The domestic financial position of the household sector in Mexico

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1. Introduction

In Mexico, while financing granted by financial intermediaries has been closely monitored, not a lot of research has been made in order to measure the household sector financial position. This article describes the construction of the financial position of the household sector in Mexico using aggregate financial data from 2000 to 2005. While several methods to measure household sector financial position have been addressed in the international financial literature, in Mexico there is no single widely used methodology on this topic. In this paper we measure household's financial position using a methodology that is consistent with the overall uses and sources of the economy and the monetary and financial aggregates, mainly using public available data. The aim of this paper is to provide a methodology to measure households financial position which posits a straightforward relationship between assets and liabilities.

In this article we describe the principal instruments used by households either to save or receive credit since most of these instruments have changed dramatically over the last years. On one hand, credit to households had a noticeable expansion both by the banking sector and by other intermediaries. Banking credit for consumption has been showing positive real rates of growth since 2000, while banking credit for housing started its expansion in 2004. Other intermediaries like non-bank mortgage originators and government sponsored funds (Infonavit) have been important sources of financing particularly to low income households. On the other hand, after a profound reform of the pension system in 1997, households savings have shown a remarkable increase in the last decade. In addition, nowadays the private sector has access to other investments options, in particular investment funds have increased their market participation considerably.

The paper is structured as follows. Section 2, provides a brief introduction to the macroeconomic context in which the household position is measured. In order to understand current household financial position we contrast the main differences between the current macroeconomic situation and the one before the 1995 crisis. Additionally, we describe the profound changes that have taken place in financial intermediation. In section 3, we describe the principal sources of information both for the liabilities and assets sides of the households' balance sheet. This is important because there have been major changes to the primary data sources in Mexico that have enabled the use of the methodology presented in this paper. In section 4 the estimation of households' liabilities is presented, describing the consumption and mortgage credit markets, the principal financial intermediaries and the characteristics of the main instruments. On the liabilities side, we observed a remarkable credit expansion, which started with consumption credit and have been extended to mortgage credits. Section 5 develops on households financial savings. Of high importance, along with macroeconomic stability, is the role played by public pension funds and investment funds in explaining the increase in financial deepening. Financial savings have increased

[1] The views expressed are those of the authors and do not necessarily reflect the views of the Bank of Mexico. This paper is part of a broader research agenda. Emma T. Martínez, María E. Ortega, Manuel Sanchez, Javier Vazquez and Diana Morales participated in related research activities.

considerably, particularly because of the compulsory public pension funds. Section 6 combines households' assets and liabilities in order to construct the balance sheet. Then an estimation of households' net financial position is reported using different indicators. Section 7 includes the final remarks. At present the financial position of Mexican households as net creditor is still large relative to its income. This could imply that there is still room for credit expansion, although it is important to recognize that the current financial situation of the household is mainly related to compulsory savings.

2. Macroeconomic context: two credit cycles in Mexico

In the last decades, financial intermediation in Mexico has undergone profound changes. In order to analyse household's financial position it is important to understand the context in which it is developed. In the early 80's financial markets were completely closed and commercial banks were under the direct control of the government. Nowadays, domestic financial markets have strengthened and deepened, they have been fully integrated with international markets and have become more sophisticated. Nevertheless, in Mexico financial intermediation is still low, both compared to international levels and to the size of the Mexican economy.[2]

During the past two decades there have been two important credit expansions to households. The first one occurred during the first years of the 90's, the second started in 2001. From many perspectives, these two episodes performances are very different. First of all it is important to understand the Macroeconomic situation in which these credit expansions occurred. From 1991 to 1994 although inflation went down substantially there was a perception of high contingent risks. For example this uncertainty was reflected in government debt either as a shortening of average maturity (see Figure 1) or the use of foreign currency denominated bonds. Currently, as inflation has gone down the average maturity of public debt has increased substantially and foreign denominated liabilities have been reduced.

There is a clear relationship between inflation and the maturity of financial contracts. In countries with a history of inflationary episodes, there is a high pass-through effect from macroeconomic instability to the quality and access to financial resources, especially for households. This is important because many of the financial instruments characteristics are very sensitive to the macro context. In particular, the recent abatement of inflation has allowed the strengthening of domestic markets for fixed rate instruments. As inflation has gone down the issuance of longer term contracts has increased considerably, reflecting that agents have been able to broaden their planning horizons. During the first half of the 90's, although mortgage credit was issued at long maturities, they were signed under variable interest rates instruments or indexed to inflation. In particular a dual index mortgage was widely used and is still the base for the main mortgage instruments used by public entities for low income housing credit (see Box 1 in section 4.2). Nevertheless, today the most common mortgage instrument used by private financial intermediaries is a fixed rate loan.

Inflation reduction has also been reflected in an increased supply of financial savings. Financial deepening, measured by the broad monetary aggregate M4, has increased from 35.9 percent of GDP in 1991 to 52.2 percent in 2006 (Figure 2a). Overall, macroeconomic stability has implied better conditions for households' credit and an increase in the availability of financial resources.

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[2] See Sidaoui (2006) for a description of the main developments in the Mexican financial market.

Figure 1

a. Average maturity of Government securities and inflation

b. Government interest rate

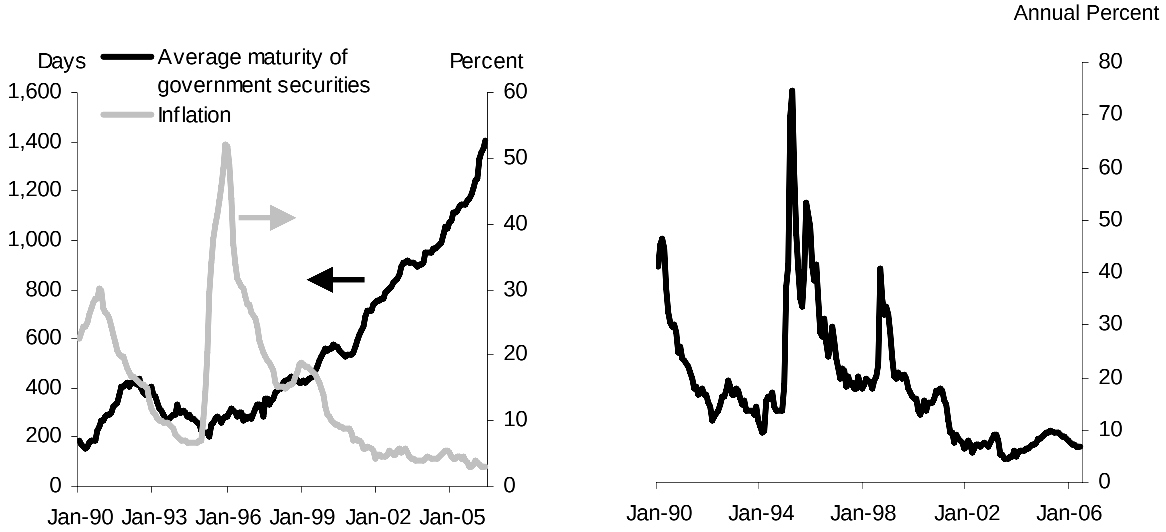

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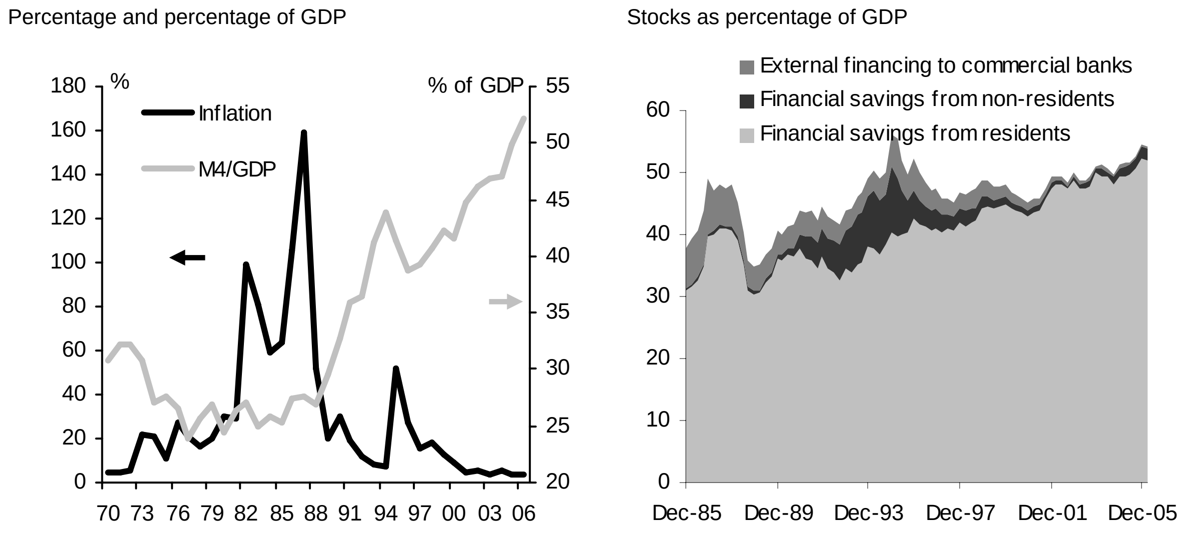
Figure 2

a. Financial savings (M4) and inflation

b. Financial savings and banks foreign liabilities



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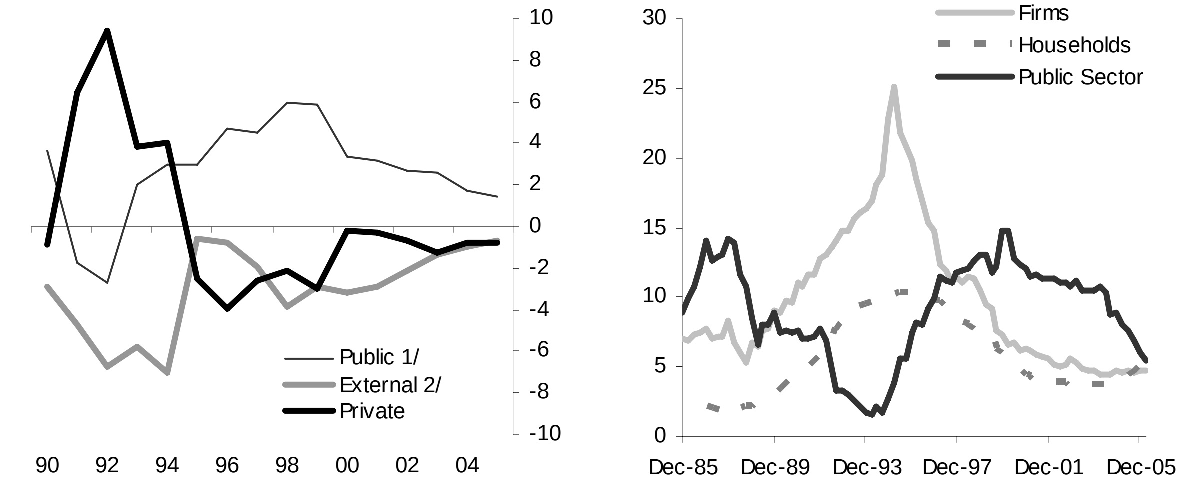
A second perspective to analyze these two episodes is the flow of funds, since the sources of the two credit cycles are very different. On one hand, most of the first credit expansion, from 1991 to 1994, was possible because of capital inflows, especially in the form of financial savings from non-residents and an increase on banks' foreign liabilities (Figure 2b). On the other, the current increase on credit to households is based on domestic financial savings. Also the role of financial intermediaries has been completely different. In the first episode banks were the main participants, while in the current expansion other financial intermediaries have taken a more active position.

In addition to the differences already mentioned it is important to point out the role of the public sector and the crowding out of financial resources. During the 1991-1994 period there was an important expansion on financial intermediation by public development banks, which in part sustained the private sector deficit.[3] After the 1995 crisis the public sector demanded most of the increase in financial savings leading the private sector to be a net creditor in the domestic markets (Figure 3a). However, by the end of 2000 bank financing to the public sector began to drop and a crowding in effect with the private sector was observed, particularly with households (Figure 3b). Finally, it is worth mentioning that households' credit is still low compared to the levels that it reached during the first half of the 90's.

Figure 3

a. Net financing received by sector* **b. Commercial banks financing**

Flows revalued as percentage of GDP Stocks as percentage of GDP



* Positive sing=debtor position. 1/ Public sector borrowing requirements (PSBR). 2/ Current account of the balance of payments.

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3. The sources of information

Most of the information available to measure household sector financial position is gathered from financial intermediaries by Mexican authorities. In this regard, after the 1995 Crisis, the supervising entity, Comision Nacional Bancaria y de Valores (CNBV), and the Central Bank (Banco de México) have made outstanding improvements in data collection. Table 1 presents the type of information collected by supervisory and regulatory entities regarding household financial positions. However, these authorities collect information pursuing different objectives, while CNBV objective is to supervise the operations of financial intermediaries; Banco de

3 See Gil Díaz and Carstens (1996).

México objective is to promote the development of the financial system. As we mentioned before the objective of this paper is to provide a methodology for measuring household financial position using public available data. Even when CNBV publishes information on financial operations we used Banco de México's published macro financial information since it has special emphasis on sectoral transactions. In fact, using Banco de México data is possible to distinguish financial intermediaries operations with all economic sectors. Therefore, it will possible to extend the methodology used on this paper to measure other sectors financial position.

In order to follow up sectoral transactions, Banco de México collects data by sector and type of financial instrument at disaggregated levels. Consequently, financial intermediaries' information can be indirectly utilized to construct household balance sheets. On the asset side of financial intermediaries' balance sheets detailed information on holdings of issues and securities, loans and credits is available. On the liabilities side, the most important item corresponds to short and long term deposits. Therefore, as long as it is possible to identify the sectoral counterparts of financial intermediaries' transactions, it is possible to follow up households positions.

Table 1

Information related to households gathered by financial authorities

Concept and frequency of submission by intermediary

Information on	Banks	Financial Leasing Companies	Brokerage Houses	Foreign Exchange Firms	Financial Factoring Companies	Financial Holdings	Investment Funds	Pension Funds	Special Purpose Financial Companies	Credit Unions
Assets and Liabilities	M	M	M	M	M	M	M	M	M	M
Holdings of Securities	M	M	M	M	M		M	M	M	M
Credit Portfolio	M	M			M				M	Q
Other Accounts Receivable	M	M	M	M	M				M	M
Bad Debt Asset Recovery	M	M			M				M	M
Deposits from the Public	M	M			M				M	Q
Penalties and Losses	Q	M	M		M				M	M
Financial Statements	M	M	M Q	M Q		M Q	M	M		M
Risk Assessment	Q								M	M
Other Accounts Payable		M	M		M				M	M
Goods on Deposit		M								M

Note: For the purpose of this table, M refers to monthly frequency and Q to quarterly frequency of submission.

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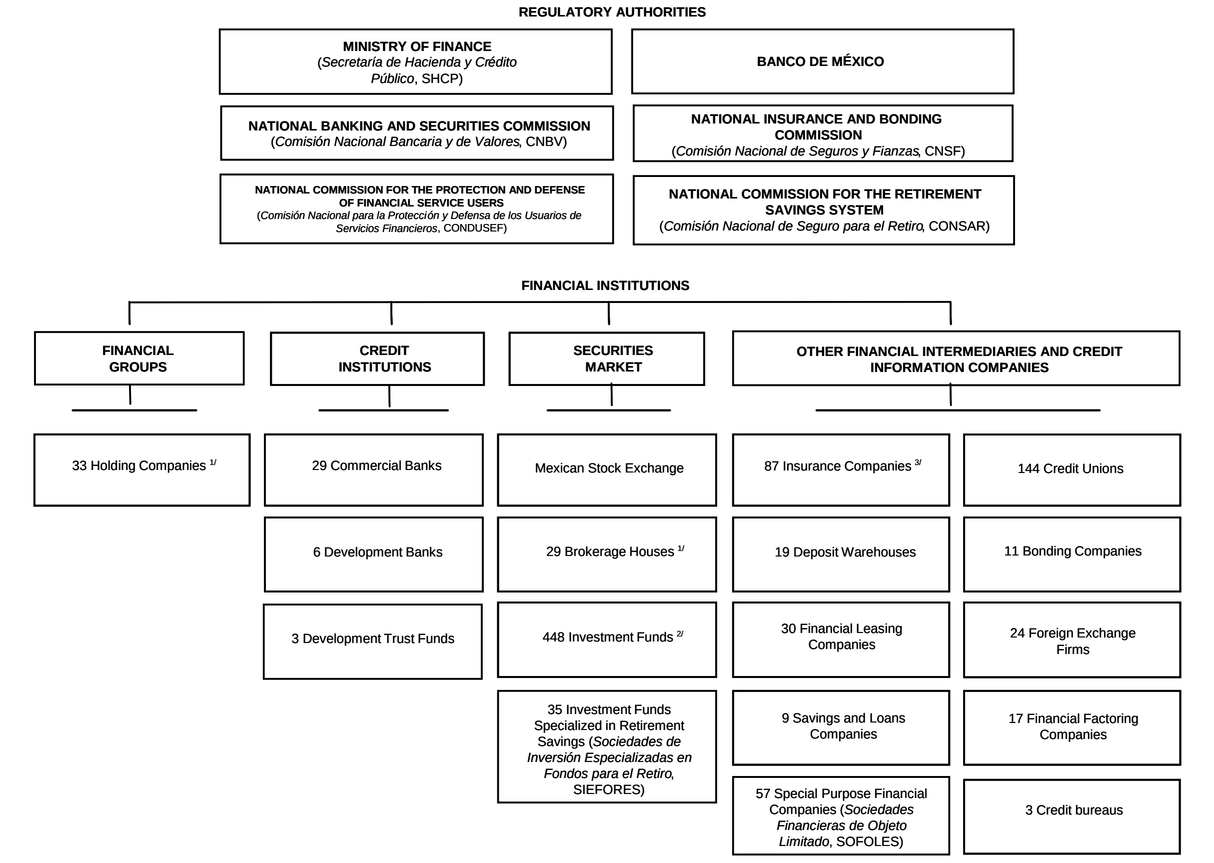
Following data collection, Banco de México publishes on monthly basis assets and liabilities of financial intermediaries identifying their sectoral counterparts. The first main distinction made on counterparts is according to residence. When a unit engages and intends to continue engaging in economic activities and transactions on a significant scale in Mexico it is considered a resident, non resident is considered otherwise.[4] Once acknowledged by residence, economic units are classified in the following sectors:

- Financial corporations.
- General government.
- Non-financial corporations.
- Households.

Table 2

Mexican financial system in 2005



1/ Source: National Banking and Securities Commission (Comisión Nacional Bancaria y de Valores, CNBV). 2/ Includes stock investment funds, fixed-income investment funds for both individuals and enterprises, equity investment funds, and investment fund holdings. 3/ Includes insurance companies, insurance companies specialized in pensions, and health insurance companies. Information up to December 2005.

Financial Corporations in Mexico are those financial institutions that are subject to government regulation and supervision. Table 2 describes current Mexican Financial System structure. General government corresponds to central government, state and local governments and those sectors which liabilities are supported by the government. Non financial corporations are private enterprises and individuals with entrepreneurial activities.

[4] This definition of residence it mostly used by international organizations like the International Monetary Fund and the Bank for International Settlements.

Households are those individuals or group of individuals that conduct economic transactions not related with entrepreneurial activities. Therefore for the purposes of this study we will follow up assets and liabilities with this last sector.

Finally, it is worth mentioning that Banco de México publishes aggregate measures of total liabilities of the private sector (households and firms). Liabilities are presented by intermediary and classified by type of loan (consumer and mortgage loans). Also information is available by instrument, like credit cards, personal loans, etc.

Several presentations of overall financial savings are regularly published by Banco de México. Nevertheless, a sectoral classification, dividing by households and firms, is not yet published. This paper is part of a broader research agenda and presents estimations of households' M2 (domestic financial savings by residents) in the context of the overall financial assets.

In addition to the information of sectoral transactions of financial intermediaries published by Banco de México is important to considered other sources of financing available for the household sector. In Mexico Infonavit and Fonacot are the most important government supported institutions that entitle transactions with households. The former offers mortgage financing and the later provides consumer financing to households. These institutions publish quarterly financial statements where it is possible to identify households' positions.

4. Household liabilities

In recent years there has been a gradual lift of credit restrictions faced by households. These restrictions were characterized by a limited credit supply an high interest rates. To illustrate the increased access of households to credit, it is worth to mention that the number of individuals registered in the credit bureau augmented from 13.9 million in 2000 to 37.1 million in 2005.[5]

In order to boost financing to households it is important to have a robust credit and loan reporting system. The accessibility to the credit history of borrowers enables the issuing of loans in better conditions and has been an important factor for the recent expansion of credit to households. Until the early 1990s, very little credit information was available and shared in the Mexican financial markets. The only information sharing mechanism available at that time was a public registry held by Banco de México. At present, there are two private credit registries that contain information from banks, as well as a number of non-bank financial institutions, retailers and other creditors (Figure 4).[6] However this industry is still in evolution since an important part of informal credit providers are not included in these registries. Access to this type of information will enable the possibility to construct more accurate households' balance sheets.

4.1 Consumer credit

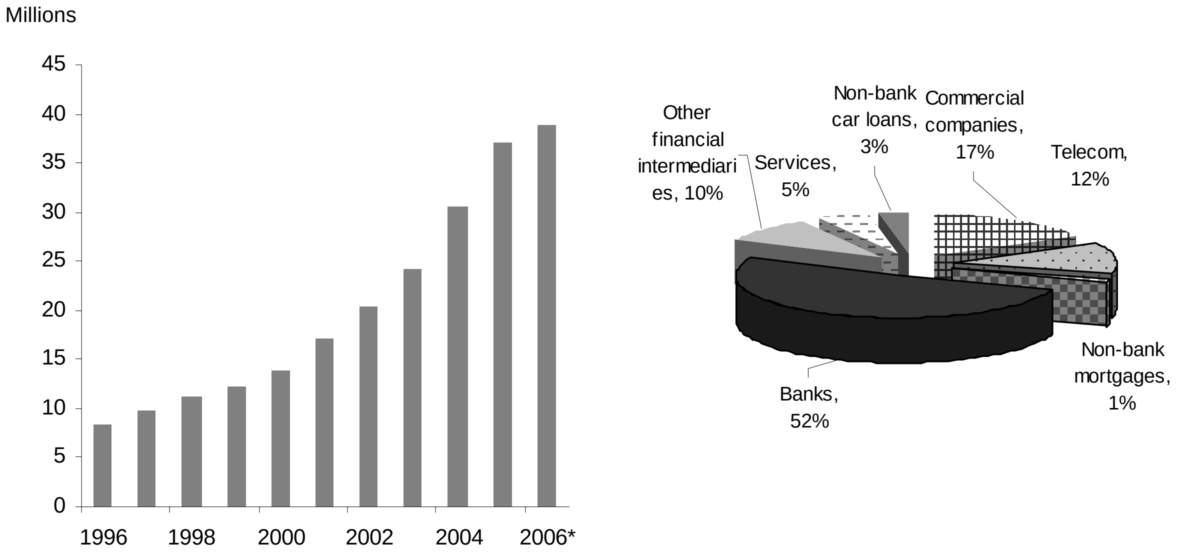
The main intermediaries in the market of credit to consumption are commercial banks that account for 77 percent of the portfolio. Sofoles (non-bank banks) have 9 percent of the market and other sources of financing have the additional 14 percent.

5 This information corresponds only to "Buró de Crédito" data.

6 For detailed information on this regard see "Credit and loan reporting systems in Mexico", World Bank, March 2005.

Figure 4

a. Number of files **b. Structure of data base**



* Source: Buró de Crédito

Consumer credit was the first market to recover after the financial crisis. The common interpretation is that it has the highest adjusted rate of return on assets. In particular the credit card market had an impressive recovery both measure by the number of cards and by the value of the market. According to Banco de México information on settlements, at the end of 1994 there were 10.5 million credit cards, in May 2006 this number reached 26.2 millions. The market doubled measured as percentage of GDP. Also the amount of transactions (billing) has increased rapidly from 4,880 million pesos in 1994 to 29,484 millions in May 2006 (Figures 5 and 6).

Figure 5

a. Consumer credit **b. Bank consumer credit**

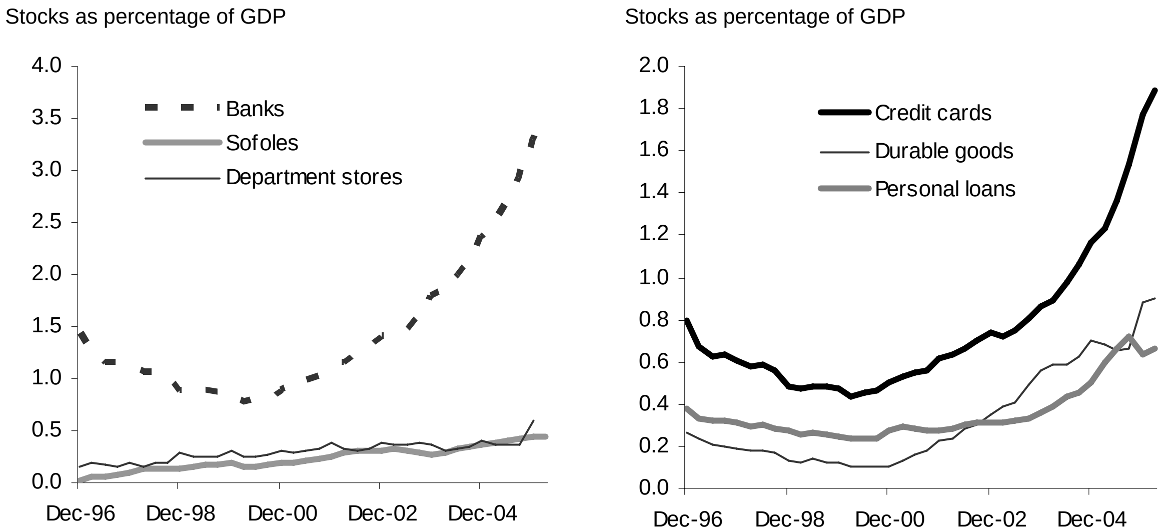


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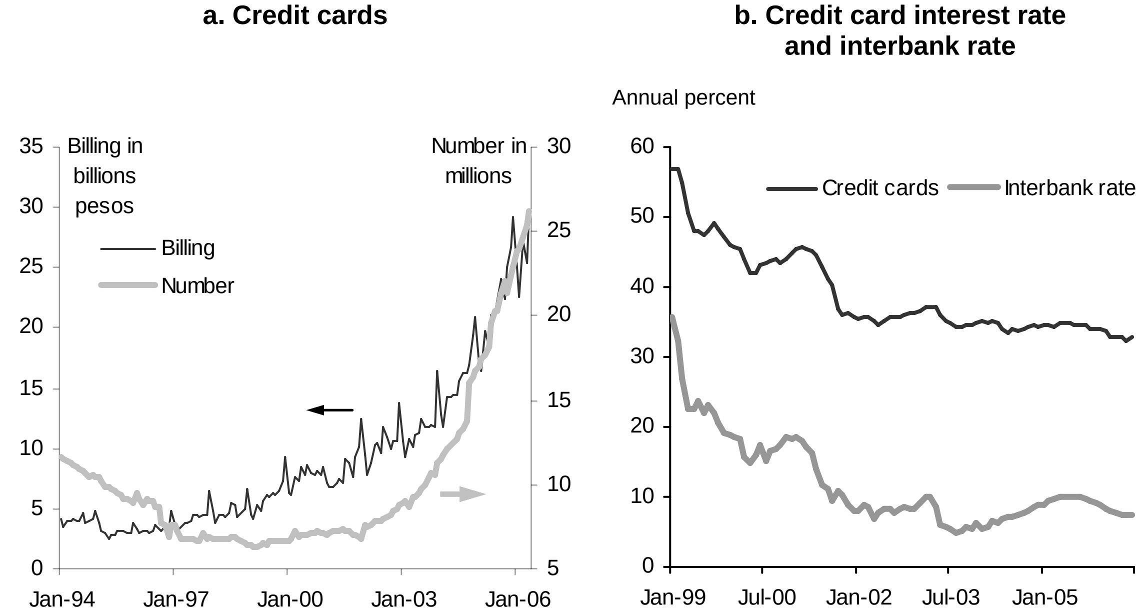
Figure 6



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Interest rates charged on credit cards are still very high, around 32 percent annual rate, for the traditional instrument. Also to consider are the commissions charged by banks that actually account for an important part of their non-interest income.

Expansion on consumer credit has not only been through credit cards, but also other types of credit have shown similar trends. Other credit to consumption by commercial banks is usually linked to the acquisition of durables goods, specially cars and home appliances. Recently other personal loans have been quite successful since they are usually linked to payroll assigned accounts. The increase in the number of accounts used to pay wages has created a business opportunity for banks. With payroll assigned accounts banks know the income of the debtor and can issue a contract to pay directly the personal loan from the payroll account. Usually the maximum amount of the loans are promoted as a number of times the monthly income, measured by the deposit in the banks' account, and payable within a year. Overall, commercial bank financing to consumption has been increasing at high rates since 2000, however the proportion of non performing loans to total loans is around four percent (Figure 8a).

As mention before, not only commercial banks have expanded consumer credit but also other intermediaries. Sofoles have found commercial credit as an important opportunity to target services to households. Most of the Sofoles that provide consumer credit are oriented to the acquisitions of cars, usually in partnership with manufacturers. As of March 2006, according to their assets 29.3 percent of Sofoles were oriented to automobile acquisitions and 3.6 percent directly to consumption. In addition of the financing granted by financial intermediaries, households have access to consumer credit through department stores and Fonacot. As mention before, financing granted by these credit sources represents 14 percent of total credit to consumption.

4.2 Mortgage credit

There are three major players in the Mexican mortgage market: Infonavit (government supported fund for low income housing, 59 percent of the value of mortgage portfolio), commercial banks (mainly middle and high income housing, 25 percent of the market), and SOFOLES (special purpose financial companies for low and medium-income housing, 16 percent of the market). Due to its characteristics, most of mortgage credit is obtained through official procedures.

Mortgage products offered in México by Banks and Sofoles can be classified in three broad categories depending on the type of interest rates. The first and most common is the one that consists on a fixed interest rate throughout the time span of the credit. The second category consists of variable interest rate mortgages. The most commonly used reference for this type of mortgages in Mexico is the one month interbank rate (28 day TIIE) and usually minimum and maximum interest rate levels are specified. Finally, the third category is a mixed scheme that usually consists on a fixed rate during the first years of the credit and a variable rate during the following years. Table 3 describes the main characteristics of mortgage instruments offered in Mexico. Due to market conditions, the most used mortgage instrument is a fixed rate loan with a 15 year maturity, although it is becoming more common to have fixed rate period (five years usually) and then becoming a flexible interest rate instrument.

Table 3

Mortgage instruments main characteristics

Financial intermediary	Instrument	Maturity	Down payment
Infonavit	Fixed rate but indexed to the minimum wage	30 years	Savings used as down payment
Commercial banks	Fixed rate	5 to 20 years	Median of 20%
	Variable rate		Min. 5%
	Mixed rate		
Sofoles (Non-bank banks)	Fixed rate	5 to 25 years	Median of 10%
	Mixed rate		Min. 5%

Recently mortgage credit has been growing, gaining importance in the credit portfolio of financial intermediaries. Nevertheless, it still has a small level compared to a decade ago. In particular, while mortgage credit in Mexico represented 12.4 percent of GDP in 1995, by the end of 2005 it stood for 8.7 percent of GDP. The substantial drop in lending can be explained by the considerable reduction in banks' mortgage portfolio, while Infonavit and Sofoles gained market share. After the 1995 crisis most of commercial bank mortgages conditions were renegotiated and it has not been until 2003 that banks have started to increase their housing credit. Banks usually concentrated in the middle and upper income segment of the mortgage market but this has been changing specially after some structural changes in the mortgage market structure. Two issues are worth mentioning: i) some banks have acquired a Sofol and are clearly using a scheme in which the Sofol originates the credit and sells it to the bank. Under these strategy banks benefit from the infrastructure and know how of Sofoles; ii) Banks' liabilities are mostly short term deposits which implies lower cost of capital.

As mentioned before an important source of mortgage credit has been Infonavit, which is a public entity that was created in 1972. It has a tripartite governance system with equal representation of the labor unions, the employers' sector and the Federal Government. After a substantial legal reform in 1992 it became part of the public pension fund system. If a worker decides not to use his savings for a mortgage credit, the resources saved in his account can be added to his pension fund savings at retirement. Currently workers' funds for housing and for retirement are held in separate individual accounts with minimum guaranteed returns. An important distinction of Infonavit with financial intermediaries relies on the characteristics of the loans. In the case of Infonavit the approval and amount of credit is based on a series of characteristics of the debtor (mainly the number of years in the system and the level of income). Workers are able to use the savings on their individual accounts as down payment for a mortgage. Over the last years Infonavit has incorporated flexibility in the schemes offered to workers. Nowadays a worker is able to obtain housing credit from a bank and use on bi-monthly basis his savings on Infonavit for the amortization of the credit.

The Sofoles are special purpose financial intermediaries (non-bank banks) that have been basically funded and supervised by development banks. They were introduced on 1993 but it was not until 1998 that they expanded their operations and were the most active private financial intermediaries in the mortgage market for nearly a decade. Until December 2005 they showed positive rate of growths on the mortgage credit. Currently they have shrink their balance sheets since an important amount of their new credit portfolio is sold to banks. As of March 2006, according to their assets 58.9 percent of Sofoles were oriented to mortgages.

BOX 1

The Mexican dual index mortgage

The interest rate, the maturity and the monthly payment define a mortgage. In the most traditional mortgage instruments these parameters are fixed. There are many different mortgage schemes in which a pair of these parameters are variable; the most common are variable interest-variable payment mortgages. Also there are level-adjusted mortgages that basically construct a traditional mortgage using a unit of account that is indexed to the CPI; so that both the payment and the interest vary in nominal terms according to inflation but they are fixed in real terms. Another possibility is to make the maturity also a variable of adjustment.

In Mexico in the middle of the 1980s a special kind of mortgage began to be used. Basically it was a variable interest rate-variable maturity mortgage. The payment was fixed using a wage index or the CPI; that is, the payment was constant measured in units of wages or in real terms. Any payment that was currently due, in excess of the payment linked to the wage index, was added to the mortgage balance and rolled over for further payment. The mortgage contracts actually specified a maturity, but nothing could assure that at the end of the period the mortgage balance would be fully paid. For this reason, the possibility of additional years was usually in the contract. The evolution of the Mexican mortgage depends crucially on the ratio of two indexes: the interest rates and the wage index to which the payment was linked. There were many variations of these types of mortgages in Mexico. We will use a simplified version to explain its main characteristics.

The Mexican mortgage started by fixing an initial payment. Given the income of the borrower, the payment was fixed so that the payment to income ratio within certain range (say, 25% of income). The contract also specified the ratio of initial payment to total credit, this usually took the form of a fixed amount per each $1,000 pesos of loan. For example, if the fixed amount was $9 pesos, then the initial ratio of payment to loan value would be 0.009, so that the first payment on the mortgage was given by:

$$P0 = f\ S0 = 0.009\ S0 \qquad (1)$$

Where P0 is the payment, S0 the outstanding mortgage balance (both at time 0), and f is the initial payment to loan value ratio. The payment evolved along with an index, say, the minimum wage index.

$$P_t = fS_0 \prod_{j01}^{t} (1 + w_j) = fS_0 \prod_{j01}^{t} (1 + \pi_j)(1 + \omega_j) \qquad (2)$$

Where w is the rate of rise of the minimum wage, π is the inflation measured by CPI, and ω refers to the rate of change of the real wage. The outstanding balance at time t then becomes

$$St = St\text{-}1\ (1+it)\text{-}Pt \qquad (3)$$

Where it is the interest rate which was defined as the maximum from among a basket of short term interest rates. The outstanding balance would decrease if the payment at time t (Pt) was enough to cover the interest (itSt-1) of that period. The mortgage was constructed so that it gave extra financing in times of inflation (or high interest rates), as a mechanism to solve the tilt problem.

The characteristics of the Mexican mortgage implied that negative amortization could exist.

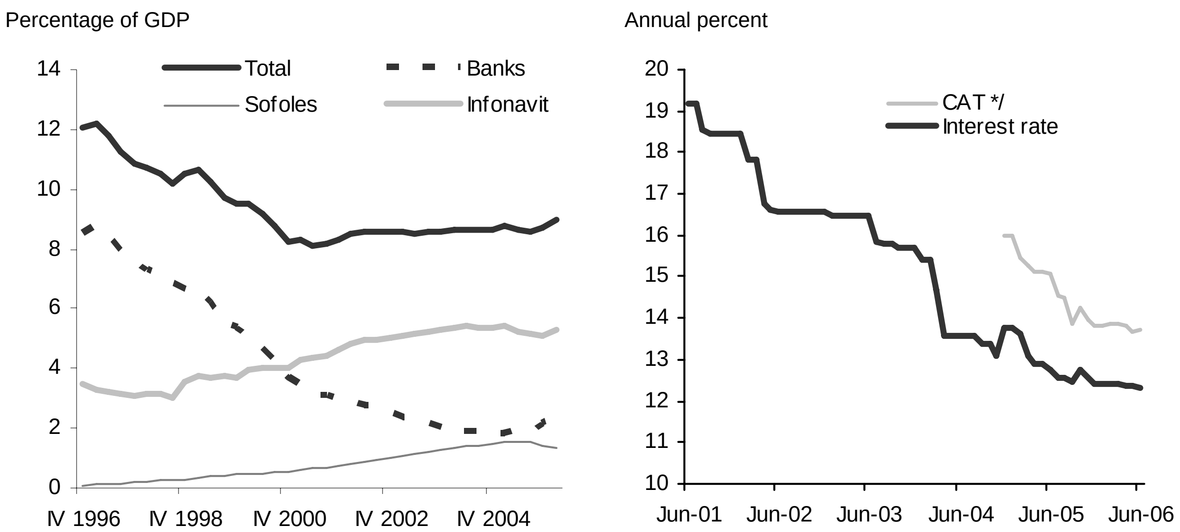
Finally, another possibility is that instead of adjusting the maturity there can be an insurance fund that can absorb the variations in the wage or inflation index. This can be done by offering an inflation-minimum wage swap.

After revising the behavior of the main players on the mortgage credit market is important to analyze the different characteristics of mortgages instruments. The existence of fixed rate mortgages contrasts with conditions prior to the 1994 crisis, where the most common instrument was the double indexed mortgage (a variable rate mortgage indexed to the CPI or the minimum wage). Box 1 contains detailed information on characteristics of the mortgage originated in the early 90s. Similar instruments are still in use by Infonavit and some public sponsored housing programs.

Nowadays it is possible to sign a mortgage under different conditions, thus the effective interest rate paid after considering cost associated with mortgages differs from the nominal interest rate. In order to assist borrowers to decide for the most adequate alternative, Banco de México has issued an specific methodology to take into account the different cost attached to the mortgage. These indicator is known as the CAT (total annual cost), and not only adjust the effective rate according to maturity but also from several items charged by the bank like commissions and insurance payments. Nominal interest rates charged by major commercial banks for a fixed-rate mortgage loan have decreased around 450 basis points since 2002 (Figure 7). However, there is an spread of 250 basis points between the nominal interest rate and the CAT. Nevertheless, even when interest rates in the Mexican mortgage market have dropped, they are still high. In countries which have similar inflation rates as Mexico, the mortgage rates are around seven percent. On average, the nominal interest rate charged on a new mortgage by private intermediaries (Banks and SOFOLES) was 12.93 percent in June 2006, and, considering additional costs, the CAT was 15.41 percent. However is important to mention that quality on mortgages loans has also increased, past due loans as percentage of total loans are at their lowest levels (Figure 8b).

Figure 7

a. Mortgage credit **b. Mortgage interest rates**



*/ Indicator of all commitments, future or existing agreed upon by the creditor and the borrower including interest rates, commissions, obligatory insurance and other charges due to financial services. The nominal interest is the average of credits in pesos granted during the period.

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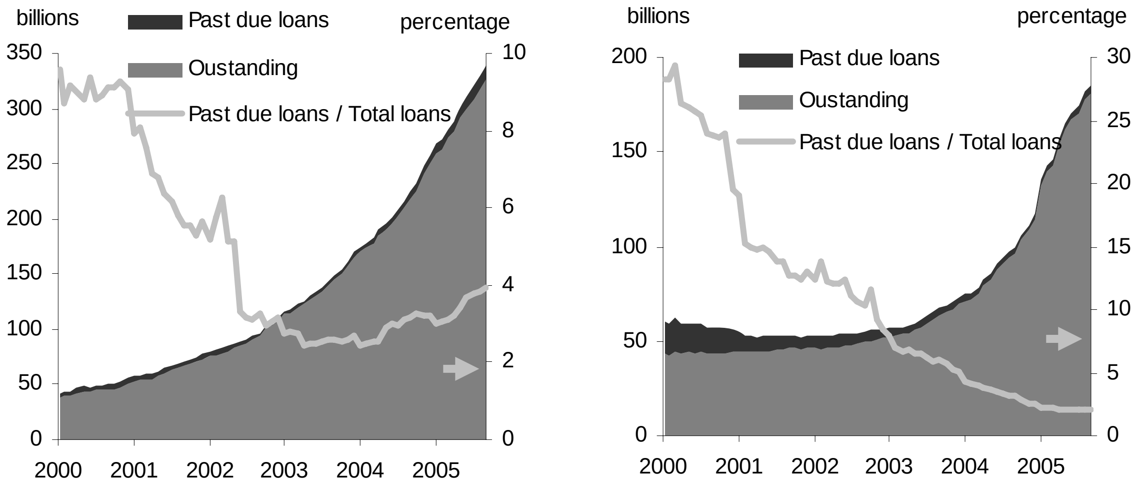
In addition to the reduction of the implied cost on mortgages and the increase in credit supply, the government has been implementing several actions to foster housing financing. In Mexico the real part of mortgage interest payments can be deducted from personal income taxes. The deduction of real interest was introduced in 2003 having the purpose to give an impulse to the construction activity that is regarded as a major employment provider.

Figure 8

a. Commercial banks consumer credit **b. Commercial banks mortgage credit[1]**



[1] Corresponds to direct credits. Does not include debtor relief programs.

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Futhermore, the government has been promoting the expansion of money markets. As a result of a more developed domestic financial system, financial intermediaries are now able not only to obtain funds at a reasonable cost but also to securitize a wide range of assets. In Mexico securitization of mortgages began in 2003. In particular mortgage Sofoles have started to securitize some part of their loans. These instruments have allowed the Sofoles to boost their credit origination without unnecessarily increasing their funding needs, as they are able to expand the rotation of their credit portfolio. In this front, the mortgage development bank (Sociedad Hipotecaria Federal, SHF) has made a significant contribution by standardizing credits and developing a credit insurance industry, which are essential to foster a mortgage-backed securities market.

5. Household financial savings

5.1 The measurement of the financial savings of households

As stated before, using Banco de México data is possible to distinguish financial intermediaries operations with all economic sectors. Financial intermediaries' information can be used to construct households' main financial savings. Therefore, as long as it is possible to identify the sectoral counterparts of financial intermediaries' transactions it is possible to follow up households positions.

Different presentations can be made of households' financial savings. In particular we have decided to present the division by instrument so that we can easily compare this data in the context of the monetary aggregates and flow of funds accounts. Additionally, households financial savings can be presented by financial intermediary, this approach is possible through the financial surveys presentation. Actually Banco de México is in the process of publishing the financial surveys by financial intermediaries and for the consolidated financial system. We believe that this is a complementary point of view that by itself represents a valuable analysis and it is not included in this document.

The measurement of households' financial savings is based on the sectoral disaggregation of M2 (domestic financial savings by private sector residents). Basically two broad sectors are identified, non-financial corporations and households, in addition a part of financial savings is classified as belonging to non-bank financial corporations. The latter basically refers to insurance companies investments in domestic financial instruments. Household sector accounts for the majority of domestic financial savings (72 percent) while firms participate with 22 percent of the total. Furthermore, households' financial savings have been increasing and have a more cyclical behavior while firms' savings have remained fairly stable around 10% of GDP (Figure 9).

Figure 9

a. Sectoral disaggregation of M2 **b. Sectoral disaggregation of M2**

Percentage of total Percentage of GDP

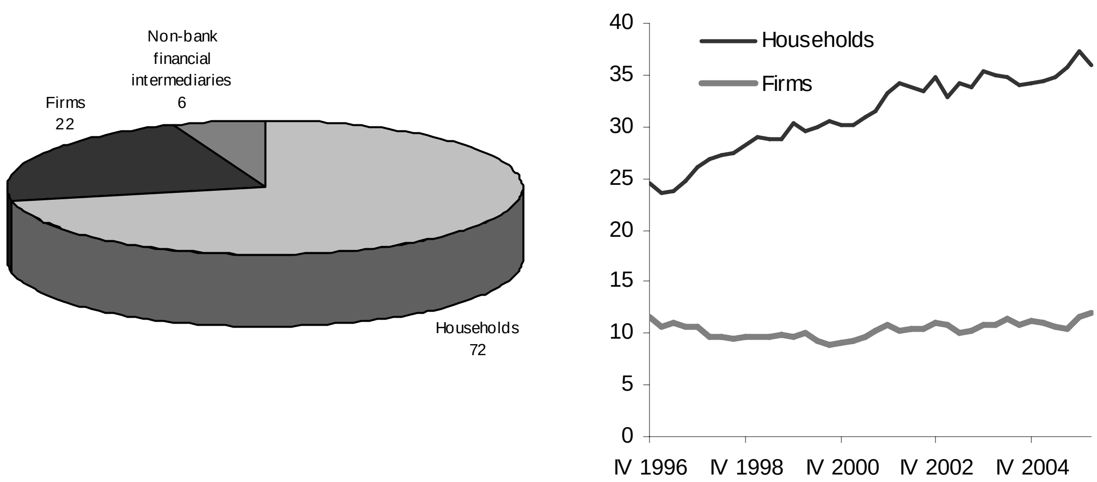

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Table 4 reports the structure of households' financial savings. Special mention deserves the two main components, that is deposits and the holding of securities. Deposits are obtained directly from banks' detailed information as reported to financial authorities. The deposits item also includes those made in the Savings and Loans Companies (Sociedades de Ahorro y Prestamo) but account for a very small proportion of total deposits.

The holding of securities is obtained indirectly through the balances of investment and retirement funds (Siefores). Also it is important to notice that in Mexico repo transactions implies the legal ownership transfer of the instrument, so that usually financial intermediaries report the holding of securities (debt instruments) including the purchases through repos. This indirectly affects the composition of financial savings (between banks deposits and holdings of securities), but not the total amount.

5.2 The evolution of financial savings

As stated earlier, financial savings have been increasingly supported by more stable macroeconomic conditions and by institutional changes related to the pension funds schemes. As a result, most of financial savings of residents comes from households (M2 households). It is important to mention that the public pension funds account now days for resources that represent 12 percent of GDP (Figure 9). This is the result of the high growth rates of pension funds (Siefores) and housing funds (Infonavit and Fovissste) related to the Public Fund System (Sistema de Ahorro para el Retiro, SAR). In 2005 Siefores presented an average annual real growth rate of 16.1 per cent, driven by annual contributions of 102.9 billion pesos. Meanwhile, at the end of 2005 Infonavit´s savings stock amounted to 317.7 billion pesos and showed a significant annual real growth rate of 10.9 per cent.

Table 4

Household sector financial savings in Mexico

	Total	Percentage of total securities					
	Billion pesos	**Currency outside banks**	**Deposits**[1]	**Total debt**	**Public debt**	**Private debt**	**Housing funds**[2]
1997	831.3	11	55	20	16	4	14
1998	1,088.9	11	49	28	24	4	12
1999	1,400.1	12	42	34	31	3	12
2000	1,652.3	11	36	40	36	4	13
2001	1,926.5	10	31	45	41	4	14
2002	2,174.9	11	28	48	43	5	13
2003	2,433.8	11	28	46	40	6	14
2004	2,644.8	11	30	44	38	6	14
2005	3,123.9	11	28	47	41	6	14

[1] Includes deposits in domestic banks and in savings and loans companies. [2] Includes Infonavit and Fovissste.

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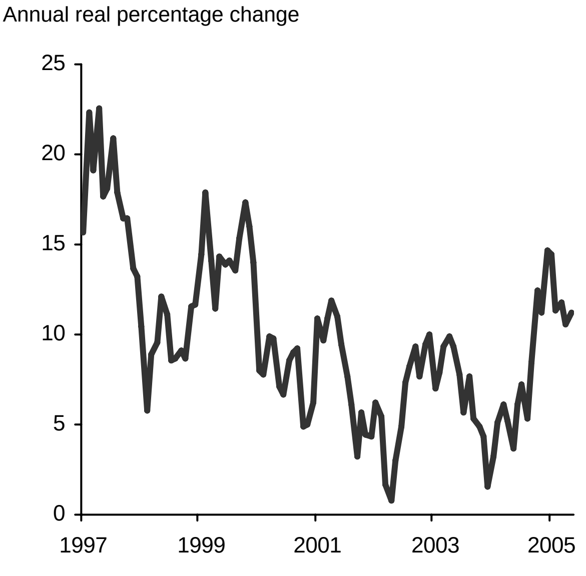
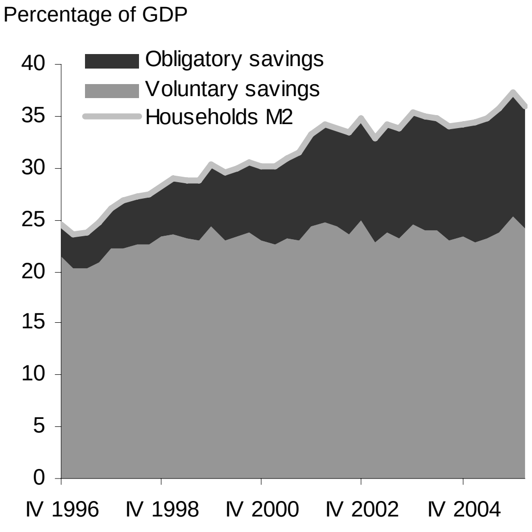
Figure 10

a. Households M2



b. Households M2



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One of the major institutional changes was in 1997 when the pension system changed from a pay-as-you-go to a fully funded social security system. Pension savings are based on obligatory contributions both by workers and employers. There are 35 investment funds specialized in retirement savings. Workers can change from one investment fund to another but there are still certain restrictions, and commissions are still high (system average of around 2.6% of the stock on annual basis). Also important are the savings in the mortgage oriented public entities (Infonavit and Fovissste) which were explained before.

On the other hand, concerning voluntary savings two financial intermediaries stand out: commercial banks as the primary recipients of households savings and other investment funds that had registered an impressive growth in the last years. While investment funds started operations on 1950 it was until 1998 that they began to expand their operations substantially. Investment funds represent an easy access alternative for non sophisticated investors. Their objective is to merge a pool of investors according to a specific investment portfolio that satisfy specific risk requirements. Since the amount required to participate on Investment funds is lower than the required to directly invest on the money and capital markets, it has been an attractive alternative for household investments.

Investment funds offer their products to households and to enterprises, the latest generally invest their pensions funds related to workers. Investment funds are divided on four groups according to the economic sector they specialize on: capital markets; restricted to households; restricted to enterprises; and, mixed (which can serve both households and enterprises).

The expansion of the investment funds related to the household sector has been remarkable. In March 1998 their assets represented 2.6 percent on GDP while in March 2006 this figure amounted to 5.3 percent of GDP. Its expansion has also been observed in the number if investment funds available in the market, in December 1996 there where only 112 investment funds whereas in March 2006 there were 360 of them serving more than 1.2 million of investors.

6. The financial position of the household sector

We believe that in order to correctly measure the financial position of the household sector in a consistent way it is necessary to make the sectoral disaggregation of the total uses and sources of financial resources of the economy. In our perspective, this is the only way in which measurement of the total position of the different sectors can be coherently presented. Using Banco de México information explained on section 3 we were able to identify these sectoral positions. The exercise allows for the verification of the different financial aggregates and substantially facilitates the presentation of the different statistics by financial intermediaries and by instruments. Table 5 reports the overall uses and sources of financial resources for the Mexican economy.

Although there has been an important expansion of credit to households, the public sector, including the Central Bank and local governments, still accounts for more than 66 percent of total financial resources. In particular, households receive less than 25 percent of domestic financial savings. Consumer credit accounts for less than a third of credit to households and mortgage credit represents a similar amount to that of international reserves of the Central Bank. Firms are still the main recipients of financial resources in the private sector and still have an external financial position of relative importance (44 percent of total firms' financial liabilities).

Table 5

Sectoral disaggregation of the sources and uses of financial resources in Mexico

Stocks

	2005		
	Billion pesos	**% GDP**	**% Structure**
Total sources	**6,180.3**	**73.8**	**100.0**
M4 (Domestic financial assets)	4,528.1	54.1	73.3
Held by residents	4,374.0	52.2	70.8
Households	3,123.9	37.3	50.5
Other sectors	1,250.1	14.9	20.2
Held by non-residents	154.1	1.8	2.5
Net external financing	1,652.2	19.7	26.7
Public sector[1]	1,054.7	12.6	17.1
Commercial banks[2]	27.5	0.3	0.4
Private sector[3]	570.0	6.8	9.2
Total uses	**6,180.3**	**73.8**	**100.0**
International reserves[4]	730.3	8.7	11.8
Public sector (PSBR)[5]	3,255.0	38.9	52.7
Domestic financing	2,200.3	26.3	35.6
External financing	1,054.7	12.6	17.1
States and municipalities[6]	132.4	1.6	2.1
Credit granted by financial intermediaries[6]	114.1	1.4	1.8
Debt issues	18.3	0.2	0.3
Private sector	2,334.1	27.9	37.8
Households	1,044.6	12.5	16.9
Consumer credit	316.9	3.8	5.1
Mortgage credit[7]	727.7	8.7	11.8
Firms	1,289.5	15.4	20.9
Credit granted by financial intermediaries[6]	553.5	6.6	9.0
Debt issues	166.0	2.0	2.7
External financig	570.0	6.8	9.2
Other net concepts	–271.5	–3.2	–4.4

[1] Includes net external indebtedness of the Federal Government, public enterprises and institutions, and external PIDIREGAS, as reported by the Ministry of Finance (SHCP). [2] Commercial banks' external liabilities. Excludes non-residents' bank deposits. [3] Includes loans and securities issued abroad by the private sector. [4] As defined by Banco de México's Law. [5] Borrowing Requirements Historical Balance of the Public Sector (BRHBPS), as reported by Ministry of Finance (SHCP). [6] Includes total credit portfolio from financial intermediaries and portfolio related wiht debt-restructuring programs. [7] Includes total credit portfolio from financial intermediaries and portfolio from National Employees' Housing Fund (Instituto Nacional del Fondo de Vivienda para los Trabajadores, INFONAVIT). Includes portfolio related with debt-restructuring programs.

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Table 6 presents the households' total balance sheet combining the information on their assets and financial liabilities analyzed in the previous sections. On the asset side an estimation of housing and durable goods wealth is reported. These estimations were constructed using a perpetual inventory method and national accounts data. In the case of housing it refers to the value of the structures and does not include an estimate of the value of land. The value of housing wealth represents 76.9 percent of GDP, a relative small figure compared with developed economies where the housing stock reaches 90 percent of GDP. Also important is that net housing equity, value of the housing stock net of mortgage credit, represents more than half the GDP. In addition, an estimate of households' equities holdings is reported. This is constructed by deducting from total market capitalization the equities holdings of non- residents and financial intermediaries.

Finally, total financial assets of households, considering residents' stocks holdings, amount to 66.8 percent of GDP (36.5 percent of GDP without equities). It is important to mention that the observed expansion on savings mostly reflects the compulsory savings of the pension system. The most important component of financial savings is the holding of securities, either directly or through the pension and investment funds.

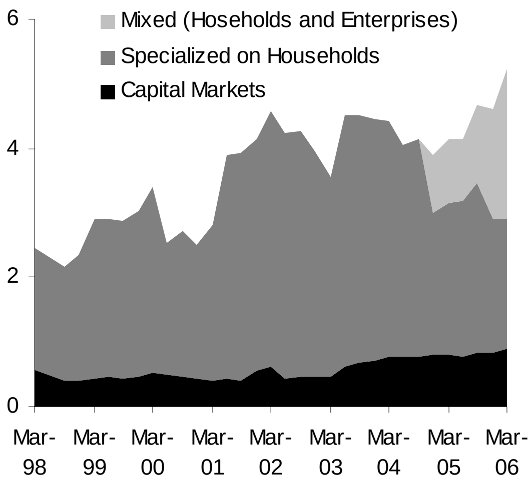
Financial liabilities of households amounted at the end of 2005 to around 13 percent of GDP. Although mortgage credit represents 67 percent of total liabilities, it is credit to consumption the one with the most important increase. In particular, the role of banks in the market of credit to consumption stands out. Households are becoming the most important sector in banks' balances.

The total net creditor financial position of households in 2005 represented more than half of GDP if residents' stocks holdings are included. If the latter is not considered then the financial position is around 23 percent of GDP (Figure 11). It is important to notice that long term savings invested in the pension funds represented around 12 percent of GDP. These are not liquid accounts and there is evidence that workers still consider these resources as contingent, specially the ones related to the pension funds. Without these long term deposits, and not considering equities, the net financial position of households diminishes to 11.5 percent of GDP, a figure slightly below the one observed in 2000 (13.4 percent of GDP).

Figure 11

a. Investment funds assets

Stocks as percentage of GDP



b. Investment funds

Number of funds by type

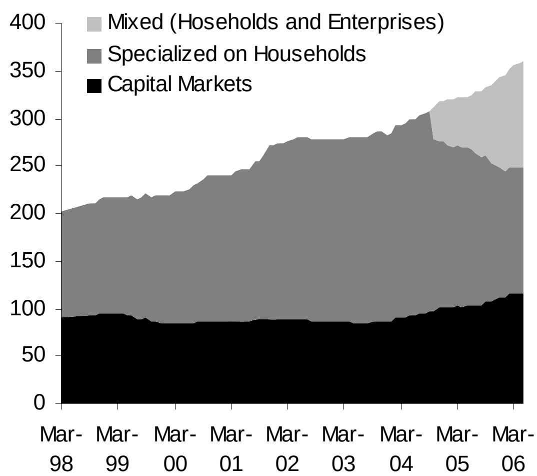


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Table 6

Household balance sheet

Percentage of GDP

	Dec-00	Dec-05
Total	**147.8**	**169.2**
Total real assets	**96.7**	**102.4**
Housing[1]	75.4	76.9
Durable goods	21.3	25.5
Financial assets	**51.1**	**66.8**
Financial savings	**30.0**	**36.5**
Deposits in financial intermediaries	10.7	10.5
Securities	11.9	16.8
Public	10.6	14.7
Private	1.3	2.1
Housing funds[2]	4.0	5.2
Currency outside banks	3.3	4.0
Equities	**21.1**	**30.2**
Financial liabilities	**9.6**	**13.0**
Consumption	1.4	4.3
Banks	0.9	3.3
Sofoles[3]	0.2	0.4
Department stores	0.3	0.6
Housing	8.2	8.7
Banks	3.7	2.2
Sofoles[3]	0.5	1.4
Infonavit[4]	4.0	5.1
Memoranda items		
Total net financial position	41.5	53.8
Total public pension funds[5]	7.0	12.0
Net financial position excluding equities and public pension funds	13.4	11.5
Net housing wealth	67.2	68.2

[1] Value of housing stock structures, does not include the value of land. [2] Mainly contributions to Infonavit and Fovissste. [3] Special Purpose Financial Companies (Sociedades Financieras de Objeto Limitado). [4] National Employees' Housing Fund (Instituto del Fondo Nacional de la Vivienda para los Trabajadores). [5] Includes housing and retirement funds.

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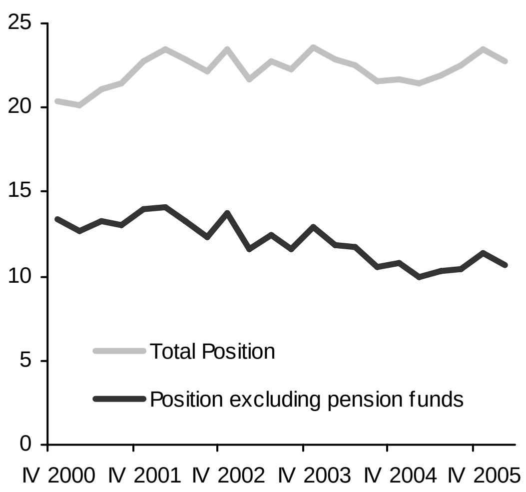
Once the size of the financial position of households can be measured it is possible to evaluate the impact of the current credit expansion. For the period 1991-1996, we do not have yet the data required to construct households' net financial position, however an indicator can be calculated using bank deposit data and making some assumptions on the holdings of securities. This broad indicator shows that during this period households nearly reached a net debtor position. This contrasts with the current situation where the household sector has a net creditor position of around 23 percent of GDP. It is clear that although households' liabilities are growing rapidly, at a rate faster than that of their income, the net financial position is very different from that observed previous to the 1995 crisis. Nevertheless, it stands out that at that time households' net financial position decreased substantially in just a few years, basically explained by an enormous increase in their liabilities.

Figure 12

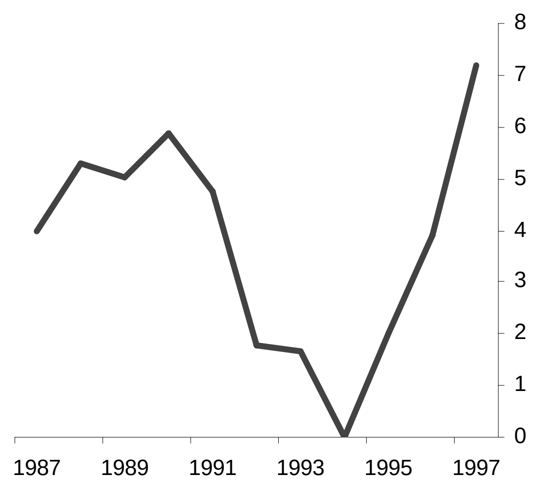
a. The net financial position of households 2000-2006

Percentage of GDP



b. Indicator of households net financial position 1987-1997

Percentage of GDP



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7. Final remarks

In Mexico, macroeconomic stability has allowed for a deepening of financial markets. Households have benefited from this context by having access to an increased availability of financial resources and with better conditions. However, macroeconomic changes could highly impact households' financial position. Additionally, even when current performance of banking loans is at sound levels a close follow up should be made by financial authorities. It is clear that households are having a bigger participation in financial intermediaries' balances (both in their liabilities and asset sides).

There is an increasing need to understand the macroeconomic implications of this cycle. In this paper we provide a methodology to measure the household sector position in Mexico using public available data, as far as we have knowledge this is the first paper on this topic. This methodology allows the understanding of the interaction of the household sector with financial intermediaries.

Even when the particular high expansion of credit to households has not been reflected in a deterioration of their financial position, other episodes in our recent history tell us that there can be an important deterioration in households' financial position in a relative short period of time. Although the net financial creditor position of Mexican households is still large with respect to its income, an important part is explained by the long term financial savings. Institutional changes have played an important role in fostering financial savings of the household sector. The transition to a fully funded social security system stands out as the most relevant factor to explain the increase in savings. So it is important to notice that without these long term deposits the net financial position of households diminishes substantially. Finally, future research on household sector financial position should focus in the analysis in the imbalances in assets and liabilities by income brackets.

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