

# Housing Finance in Mexico: Current Conditions and Challenges

by Manuel Zepeda Payeras

## INTRODUCTION

This article presents a picture of the evolution of the mortgage market before the 1994–95 crisis of the Mexican economy, the effects of the crisis at the present time, the measures FOVI is taking to make securitization viable and the manner in which the market is going to implement these measures.

## THE MORTGAGE MARKET BEFORE THE 1994–95 CRISIS

The 138.7% devaluation of the Mexican peso from December 1994 to December of 1995 had a severe impact on housing finance in Mexico. The devaluation led to high inflation, high interest rates and declining real wages. This environment wreaked havoc in an already weak system—one that was plagued by reckless lending, poorly designed mortgages and poor servicing.

This situation was in contrast to the state of the market in the late 1980s. Following the first fiscal surplus in many years and trying to encourage a more flexible finance system, in April 1989 mandatory requirements that had been imposed on commercial banks

during the period of bank nationalization, which required investment in government bonds, housing and agriculture loans, were eliminated.

This helped to overcome the obstacles to obtain credit that the private sector had faced in the past. Therefore, after many years in which almost no lending was extended to middle and residential home buyers, the banks went on a lending spree to a thirsty market.

## PLAMs and DIMs

Since inflation was still high, most banks resorted to mortgages with payments linked to the Consumer Price Index (CPI), while others provided loans with payments linked to short-term interest rates.

The first mortgage, a PLAM or price level adjusted mortgage, is a fixed-rate mortgage in real terms. It is created by the use of a CPI-based unit of account that is quoted daily by the Central Bank, called "Unit of Investment" (UDI). This serves as the exchange rate between nominal and real prices.

Banks using this instrument had to be careful in their pricing and risk management, as at the time there were no inflation-indexed funding sources available. The banks assumed that real rates would go down and remain low in the future (in the

5% range) and priced their mortgages appropriately.

The second instrument is a double-indexed mortgage (DIM) in which the payments were indexed to inflation but the loan was amortized using short-term market interest rates. The DIM was fairly popular, and the interest-rate-linked payment formula was very well accepted by bank treasurers. It was easy to fund with short-term deposits, with a fixed term and constant payments at present value.

With these two instruments, home loans grew five-fold between 1989 and 1994 in real terms (see Figure 1). However, bank lending practices and servicing procedures and systems were not prepared for such expansion. In addition, newly privatized banks found themselves without experienced management who understood the intricacies of mortgage lending.

The inherent weaknesses of the system surfaced when real interbank lending rates, that were the index used for most mortgage payments, increased from 7.9% on average in 1992, to 11.0% in 1993 and then to 11.6% in 1994. This situation resulted in a high level of mortgage defaults and financial difficulties for the banks. In order to stem the losses from mortgage defaults, the banks began rescheduling their loans; even before the 1994-95 devaluation, many banks were facing high delinquency rates.

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**LOW-INCOME HOUSING FINANCE**

The Mexican government has been a fairly active participant in the financing of low-income housing (LIH). FOVI (Fondo de Operación y Financiamiento Bancario a la Vivienda) has been one of the most important government programs in this market. FOVI was created in 1963 as a government trust administered by the Central Bank in order to provide long-term funding for banks.

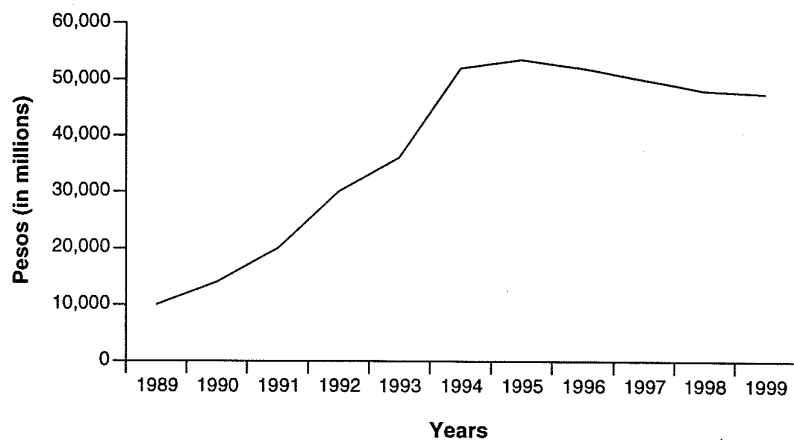
In order to raise the interest rates without accelerating the amortization of the loans in real terms, FOVI introduced in 1984 the double-index mortgage (DIM). The FOVI DIM indexes borrower payments to the minimum wage, while the principal balance is indexed to a separate rate.

Under the DIM, the interest rate accrued can be either nominal or real. From 1984 to 1993 FOVI used as the nominal rate the average cost of funds for banks. From 1994 to 1999 it has used a real rate equal to the average Treasury bill rate in real terms from 1980 to 1993 of 5%.

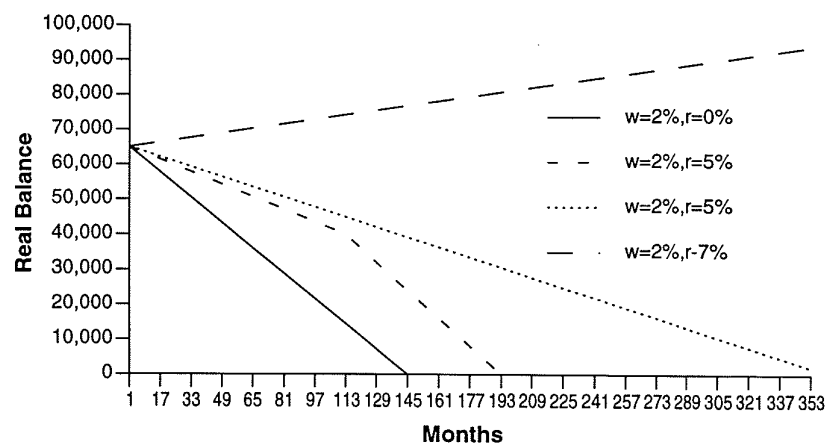
Since the index used for payments is different from that of the accrual rate, the term of the DIM is variable. If the interest rate goes up or the wage goes down, the term lengthens and vice versa. Therefore, the variable term acts as a shock absorber, allowing the impact to be transferred to the maturity, instead of increasing the payments to the borrower.

In this way, the mortgage can be funded with short-term deposits within certain parameters, but if the minimum wage falls too low, or the interest rate goes too high, the term of the mortgage will exceed 30 years, and the remaining balance has to be absorbed by the bank; or in the case of LIH loans, transferred to FOVI. (See Figure 2, where  $w$  = real wage growth and  $r$  equals real interest rate.)

**Figure 1. Outstanding Balance of Commercial Bank Housing Loans**



**Figure 2. Mortgage Balance Amortization for Different Growth Scenarios**



The variable term was, however, not acceptable to the banks without a guarantee by FOVI; and so they continued to originate mortgages with inflation-indexed payments. FOVI set the first payment of the mortgage to a level that, in spite of the crisis, would

result in an estimated loss for the end of term guarantee at 1% of the Fund's portfolio. For example, had there been no crisis, the mortgages originated in 1994 would have amortized in 18.5 years instead of 29.8 years.

**EFFECTS OF THE CRISIS**

As can be seen in Figure 3, due to the crisis interest rates rose in real terms while real wages fell. Therefore, with either of the two mortgage instruments used by the banks, the borrowers were left in a position where they could not afford to repay their loans. At the same time, the fall in income together with the contraction of lending produced a fall in home prices. As a result, the balance due in many cases exceeded the value of the home (i.e., a loan-to-value ratio greater than 100%).

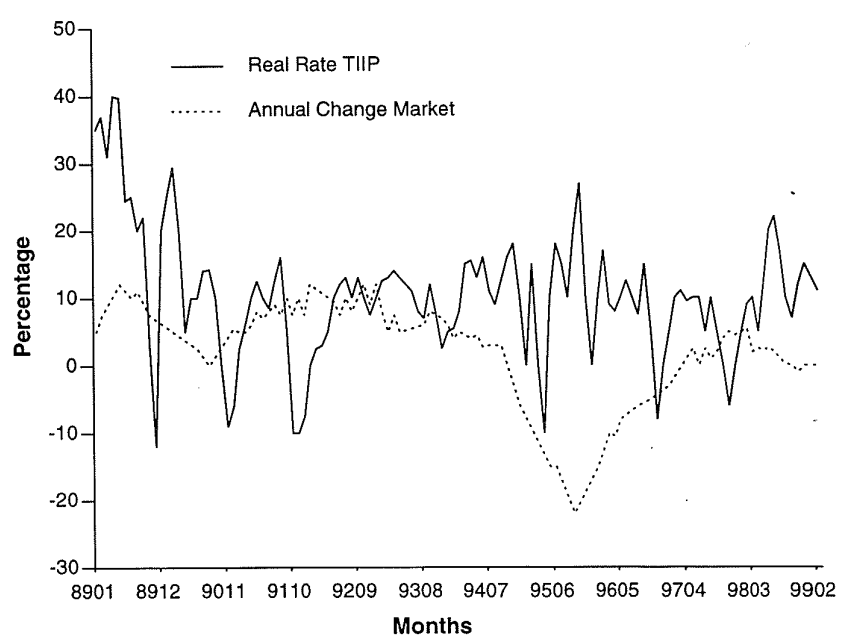
Negative equity provided a disincentive for borrowers to repay their mortgages and consequently delinquency rose to 40% measured according to U.S. GAAP or 12% under Mexican GAAP (see Figure 4).<sup>1</sup>

In the case of LIH, delinquency was also high because of unemployment, as well as poor origination and servicing. However, since payments were indexed to the minimum wage, which fell in real terms more or less evenly with market wages, delinquency was lower than in the case of bank-originated residential mortgages.

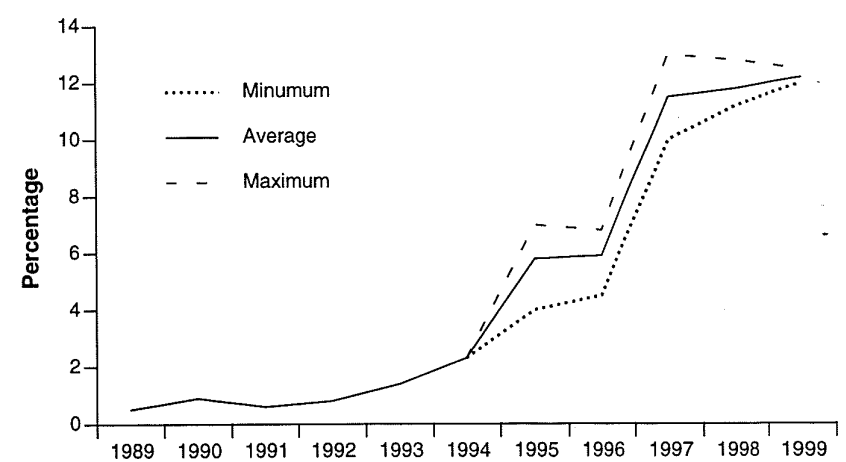
Construction loans were also affected by the crisis. Home developers were faced at the same time with rising interest rates and lower demand. Since the cost of loans increased sharply and demand fell abruptly, they were caught with a large inventory of homes in various states of construction.

The developers operated with low equity and thus could not lower the price of the homes as required (typically banks would finance home construction for up to 60% of the home price with financing from suppliers accounting for another 20% to 30% and the 10% left as profit). Another factor affecting the developers was the accelerated amortization of the construction loans in real terms arising from the increase in the nominal interest rate caused by inflation.

**Figure 3. Real Interest Rate vs. Real Wage Growth**



**Figure 4. Delinquency Rate in Home Mortgages Originated by Commercial Banks**



In sum, both home developers and banks were in fact broke, and as a result neither one could yield to the demands of the other. Developers wanted interest rate relief on their construction loans and a lower mortgage rate to home buyers; banks wanted developers to lower home prices and sell fast, so they could recover their loans.

The Mexican government offered in 1995 to absorb part of the loss in order to lower the cost of existing mortgages for mortgagors. However, instead of inducing cooperation, this led each party to move to a more extreme position. The result was a stalemate, and claims in court on each side, leading to increased overall losses.

The judicial system also contributed to the high delinquency rate. Developers could go into a legal "suspension of payments" where, in addition to ceasing the payment, the interest was not accrued during this period. Therefore, with an accumulated inflation of 124.6% from December 1994 to December 1997, a settlement whereby it was agreed to pay the principal, meant that the developer would end up paying in real terms only 44% of the original balance, with the consequent loss to the bank.

All of these factors, borrower willingness and ability to pay, the financial condition of the developers and banks, and the ineffective legal system contributed to enormous losses in the banking system. In an attempt to rescue the system, the federal government stepped in and bought most of the bad loans. To date, the government has purchased US\$80 billion in all kinds of loans, equal to 20% of GDP. It is possible that the government will have to purchase even more loans in the future.

**PRESENT SITUATION**

Just at the time when the banks stopped lending in 1995, FOVI started working with

mortgage companies (SOFOLÉS in Spanish, which stands for Limited Purpose Financial Institutions), that can lend but cannot take deposits from the public. SOFOLES have proved that they can be reliable lenders when they are well regulated by their creditors (to date FOVI). The regulatory and operational requirements for SOFOLES are stringent. This has resulted in FOVI approving, to date, only 13 SOFOLES as authorized lenders.

With adequate rules and experienced management, SOFOLES delinquency performance has been very encouraging (see Figure 5). As of May 1999 the SOFOLES had an average delinquency rate of 1.3% with a maximum of 2.5% and a minimum of 0%. Since mid-1997 their lending volume has exceeded that of banks (see Figure 6).

**OTHER LOW-INCOME PROGRAMS**

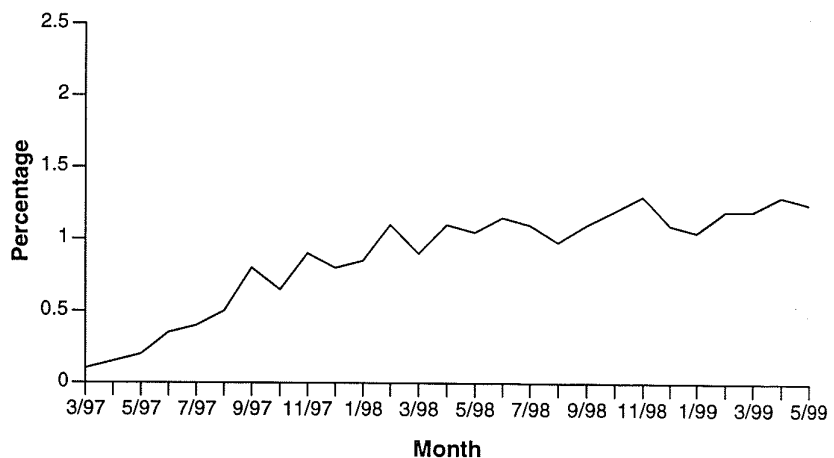
In the low-income home market, there are two housing pension funds, INFONAVIT for

private sector workers and FOVISSSTE for employees of the federal public sector. They require a 5% payroll contribution paid by an employer on behalf of an employee. Both funds are restricted to investing only in mortgages for affiliated workers.

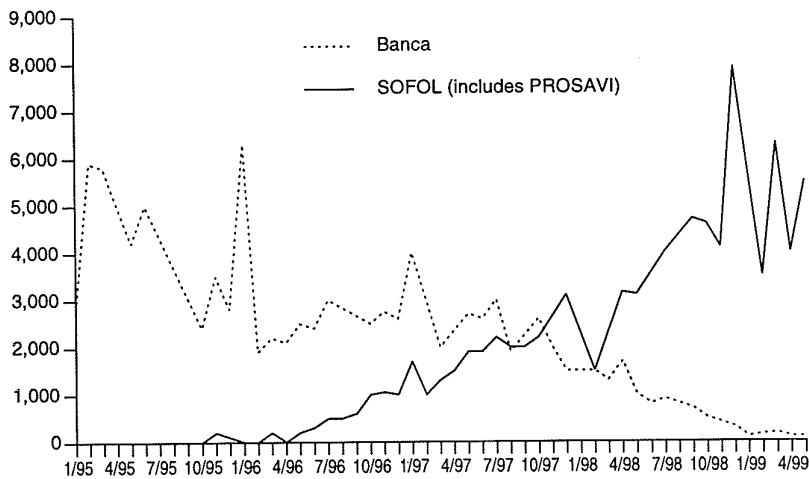
The pension contributions of INFONAVIT over the last 26 years have amounted to US\$9.2 billion (December 1998). If the contributions had had an inflation-adjusted yield of 0%, the total balance would be US\$28.8 billion and with a 3% annual real return there would be US\$41.2 billion. However, at present, their return has averaged minus 5.9% in real terms, because the price of homes financed has exceeded the present value of the payments of workers from the outset.

This is due to a high delinquency rate (about 50%), loans with high loan-to-value ratios and a mortgage instrument that was designed not to yield above 8%<sup>2</sup> (real) in the best case scenario. FOVISSSTE is in a similar situation.

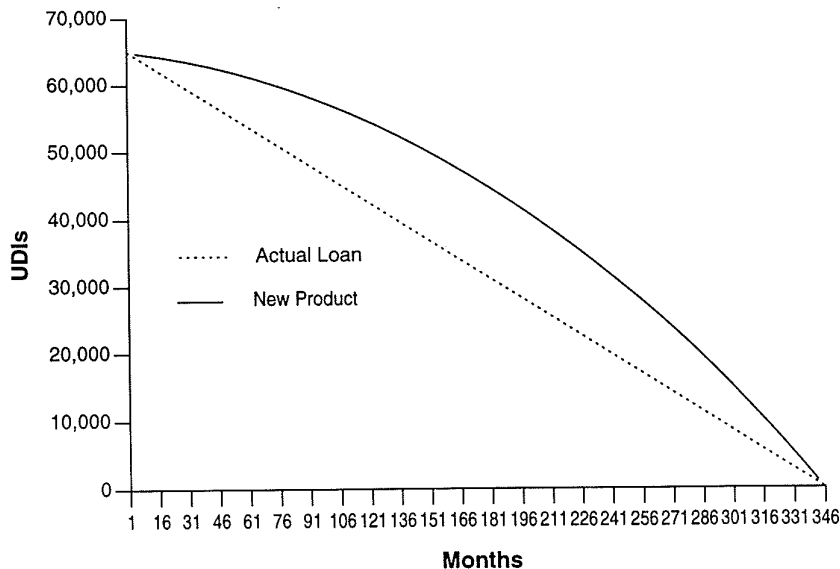
Figure 5. Delinquency Rate of Mortgages Originated by SOFOLES



**Figure 6. New Loans Originated Monthly by Banks and SOFOLES**



**Figure 7. Evolution of Inflation-adjusted Mortgage Balances**



Although INFONAVIT and FOVISSSTE together provide the bulk of mortgage lending to low-income households—as well as the bulk of all mortgage lending in Mexico—from a financial perspective, they have not been successful. In contrast, FOVI has attempted, and continues to attempt to implement mortgage lending programs that are financially viable and attractive to borrowers.

**NEW FOVI INITIATIVES**

The inactivity of commercial banks and the poor performance of INFONAVIT and FOVISSSTE in the housing finance area highlight the importance of FOVI and its role in the sector. Not only is it necessary that FOVI continue with its successful lending programs but also that it uses its position in the market to help exact lasting and positive change in the sector. To this end, FOVI is about to launch three new initiatives: a new mortgage, a new subsidy policy and securitization of mortgage portfolios.

**A New Mortgage Product**

The new FOVI mortgage is fundamentally the fixed real rate DIM but adds a significant new feature. An insurance fund (the "SWAP") will be created to guarantee that a borrower's monthly payment is sufficient to fully amortize the mortgage.<sup>3</sup> The SWAP premium is bundled into the borrower's monthly payment. In times in which the borrower's payment is insufficient to amortize the mortgage, the fund will pay the shortfall.

From the investor's point of view, the resulting mortgage looks very much like a PLAM (price-level adjusted mortgage). From the borrower's point of view, the instrument continues to have affordable payments linked to wages. From FOVI's point of view, the instrument behaves like a PLAM but with reduced credit risk due to a lower probability of payment shock than is typically associated with PLAMs in Mexico.

Lenders receive commissions for servicing the mortgage and bearing 50% of the default risk. (FOVI bears the other 50% on a *pari-passu* basis.) Lender commissions are market determined and are calculated as a proportion of the outstanding loan balance. FOVI also charges a commission that is calculated as a percentage of the initial balance; this commission is for its 50% mortgage guaranty. The commission is added to the borrower payment. It is fixed in terms of UDI's.

For the SWAP, FOVI will charge a commission of 11% of the sum of the mortgage payments plus the bank servicing fee. This is the premium required to protect the mortgage from up to a 30% (real) fall in the minimum wage during the life of the mortgage (30-year fixed term). This is an important feature, as reductions in real wages of this magnitude have occurred in the past.

An example of the evolution of the balance of the proposed mortgage compared with the current mortgage is presented in Figures 7 and 8, under the assumption of a -2% annual fall in real wages.

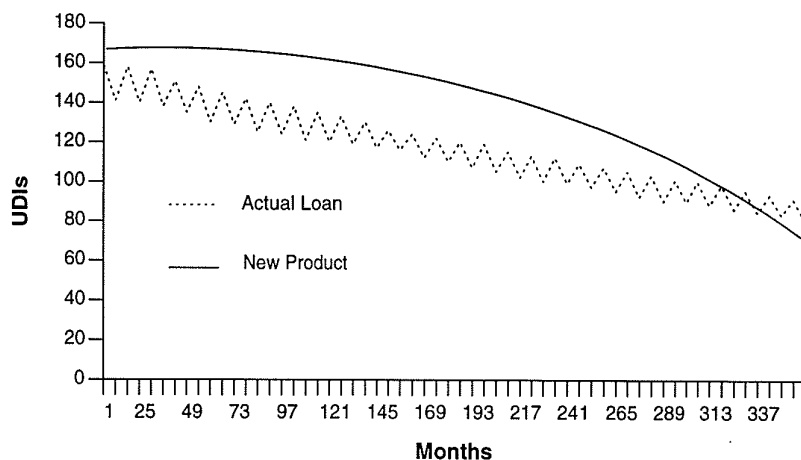
The advantage of the new FOVI mortgage is that it is securitizable, and the commissions of banks and FOVI move with inflation and are not affected by the evolution of minimum wages.

#### Making Subsidies Explicit

FOVI's current mortgage carries a 5% real interest rate. This rate is currently below market, as government bond yields are approximately 9%. With the new mortgage, the policy of the government is to replace the present subsidy in the interest rate with an up-front payment to the borrower at the time of origination for the homes targeted to the poorest families.

For this purpose, in 1997 a special program was started, called PROSAVI (Special Pro-

Figure 8. Evolution of Payments in Real Terms



gram for Housing Loans and Subsidies). The subsidy amounts to US\$2,000 (8,000 UDI's) and is assigned through a system of auctions, where interested households bid with a percent downpayment. The banks carry out the auctions in the presence of a notary public. Since there is no market for low-income used homes, the winners can only buy homes from new housing developments. The program works very well, and about 25,000 PROSAVI loans will be financed this year.

#### Securitization

In order to expand the housing finance system in Mexico, it will be necessary to tap new sources of funds. Fairly recent developments in pension funding make this possible. The law of the Mexican Institute of Social Security (IMSS) was changed to transfer to private pension fund administrators (AFORES) part of the payroll tax contributions provided by employers on behalf of their respective employees; these contributions were once completely managed by

IMSS. The tax is equal to 5% of the income of employed workers up to the first 25 multiples of the minimum wages earned (one monthly minimum wage unit is currently equal to approximately US\$105).

The AFORES have opened individual accounts for 13.8 million workers, amounting to 105,938 millions of pesos as of December of 1998. Given the growth of the labor force (above 3% per year because of high population growth and the incorporation of women into the labor force) and of real wages (2.2% in 1998), by the end of the year 2000 the deposits will have reached approximately US\$14 billion at today's exchange rate (approximately 1US\$=N\$9.5) and may grow as high as US\$2 billion per year.

When retired, workers may opt to keep their money with the AFORES or buy an annuity sold by insurance companies. By the end of the year 2000, annuities may reach US\$2.5 billion, growing annually by US\$1 billion. There also exist private pension funds that have deposits estimated to be US\$5 billion.

Therefore, by the end of the year 2000, there may be as much as US\$24 billion in long-term funds that could be the basis of a market for MBS.

The availability of long-term funds from the AFORES and insurance companies, together with the low delinquency shown by the SOFOLES and the new FOVI mortgage, offer the possibility of a secondary mortgage market. From the point of view of banks and SOFOLES, their low capital availability makes it a desirable development. From the point of view of investors, it makes sense in principle, but it will require considerable policy changes and consistent effort to develop a smoothly working market.

To test the true investor interest and to establish the basic legal and regulatory aspects, FOVI is working on a set of pilot issues collateralized by vintages of existing mortgages (fixed real rate DIMs without a SWAP) currently being originated.

#### Issues to Be Addressed

There are a number of issues that must be addressed if securitization is to become successful in Mexico. The first step is to address the relevant regulatory impediments.<sup>4</sup> With regard to the special purpose vehicle (SPV), in the case of Mexico the legal structure of the trust can be used as in the U.S. for securitization; and the securities trusts issue can be either pass-through securities or bonds.

With respect to taxes, the government has determined that when there is the possibility of repurchasing the mortgages, these are considered as not having been taken off the balance sheet of the originator; therefore taxes are paid by each party outside the trust. At the same time, for capitalization purposes, the Central Bank considers that the mortgages are taken off the balance of the originator only when there is no repurchase

clause. For tax purposes, the government, the Central Bank and the tax authorities have accepted a repurchase clause, which would be subject to conditions that would make it difficult to use.

Since the cash flows of the present FOVI mortgages are indexed to the minimum wage, the second step in the securitization process would be to transfer loans to an SPV and convert their minimum-wage-indexed cash flows to CPI-indexed cash flows. This could be done through a wage/UDI SWAP from FOVI to the SPV; with the new mortgage this would not be necessary.

The third step would be to raise the real interest rate to the market level. This could be accomplished by issuing an Interest Only Strip (IO) funded by the government.<sup>5</sup> The IO would cover the losses arising if the market interest rate for the bonds is higher than the interest rate of the mortgages. With the new mortgages it is possible that the IO would not be required or only be used temporarily in periods of interest rates above the long-term average.

The fourth step would involve credit enhancement of the securities that could be done through a senior-subordinated security structure. A rating agency would determine the amount of subordination required for the Senior Participation Certificates (Sr. PC's) to be issued with a AAA rating. Since the term of the Sr. PC's would most likely be shorter than that of the mortgages, it is likely that in addition to the subordination tranch required for the credit risk, the bonds would have to have different maturities to take account of the differences in duration.<sup>6</sup>

#### Who Will Purchase?

Given the lack of satisfactory repayment performance on bank-originated mortgages and the limited experience of the SOFOLES, it is unlikely that market investors would pur-

chase the junior PCs (or would only do so at extraordinarily high real rates of interest, increasing the size of the government IO).

One option could be for the banks and SOFOLES that originated the mortgages to purchase the junior securities. However, this would defeat one of the major objectives of securitization: to get the mortgages off the balance sheet of the originators. Another possibility would be for the government or FOVI to guarantee the certificates issued. This would reduce the subordination and the size of the IO, but then the MBS would be government paper with reduced incentives for originators to service their loans properly.

Alternatively, FOVI could take all or part of the junior PCs in return for a guarantee on the senior PCs with the option of selling the securities (and realize an upside) at a later date when their performance is established.

The fifth step would be to issue the securities. In this regard, two questions arise. One is, will the market buy long-term real fixed-rate securities? The other is how should they set the best rate for the Sr. PC's so as to minimize the amount of the IO? This process will be complicated if the junior PCs are not initially sold and if there is a substantial lag between the origination of the mortgages and issuance of the securities.

Pilot issues will attempt to solve these problems. It is hoped that once the securitization process is established, wholesale buyers of mortgages or conduits will come into the market. These entities could generate a larger volume of transactions and thus establish liquidity in the market.

Also, in the course of the next year, FOVI will try to bring a private mortgage insurer into the Mexican market to improve mortgage management procedures and the pricing of credit risk.

### IMPEDIMENTS FACING PRIMARY, SECONDARY MARKETS

The main impediments for the development of the primary market are the extreme weakness of the banking system and the primary market operations of INFONAVIT and FOVISSSTE. With respect to the first problem, after the massive purchase of loans from the banks undertaken by the government and three successive programs to restructure the delinquent loans, accompanied by significant discounts in the payments of non-delinquent borrowers, the delinquency rate is still very large and growing.

Since the banks for practical purposes stopped lending in 1995, by now their mortgage departments, in general, do not have the proper expertise. The market is therefore being served by the SOFOLES, but it will take a few years before they have the size and capital to become mortgage banks of considerable strength.

With respect to the second problem, only a strong political will could change the situation. Meanwhile, the market of LIH left to banks and SOFOLES is a residual, and as such, subject to too much variation.

For the secondary mortgage market, the main impediment is the immaturity of the bond market. Although by the end of year 2000 there will be about \$US24 billion in long-term funds available in possession of the AFORES and insurance companies, there are several restrictions on the investment regulations that could substantially reduce the amount available for mortgages.

In the case of SIEFORES (the fund administrators for the AFORES), they cannot invest less than 51% of their total portfolio in UDI's or bonds issued with a federal government guarantee, and not more than 35% in private bonds. In addition, there is still substantial concern about volatile real interest rates and

a lack of liquidity in the secondary real rate bond market, even for those issued by the government. Insurance companies would like to invest in long-term fixed real rate bonds, but with a government guarantee, since without it, their capital requirement rises even if the bonds are rated AAA.

Private bonds are subject to tax on interest income that increases the rate about two percentage points. Therefore, the bond market is concentrated on government issues or government guaranteed issues, with coupons linked to very short-term rates. There is really no long-term capital market on which to reallocate the interest-rate risk, a move that is the basis of mortgage securitization.

The bond market has other deficiencies that hinder its development, such as the lack of firewalls between commercial banks, and investment and pension funds. For example, the two main banking groups that concentrate 50% of deposits are the main players in the bond market as well.

Besides firewalls, the secondary bond market also lacks transparency about prices and liquidity. Together with the tax issues and lack of derivatives, these factors contribute to a very feeble market, unsuitable for the development of a strong secondary mortgage market.

### DESIRABLE DEVELOPMENTS FOR THE FUTURE

In a country with such a shortage of long-term funds, the first priority is to put INFONAVIT and FOVISSSTE on a sure footing by improving their rate of return. This requires transforming them into second level institutions, such that they carry no credit risk (which would be taken up by third-party lenders).

By becoming second level institutions, they would concentrate on buying securities

backed by loans originated to their constituencies. If these institutions were successfully transformed into financially viable institutions, it is estimated that by year 2015 they could be financing about 640,000 homes per year and almost all new Mexican families would be able to buy a home on credit.

The government also needs to develop a general up-front subsidy system open to the population as a whole that would allow FOVI, INFONAVIT and FOVISSSTE to issue affordable but market rate, loans.

The third challenge, transformation of the market, requires the development of a wide and deep bond market, with sufficient liquidity, transparency and firewalls. The present administration is working to this end, in spite of the objections of bankers and other vested interests.

The fourth challenge is for banks and SOFOLES to lend to very low-income households, without the government having to take the credit risk. The government should concentrate only in funding the necessary up-front subsidy.

The fifth objective should be for low-income households to have access to savings systems that have a positive real return on deposits, so they can save for the downpayment.

The final challenge is to have a stable macroeconomic environment. Efforts are being made in this respect, and we all hope they will succeed.

### NOTES

<sup>1</sup> Editor: Under U.S. GAAP (Generally Accepted Accounting Principles) the entire balance of a loan more than a specified number of months delinquent must be reported. Under Mexican GAAP, only the



amount of delinquency must be reported. Mexican banks are now required to report delinquencies according to U.S. GAAP.

<sup>2</sup> Editor: The initial accrual rate for INFON-AVIT loan can range between 4% and 8%. The rate is based mainly on a borrower's income level.

<sup>3</sup> Editor: While the insurance fund is called a SWAP, it is not a traditional SWAP as exists with interest rates or currencies.

<sup>4</sup> See the articles on legal and regulatory obstacles to securitization in the June 1996 and September 1996 issues of *Housing Finance International*.

<sup>5</sup> Editor: In presentations in Mexico, this instrument has been referred to as a Principal Only Strip (PO). As described, the security would augment the interest paid by borrowers based on the outstanding balance of the loans; hence the change in terminology to Interest Only Strip.

<sup>6</sup> Editor: The longest term of government bonds is currently five years. The structure will most likely be a senior-subordinated CMO (collateralized mortgage obligation) in which the senior bonds will have a similar maturity and the junior bond(s) will have a longer maturity. The senior bonds will receive interest and all principal until paid off, and the junior bonds will receive interest but no principal payments until the senior bonds are repaid.