancomer.com
Fernando Tamayo fernando.tamayo@bbva.bancomer.com

Other publications

Country Watch:
Argentina
Chile
Colombia
Peru
Spain
Venezuela

This document has been prepared by BBVA Bancomer Economic Research Department with information that is believed to be reliable; however, it is not intended as a recommendation for the purchase or sale of financial instruments.

The opinions, estimates, forecasts and recommendations in this document are based on information obtained from sources considered trustworthy but BBVA Bancomer does not guarantee, implicitly or explicitly, the accuracy, veracity or correctness.