



BANCO DE MÉXICO

## Financial System Report

September 2013



*BOARD OF GOVERNORS*

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**Deputy Governors**

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## **NOTICE**

*Unless otherwise specified, this document has been drafted using information as of November 15, 2013. Figures are preliminary and may be revised.*

## **USE OF INITIALS AND ACRONYMS**

*In this report, initials and acronyms that correspond to names in English appear in italics, whereas those that correspond to names in Spanish appear in regular Roman characters.*

## TABLE OF CONTENTS

1. Introduction .....	8
2. Determinants of Financial Stability.....	10
3. Financial Intermediaries .....	36
4. Financial Markets and Infrastructures .....	82
5. Stress Tests .....	108
6. Balance of Risks and Conclusions.....	115
Annex: Financial Reforms.....	122

## **1. Introduction**

This *Financial System Report* covers the period from October 2012 to September 2013. Rather than describing relevant events, this report aims at identifying and analyzing risks that, from the central bank's standpoint, could become threats to the Mexican financial system. Therefore, special attention is given to major financial risks and the state of financial intermediaries and markets as of September 2013.

Although six years have gone by since the crisis started, the global economy and financial system have not fully recovered. Growth is still slow and unbalanced among regions, with deepening inequalities among countries as well. On one hand, the US economy exhibits moderate growth and the Eurozone has begun to pick up –yet, this momentum's strength and length are still uncertain–. On the other hand, the main emerging economies experience a not inconsiderable downturn. On its part, the domestic economy has not been immune to the developments in other emerging countries, and hence, during the first half of 2013, it suffered a sharp slowdown, driven by both external and domestic factors.

Some of the main risks that the Mexican economy and its financial system face are related to interest and exchange rates movements, as well as to adjustments made by global financial agents in their investment portfolios and risk positions, motivated by expectations that the US monetary policy will begin to return to normalcy. The announcement made by the Fed in September that it will not modify its course of financial asset purchases set the markets at ease, although there is still risk of high volatility episodes, such as the ones registered between May and August 2013. In addition, we should not overlook a potential rise in uncertainty in October 2013, caused by a possible US debt default. Even though American lawmakers reached an agreement to raise the debt ceiling so as to deal with their debt up until February 2014, the absence of a definite resolution left room for additional bouts of volatility.

Moreover, risks stemming from global economic activity have not diminished. Despite the continued recovery of the US and European economies, there are ongoing threats related to fiscal imbalances in the US and other countries, the frail Eurozone financial system and the economic slowdown observed in developing countries. Domestically, a sharp economic slowdown is noteworthy, together with its impact on credit demand and debtors' performance. However, this deceleration is expected to be temporary, with the US economic recovery, the normalized pace of public expenditure and expectations over the structural reforms' early effects contributing to a soon improvement in Mexican economic activity.

In spite of the complex international environment and the domestic slowdown, the Mexican financial system did not fail to expand and foster economic growth over the period covered by this report. Its good performance and soundness is based on high capital adequacy ratios, reasonable levels of bank liquidity, and macroeconomic fundamentals underpinned by monetary and fiscal policies aiming at low and stable inflation, a sustainable debt-to-GDP ratio and stable external accounts. A floating exchange rate regime and across-the-board transparent, coherent, and foreseeable economic policy measures have also played a role in such an achievement.

This macroeconomic and financial strength is at the root of the sound performance of Mexican financial markets, quite unlike other emerging economies and despite recent acute volatility bouts in international markets. Nevertheless, the Mexican financial system was not unaffected by poor economic performance and global financial volatility. It is therefore essential to analyze

risks posed to financial stability, with a view to adopting timely measures to tackle them or mitigate their effects in the future.

This document contains seven sections. After this introduction, the second section analyzes determinants of financial stability such as the macro-financial environment, and credit, market, liquidity and contagion risks. The third section studies how the structure of the chief Mexican financial intermediaries has evolved, with a special focus on those not subject to traditional banking regulation. The fourth section describes the performance of domestic financial markets and the infrastructure of the financial system. The fifth section presents stress tests results, and the sixth offers a balance of risks and some conclusions. An annex about certain aspects of the Financial Reform initiative closes the *Report*.

## **2. Determinants of Financial Stability**

A financial system serves the functions of transferring savings towards their most productive uses, facilitating risk sharing and enabling the functioning of payment systems. These are essential functions to both the good performance of the economy and the maximization of long-term growth. Nevertheless, at occasions, eventual circumstances or certain phenomena may trigger serious disruptions and alter such functions, and even interrupt them, thus hindering economic activity and imposing considerable social costs. Aiming at preventing extreme shocks, financial authorities must timely identify situations that may potentially become threats to financial stability. To that end, it is imperative to monitor the determinants of financial stability; namely, the macro-financial environment, the level of risks and financial positions of diverse sectors and economic agents. In this section, such determinants are analyzed.

### **2.1 Economic Environment**

Poor economic growth and high inequality among countries and regions were characteristic of the international environment over the period covered by this report (graph 1a). Economic activity in the US –our main trade partner– continued to exhibit moderate growth, with non-negligible fiscal challenges. Indeed, structural imbalances in public finances, the continuous need of raising the debt ceiling, and, in particular, the lack of consensus within Congress heightened tensions and confirmed that this situation has become a recurrent event.

On the other hand, for the first time since 2011, over the second quarter of 2013, the Eurozone experienced positive growth. Nonetheless, doubts about whether this really implies the beginning of across-the-board and sustained recovery still persist. Furthermore, the inflationary downtrend that led the Central European Bank to cut its major reference rates at the beginning of November is particularly worrisome<sup>1</sup>. Even if financial conditions in Europe have improved, the banking system's strength and some member countries' fiscal sustainability are still uncertain. Further, the vicious circle between low growth and sovereign and banking risk is an ever-present threat; and, importantly, the balance-sheet repairs in European banks notwithstanding, their price-to-book ratio still remains below one, whereas it has been above that level in American banks since late 2011 (graph 1c).

In parallel to the complex scenario of developed economies, the major emerging countries have suffered a significant decline in economic activity. During the first half of the current year, owing to both structural and cyclical causes, the Chinese economy slowed down, having a direct impact on other emerging countries via trade and their influence on international commodity prices. Likewise, emerging countries with serious external imbalances, like India, have significantly decelerated over this year and are faced with critical financial and monetary challenges. Their contraction has spread to other countries in Asia, Eastern Europe, Africa and Latin America.

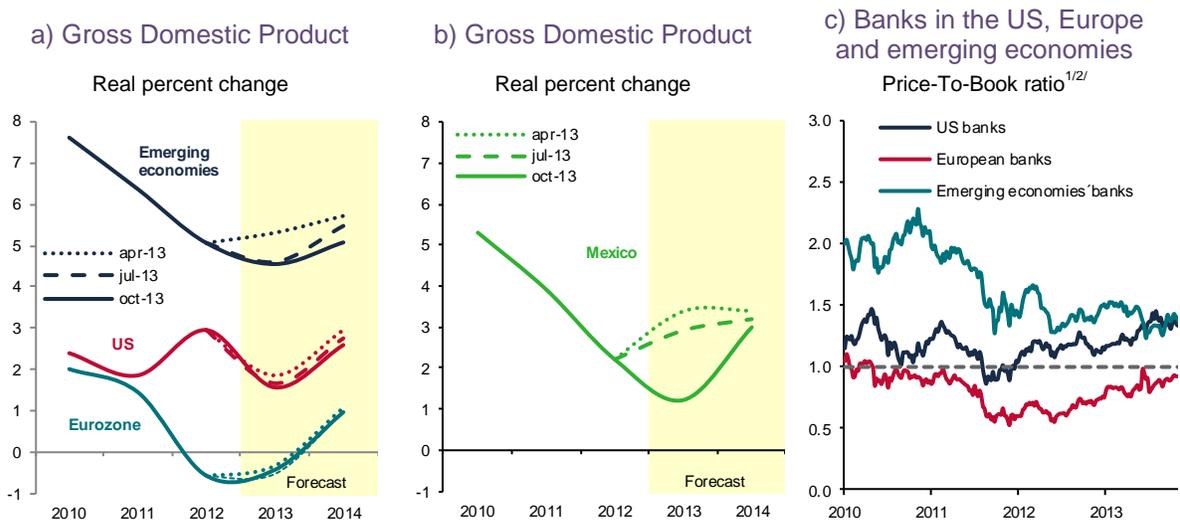
There was also a serious downturn in Mexico during the first half of 2013 (graph 1b and 2a). The slowdown in the external demand and some segments of its domestic counterpart translated into a moderate decline in industrial production, particularly in the manufacturing sector. Similarly, the construction sector also slowed down (graph 2b). On its part, the current account deficit remained at a moderate and totally fundable level –thanks to debits in the

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<sup>1</sup> On November 7th, the European Central Bank's Governing Council cut interest rates on major Eurosystem's financing transactions by 25 basis points down to the historic minimum of 0.25 percent. In like manner, it reduced the marginal lending facility rate by 25 basis points down to 0.75 percent.

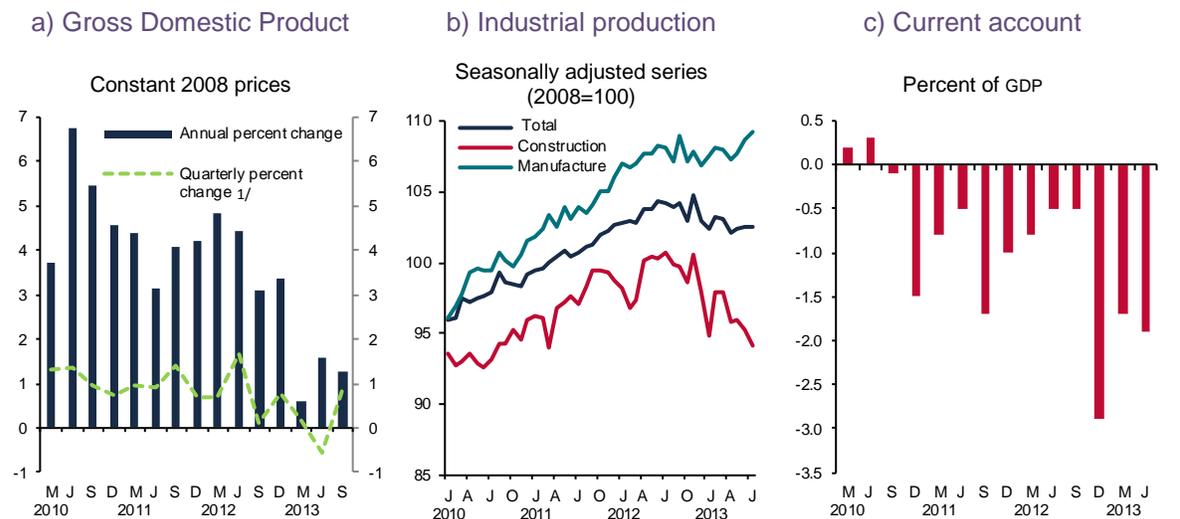
financial account-, despite its increase over that same period and the general environment (graph 2c).

**Graph 1**  
**Market Perception of the Banking Sector Value and GDP Growth by Regions**



Figures as of October 2013  
 Source: IMF, World Economic Outlook  
 1/ The price-to-book ratio is the number of times investors are willing to pay for a company with respect to its book value. A higher value indicates investors foresee greater value creation by the company in the future.  
 2/ Indices computed by Morgan Stanley (Msci).

**Graph 2**  
**Mexican GDP, Industrial Production and Current Account**



Figures as of the third quarter of 2013  
 Source: INEGI  
 1/ Seasonally adjusted figures.  
 Figures as of September 2013  
 Source: INEGI  
 Figures as of June 2013  
 Source: Banco de México

## Banco de México

Some economic indicators suggest that the Mexican economic downturn will be temporary and that the expected US recovery will revive domestic economic activity.<sup>2</sup> Along these lines, the repercussions of hurricanes Ingrid and Manuel, which hit several Mexican states last September, are not expected to curb the foreseen economic upturn.

### 2.2 Macro-financial Environment

For years, the Mexican financial system has benefited from a favorable domestic environment, characterized by low and stable inflation and well anchored inflation expectations. Low and stable inflation is essential, among other goals, to achieve efficient resource allocation, increase savings and long-term financing, and reduce the level and volatility of real interest rates.

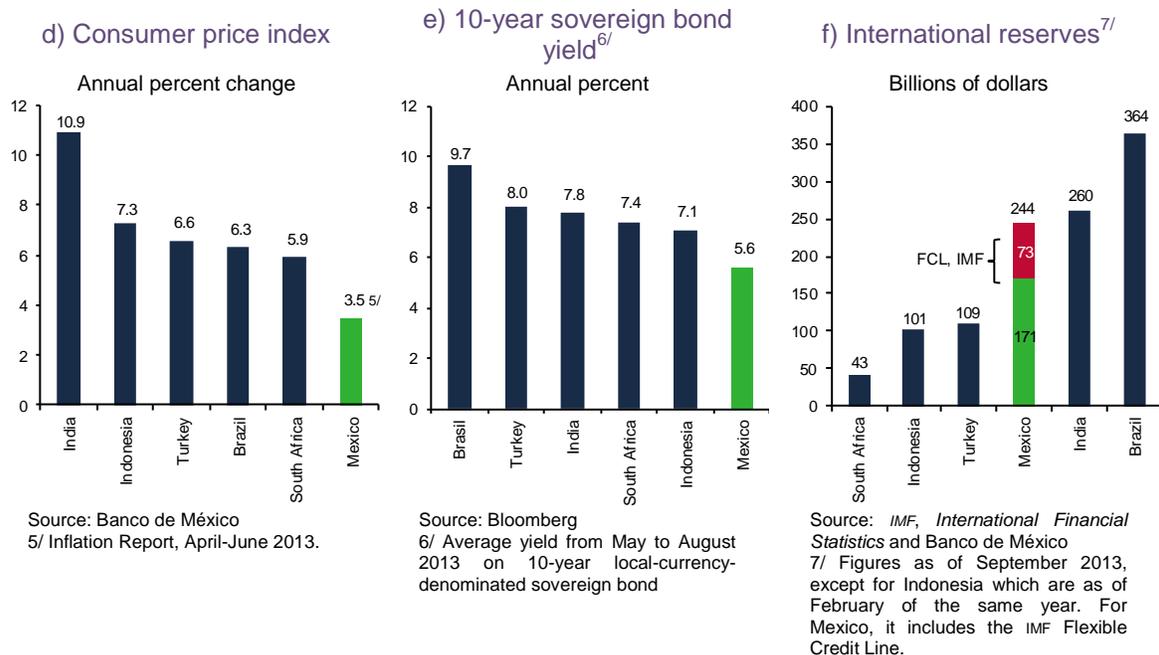
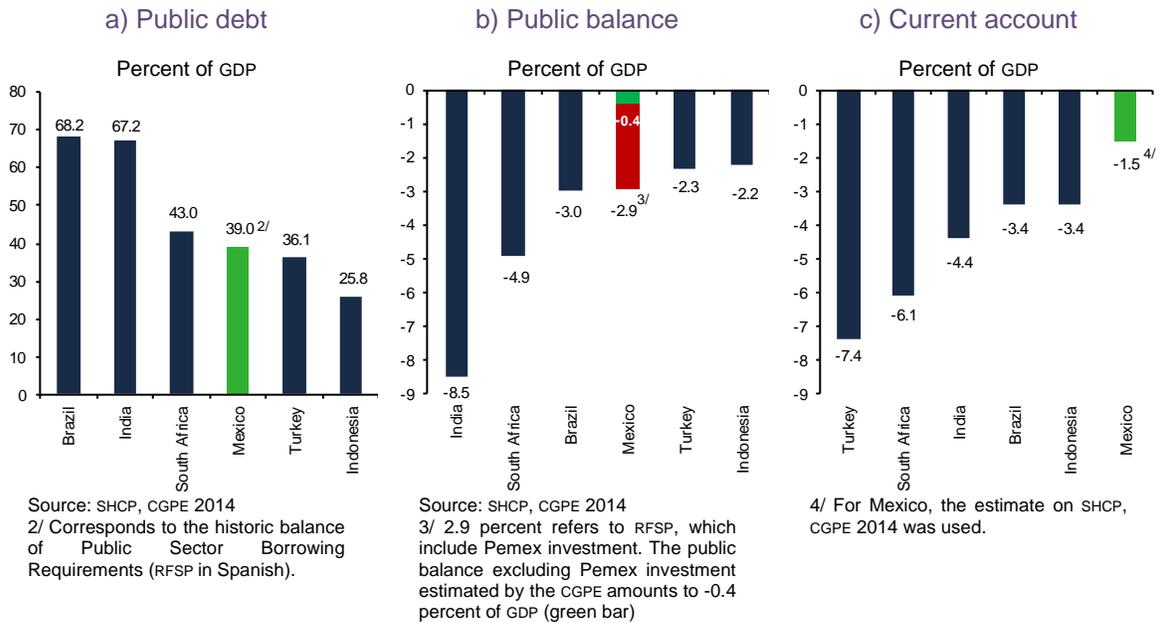
Several factors have consistently distinguished Mexico from other emerging economies: a floating exchange rate, free capital mobility, and determined policies aiming at issuing clear, transparent and foreseeable measures applicable to financial intermediaries and markets. The difference is noticeable in both macroeconomic indicators and the performance of financial markets, given a scenario of rising international volatility (graph 3).

The long period of low interest rates and the liquidity boost derived from developed countries' expansionary monetary policies have translated into an unprecedented rise in capital flows towards emerging economies. Further, international investors have opted for long-term local-currency-denominated sovereign debt issued by such countries. Therefore, international investors' share in local-currency-denominated sovereign debt markets of emerging economies has peaked, accounting for 50 percent of the sovereign debt balance in countries like Poland or Indonesia, around 30 percent in Mexico, South Africa and Turkey, and 20 percent in Brazil.

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<sup>2</sup> With seasonally adjusted figures, Mexican GDP varied 0.84 percent from the second to the third quarter of 2013, while it varied -0.55 percent from the first to the second one.

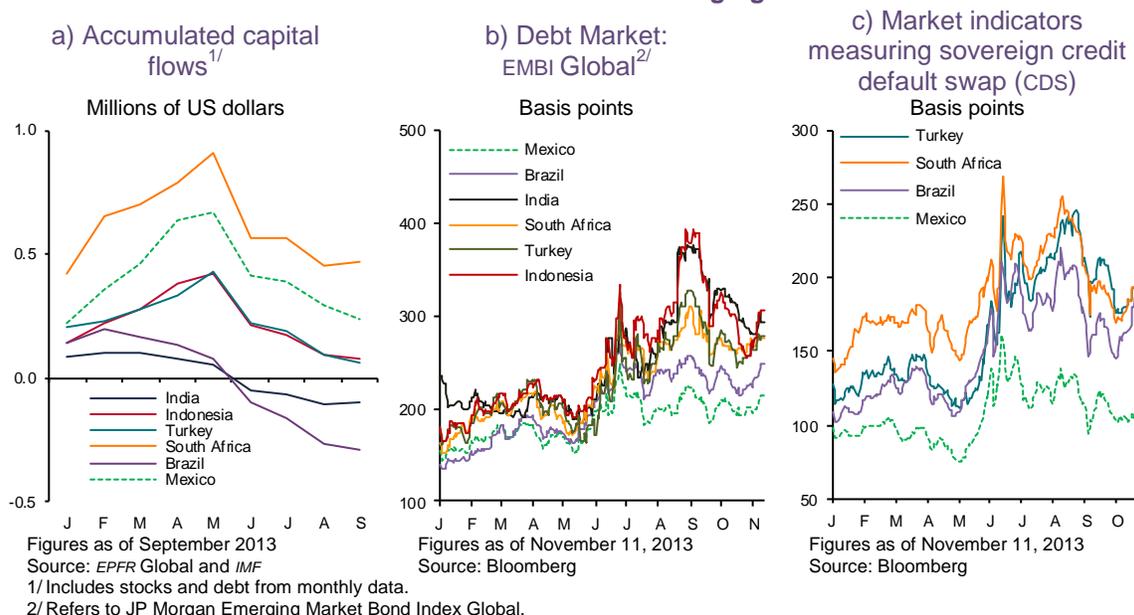
**Graph 3**  
**Macroeconomic Variables of Selected Countries in 2013<sup>1/</sup>**



<sup>1/</sup> Unless otherwise specified, variables refer to forecasts published by the International Monetary Fund in its October 2013 *World Economic Outlook*.

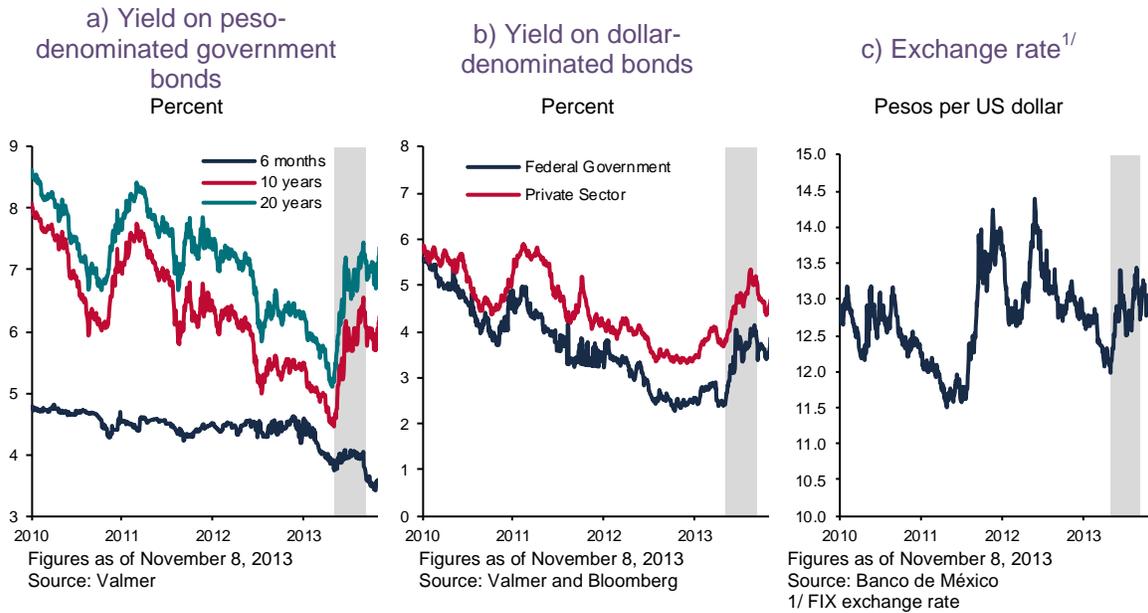
The aforesaid high share has contributed to the particularly high sensitivity of international investors' holdings to changes in exchange rates and USD interest rates. In that sense, the fact that the Fed was expected to cut asset purchases made the US Treasury yields rise. This had a negative impact on international sovereign bond markets, especially in emerging countries, between May and August 2013: a capital outflow and the revival of sovereign debt risk perception are worthy of mention (graph 4).

**Graph 4**  
**Financial Market Indicators of Selected Emerging Economies in 2013**

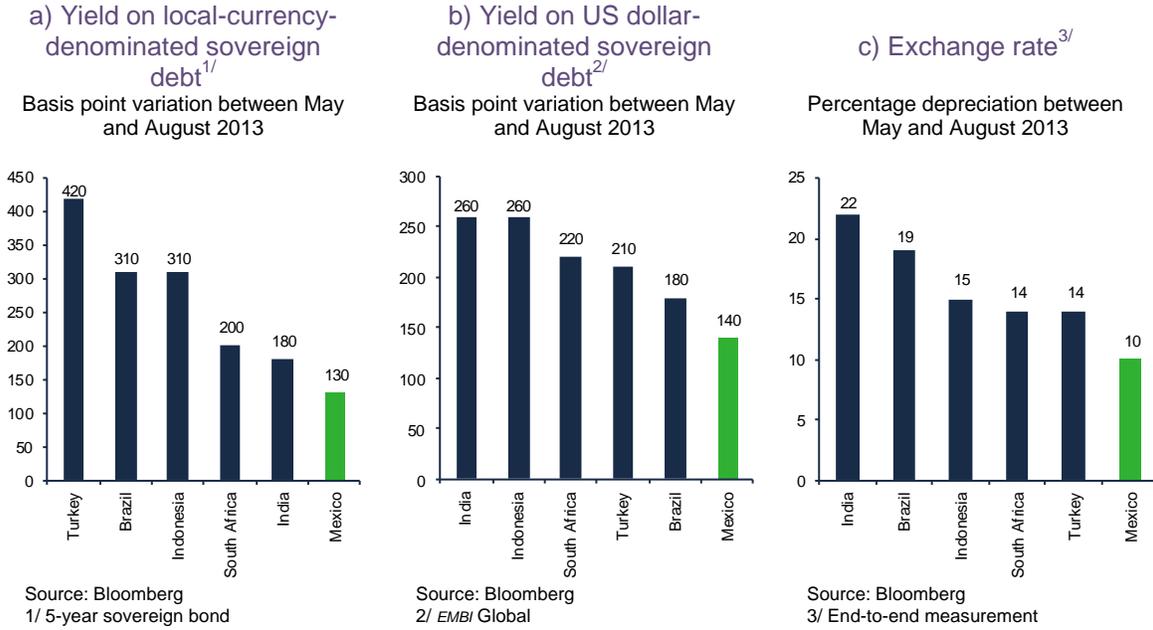


Mexican financial markets were not immune to the backlash caused by the surge in interest rates of USD-denominated securities (graph 5). The close relationship between the US and Mexican economy, together with the high share of foreign investors in domestic capital markets, made both volatility and changes in peso-denominated bond yields be sensitive to yields on USD-denominated securities (see box 1). Nonetheless, the expectation that the Fed would cut its asset purchases had a lesser impact on Mexican financial markets, and consequently, there was a more orderly adjustment process than in other emerging economies, such as South Africa, India, Indonesia, Turkey and Brazil (graph 6). That is, the higher yield on US bonds particularly affected emerging economies with a weaker macroeconomic position (graph 3). Compared with said economies, thus far this year, Mexico has registered the higher accumulated balance of capital flows (graph 4a).

**Graph 5**  
Interest Rate and Exchange Rate in Mexico



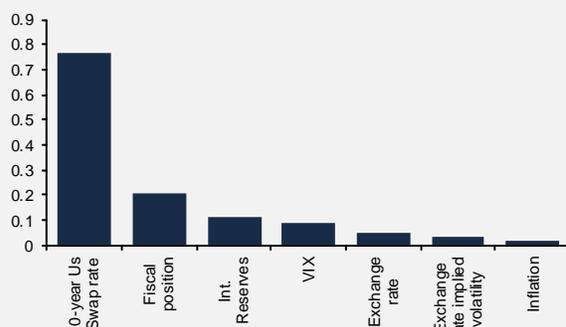
**Graph 6**  
Reaction of Financial Markets in Several Countries to an Expected Cut in Asset Purchases by the Fed



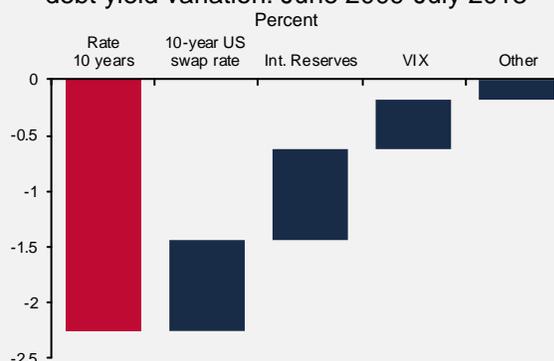
Box 1

Determinants of Changes in the Mexican Sovereign Debt Yield

a) Explanatory variable contribution to sovereign debt yield variance: June 2009-July 2013



b) Explanatory variable contribution to sovereign debt yield variation: June 2009-July 2013



Figures as of July 2013  
Source: Use of own estimates with Bloomberg and Banco de México data

Changes in sovereign debt yields are influenced by both domestic factors, such as fiscal position or inflation, and external factors, such as changes in other countries' bond yields. Since in Mexico sovereign bond holdings by foreigners have reached record levels (above 50 per cent on fixed rate bonds), it is useful to analyze which factors explain their yield and to what extent.<sup>1</sup> We therefore carried out an exercise to identify factors explaining yield variance and how changes in domestic and foreign variables have an effect on its level.

The proposed model assumes a linear relationship between the rate of return on the 10-year peso-denominated Mexican sovereign bond and the following external and domestic variables: 10-year US swap rate, VIX index, MXP/USD exchange rate, implied volatility of foreign currency options and inflation rate, fiscal position and the logarithm of Mexico's international reserves.<sup>2</sup> A sample of monthly data between May 2005 and July 2013 was used. Using the model, the contribution of each of the above mentioned variables to the 10-year sovereign bond yield variance is analyzed<sup>3</sup>, as well as their respective effect on changes in the sovereign bond rate of return between June 2009 and July 2013 (graphs a and b).<sup>4</sup>

The results showed that the Mexican sovereign bond rate of return is more sensitive to foreign than to domestic factors, mainly to the US swap rate. This relationship seems robust for the selected period. Nevertheless, when the analysis is

performed for shorter periods (for example, between April and July 2013), the swap rate's explanatory power decreases.

Therefore, it is possible to conclude that the decline in the Mexican sovereign bond rate of return observed between June 2009 and July 2013 is largely explained by the decrease in the US swap rate, and the accumulation of international reserves. Further, changes in the Mexican bond rate of return are mostly explained by foreign factors; this is consistent with the increasing foreign investors' share in the public debt market. Should this relationship hold, future increases in US rates could contribute to push the Mexican rate up, although the resulting increase could be partially offset by the current international reserve accumulation trend.

<sup>1</sup> This exercise uses the same variables employed by Miyajima, Mohanty and Chan: "Emerging market local currency bonds: diversification and stability", *BIS Working Papers*, N° 391, 2012.

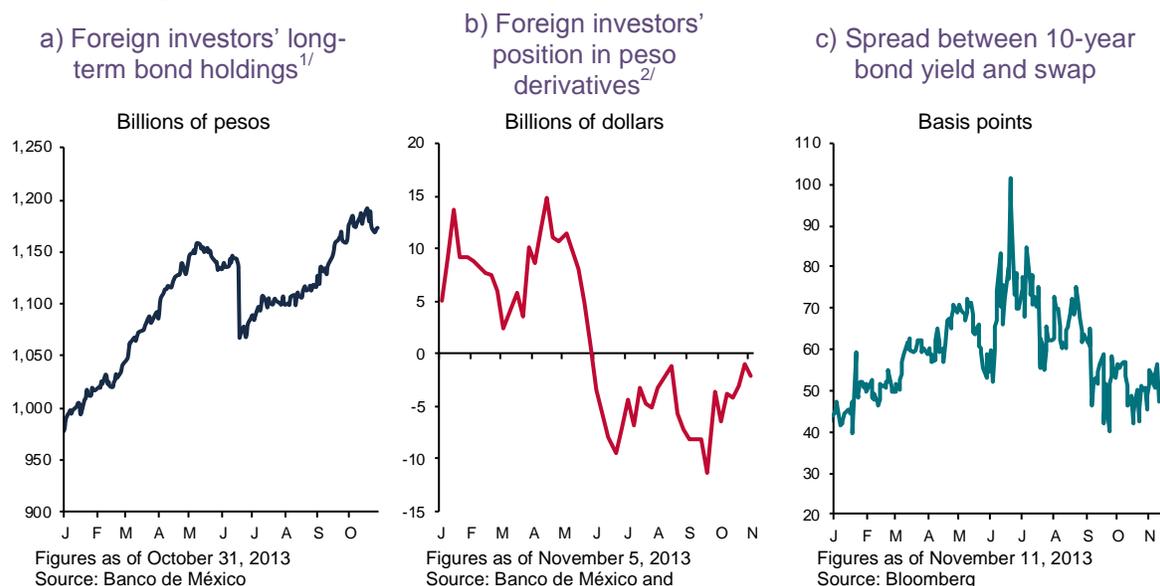
<sup>2</sup> The fiscal position is calculated as the moving average of the public expenditure-to-income ratio during the last twelve years

<sup>3</sup> For that purpose, the variance of each variable is multiplied by the square of the estimated coefficient and divided by the sovereign bond yield variance.

<sup>4</sup> Both diagnostic and specification tests were significant.

Even if a significant capital outflow did not materialize in Mexico, as occurred in other emerging economies (graph 7a), there were substantial changes in exchange risk coverage transactions in stock and *OTC* markets and interest rate risk via swaps. As of May, the derivatives' net long Mexican peso position in organized *OTC* markets declined (graph 7b), and the spread between 10-year swaps and the 10-year bond yield increased (graph 7c). This widened spread suggests a greater demand to cover against exposure to long-term bonds via the tradeoff between fixed and floating rates. Consequently, derivative markets were instrumental in alleviating shocks on peso interest rates, derived from higher USD rates.

**Graph 7**  
**Foreign Investors' Position in Peso Interest Rates and Exchange Rates in 2013**



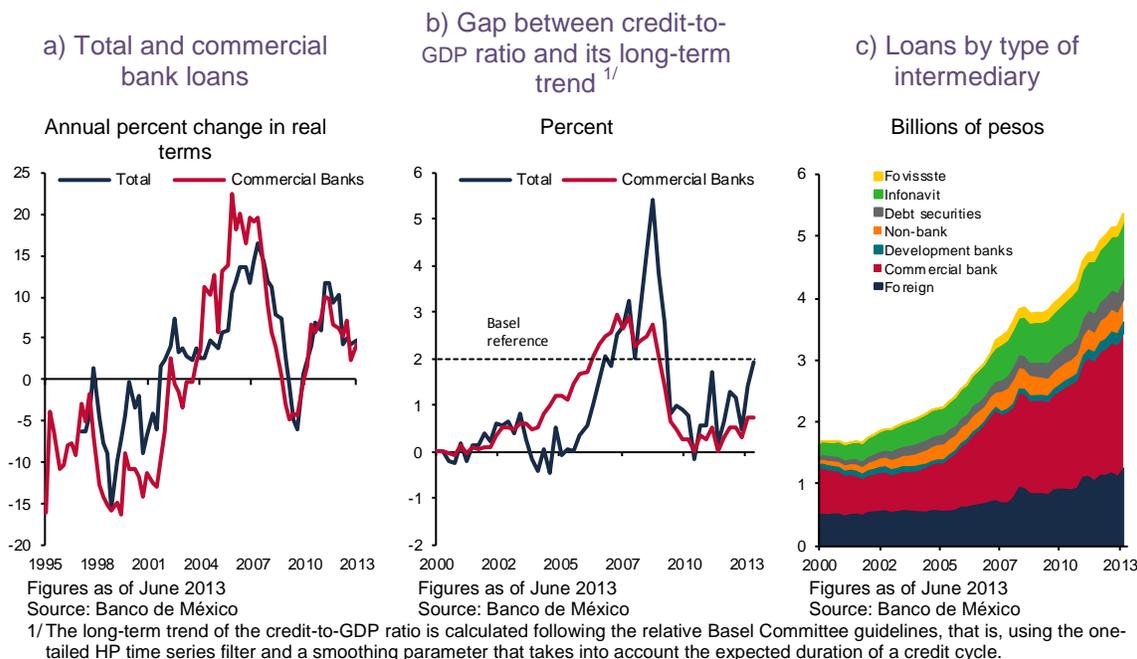
1/ The steep fall-off in foreign investors' securities holdings are largely due to bond amortization. For instance, 75 billion pesos in fixed-rate bonds reached final maturity on June 2.  
 2/ Includes the speculative peso position at the CME and the foreign investors' net long position in forward markets through domestic financial intermediaries

In sum, the macro-financial environment, as a stability determinant of the Mexican financial system, registered significant changes throughout 2013. The international risk balance has also been altered, as witnessed by several factors: first, the decline in catastrophic risks in the Eurozone; second, the rising dangers associated to the unbalanced and poor global economic recovery; third, the existing fiscal challenges and fallout from extraordinary monetary policies – not to mention the potential abandonment thereof– in developed countries. In such a context, the Mexican economy and financial system stand out from other emerging economies, thanks to smoother and more orderly market adjustment processes. Yet, the acute volatility in financial markets in recent months made it clear that investors are highly sensitive to unexpected changes in the US monetary position. Therefore, a possible general reversal of the capital inflows observed in developing countries holds true.

## 2.3 Credit Risk

The economic slowdown that started in the last quarter of 2012 resulted in the credit demand shrinkage. At the end of the second quarter of 2013, credit to the non-financial private sector<sup>3</sup> grew by 4.6 percent in real terms, *vis-à-vis* the same period in the previous year (graph 8a). Despite the fall in credit granting (10.2 percent in June 2012), the total balance of loans to the private sector as a percentage of GDP remained at levels above its long-term trend (graph 8b).<sup>4</sup> As of the second quarter of 2013, 41 percent of loans to the non-financial private sector had been granted by commercial banks (graph 8c).

**Graph 8**  
**Credit to the Non-Financial Private Sector**



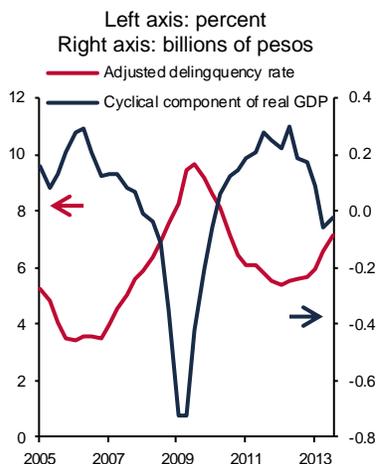
Throughout 2011 and 2012 diverse credit risk indicators improved on a continuing basis. The deceleration observed in the first half of 2013 had an influence in breaking the trend. Nonetheless, most credit risk indicators remain below the levels observed at the beginning of 2012, and thus, a trend reversal is expected as the economy will improve. With regard to credit risk indicators, both the probability of default and the adjusted delinquency rate have exhibited a halt in their previous favorable trend (graph 9a and 9b). The adjusted delinquency rates of consumer and commercial bank portfolios have seen a rebound as of the second quarter of 2013, derived from the decline in personal and building company loans, respectively (graph 9c).

<sup>3</sup> Includes both foreign and domestic loans from commercial and development banks, non-bank intermediaries, Infonavit and Fovissste, and the issuance of foreign and domestic debt securities.

<sup>4</sup> The gap between the credit-to-GDP ratio and its long-term trend is an indicator proposed by the Basel Committee on Banking Supervision that establishes when banks should start to build up countercyclical capital buffers. The Committee recommends buffers should be set when the indicator is greater than two percent, although every jurisdiction should establish the rules and process through which they should be built up.

**Graph 9**  
**Credit Risk Indicators for Commercial Banks**

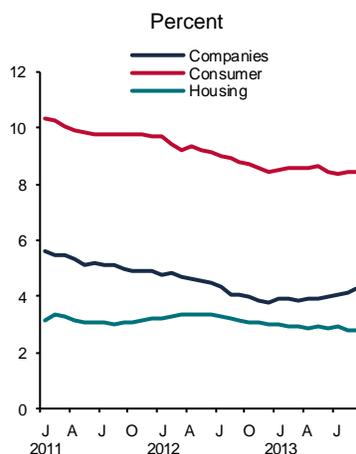
a) Economic activity and adjusted delinquency rate<sup>1/</sup>



Figures as of September 2013  
Source: Banco de México

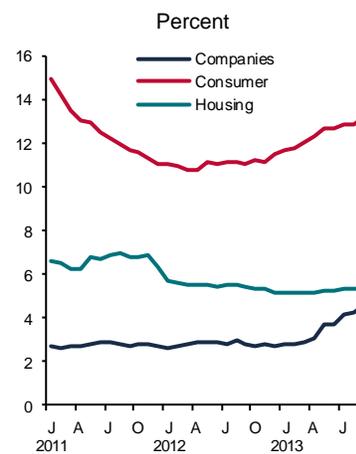
1/ Economic activity is measured by the cyclical component of real GDP. This is the gap between real GDP and its long term trend using a one-tailed HP filter and a smoothing parameter of 1600.

b) Probability of default



Figures as of September 2013  
Source: Banco de México

c) Adjusted delinquency rate



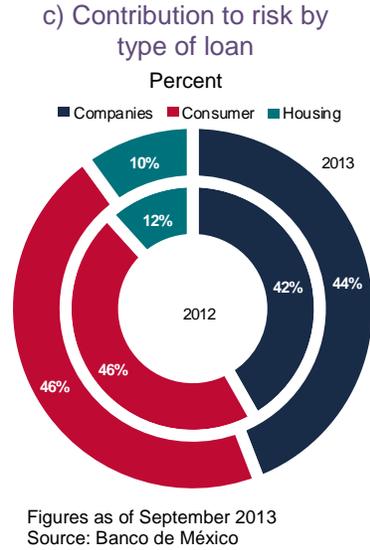
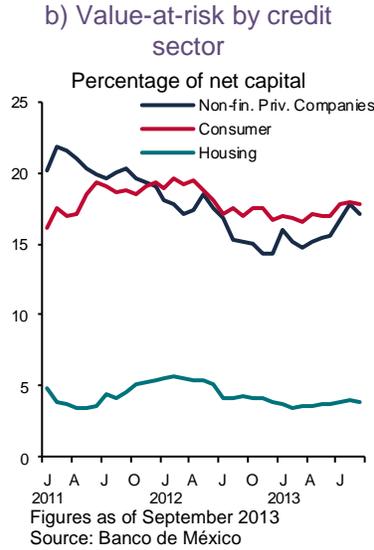
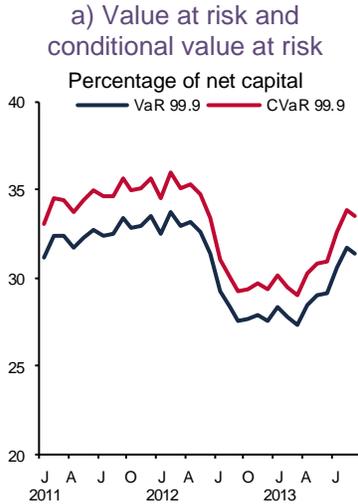
Figures as of September 2013  
Source: CNBV

The aforesaid variation in the trend of credit risk indicators is also noticeable in the distribution of losses related to loan portfolio capital: both the value at risk ( $VaR$ ) and the conditional value at risk ( $CVaR$ ) have spiked. In other words, if an extreme shock materialized, losses would be greater than they would have been six months ago. Further, it is worth mentioning that these losses would still be lower than they would have been, had a shock materialized twelve months ago (graphs 10a and 11a).<sup>5</sup>

On the other hand, the commercial portfolio entails substantial risks for banks, both for its borrower concentration and weight in most banks' balances. Specifically, the concentration effect on the commercial portfolio is clearly evident in the problems some house building companies have been facing recently, since their default on obligations accounts for the larger part of the increase in delinquency and adjusted delinquency rates (graphs 11b and 11c). On the other hand, the meteorological events that recently hit several Mexican states could put additional pressure on banks' loan portfolios. Yet, commercial banks' exposure to borrowers located in catastrophe-stricken states is limited, since said debtors only account for less than eight percent of the commercial loan portfolio and around nine percent of the mortgage loan portfolio.

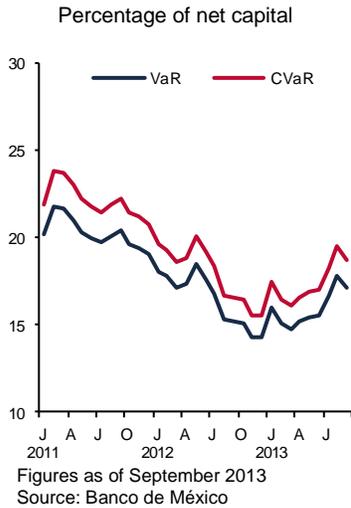
<sup>5</sup> In September 2013, the  $CVaR$  over one year at the 99 percent confidence level for all loans to the non-financial private sector amounted to 33.5 percent of commercial banks' capital and slightly more than 19.8 percent of the current loan portfolio. The  $CVaR$  at the 99 percent confidence level for the commercial banking portfolio was 10.4 percent of the current loan portfolio, whereas the respective  $CVaR$  for the consumer and mortgage loan portfolios were 21.3 and 6 percent.

**Graph 10**  
**Non-Financial Private Sector Credit Risk Indicators**

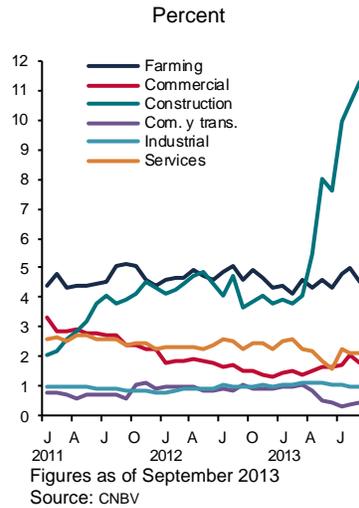


**Graph 11**  
**Non-Financial Private Companies Credit Risk Indicators**

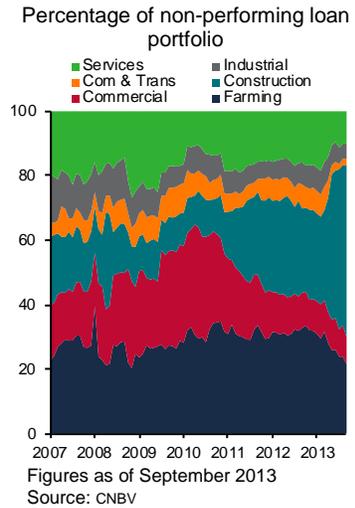
a) Conditional value at risk on loans to non-financial companies



b) Delinquency rate on loans to companies pertaining to different economic sectors

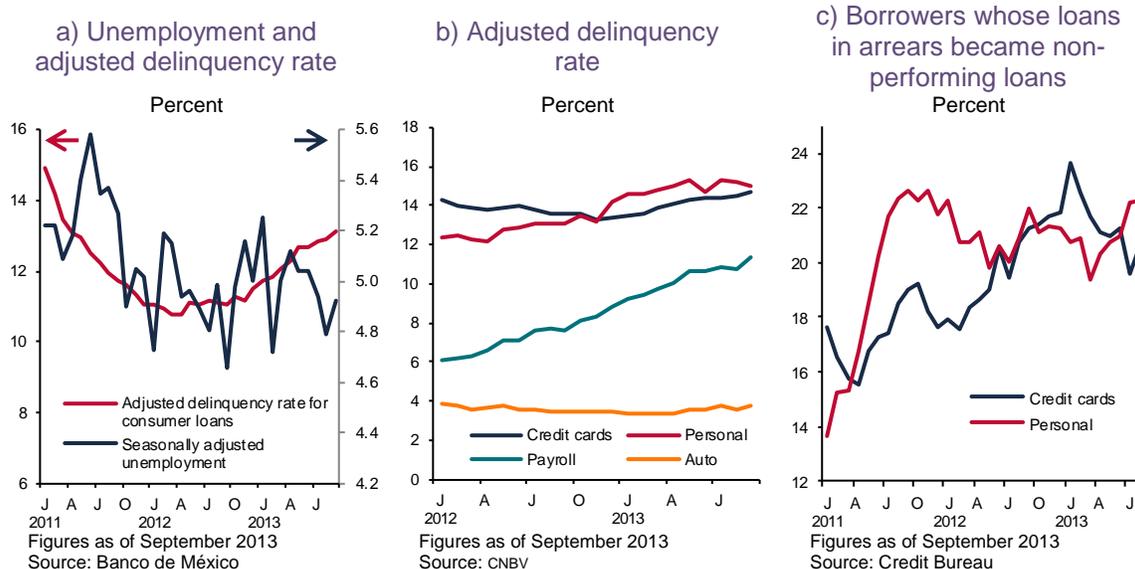


c) Contribution of different economic sectors to the private sector non-performing loan portfolio



The aforementioned trend reversal is also evident in the slight worsening of the consumer loan portfolio delinquency rate (graph 12a), particularly that of payroll loans (graph 12b). Approximately half of commercial bank revenues stem from the consumer credit heading, within which payroll and personal loans have gained in importance. Nevertheless, in the first half of 2013, there were no changes in the proportion of debtors in default that quit paying.<sup>6</sup> The relative deterioration of this indicator occurred in 2013, affecting solely credit card debtors (graph 12c).

**Graph 12  
Consumer Risk Indicators**



In regards to the credit card portfolio, the delinquency rate rose slightly. Yet, unlike previous years, the rise in delinquency was not accompanied by an increase in the utilization ratio of lines of credit (graph 13a) or in the number of cardholders with more than one card (graph 13b). Furthermore, delinquency on commercial bank loans was lower than that on loans granted by non-bank institutions (graph 13c).

As for mortgage loans, there was a moderate increase in delinquency rates on liquidity and house purchase loans (graph 14c).<sup>7</sup> While interest rates on mortgage loans significantly diminished during the first three quarters of 2013, other granting conditions have not loosened up (graph 14a), as demonstrated by the good performance of various mortgage vintages (graph 14b).<sup>8</sup>

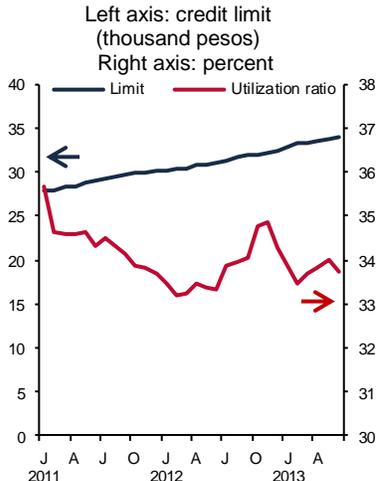
<sup>6</sup> This indicator is obtained from stochastic matrices using random samples from the Credit Bureau (see table 22 on the *Financial System Report* of July 2009).

<sup>7</sup> Mortgage liquidity loans are loans through which debtors get cash for whatever purpose in exchange for a mortgage guarantee, usually a house.

<sup>8</sup> As explained on table 23 on the *2007 Financial System Report*, published in May 2008, the term “mortgage vintage” refers to a group of mortgage loans granted in a specific period, usually one year.

**Graph 13  
Consumer Risk Indicators**

a) Credit cards: credit limit and utilization rate<sup>1/</sup>

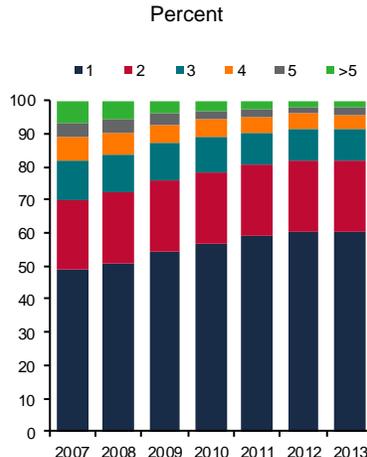


Figures as of August 2013  
Source: Credit Bureau

1/ Percentage of available credit line

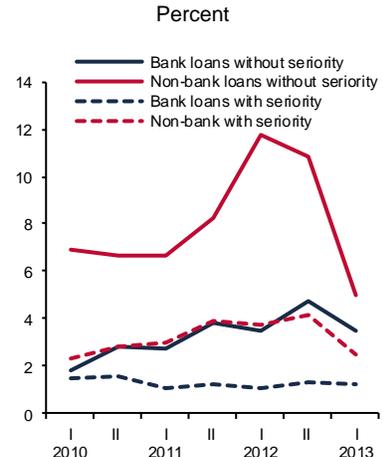
2/ A borrower has seniority in the system if their loans were granted more than six months ago.

b) Number of cards per customer



Figures as of June 2013  
Source: Credit Bureau

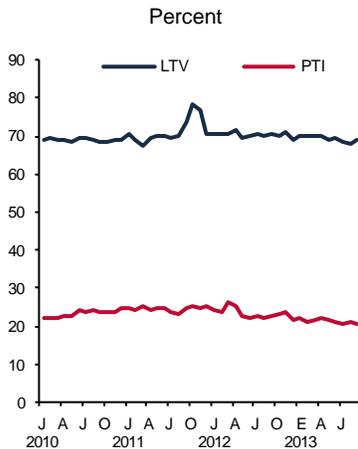
c) Delinquency on personal loans to borrowers with and without seniority in the system<sup>2/</sup>



Figures as of June 2013  
Source: Credit Bureau

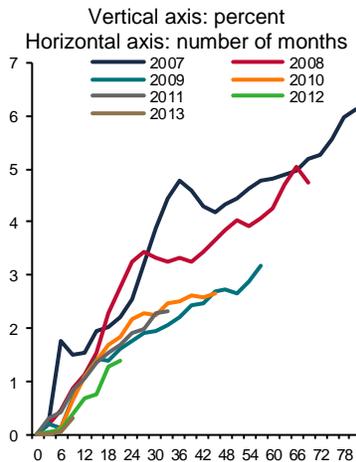
**Graph 14  
Mortgage Risk Indicators**

a) Loan-To-Value (LTV) and Payment-To-Income ratio (PTI)



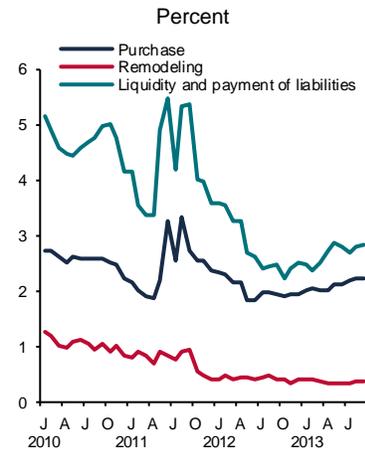
Figures as of September 2013  
Source: CNBV

b) Delinquency rate on different mortgage vintages



Figures as of September 2013  
Source: Banco de México

c) Delinquency rate on different types of mortgage loans



Figures as of September 2013  
Source: Banco de México

Mortgage loans for purposes other than house purchasing<sup>9</sup> have gained in relative importance and already account for eight percent of the current mortgage loan portfolio. Further, delinquency on liquidity and debt payoff loans is higher than on house purchasing loans –the latter contributed to families’ over-indebtedness in the US prior to the 2007 crisis.

Although at an individual level, financial intermediaries have been prudent when granting loans, at a systemic level, there are some aspects which need to be closely monitored so that they do not become threats to financial stability. Two of these are particularly relevant: the first one has to do with credit products whose structure fosters higher certainty over payment receipt on some debtors to the detriment of others; the second one, with the loan portfolio concentration in certain economic sectors.

Indeed, structured credit products may pose a threat to the financial system as a whole, for higher certainty over receipt of payment on some liabilities may generate higher leverage. For example, loans backed by guarantees or collateral with higher credit quality than that of the debtor may lead creditors to grant loans disregarding the fact that those may not be the only debtor’s financing source. That is, the higher certainty over payment receipt may lead creditors to leverage debtors beyond their actual ability to pay, at the expense of other financial intermediaries’ loan portfolios. The Infonavit is a case in point: despite being the most salient mortgage loan provider, it does not share data with credit bureaus nor consults with them. Infonavit loans may disturb the performance of the remaining mortgage loan portfolio, since the former enjoys a higher payment receipt certainty than the rest, as payments are directly deducted from workers’ payroll. It is therefore advisable that all grantors be obliged to report to and consult with credit bureaus.

As for the problems posed by loan portfolio concentration in certain economic sectors and the concentration of highly correlated risks, an illustrative example is offered by the problem related to the funding of housing companies: several financial intermediaries partook in funding such companies via securities, direct loans and invoice discounting; yet, the sector’s high loan concentration engendered the over-leveraging of businesses whose sources of income are exceedingly vulnerable to the economic cycle and the continuation of high growth rates.

Lastly, credit risk stress tests demonstrated that, in extreme albeit plausible scenarios (see the stress tests section), some institutions see important losses due to capital adequacy ratios below the minimum regulatory requirement.

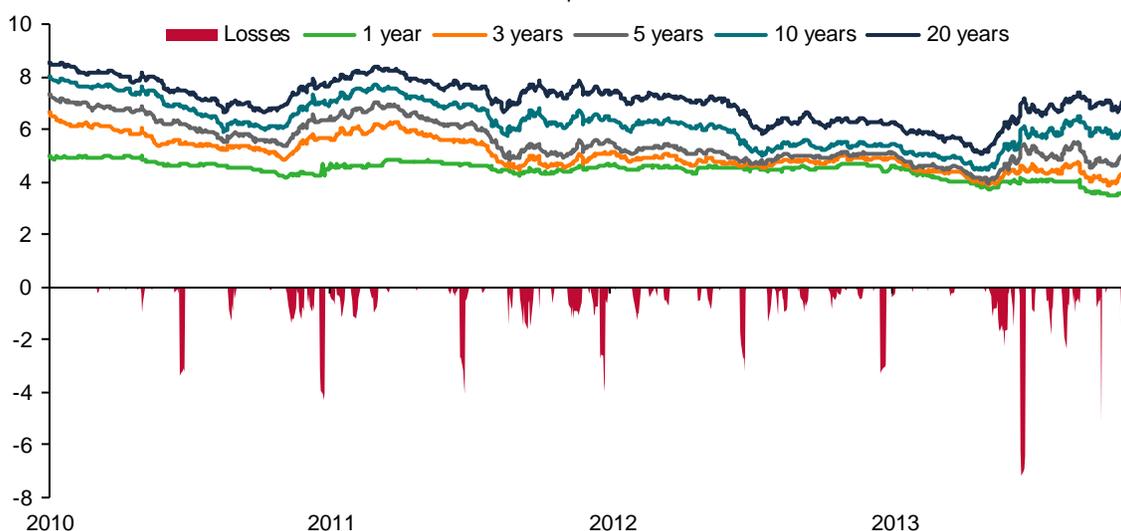
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<sup>9</sup> These loans may be devoted to land purchase, house remodeling, liquidity and settlement of liabilities, among others. A mortgage guarantee is required in all cases.

## 2.4 Market Risk

The macro-financial environment prevailing in Mexico, characterized by low and stable inflation, sustainable public debt policy and a floating exchange rate regime, has fostered a considerable term extension on loans in all sectors. Term and debt length extension implies higher borrowers' and lenders' sensitivity to interest rate changes. Graph 15 shows how the losses in federal debt market value increased, as a result of the longer duration of circulating debt. Nonetheless, the aforesaid higher debt value sensitivity to interest rate changes has not resulted in an equivalent market risk increase.

**Graph 15**  
**Market Value Losses in Total Local-Currency-Denominated Federal Debt Derived from Interest Rate Changes<sup>1/</sup>**  
 Annual percent



Figures as of November 8, 2013

Source: Banco de México

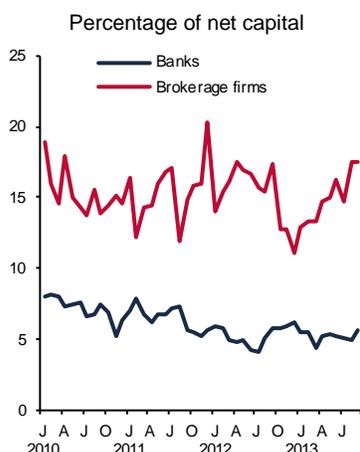
<sup>1/</sup> Losses were estimated by accumulating all observed losses in a 6-day period, for that is the average term of government securities repo transactions.

The increasing use of coverage strategies via derivative transactions by financial intermediaries and other financial system participants has alleviated the shocks generated by medium- and long-term interest rates increases as of May 2013; thanks to derivatives coverage, commercial banks' value-at-risk (VaR) as a proportion of net capital has dropped (graph 16b).<sup>10</sup>

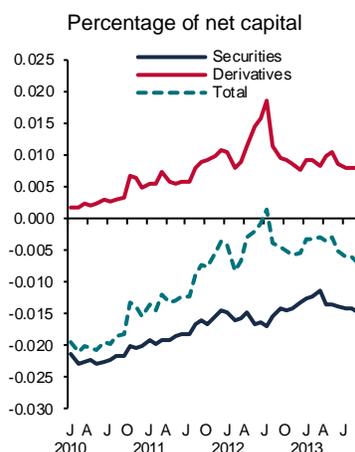
<sup>10</sup> Foreign exchange risk is not critical to commercial banks because the existing regulation establishes strict limits to foreign-currency-denominated risk positions.

**Graph 16**  
**Market Risk Indicators**

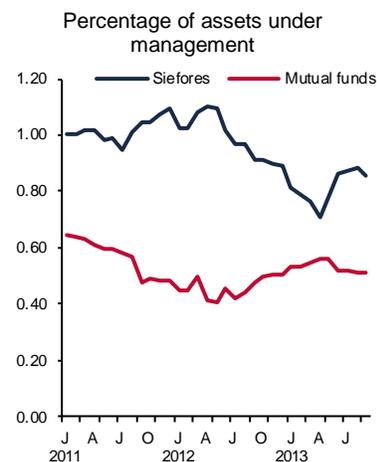
a) Commercial banks and brokerage firms' value-at-risk



b) Commercial banks' DV01 breakdown<sup>1/</sup>



c) Siefores and mutual funds' value-at-risk



Figures as of September 2013  
Source: Banco de México

Figures as of September 2013  
Source: Banco de México

Figures as of September 2013  
Source: Banco de México

<sup>1/</sup> DV01 is the change in the trading book value, given a one-basis-point increase in interest rates.

The higher sensitivity of government debt had a different effect on intermediaries with a large position therein. For instance, the impact of interest rate changes on brokerage firms' portfolios was lesser than on banks' portfolios, since market risk on the former stems mainly from their stock positions; On the other hand, siefores and mutual funds' debt securities positions have different durations (the former have 1.6 years and the latter 0.25), and this explains the different *VaR* levels these intermediaries exhibited.

Last, the siefores' *VaR* decline observed as of the second half of 2012 is mainly due to the computing methodology set by Consar –the procedure considers risk factor changes over the last 1,000 days–, and not to variation in the portfolio composition. In fact, the *VaR* upswing is explained by market volatility during last May and June, and not by siefores taking greater risk.<sup>11</sup>

<sup>11</sup> According to annex L of the general provisions that establish the investment regime by which siefores issued by Consar must abide, siefores' *VaR* shall be estimated considering daily data of the last 1,000 working days. The calculation of banks', brokerage firms' and mutual funds' *VaR* was made over a 2,500-day horizon. The problems related to risk underestimation that arise from historical *VaR* are explained on box 27 in the *Financial System Report* that was published in July 2009.

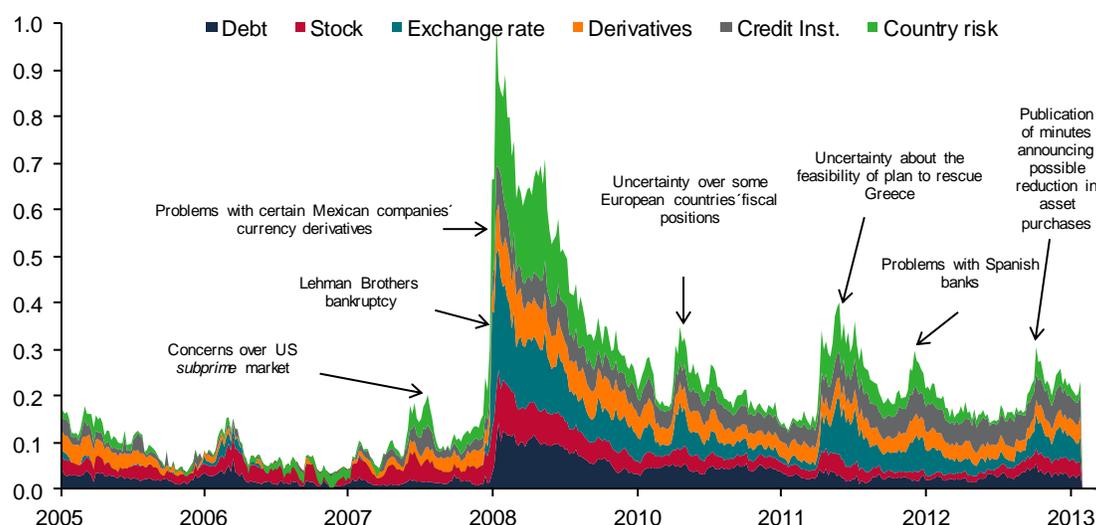
**Table 1**  
**Percent Change in Asset Value for a 100-Basis-Point Increase in the Interest Rate Curve<sup>1/</sup>**  
 Percentage of investment portfolio

Sector	2008 IV	2010 IV	2013 III
Commercial banks	-0.545	-0.224	-0.123
Brokerage firms	-0.323	-0.119	-0.145
Insurance companies	-0.232	-0.232	-0.309
Siefores	-2.449	-1.143	-0.918
Mutual funds	-0.472	-0.483	-0.436

Figures as of September 2013  
 Source: Banco de México and Consar  
 1/ Commercial banks' and brokerage firms' sensitivity includes their derivative position.

The results from market stress tests (see the stress tests section) using scenarios generated by a macroeconomic-based model suggest that, on average, banks and brokerage firms would maintain their capital adequacy levels above the minimum requirement; yet, in certain scenarios, some of them would display a capital adequacy ratio below the minimum. Withal, the volatility of major market risk factors did not reach the previously observed levels. On the other hand, a way of measuring across-the-board market volatility levels is presented by a stress index synthesizing data from different foreign and domestic financial indicators in one single variable. When analyzing that index, it can be seen that, last June, stress had similar levels to those observed in late 2009; moreover, it hasn't returned to the levels observed prior to Lehman Brothers' bankruptcy (see graph 17 and table 2).

**Graph 17**  
**Financial Market Stress Index and Its Components<sup>1/</sup>**  
 0 - 1



Figures as of November 8, 2013  
 Source: Banco de México  
 1/ The aggregated index is the sum of the index components; the higher the index score, the greater the stress.

## Box 2

## Financial Market Stress Index and Its Components

There is no precise definition of financial stress; nevertheless, this may become manifest in changes in economic agents' behavior, triggered by both the escalation of uncertainty and changes in expectations over potential financial market losses.<sup>1</sup> In a crisis, the level of financial stress is higher and the following events are detectable:

- Heightened uncertainty over asset values (a surge in volatility)
- Heightened uncertainty over other agents' behavior
- Increased information asymmetries
- Preference for lower-risk assets
- Preference for higher-liquidity assets

All listed events may affect the price of financial assets and the real economy. When there is a negative spiral of rising volatility fueled by increased sales of assets, triggered, in turn, by higher volatility, risks to financial stability also increase.

Systemic risk is a multifaceted phenomenon and, hence, it is hard to measure at a multidimensional level at any time. The large amount of variables and interrelations that exist in the risk origination, transmission and amplification process make this an almost impossible endeavor, unless a methodology that efficiently summarizes data is used. Therefore, the financial authorities of various countries have formulated indices that sum up in one single variable the aggregated risk level in their financial systems.<sup>2</sup>

These indicators are obtained by combining market data with systemic financial intermediaries' indicators, so as to come up with a synthetic measure for the system. As far as the Mexican financial system is concerned, this box presents the Financial System Stress Index (IESF in Spanish), which summarizes data from 34 financial variables pertaining to stock, debt, foreign exchange, derivative and banking markets, together with domestic and foreign variables related to country risk and having an impact on the Mexican financial system.<sup>3</sup>

The principal components method was used to build up the index; by using variable correlations, this multivariate non-parametric procedure provides weights assigning greater importance to variables with higher information content.<sup>4</sup> Such weights are computed at every update, so it is possible to compare indices updated on different dates.

The goal of the index is to provide a timely, effective and flexible measure capturing accumulated risk in the Mexican financial system at a given moment. Just as other indicators of its kind, this is a coincident indicator; that is, it measures events as they occur. Regarding the interpretation of the IESF, a higher level is associated with a higher financial stress level. It is also possible to analyze each of the components to determine which variables contribute more to the level of financial stress at every moment.

The specific objectives of the IESF are:

- To compare the level of financial stress at different times.
- To provide a methodology capable of detecting disequilibria, and thus supply a first sign to reinforce across-the-board oversight.

The index presented on graph 17 covers the period from 2005 to today. During that time, there was only one extreme event, derived from Lehman Brothers bankruptcy in September 2008 and domestic volatility, aggravated by some companies' mishandling of derivative transactions. This event had a negative impact on risk perception, and gave rise to uncertainty and liquidity problems in the markets.

Additionally, the index has captured other stress events in Mexican financial markets, such as the beginning of the Greek crisis, the Spanish banking system's hardships, and more recently, last May Fed's announcement on the possible withdrawal of unconventional monetary incentives. As of June 2013, the index level was similar to the levels observed in late 2009, before uncertainty over some European countries' fiscal position became a widespread concern. Further, it has not returned yet to levels prior to the international financial crisis.

<sup>1</sup> See Illing M. & Liu Y. (2006), "Measuring financial stress in a developed country: An application to Canada", *Journal of Financial Stability*, Vol. 2, N° 3, pp. 243-265.

<sup>2</sup> The Federal Reserve Banks of St. Louis, Kansas and Cleveland continuously use, update and publish a stress index. The Central Bank of Sweden updates and releases the index every six months, as part of its financial system report, whereas the European Central Bank releases daily information. The central banks from Greece, Canada and Hungary have released isolated publications. For its part, the IMF has added a financial stress index for emerging countries in its latest biannual publications. Besides, there are several working documents exploring different methodologies for the construction of related indicators. Apart from financial authorities, some financial companies have developed their own indicators aiming at informing analysts and investors about risks (for instance, see Goldman Sachs's Financial Stress Index (FSI); Bank Credit Analyst Research produces a monthly index for the US, and JP Morgan releases the Liquidity, Credit and Volatility Index on a daily basis).

<sup>3</sup> The variables used are updated at different times; however, the index is updated on a weekly basis. In the case of variables that have not been updated when recalculating the index, last available data are kept.

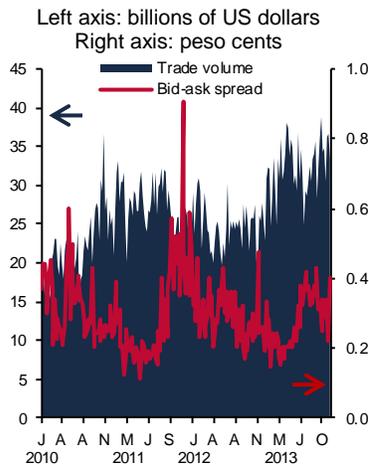
<sup>4</sup> Under certain restrictions, original variables are projected in order to obtain new variables, known as components. Using algebraic terminology, one of said restrictions is that components must form an orthonormal basis. The weights that the final index uses for the original standardized variables are values related to its own vector associated with the largest eigenvalue in the projection matrix. This eigenvector is known as first component and explains the largest proportion of all original variables' total variance. This implies that the first component synthesizes data from the original group of variables. See Jolliffe, I. (2004), *Principal Component Analysis*. Springer. Second Edition.

2.5 Liquidity Risk

In spite of the rise in international markets' volatility as of May 2013, foreign exchange trade volumes have remained high, and the bid-ask spread stable (graph 18a). This enabled the orderly adjustment of prices, the high movement notwithstanding. Foreign exchange volatility has been slightly lower than that of other emerging markets (graph 18c), and the OTC trading volume has constantly grown. Further, current increased liquidity has led international investors to cover their exposure to foreign exchange risk by using domestic currency. That also results from the fact that the Mexican peso is highly liquid and subject to a free-floating regime; it can be traded 24 hours a day and interventions are rare and follow pre-established rules.

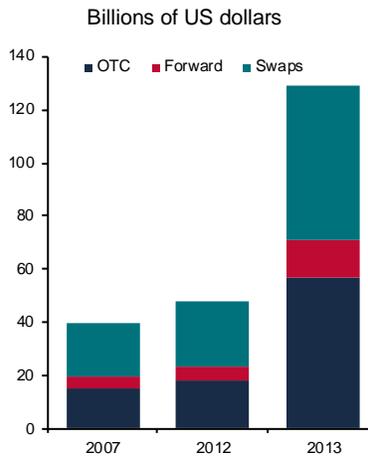
**Graph 18**  
Foreign Exchange Market Liquidity Indicators

a) Mexican trading volume and interbank bid-ask spread



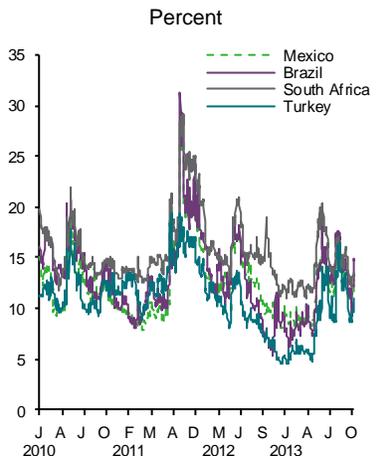
Figures as of November 8, 2013  
Source: Banco de México and Bloomberg

b) Global trading volume



Figures as of April 2013  
Source: BIS triennial Survey

c) Implied volatility on one-month foreign exchange options for different currencies



Figures as of November 8, 2013  
Source: Bloomberg

Mexican foreign exchange policy has been coherent for many years, thus contributing to positioning the peso as one of the most traded currencies the world over. In this regard, the results from the Bank of International Settlements (BIS) triennial survey on foreign exchange and derivative trading volumes were published in September 2013. These showed that the Mexican peso is the eighth most traded currency in the world, and the first among emerging countries' currencies (table 2). Consequently, it comes as no surprise that the global peso trading volume has jumped from 50 billion dollars per day in 2010 to 135 billion dollars in 2013 (graph 18b).

**Table 2**  
**Major Currencies' Position and Share in Foreign Exchange Trading Volume<sup>1/</sup>**  
 Percent

Global position	2013	
	Currency	Share
1	US dollar	87.0
2	Euro	33.6
3	Japanese yen	23.2
4	Sterling pound	11.9
5	Australian dollar	8.7
6	Swiss franc	5.2
7	Canadian dollar	4.6
8	<b>Mexican peso</b>	<b>2.6</b>
9	New Zealand dollar	2.0
10	Swedish krona	1.8
11	Chinese renminbi	1.6
12	Russian ruble	1.6
13	Norwegian krone	1.4
14	Hong Kong dollar	1.4
15	Singapore dollar	1.4

Figures as of April 2013

Source: Bank of International Settlements

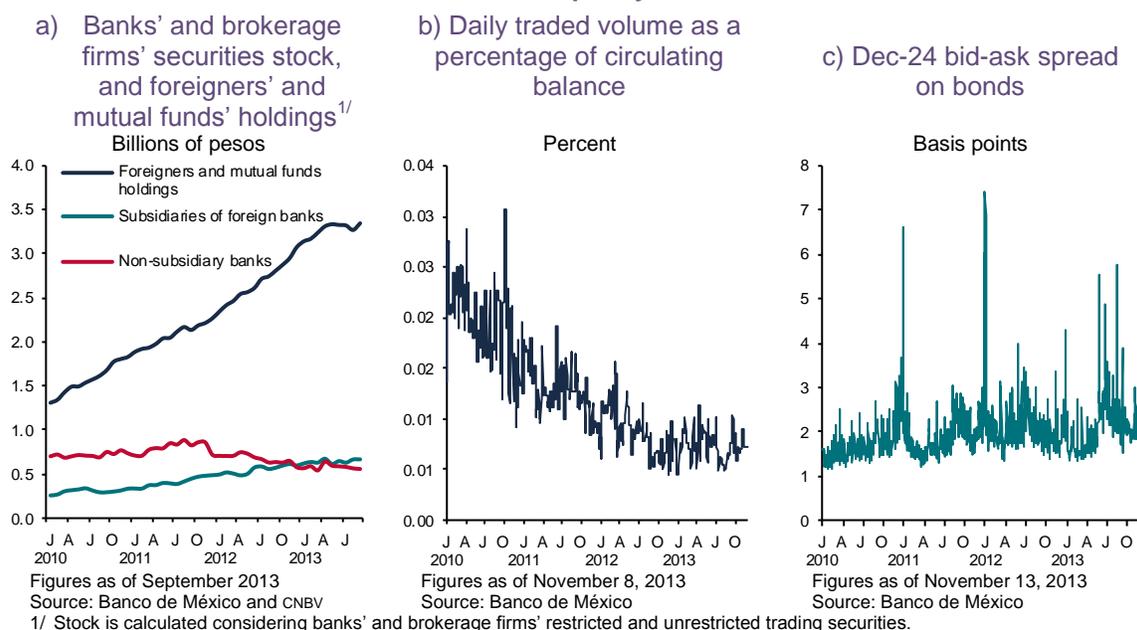
<sup>1/</sup>Since in any given transaction there are two currencies involved, the sum of share percentages is 200 instead of 100 percent.

The local debt market has seen an orderly price adjustment process, although trading volume as a percentage of circulating balance has been in a downtrend in recent years (graph 19b). Indeed, debt securities positions in banks' and brokerage firms' trading books have deteriorated *vis-à-vis* the circulating securities total balance (graph 19a). The same can be said about global debt markets. This relative fall in financial intermediaries' securities positions is particularly relevant for liquidity conditions in debt markets. Certainly, banks' and brokerage firms' active participation in financial markets allows potential securities buyers and sellers to carry out transactions immediately, without having to wait for the opposite bet, thereby easing price volatility.

The shrinkage of financial intermediaries' securities stock results from lower risk appetite, higher capital requirements and regulatory initiatives aiming at prohibiting or splitting certain banking businesses apart, such as the adoption of risk positions in financial markets with the purpose of making profits. Also, reduced risk appetite on securities and derivatives might have a negative impact on financial markets' liquidity, and further, in the event of a capital flow reversal triggered by changes in the Fed's monetary policy, give rise to higher volatility,

It is noteworthy that institutional investors account for a large part of the increase in foreign investors' share in Mexican debt securities; moreover, they usually opt for a long-term investment horizon. In any case, liquidity conditions in the domestic debt market have remained nearly the same, as shown by the bid-ask spread (graph 19c).

**Graph 19**  
**Debt Market Liquidity Indicators**



## 2.6 Contagion Risk

Transactions carried out by financial intermediaries play an essential role in efficiently allocating resources in the economy, as they facilitate that units with excessive liquidity provide funds to those lacking them. Nevertheless, these transactions represent a far from negligible source of risk for the financial system, given the level of debtor and creditor positions, and the interconnectivity that can be generated. Contagion risk materializes when an institution defaults on its obligations and causes other entities to default as well.

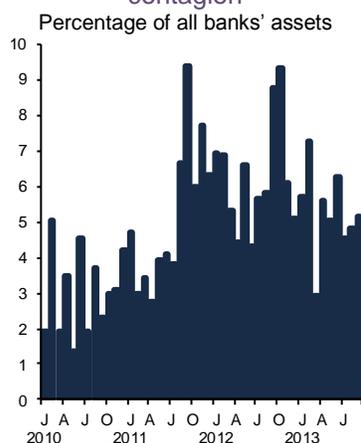
Contagion tests are carried out using networks based on direct exposures of domestic financial intermediaries among themselves. In the event of the worst possible contagion chain, contagion risk has decreased since October 2012 –in terms of the entities that would be affected: both for the number of institutions and the amount of assets that would be hit.<sup>12</sup>

Major domestic financial intermediaries' exposure to the rest of the world is narrow (table 3), and hence, contagion for exposures to foreign direct risk is limited.

<sup>12</sup> The risk analysis presented in this report uses the methodology described in the *Financial System Report September 2012*. The worst possible contagion chain is that which generates the largest impact on the system. Impact was measured using the sum of the value of bank assets with a capital adequacy ratio below the minimum regulatory requirement (eight percent).

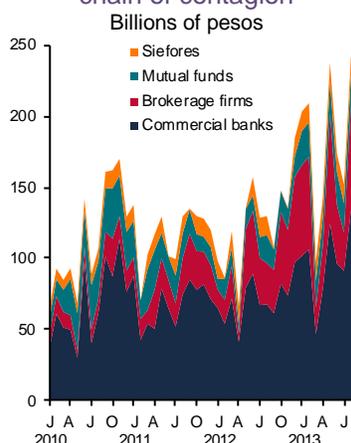
**Graph 20**  
**Contagion Risk Indicators**

b) Bank assets that could be affected in the event of the worst possible chain of contagion



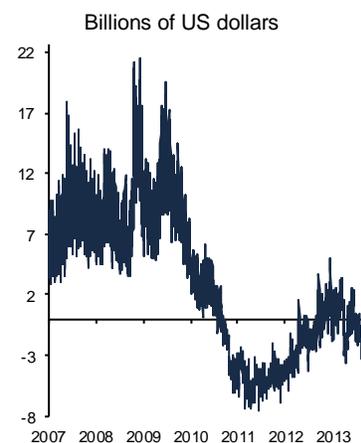
Figures as of September 2013  
Source: Banco de México

b) Maximum losses in the financial system in the event of the worst possible chain of contagion



Figures as of September 2013  
Source: Banco de México

c) Net position of banks established in Mexico with foreign banks



Figures as of September 2013  
Source: Banco de México

**Table 3**  
**Mexican financial intermediaries' exposures to foreign counterparties<sup>1/</sup>**  
Billions of pesos

Creditor/debtor	US	Europe		Latin America	Others	Total
		Spain	Others			
Commercial banks	22.8	2.4	10.6	14.4	2.8	<b>70.4</b>
Development banks	0.7	1.1	6.2	0.4	0.7	<b>9.6</b>
Brokerage firms	0.0	0.0	0.6	1.4	0.0	<b>1.9</b>
Mutual funds	4.5	2.1	0.5	5.7	0.1	<b>13.1</b>
Siefores	23.8	0.5	3.9	0.2	2.9	<b>33.5</b>
<b>Total</b>	<b>61.1</b>	<b>6.3</b>	<b>33.9</b>	<b>20.5</b>	<b>6.6</b>	<b>128.3</b>

Figures as of September 2013  
Source: Banco de México

<sup>1/</sup> Exposure is defined as the aggregate net creditor position of deposits, loans, securities holdings, the positive net valuation of derivatives contracts and the net creditor position of guarantees, repos, securities loans and value date transactions.

**Figure 1**  
**Mexican Financial System's Exposure to the Rest of the World**



Figures as of June 2013  
Source: Banco de México

### 2.7 Financial Position of Households, Firms and the Public Sector

Households' indebtedness as a percentage of GDP has remained constant, whereas that of non-financial private companies has marginally grown. In contrast, public sector's indebtedness grew by ten GDP points. Withal, the external sector increased its relative share in total financing to domestic sectors, due to external debt expansion and domestic debt financing (graph 21).

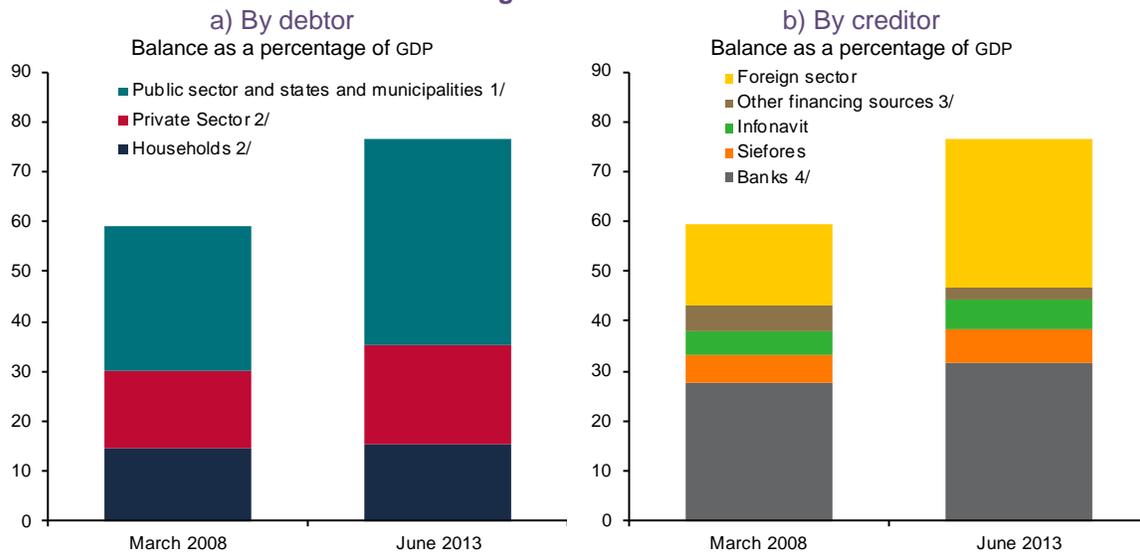
#### Households and Firms

In the second quarter of 2013, the financial position of households –defined as the difference between their asset holdings included in the monetary aggregate M2 and their debt *vis-à-vis* the financial system– amounted to 26.8 percent of GDP; this figure was .6 percentage point below compared with the previous year. The decline resulted from higher households' indebtedness, considering that financial asset holdings remained stable with regard to the previous year. The reasons for such stability were, first, a slowdown in the voluntary component M2 Households –partly explained, in turn, by the deceleration of the second half of 2012–, and second, the obligatory component contraction observed in the second quarter of 2013 –derived from losses in government securities that make up the pension fund portfolio (these losses were, in turn, caused by increases in medium-term and long-term interest rates *vis-à-vis* the previous year).

For its part, household indebtedness continued to grow, in spite of registering a slight slowdown due to a contraction in consumer credit. In like manner, even though Infonavit's and commercial banks' mortgage loan portfolios continuously increased in the second half of 2012, they did so at a slower rate in the first and second quarter of 2013.

In the second quarter of 2013, as a result of higher indebtedness, the household debt service as a percentage of disposable household income increased with regard to the previous year, jumping from 2.6 to 2.9 percent. Nonetheless, interest rates on loans did not diminish as much as reference rates.

**Graph 21**  
**Total Financing to Non-Financial Sectors**



Figures as of June 2013

Source: Banco de México, SHCP and AMFE

1/ Considers the historical balance of the Public Sector Financial Requirements (RFSP) and subnational governments' indebtedness.

2/ Includes loans granted by ENR sofomes.

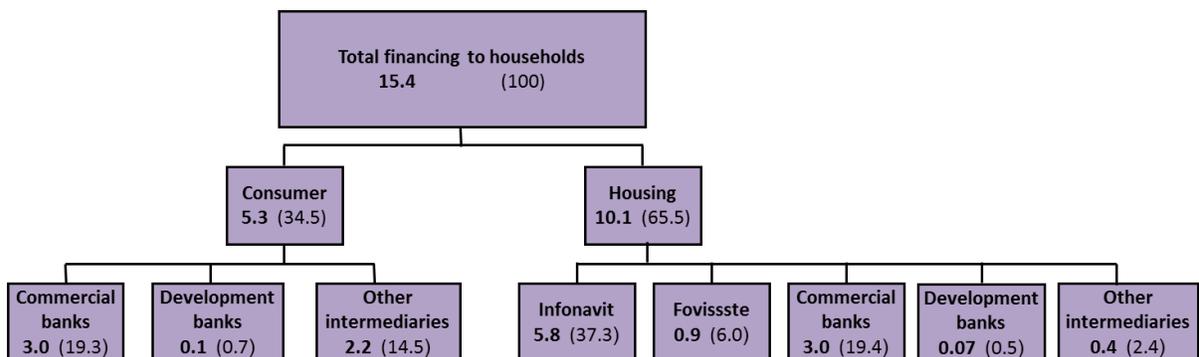
3/ Includes financing by brokerage firms, mutual funds, insurance companies, sofomes, ER sofomes, ENR sofomes, credit unions, factoring firms and other financial intermediaries.

4/ Includes direct loans and securities holdings.

Figures as of June 2013

Source: Banco de México, SHCP and AMFE

**Figure 2**  
**Total Financing to Households**<sup>1/ 2/ 3/ 4/</sup>  
Percentage of GDP (percentage structure)



Figures as of June 2013

Source: Banco de México

1/ Due to rounding, the sum of the parts may not coincide with the total.

2/ The "Commercial banks" heading does not include ER sofomes subsidiaries; in this Report, they are included in other intermediaries not subject to banking regulation (see "Other intermediaries" in this figure).

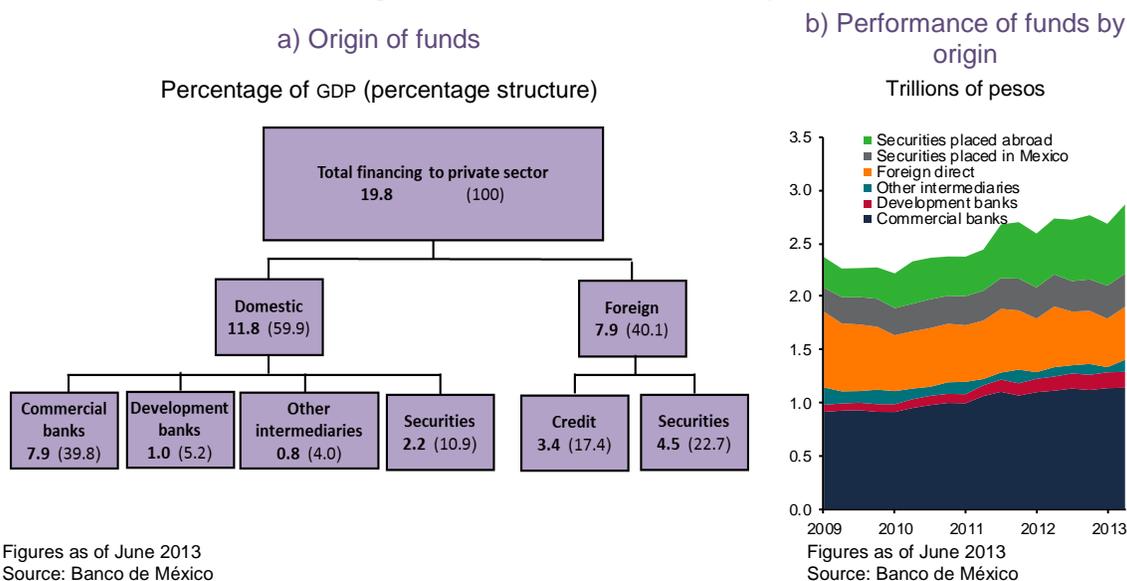
3/ The "Development banks" heading also includes development funds.

4/ "Other intermediaries" includes: sofoles, ER sofomes, ENR sofomes, and AMFE members for whom there are available data on loans granted to households and companies; the heading also includes EACP, credit unions, leasing and factoring firms.

As of the second quarter of 2013, total financing granted to non-financial private companies accounted for 19.8 percent of GDP (graph 22), holding a sustained uptrend during the four previous quarters and registering a growth rate of 4.8 percent in real annual terms. This was driven by both increased external financing –particularly by higher resources through external debt issuances– and domestic financing. As of June 2013, foreign and domestic financing to companies grew by 4.6 and 4.8 percent, respectively.

The increase in internal financing was a result of the expansion in the portfolio of domestic securities and loans granted by commercial banks and other non-bank financial intermediaries, whose respective balances grew by 6.6 and 4.5 percent in June 2013. Particularly, commercial banks' performing loans to the private sector increased by 2.9 percent. Average interest rates on this type of loans decreased as of the end of the second quarter of 2013, compared to the same period in the previous year. This was partly due to the decision made by Banco de México *Board of Governors* in March to reduce the interbank interest rate by 50 basis points.

**Graph 22**  
**Total Financing to Non-Financial Private Companies** <sup>1/ 2/ 3/ 4/ 5/ 6/</sup>



Figures as of June 2013

Source: Banco de México

1/ Due to rounding, the sum of the parts may not coincide with the total.

2/ "Securities" corresponds to domestic financing received by non-financial companies through debt securities issuances.

3/ The "Commercial banks" heading does not include ER sofores subsidiaries; in this *Report*, they are included in other intermediaries not subject to banking regulation (see "Other intermediaries" in this figure).

4/ The "Development banks" heading also includes development funds.

5/ "Other intermediaries" includes: sofoles, ER sofores, ENR sofores, AMFE members for whom there are available data on loans granted to households and companies; The heading also includes EACP, credit unions, leasing and factoring firms.

6/ External financing includes credit granted by foreign commercial banks, suppliers and other creditors. Data on foreign suppliers is obtained from issuing companies' balances listed on the Mexican Stock Exchange (BMV). The heading also includes issued debt that is placed abroad.

## Public Sector

In 2012, the public sector deficit was 403.2 billion pesos (2.6 percent of GDP), and hence within the variation limits established by the Federal Law for Budget and Fiscal Accountability (LFPyRH in Spanish) and its norms. The deficit was 91.2 billion pesos (0.6 percent of GDP) excluding physical investment in Pemex.

For 2013, excluding Pemex investment, the approved fiscal package anticipated a balanced budget. Nevertheless, the 2014 economic package put forth a budget deficit –excluding Pemex investment– of 0.4 percent of GDP for 2013. The reason for the deficit broadening was that the Ministry of Finance and Public Credit (SHCP) estimated that budgetary revenues this year would lag behind the approved level, and that cutting public expenses in order to achieve the budgetary balance target would negatively impact economic activity. The public sector deficit widening for 2013 was approved by Congress last October 31<sup>st</sup>. Net budgetary expenses are expected to be similar to those originally approved by the end of the year.

On the other hand, at the end of third quarter of 2013, the balance of stabilization funds was 57.4 billion pesos, 10.4 billion higher with regard to the end of 2012. This balance represents 27.5 percent of the level reached at the end of 2008.

## 3. Financial Intermediaries

### 3.1 Financial System Structure

As of the end of the first half of 2013, the financial system's total assets amounted to 13 billion pesos, which implied a 2.9 percent increase in real annual terms with regard to the same period in the previous year. Some financial intermediaries displayed annual growth rates above five percent, namely, pension funds (siefos), mutual funds, development banks and popular savings and credit entities. In contrast, other financial entities, such as commercial banks and brokerage firms grew at lower rates.<sup>13</sup>

The growth of assets of the shadow banking sector has also followed the global trend.<sup>14</sup> Particularly, as of June 2013, unregulated sofomes registered a growth rate of 11.8 percent in real annual terms.<sup>15</sup> During that period, siefos' and mutual funds' share in total assets increased, whereas those of insurance, surety and brokerage firms decreased (table 4).

As far as the financial system's corporate structure is concerned, the share of domestic individuals in the capital of financial groups increased, while that of their foreign counterparts decreased. Importantly, two foreign bank subsidiaries exited the Mexican market and a foreign-owned afore was sold to a domestic financial group.<sup>16</sup>

On the other hand, the profitability of financial intermediaries remained at levels similar to those observed in previous years (table 6). Despite the economic slowdown, commercial banks and brokerage firms registered greater capital returns. It is worth mentioning, however, that commercial banks' profitability was fueled by extraordinary revenues derived from the sale of business units that took place in the first quarter of the year. On their part, afores' profits diminished significantly –this was essentially due to a capital injection in one of them.

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<sup>13</sup> Losses observed at the end of the first half of 2013 on a number of financial assets brought down growth rates of brokerage firms' and afores' assets, which plummeted 14 and 9.8 percentage points with regard to the annual growth registered in March 2013.

<sup>14</sup> Sofoles (limited-scope financial institutions), surety and factoring companies are deregulated since July 19, 2013, when the relative applicable articles were abolished. Authorizations made by the SHCP in conformity with article 103 section IV of the Credit Institutions Law are no longer valid. To stay in business, such institutions must have reformed their articles of association, thereby deleting all references from which it could be inferred that they are credit organizations authorized by the SHCP. Otherwise, they must enter into a winding-up and liquidation process.

<sup>15</sup> This growth rate exclusively considers unregulated sofomes members of the Mexican Association of Specialized Financial Institutions (AMFE).

<sup>16</sup> One of the subsidiary banks was liquidated, while the other merged with a domestic-owned bank. Changes in the financial system structure can be better seen when comparing table 5 in this report with table 4 in the *Financial System Report September 2012*.

**Table 4**  
**Number of Institutions and Market Share by Type of Intermediary in the Mexican Financial System**

	Number of entities	Share in total assets (%)	Real annual growth rate of assets (%)
Commercial banks <sup>1/</sup>	47	48.0	0.2
Siefores (afores) <sup>2/</sup>	77 (12)	15.7	6.1
Mutual funds (managers) <sup>3/</sup>	604 (54)	12.7	9.4
Development banks <sup>4/</sup>	10	9.8	3.1
Insurance companies	103	6.9	6.8
Surety companies	15	0.1	-3.4
Brokerage firms	33	3.5	2.6
Regulated sofomes <sup>5/</sup>	25	0.5	5.8
Unregulated sofomes <sup>6/</sup>	3,343	1.7	11.8
Popular savings and credit entities <sup>7/</sup>	283	1.0	5.4
General deposit warehouses <sup>10/</sup>	20	0.1	27.7
<i>Leasing companies<sup>8/</sup></i>	0	0.0	-88.3
<i>Factoring companies<sup>8/</sup></i>	0	0.0	-23.1
<i>Sofoles<sup>8/</sup></i>	0	0.0	-93.4
<i>Memo: Housing institutes<sup>9/</sup> and others<sup>10/</sup></i>	3	<i>n.a.</i>	<i>n.a.</i>

The number of financial entities refers to those authorized as of September 2013; some are not operating. Their share of total assets corresponds to June 2013 and the real growth rate refers to June 2013 with regard to the same month a year earlier.

Source: Banco de México, SHCP, CNBV, CNSF, Consar, Condusef and AMFE

1/ Commercial banks' total assets include regulated sofomes that are consolidated with the respective bank when they are subsidiaries.

2/ Overall, pension funds (Afores) manage a total of 82 Siefores.

3/ Mutual fund management companies administer 600 funds in all. Of the 58 investment fund operators, 4 are multiple banks, 10 are brokerage firms and 44 are mutual fund management companies. Asset information corresponds to the balance sheets of investment funds, not management companies.

4/ Includes development banks and trusts (FIRA, FOVI, Fonhapo, Fifomi and Financiera Rural).

5/ The share of total assets considers sofomes that are regulated because they belong to a financial group but do not consolidate their assets with a multiple banking institution (15 out of 25). Those that do consolidate their assets with banks are included in the commercial banking heading (9 out of 25); there is also one that belongs to the development banking sector.

6/ Figures referring to the number of unregulated sofomes come from a Condusef record of them. However, information about assets only contains information from those entities associated with the AMFE, a sector trade association which to date has 36 unregulated members.

7/ Includes savings and loan associations (SLA), popular finance corporations (sofipos), savings and loan cooperatives (socaps) and credit unions.

8/ Sofoles, surety and factoring companies are no longer legally instituted as of July 2013.

9/ Infonavit and Fovissste

10/ Infonacot

**Table 5**  
**Financial System's Corporate Structure**

	Commercial banks		Afores		Insurance companies		Brokerage firms	
	Number	(%) assets <sup>1/</sup>	Number	(%) assets <sup>1/</sup>	Number	(%) assets <sup>1/</sup>	Number	(%) assets <sup>1/</sup>
<b>I. Affiliates of foreign financial entities</b>	<b>15</b>	<b>70.5</b>	<b>4</b>	<b>32.8</b>	<b>59</b>	<b>63.3</b>	<b>13</b>	<b>19.4</b>
a. belonging to a financial group (FG)	10	66.9	1	10.5	10	24.4	9	16.6
b. not belonging to a FG	5	3.5	3	22.4	49	38.9	4	2.8
<b>II. Controlled by local individuals</b>	<b>22</b>	<b>25.3</b>	<b>4</b>	<b>49.1</b>	<b>22</b>	<b>28.7</b>	<b>16</b>	<b>75.4</b>
a. belonging to a financial group (FG)	8	22.0	3	47.0	9	18.5	5	41.0
b. not belonging to a FG	14	3.3	1	2.2	13	10.2	11	34.5
<b>III. Controlled by non-financial entities</b>	<b>10</b>	<b>4.2</b>	<b>4</b>	<b>18.0</b>	<b>22</b>	<b>8.0</b>	<b>4</b>	<b>5.2</b>
a. belonging to a financial group (FG)	3	1.9	0	0.0	0	0.0	3	5.1
b. not belonging to a FG	7	2.4	4	18.0	22	8.0	1	0.1
<b>Total</b>	<b>47</b>	<b>100</b>	<b>12</b>	<b>100</b>	<b>103</b>	<b>100</b>	<b>33</b>	<b>100</b>

The number of financial entities refers to those authorized as of June 2013; some are not operating. Market share corresponds to June 2013. Source: Banco de México, CNBV, Consar and CNSF.

1/ Market share measured as a percentage of each intermediary's total assets.

**Table 6**  
**Profitability of Financial Intermediaries and Non-Financial Firms Quoted on the Mexican Stock Exchange (BMV)<sup>1/</sup>**

Sector	Return on equity (Net profit as a percentage of equity)			
	2010	2011	2012	Jun-13
Commercial banks	13.4	12.5	13.9	15.5
Afores <sup>2/</sup>	26.6	27.7	30.5	14.7
Mutual fund managers <sup>3/</sup>	29.9	24.5	27.6	31.4
Development banks <sup>4/</sup>	6.6	7.9	6.7	4.1
Insurance companies	15.0	14.9	18.4	15.2
Surety companies	18.5	17.1	12.5	13.0
Brokerage firms	20.7	13.8	20.9	23.0
Regulated sofomes <sup>5/</sup>	5.5	8.5	-8.4	17.7
Unregulated sofomes	-1.9	n.d.	n.d.	n.d.
Popular credit and savings entities <sup>6/</sup>	6.1	5.5	6.2	5.9
General deposit warehouses	6.3	6.3	-1.8	13.9
<b>BMV companies</b>	<b>14.2</b>	<b>13.7</b>	<b>13.0</b>	<b>13.3</b>

Source: CNBV, Consar, BMV, CNSF and AMFE

1/ Return on equity was calculated using the accumulated result of the twelve previous months, and dividing them by average equity from that period. Commercial banks' profitability was fueled by extraordinary revenues derived from the sale of business units during the first quarter of the year.

2/ Asset and capital figures correspond to the sum of the respective numbers on Afores' balance sheets, not funds managed by Siefomes. Funds managed by Siefomes also include, besides workers' funds, part of the Afores' capital, which under current capitalization rules must invest them in Siefomes.

3/ The numbers correspond to mutual fund management companies, not the funds in which they invest.

4/ Includes development banks and trusts (FIRA, FOVI, Fonhapo, Fifomi and Financiera Rural).

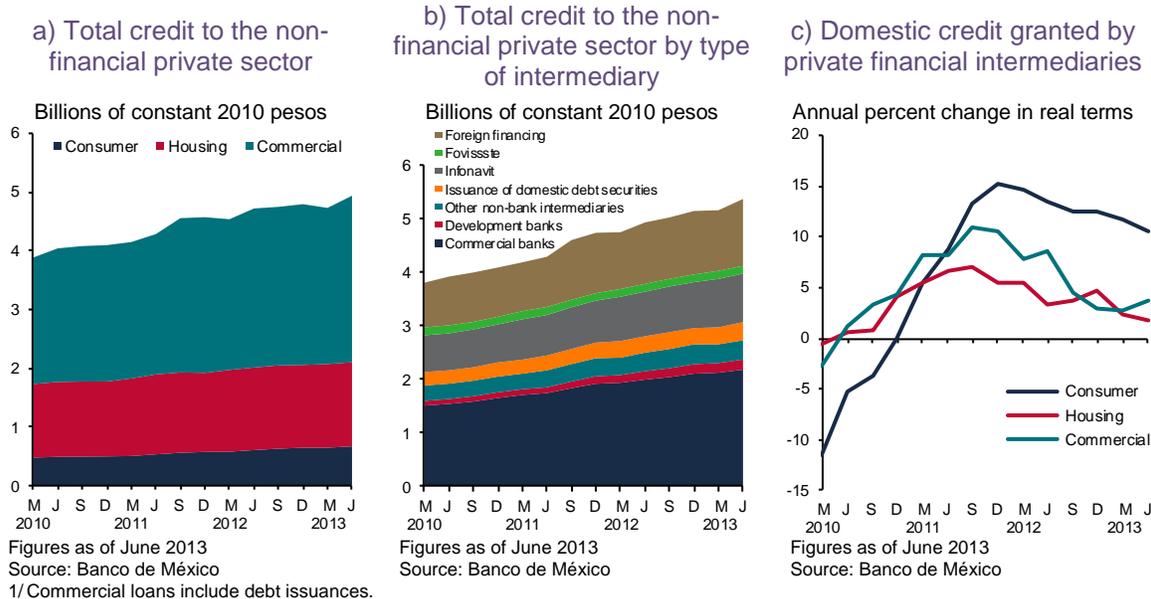
5/ Sofomes that are regulated because they belong to a financial group but do not consolidate their assets with a multiple banking institution

6/ Includes savings and loan associations (SLA), popular finance corporations (sofipos), savings and loan cooperatives (socaps) and credit unions.

Domestic total credit to the non-financial private sector registered a growth rate of 4.6 percent in real annual terms as of June 2013. Nearly half of funds come from commercial banks, the remainder was granted by siefores, mutual funds and brokerage firms, in order of relative importance.<sup>17</sup> As for credit to households, commercial banks granted an amount similar to the joint amount of Infonavit and Fovissste –the three of them granted nearly all funds to domestic households.<sup>18</sup>

Consumer credit exhibited significant growth (10.5 percent in real terms as of June), although two points below the previous year’s level (graph 23c). Mortgage loans grew a bit more than half of the increase registered by the end of June in the previous year (1.8 percent). Total financing to the private sector (domestic, foreign and domestic debt issuances) was the heading that decelerated the most throughout the period.<sup>19</sup> In addition, credit granted by development banks to the private sector exhibited a real annual growth rate of 18.5 percent, less than half of the growth rate registered the previous year.

**Graph 23**  
**Credit to the Non-Financial Private Sector<sup>1/</sup>**



Commercial banks continue to be the most prominent financial intermediaries. Nevertheless, their share in total financial assets came down from 50 to 48 percent, owing to both the lower growth of credit to the public sector via governmental debt issuances and the reduced private sector demand for credit resulting from the economic slowdown.

<sup>17</sup> As of June 2013, credit unions, general deposit warehouses, sofoles, financial leasing companies, factoring companies and ER sofoles accounted for three percent of total credit to the non-financial private sector.

<sup>18</sup> The remaining intermediaries account for nearly five percent of total credit to households.

<sup>19</sup> Total loans to the private sector increased by 4.8 percent, whereas, as of June 2012, they grew by 13.3 percent in real annual terms.

## Banco de México

### 3.2 Commercial Banks

#### Evolution and Performance

Commercial banks' assets totaled 6.3 billion pesos as of September 2013, which translates into real annual growth of 2.7 percent. Importantly, banks associated with commercial chains registered real annual growth of 14 percent, and middle-sized banks of 8.1 percent. Small subsidiaries, which accounted for 6.8 percent of commercial banks' assets, decreased by 3.2 percent in real terms. Further, the seven largest banks' assets slightly increased in real terms over said period.<sup>20</sup>

Importantly, three niche banks started operations during the aforesaid period. Along these lines, specialized or niche banks were incorporated in the secondary regulation as of December 2009. This amendment introduced the minimum paid-in capital commercial banks must bear, in accordance with the operations they anticipate to fulfill in their articles of association. Niche banks have limited activities in comparison with a wide-scope banking license that requires higher minimum levels of subscribed and paid-in capital. Activities and services that commercial banks are allowed to perform are indicated in article 46 of the Credit institutions Law. Three new institutions authorized in 2012 and one authorized in 2013 are yet to operate under the "bank" legal figure.

On the other hand, the economic deceleration of 2013 translated into a slowdown in the growth of commercial bank loans to the non-financial private sector. Likewise, commercial bank loans to the public sector registered a decline of 0.5 percent in real annual terms. This decrease can be essentially explained by the shrinkage of government debt holdings, which are the chief source of funds to the public sector, but also by the lower growth rate of direct loans to governmental entities (graph 24a). Banks seem to have reconfigured their assets, giving greater weight to loans to the non-financial private sector, especially to the more profitable ones –this portfolio saw positive growth rates during the first three quarters of the current year–. The share of credit to the private sector in commercial banks' assets went up from 36 to 39 percent. The growth of credit has been sustained by wholesale deposits., whereas traditional funding increased by 4.8 percent in real annual terms.<sup>21</sup>

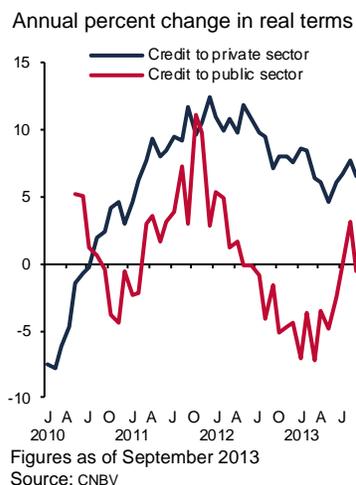
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<sup>20</sup> The IXE-Banorte merger took place during that period. Even though the merger's effects on the real annual change in total financial assets were irrelevant, they were significant when classifying bank groups by size. Therefore, it was excluded in the real annual change presented for such groups. If the IXE-Banorte merger was taken into account, middle-sized banks' assets would exhibit a 7.2 percent shrinkage. Conversely, if the merger was included, assets of the seven largest banks would have expanded by 4.4 percent. Importantly, a subsidiary of a foreign bank exited the banking system as a result of its parent bank's deleveraging efforts.

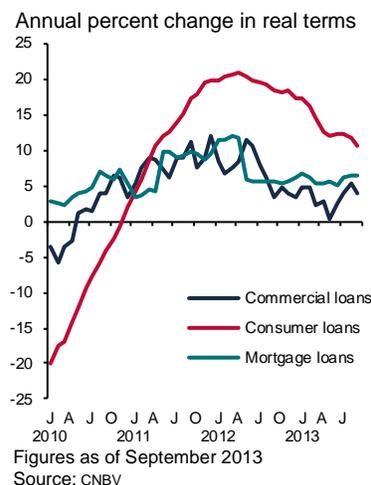
<sup>21</sup> Traditional funding includes demand and term deposits, as well as issued debt instruments.

**Graph 24  
Commercial Bank Loans**

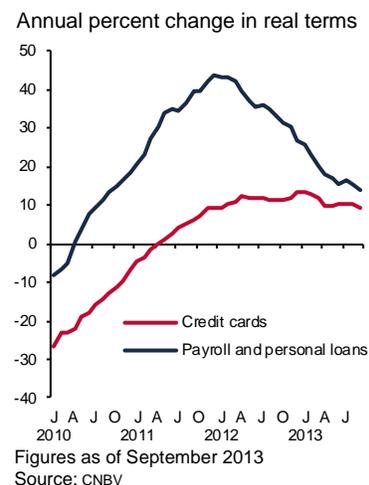
a) Loans to the non-financial private sector and public sector



b) Loans to the non-financial private sector by type



c) Consumer credit by type of loan



## Profitability

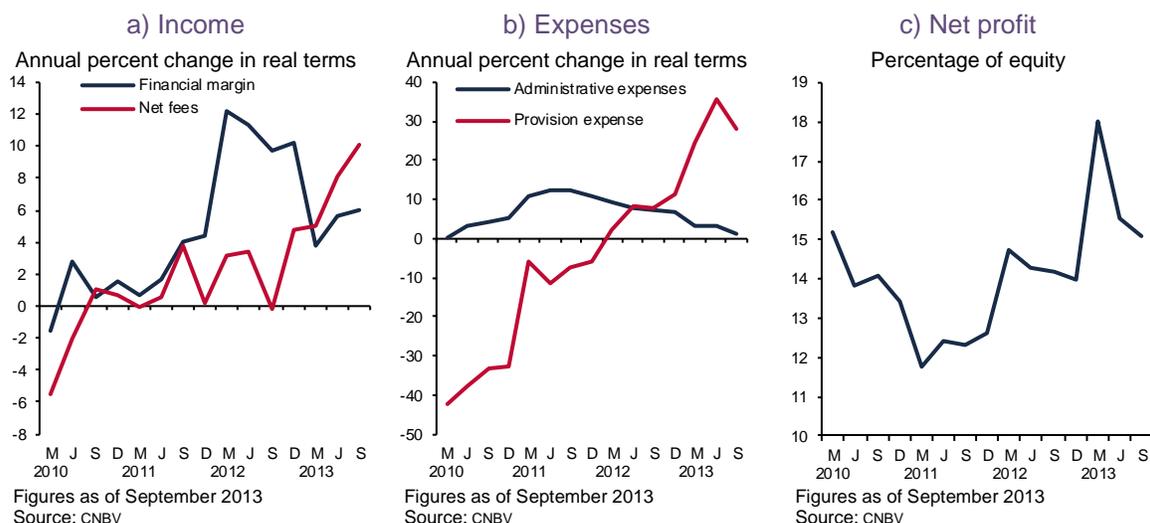
With reference to commercial banks' capital profitability, as of September 2013, the return on equity ratio was 15.1 percent and the return on assets 1.6 percent. These results were favored by extraordinary revenues derived from the sale of business units during the first quarter of the year (11.4 billion pesos).<sup>22</sup> During that period, net interest income continued to grow, albeit at a slower pace than in the previous year (graph 25).

These results are also explained by the high increase in loan loss reserves (28.3 percent in real annual terms) and the downturn in banks' non-recurring income (45.6 percent in real annual terms).<sup>23</sup> The former was due to the drop in commercial loans, particularly bank loans to house building companies and consumer loans. As of September, the total and private sector non-performing loan portfolio soared 43.3 and 77.6 percent (in real annual terms), respectively. Likewise, securities trading income climbed 60.8 percent, mainly driven by the profits of the seven largest banks, and despite the losses attached to market events occurred in May and June of the current year. On top of that, banks improved their expense-to-income ratio (their efficiency ratio dropped 0.7 basis points to 68 percent). Thus, administrative and operating expenses climbed 1.1 percent in real terms during the same period.

<sup>22</sup> Excluding such extraordinary revenues, banks' return on equity and assets would have dropped 2.3 and 0.2 percent, respectively. Such results would have been worse than those of the same period in the previous year.

<sup>23</sup> Banks' non-recurring income (expenses) as a percentage of total operating income came down from seven to four percent between September 2012 and 2013.

**Graph 25**  
**Commercial Banks' Sources of Income and Expenses**



## Solvency

Recent capitalization rules, known as Basel III, introduced brand-new concepts that replaced the Tier 1 and Tier 2 capital definitions put forth in the previous regulation, setting new individual minimal levels on regulatory capital's new components. According to the new rules, the first level was renamed with the term Common Equity Tier 1, and is comprised of equity and retained earnings; the second component is Additional Tier 1, which includes capital instruments complying with certain loss absorption requirements; last, Tier 2 Capital, including instruments with lower loss absorption capacity than Additional Tier 1. The minimum cumulative requirements for the three buffers, as a percentage of risk weighted assets (RWA), are 7.0, 8.5 and 10.5 percent, respectively –each of the minimum capital requirements can be completed with capital with higher loss absorption quality. It is worth mentioning that previous rules mandated that the minimum regulatory capital level was 8 percent of RWA for all components.

The estimated capital adequacy ratio (16.1 percent) for the banking system under the rules in effect as of the beginning of the current year<sup>24</sup> was slightly lower than the one registered under previous regulation in September 2012 (16.2 percent). Common Equity Tier 1 –the buffer with higher loss absorption capacity– accounted for 85.8 percent of banks' net capital and 13.8 percent of RWA (graphs 26a and b). The increase in capital adequacy levels in September 2013 was caused by a lower rise in capital than in RWA. Additionally, the higher equity *vis-à-vis* total liabilities has translated into a drop in leverage levels (graph 26c).

Further, the entry into force of the new banking regulation had no relevant impact on regulatory capital. In fact, if the indicator was to be compared with the level it would have exhibited under previous regulation, as of September,<sup>25</sup> a meager increase of 0.1 would have been registered,

<sup>24</sup> Rules coming into force this year consider the Basel III capital guidelines introduced by the Basel Committee on Banking Supervision.

<sup>25</sup> Importantly, had these rules not changed, banks' strategic behavior regarding capital adequacy levels might have been different from what is currently being observed, given the entry into force of the new regulation and the current economic environment.

partly because most Basel III guidelines had already been included in the corresponding Mexican regulation in 2001 –the only substantial difference being the criteria (valid as of January 2013) to determine whether subordinated capital securities should be computed as part of Tier 1 or Tier 2 capital. Yet, said amendment provides for a broad transition and adjustment period, so that subordinated capital securities not eligible under the new rules and issued prior to January 2013 be gradually eliminated from regulatory capital. Thus, the banking sector capital adequacy ratio remained stable during the same period (graph 27).

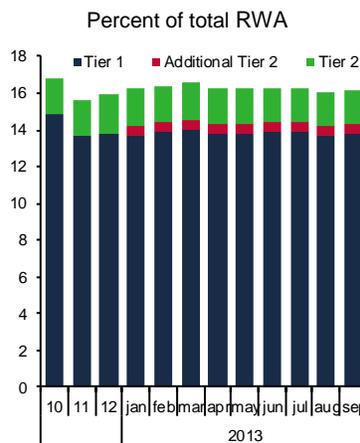
**Graph 26**  
**Solvency Indicators**

a) Capital adequacy ratio<sup>1/</sup>



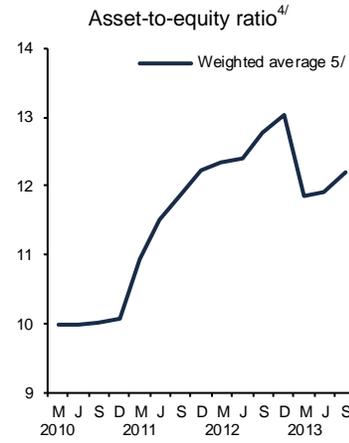
Figures as of September 2013  
Source: CNBV and Banco de México

b) Tier 1 and Tier 2 capital<sup>3/</sup>



Figures as of September 2013  
Source: CNBV and Banco de México

c) Leverage ratio



Figures as of September 2013  
Source: CNBV and Banco de México

1/ The capital adequacy ratio is calculated by dividing net capital by risk-weighted assets. Under capitalization rules, the resulting ratio should be a minimum of 10.5 percent. Net capital is regulatory capital and comprises Tier 1 and Tier 2 capital.

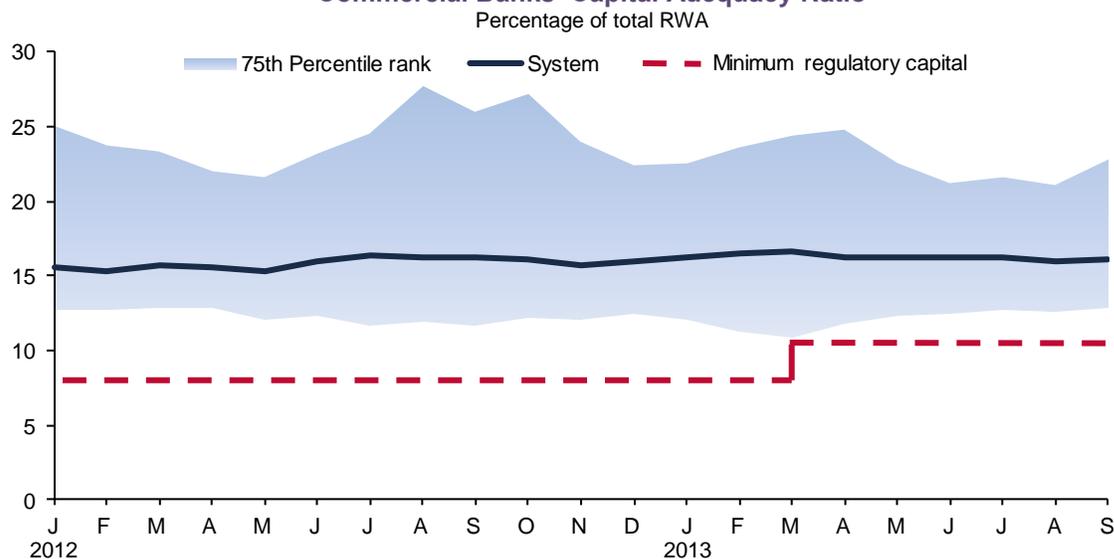
2/ The weighting procedure is based on the percentage share of individual banks' risk-weighted assets in commercial banks' total assets

3/ Tier 1 and Tier 2 capital at the end of each respective year as a percentage of risk-weighted assets for the same period. 2013 figures consider the new capitalization rules.

4/ The Basel Committee proposes as leverage ratio the regulatory capital divided by total assets.

5/ The weighting procedure is based on the percentage share of individual banks in commercial banks' total assets.

**Graph 27**  
**Commercial Banks' Capital Adequacy Ratio**



Figures as of September 2013  
Source: Banco de México

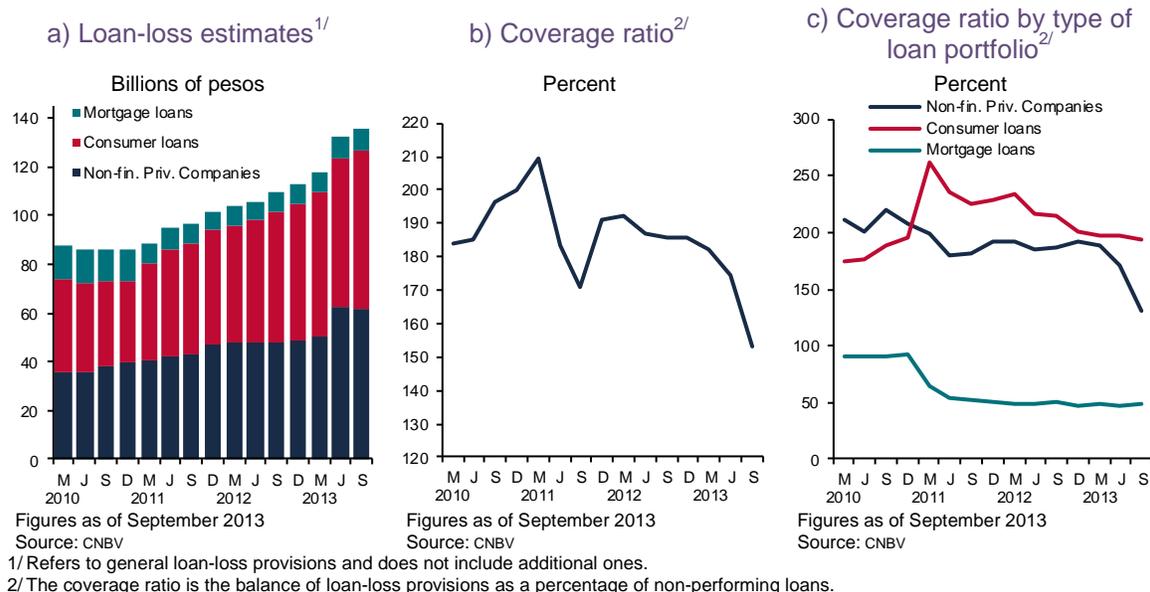
The entry into force of the new rating methodology for the commercial loan portfolio based on expected losses as of the second half of the year had a negative impact on some banks' capital, as said amendment resulted in increased loan loss provisions for some intermediaries (graph 28a).<sup>26</sup> The transition period notwithstanding, five banks made a one-time full adjustment in June, directly affecting equity results in previous periods.<sup>27</sup> However, the effect was not reflected on equity in the current period, contrary to the response in regulatory capital.<sup>28</sup> On the other hand, the banking portfolio coverage ratio registered a downturn at the end of the first half of the current year (graph 28b).

<sup>26</sup> On July 24 of the current year, said methodology was published in the Official Journal of the Federation (DOF in Spanish). The DOF establishes the temporary rating regime for the commercial loan portfolio subject to the amendment. It also puts forth that, in order to rate and provide commercial loans to legal entities and individuals with entrepreneurial activities, financial institutions shall embrace the new methodology before December 31, 2013. This means they must have built up 100 per cent of the reserves prescribed by the new methodology. As far as commercial loans to financial entities are concerned, the expected loss approach will come into force as of January 1, 2014, and thus, institutions shall have built up 100 per cent of mandatory reserves on June 30, 2014 at the latest.

<sup>27</sup> The temporary regime relative to the amendment of "General provisions applicable to credit institutions" sets forth that the financial effect resulting from the application of rating methodologies for the commercial loan portfolio shall be recognized in the equity heading, in the 'previous periods' item, provided new reserves have to be built up as a consequence of the application of the methodology. In case the 'previous periods' item was lower than the amount to be recognized, the differential shall be charged in the current period. In contrast, if the effect resulted from excess reserves, credit institutions shall free them up following applicable accounting principles or keep them until loans from which they derived are liquidated, breached, renewed or restructured.

<sup>28</sup> Certain institutions' capital was also affected by the elimination of the concept "general loan loss provisions" resulting from the rating methodology modification, as these provisions were taken into account for the calculation of commercial banks' capital adequacy ratio.

**Graph 28**  
**Commercial Bank Loan-Loss Provisions and Coverage Ratio**



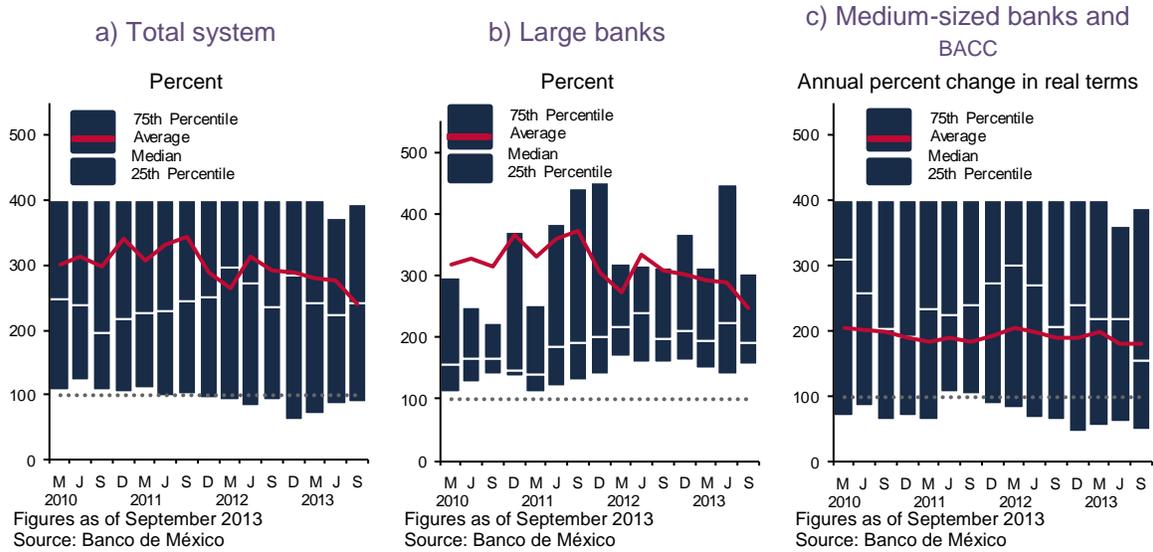
Specifically, the coverage ratio for the consumer and mortgage loan portfolio exhibited reasonable levels, with no significant variation. In contrast, the private sector loan portfolio was altered by, first, the need to build reserves arising from the entry into force of the expected loss methodology; second, the deterioration in the portfolio itself; and third, the ensuing aforesaid increase in the non-performing portfolio (graph 28c). Yet, the level reached as of September of the current year was 130.8 percent.

## Liquidity

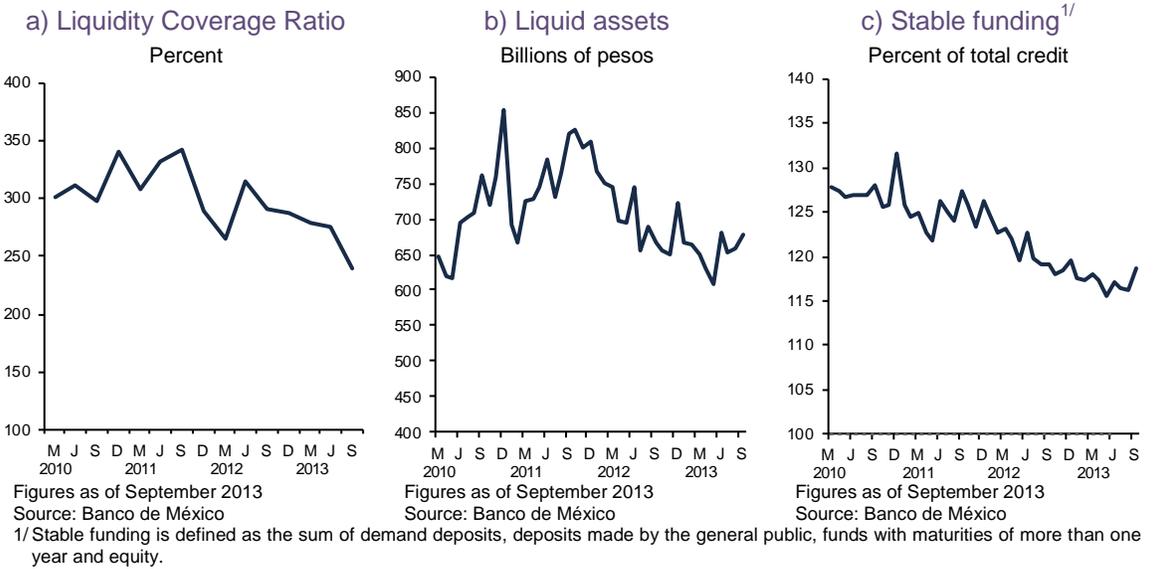
The short-term liquidity position of the Mexican banking system exhibits great dispersion, as measured by the Liquidity Coverage Ratio (LCR) put forth by the Basel Committee (box 3). On average, the banking system meets the minimum LCR required by the Basel Committee, and this is confirmed when computing the average for large and medium-sized banks separately (graph 29).<sup>29</sup> Yet, in both cases, the average ratio declined *vis-à-vis* last year's levels, owing to a credit expansion largely financed by market liabilities, a proportion of which has a maturity of less than 30 days. Furthermore, some banks have been replacing assets that, given their liquidity, meet LCR criteria (e.g. government securities) with loans (graph 30).

<sup>29</sup> The Liquidity Coverage Ratio is defined as the proportion of high-quality liquid assets with regard to expected net cash outflows (cash outflows minus inflows) in a stress scenario. The Basel Committee prescribes the ratio must be at least 100 percent, that is, institutions must have enough liquid assets to tackle their net cash outflows within the next 30 days. The definition of the ratio's numerator and denominator used for estimates in this report are based on Basel Committee guidelines published in January 2013. The LCR calculation is based on certain assumptions for some bank balance headings for which the disaggregated or detailed data necessary for the LCR calculation under Basel guidelines are not available. Particularly, the following estimations need to be made: loan portfolio cash inflows, retail and wholesale liability classifications –with financial and non-financial counterparties–, as well as the customer-bank relationship, among others.

**Graph 29**  
**Liquidity Coverage Ratio (LCR) Estimates**



**Graph 30**  
**Liquidity Coverage Ratio (LCR), Liquid Assets and Stable Funding**



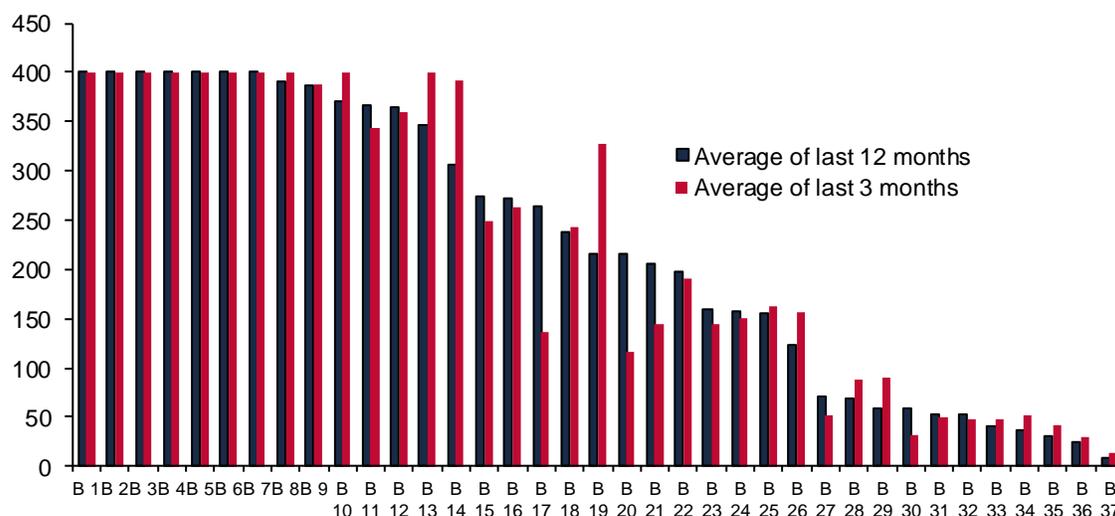
Even if both groups exhibit significant dispersion, it is bigger in medium-sized banks and banks associated with commercial chains (BACC in Spanish). This is explained by the business model some of these institutions follow, which relies more heavily on short-term market funding. Importantly, although in times of high liquidity, liquidity risk is perceived to be low, such business models are utterly vulnerable in stress scenarios, as shown by domestic mortgage sofoles and some international banks in 2008.

While some banks have strived to adopt long-term financing strategies in order to improve their liquidity positions, others have done nothing or even seen a decrease in the corresponding (graph 31). Banks in the latter case will have to modify their business strategy in order to improve their funding terms and composition, as efforts thus far have not been enough to improve their liquidity. Furthermore, several banks' liquidity indicators exhibit great volatility, mainly explained by the variability in their holdings of highly liquid assets.

On the other hand, in order to improve their liquidity positions, some institutions have issued long-term securities that have been purchased by their own brokerage firms. In turn, these firms place such long-term securities with their customers via short-term repo transactions. Even though this practice apparently enhances the bank's liquidity profile, in case of stress, brokerage firms' customers may decide not to renew repo transactions. And therefore, being incapable of placing the long term debt issued by the former, both the brokerage firm and the bank would be in a vulnerable situation. Hence, from a prudential standpoint, the relevant liability term to come up with liquidity estimates for such a transaction –particularly for the calculation of the LCR– is not that of the instrument issued by the bank but rather the term reported by the brokerage firm (graph 32).

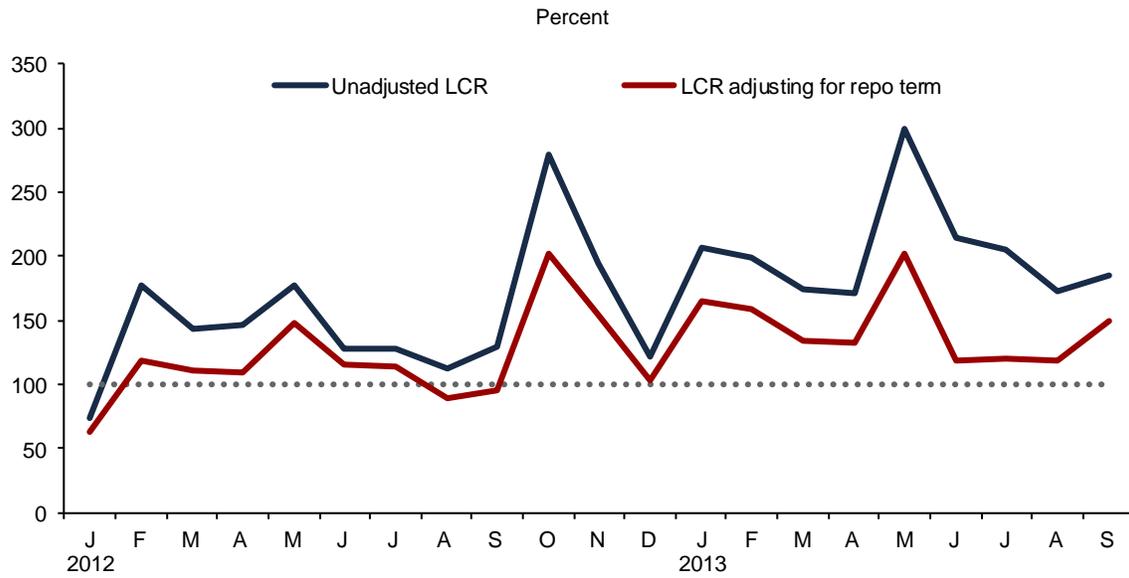
Even though, on one hand, the liquidity regulation that will come into force in Mexico is not yet clearly defined, and on the other hand, previous simulations suggest that at a systemic level there are not problems, some institutions will have to make greater efforts to comply with adequate liquidity levels.

**Graph 31**  
**Liquidity Coverage Ratio by Bank**  
 Percent



Figures as of September 2013  
 Source: Banco de México

**Graph 32**  
**Average LCR for Banks Placing Long-Term Debt through Their Own Brokerage Firms via Short-Term Repo Transactions**



Figures as of September 2013  
 Source: Banco de México

Box 3

**Basel Committee Liquidity Coverage Ratio<sup>1/</sup>**

In January 2013, the Basel Committee published the revised Liquidity Coverage Ratio (LCR) guidelines. The Net Stable Funding Ratio (CFEN in Spanish) –still under revision<sup>2/</sup>– and the LCR complement the principles for adequate liquidity risk management and oversight. Such principles, issued by the Basel Banking Committee in 2008– consist of a group of liquidity norms aiming at guiding banking risk management.

The purpose of the LCR is to ensure banking institutions maintain high-quality assets with easy convertibility into cash, at levels sufficient to address liquidity needs that may arise from a predefined stress-scenario, within the 30-day horizon. Thus, in case an adverse scenario materialized, there would at least be a 30 day-period for:<sup>7/</sup>

- Banks and supervisors to apply corrective measures or terminate the bank in an orderly fashion.
- The central bank to apply all necessary measures.

It is therefore of utmost importance that institutions be capable of making their liquid asset reserves available in stress scenarios. For LCR purposes, any given entity's assets are classified according to their liquidity level. Those that can be swiftly converted into cash with little or no value loss in stress scenarios, such as government securities, are eligible to be part of liquid asset reserves. Different haircuts are applied to assets, on the basis of their liquidity level. Further, in order to preclude excessive concentration in holdings of certain types of assets, their share within liquid asset reserves is capped.

The remaining assets, which are less liquid, such as the loan portfolio, are classified on the basis of their ability to generate cash flows for the institution (cash inflows) over the subsequent 30 days. The LCR calculation provides that, even in case of stress, the bank will continue to serve as a credit intermediary, and that's the reason why a proportion of due flows within the 30-day horizon would be rechanneled towards loan granting. That is also why different inflow rates on contractual cash flows are applied, depending on loan renewal likelihood (for instance, loans granted to financial counterparties are assumed not to be renewed).

Liabilities, on their part, are classified on the basis of their maturity date, or the likelihood they will be due within the 30-day horizon in a stress scenario –this would logically imply a cash outflow–. Cash outflows are determined based on the stability level of liabilities that generate them; therefore, different outflow rates are applied to flows relating to different due liabilities.

Once the entity's assets are classified and weighted, the LCR is defined as the ratio between liquid assets and net outflows (cash outflows minus cash inflows) that may arise within the next 30 days. The ratio should be at least 100 percent. Hence, the LCR formula is:

$$\frac{\text{High Quality Liquid Assets}}{\sum \text{Cah Outflows 30 days} - \sum \text{Cah Inflows 30 days}} \geq 100\%$$

As an additional requirement, the total amount of eligible liquid assets, after haircut, must represent at least 25 percent of total weighted cash outflows within the subsequent 30 days. Thus, institutions will count on liquidity reserves to address flow mismatches that may arise in the 30-day horizon, and will not entirely depend on cash inflows to tackle their liquidity needs.

In general terms, liquid assets can be categorized as follows:

- Level 1 Liquid Assets, for which the Basel Committee does not define any kind of haircut or cap. They are comprised of: cash, central bank reserves, and domestic and foreign sovereign bonds which are assigned a 0 per cent risk-weight under Basel II.
- Level 2A Liquid Assets: Sovereign bonds which are assigned a 20 per cent risk-weight under Basel II; non-financial corporate bonds rated at least AA- and asset-backed bonds rated at least AA-. These assets are assigned a relatively low risk-weight under the Basel II approach: the sum of Level 2A and Level 2B assets shall not exceed 40 per cent of the institution's total liquid asset reserve.
- Level 2B Liquid Assets: residential mortgage-backed securities rated AA or above, corporate bonds rated A+ to BBB- and issued by non-financial institutions, stock issued by non-financial entities that partake in the major stock index and are centrally cleared up. The Basel Committee establishes these assets should be subject to greater haircuts and that they should be capped at 15 per cent of liquid asset reserves.

Cash outflows comprise:

- Retail deposits
- Secured and unsecured wholesale funding
- Derivatives cash outflows
- Credit and liquidity facilities
- Other cash outflows

Cash inflows are assigned different weights depending on the counterparty and the type of asset, and they are classified as follows:

- Secured lending (inflow rate defined by collateral)
- Unsecured lending, categorized by counterparty
- Derivatives transactions
- Other assets

The specific regulation that shall be enforced in Mexico is yet to be defined.

<sup>7/</sup> Basel Committee on Banking Supervision: Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools, Basel: Bank of International Settlements, 2013

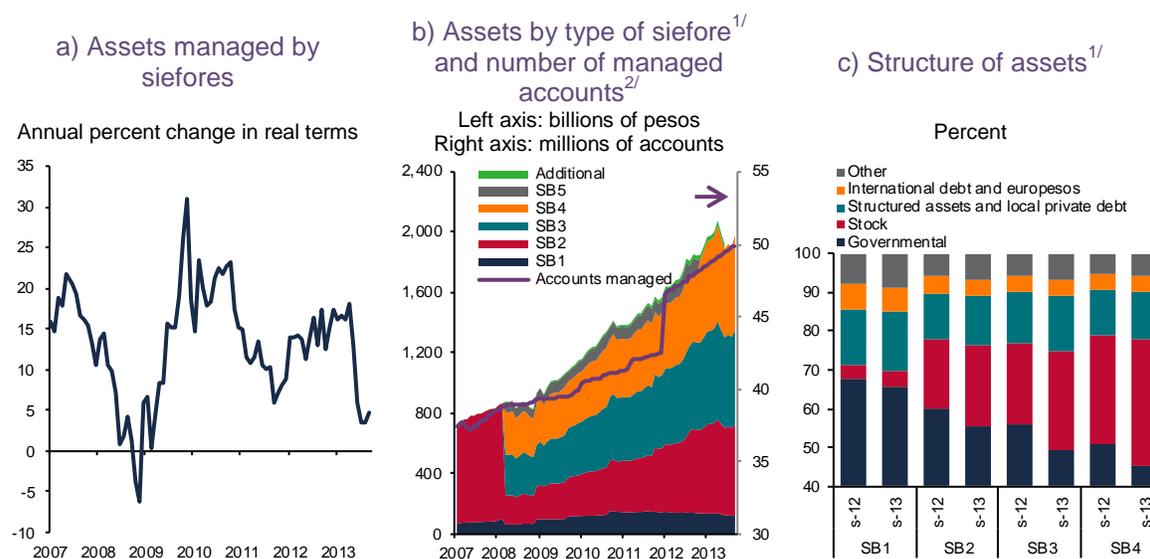
<sup>2/</sup> The Basel Committee is expected to publish a new CFEN proposal in 2014. For further information on the original proposal, see box 7 in the Financial System Report June 2010 published in November 2010

## 3.3 Pension Funds (Siefores)

### Evolution

As of September 2013, funds managed by afores totaled 2.0 trillion pesos. This figure was equivalent to 12.5 percent of GDP and implied 4.7 percent growth in real terms (graph 33a). Básica 3 Siefores managed the largest amount of funds (31.3 percent of total funds as of September 2013), followed by básica 4 (31.1 percent of funds) (graph 33b).<sup>30</sup> In total, as of the same date, the number of accounts managed by afores amounted to 49.9 million.

**Graph 33**  
**Siefores**



Figures as of September 2013  
Source: Consar and Banco de México

Figures as of September 2013  
Source: Consar

Figures as of September 2013  
Source: Consar

1/ SB1: siefore básica 1; SB2: siefore básica 2; SB3: siefore básica 3; SB4: siefore básica 4; SB5: siefore básica 5.  
2/ The higher number of managed accounts recorded in January 2012 can be attributed to the fact that 4.2 million accounts were included in the XXI afore that were previously deposited in Banco de México

With reference to portfolio composition, as of September 2013, government securities' share in total assets was 51.1 percent, which implied a 5.9 percent decline in regard to the same month of the previous year. This resulted from the effect of market volatility on prices of medium- and long-term government securities managed by siefores (graph 33c). In the same period, the stock's share in the portfolio rose by 4.3 percent of asset. On the other hand, the most conservative siefores (básica 1 and básica 2) invest most funds in low-risk instruments, while siefores that manage the accounts of relatively younger workers invest in higher-risk instruments with a higher expected return. Over the last four years, average fees paid by contributors have decreased by 7.1 percent annually. As of June 2012, commissions amounted to a 1.2 annual percent of assets (table 7).

<sup>30</sup> Siefore básica 3 manages the funds of workers aged between 37 and 45, while Siefore básica 4 manages the funds of workers younger than 36. There are two additional types of Siefores: Siefores básicas 1 and 2, which as of July 28, 2011 modified the age range they were aimed at (Siefore básica 1, for workers over 60; Siefore básica 2, from 46 to 59). Voluntary savings of affiliated workers and public and private sector social security funds managed by afores are invested in these additional siefores. In November 2012, Siefore básica 5 funds were transferred to Siefore básica 4. Each of the funds has an investment regime that takes into account the risk profile and age of members and their investment horizons; thus, funds directed at the youngest workers are subject to a relatively riskier investment regime than Siefores básicas geared toward managing the funds of workers approaching retirement age.

## Risks

As of September 2013, market VaR of siefores was 0.9 percent of assets, 5.9 lower compared to the previous year (graph 34a). The weighted average maturity of basic siefores' debt securities was 12.3 years as of September 2013; this was because most cash flows related to debt securities that will be received by such intermediaries are concentrated in instruments with maturities ranging from 5 to 20 years (graph 34b). Moreover, as of September 2013, debt securities' modified duration was 1.6 years<sup>31</sup> (graph 34c), 3.1 percent higher in regard to the same month of the previous year.<sup>32</sup>

**Table 7**  
**Structure of Fees on Balances**  
Percentage of assets

Afore	2008	2009	2010	2011	2012	2013
Afirme Bajío	1.70	1.70	1.51	1.51	1.50	1.40
Azteca	1.96	1.96	1.96	1.67	1.52	1.45
Banamex	1.84	1.75	1.58	1.45	1.28	1.16
Bancomer <sup>1/</sup>	1.47	1.47	1.45	1.40	1.28	N/A
XXI-Banorte <sup>2/</sup>	1.71	1.71	1.58	1.48	1.33	1.10
Coppel	3.30	1.94	1.81	1.70	1.59	1.49
Inbursa	1.18	1.18	1.18	1.17	1.17	1.17
Invercap	2.48	1.93	1.73	1.72	1.59	1.47
Metlife	2.26	1.89	1.74	1.69	1.54	1.39
PensionISSSTE	1.00 <sup>3/</sup>	1.00	1.00	1.00	0.99	0.99
Principal	2.11	1.94	1.79	1.55	1.48	1.36
Profuturo GNP	1.96	1.92	1.70	1.53	1.39	1.27
SURA	1.74	1.74	1.61	1.48	1.31	1.21
XXI	1.45	1.45	1.42	1.40	N/A	N/A
<b>Average<sup>4/</sup></b>	<b>1.75</b>	<b>1.62</b>	<b>1.52</b>	<b>1.43</b>	<b>1.33</b>	<b>1.21</b>

Figures as of September each year

Source: Consar

1/ Siglo XXI and Bancomer afores merged with Banorte afore

2/ Afore Banorte Generali data for years prior to 2012

3/ Figures as of December 2008

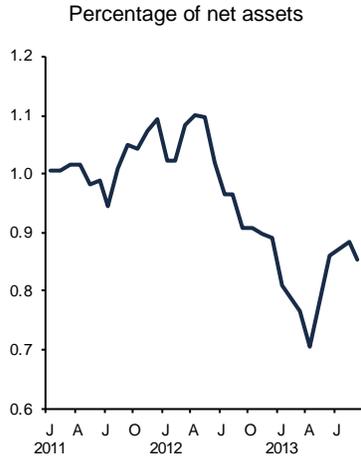
4/ Weighted average by assets

<sup>31</sup> For calculation purposes, only bonds are taken into account. Siefores' position in derivative instruments is not included.

<sup>32</sup> Modified duration measures the security's price sensitivity to changes in interest rates and depends on both the term and distribution of the flows generated during the instrument's life. The formula for the calculation of modified duration is:  $(P+ - P-)/P = -2 \times \text{modified duration} \times dr$ , where  $P+$  y  $P-$  (adding up or subtracting the change, respectively) are the security prices given a parallel one-basis point change in the curve employed to discount flows,  $dr$  is the change in the curve (one-basis point in this case) and  $P$  the debt security value.

**Graph 34**  
**VaR, Term and Duration: Siefores**

a) Evolution of siefores VaR: system<sup>1/</sup>



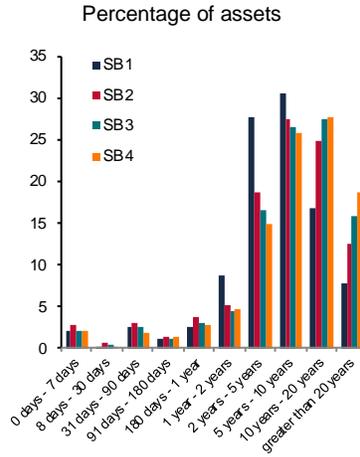
Figures as of September 2013

Source: Banco de México

1/ VaR at a 97.5 percent confidence level and a term of one working day

2/ Includes debt securities and repo transactions

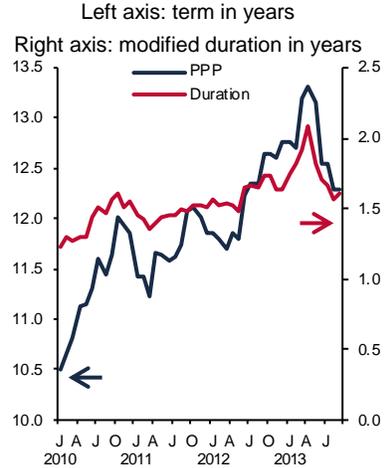
b) Cash flows<sup>2/</sup>



Figures as of September 2013

Source: Consar and Banco de México

c) Average term and modified duration of debt securities



Figures as of September 2013

Source: Consar and Banco de México

The sensitivity analysis suggests that were interest rates to be raised by one hundred basis points *vis-à-vis* the figures of September of the current year, the value of siefores' debt securities portfolio would depreciate by 1.5 percent (graph 35a). Although debt securities' average maturity increased as a result of the purchase of longer-term securities, the sensitivity of the siefores portfolio dropped 1.3 percent compared to the same month in the previous year. This can be explained by the reconfiguration of these intermediaries' investment portfolio, namely, a larger position in stock and a lower position in debt securities.

In parallel, the stress analysis shows that were the changes in risk factors registered during the 2008<sup>33</sup> crisis to occur again, by September 2013, siefores would undergo a 15.9 percent depreciation of their asset value (graph 35a).<sup>34</sup> The sensitivity of these intermediaries' portfolio to stress events has increased given their higher equity position (stock and ETFs) and their short positions in currency derivatives.

On the other hand, in response to a six-standard deviation shift in all financial variables –stock index, interest and exchange rates–, the biggest loss (9.4 percent of managed assets) would result from higher interest rates; specifically, a decline of six standard deviations<sup>35</sup> in stock indexes would bring about a depreciation of 3.1 percent of assets (graph 35b).<sup>36</sup>

<sup>33</sup> Stock indices, interest and foreign exchange rates.

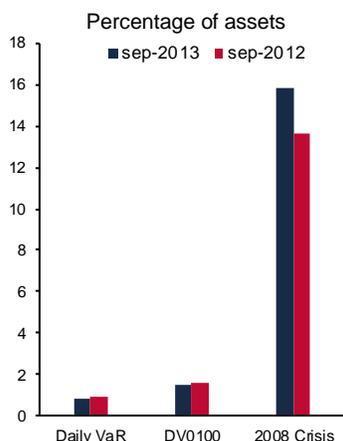
<sup>34</sup> The period considered for the stress analysis was August through November 2008. During this period, siefores recorded a loss of 8.3 percent of their assets.

<sup>35</sup> As of September 2013, in the case of the 720-day cete and the 360-day LIBOR return rates, a six-standard deviation change was equivalent to a 171.8 and 139.9 basis point change, respectively. The calculations were made on the assumption that these changes are instantaneous.

<sup>36</sup> The stock indices used as benchmarks are the IPC for the Mexican market and the *Dow Jones* for the US market. A decline of six standard deviations would be equivalent to a reduction of 34.2 and 27.1, respectively.

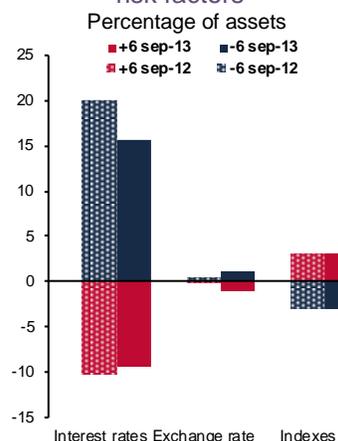
**Graph 35**  
**Market Risk: Siefores**

a) Risk measures: DV100, VaR and stress analysis



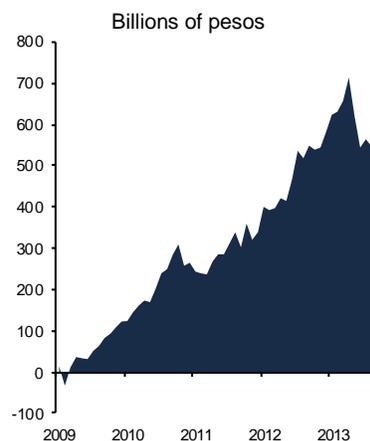
Figures as of September 2013  
Source: Banco de México

b) Change in market value of siefores' assets derived from a  $\pm 6$  standard deviation shift in risk factors<sup>1/</sup>



Figures as of September 2013  
Source: Banco de México

c) Accumulated losses or gains from January 2009 to September 2013



Figures as of September 2013  
Source: Banco de México

1/ The standard shift corresponds to losses or gains obtained from the valuation in stress scenarios where risk factors are affected by a six-standard deviation change. This deviation is calculated on the basis of monthly historical data as of January 2001.

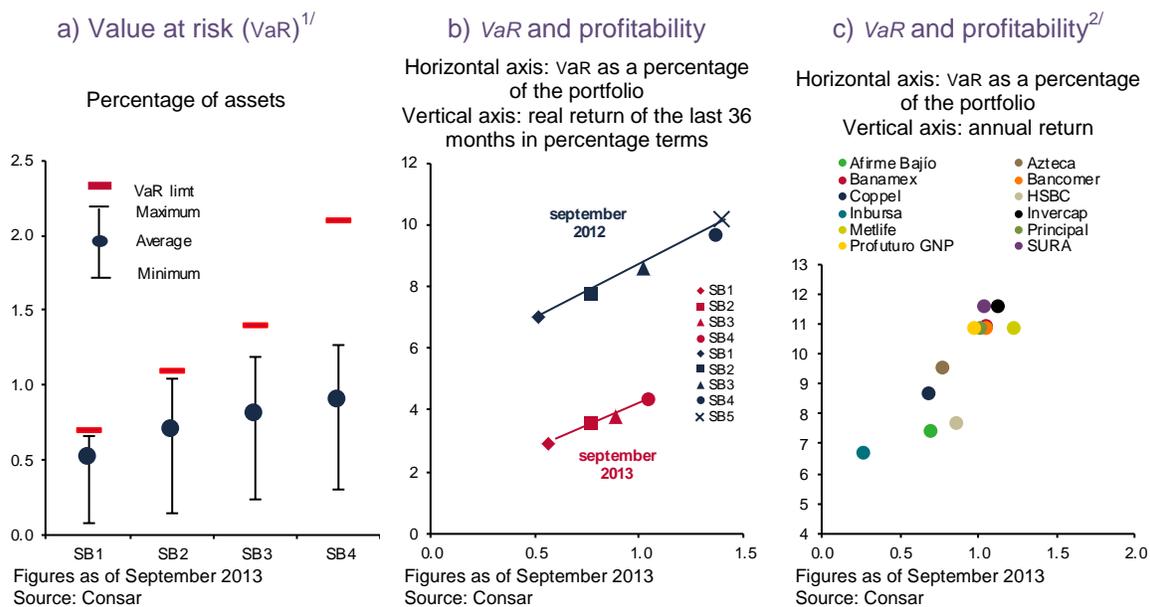
Pension fund portfolios are mainly comprised of government securities and liquid and long-term instruments. As of June 2013, domestic long-term rates soared, reaching the highest levels observed in the last two years. Such movements had an impact on the siefores portfolio, given their long-term positions. In May and June, significant losses were registered (graph 35c); yet, gains earned during the first months of the year completely offset them.

### Return and Risk

Over the 36 months prior to September 2013, the weighted average annual rate of return on siefores, in nominal terms and gross of fees, was 7.8 percent (4.0 percent in real terms) (table 8). Básica 4 siefores was the category with the best performance, with a weighted average annual rate of return of 4.3 percent in real terms. As for risk, graph 36a shows that the VaR of siefores is within the established regulatory limit for all intermediaries. In particular, siefores with higher levels of VaR not only exhibited the highest returns (graph 36b and c), but also greater variability in the returns obtained in the subsequent period.<sup>37</sup>

<sup>37</sup> The comparison was made between the VaR at  $t$  and returns with management prices over the  $t$  to  $t + 12$  month period.

**Graph 36**  
**Return and Risk Indicators**



1/ Siefiores VaR was calculated at a 97.5 percent confidence level and a one-day risk horizon.

2/ Calculated with management prices, that is, with respect to siefiores' net assets without considering the fee provision nor historically charged fees, nor the amount related to the number of subscribed and paid-in shares. For every point in the scatter plot, the level in the horizontal axis was computed as the arithmetic average of monthly VaR(1) from January 2010 to September 2013; the level in the vertical axis was calculated as the average of annual returns for every month with management prices for the same period.

**Table 8**  
**Nominal Annual Yields by Afore<sup>1/</sup>**  
Percent

Afore	2008	2009	2010	2011	2012	2013	
						I	III
Afirme Bajío	5.03	12.44	12.00	6.77	10.22	10.91	0.34
Azteca	3.82	11.69	12.42	9.20	12.52	13.56	3.57
Banamex	1.18	16.75	14.21	7.17	16.43	18.31	5.27
Bancomer	1.20	14.50	14.03	7.35	16.08	N/A	N/A
XXI-Banorte <sup>2/</sup>	1.28	11.07	13.57	1.55	15.51	17.29	3.88
Coppel	2.17	12.28	11.16	7.07	12.05	12.83	3.80
HSBC	3.73	12.42	13.01	N/A	N/A	N/A	N/A
Inbursa	6.71	8.58	6.87	6.11	7.28	6.97	6.52
Invercap	-2.19	15.17	19.44	7.42	17.16	16.35	1.42
Metlife	0.98	13.32	14.97	7.63	16.32	16.72	1.76
PensionISSSTE	N/A	9.87	12.96	7.81	16.51	17.38	5.30
Principal	3.38	13.97	14.11	8.54	15.42	15.61	0.57
Profuturo GNP	0.31	15.62	15.07	5.49	17.10	17.98	4.12
SURA	3.35	17.33	14.32	6.46	18.89	19.88	7.40
<b>Average<sup>3/</sup></b>	<b>2.40</b>	<b>14.01</b>	<b>13.60</b>	<b>6.74</b>	<b>15.95</b>	<b>17.02</b>	<b>4.39</b>

Figures as of the last quarter each year, except for 2013  
Source: Consar

1/ Calculated with management prices

2/ Afore Banorte Generali figures for years prior to 2012

3/ Weighted average by assets

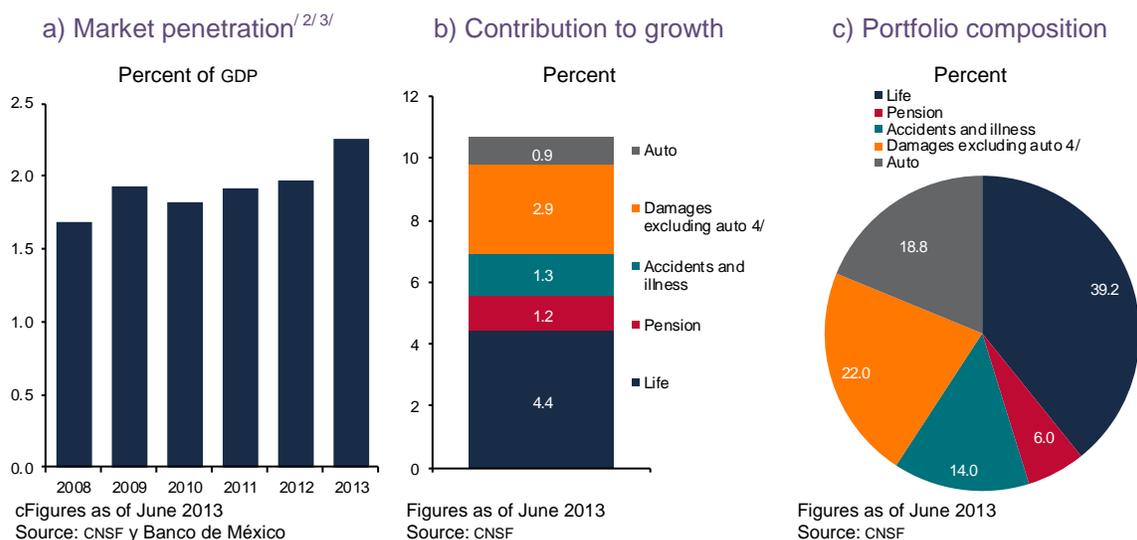
### 3.4 Insurance Companies

#### Evolution and Growth

As of June 2013, insurance companies' total assets amounted to 898.7 billion pesos, thus exhibiting a real annual growth rate of 6.8 percent. Despite sustained growth, these entities' penetration remains low, accounting for a meager 2.3 percent of GDP, whereas in countries like Chile such proportion is about 4.0 percent, and in OECD countries it is 8.0 percent.

As of June 2013, direct premia grew 10.7 percent in real terms<sup>38</sup>, boosted by life and damage (excluding cars) insurance contracts. Car insurance premia contributed little, as car sales dropped, and thus the relative insurance demand followed suit. On the other hand, the pension heading continues to represent a small portion of the portfolio, if compared to the other sectors (graph 37).

**Graph 37**  
**Insurance Companies' Market Penetration, Contribution to Growth and Portfolio Composition**



c) Figures as of June 2013

Source: CNSF y Banco de México

1/ Penetration is obtained by dividing the total amount of direct premia by nominal average GDP.

2/ 2013 figures are annualized for comparison purposes.

3/ Direct premia issued are the total amount of net premia corresponding to policies and endorsements issued to policyholders over a given period. They do not take into account the acquisition of premia generated by another insurance company nor cessions to another insurance company.

4/ Damages without cars includes financial collateral and housing credit.

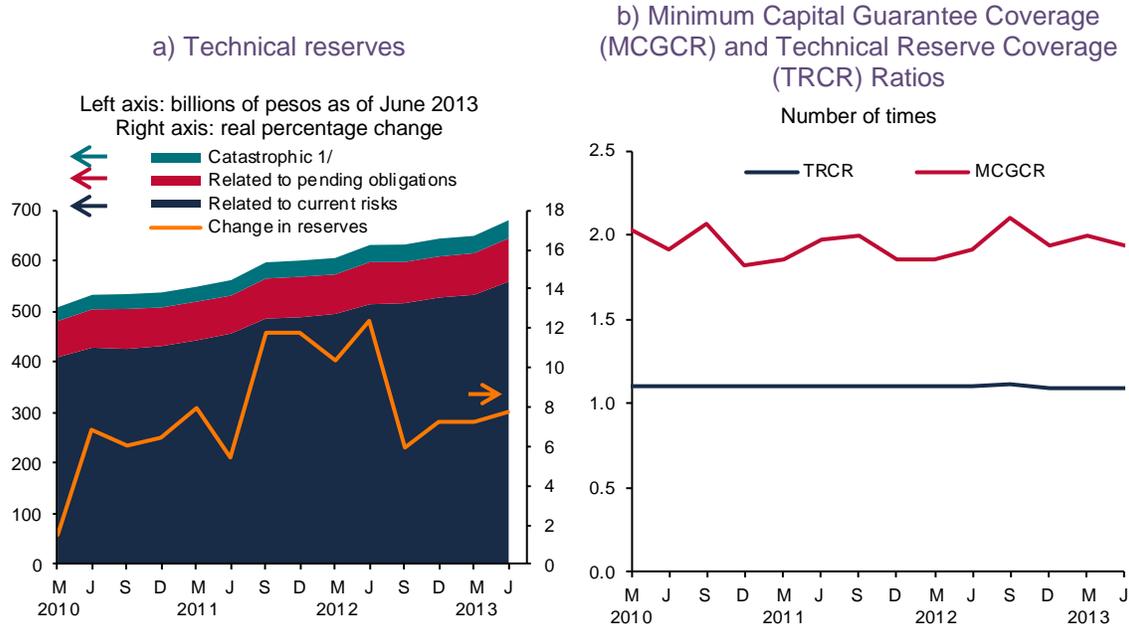
#### Profitability and Solvency

Investments account for 77.7 percent of the sector's assets, insurance companies being the third largest institutional investor in the financial system. These investments contribute to the profitability of the insurance sector, while offsetting claim and acquisition costs and administrative expenses. Withal, the sector's high reserve coverage has made it possible to tackle higher catastrophic and non-catastrophic claims. As of June 2013, the technical reserve

<sup>38</sup> Growth was only seven percent if the Pemex policy, which was renewed in June 2013, is apportioned.

coverage ratio (TRCR) was 1.1 times, 10 percent times higher than the minimum required.<sup>39</sup> With regard to the sector's capital levels, the minimum capital guarantee coverage ratio (MCGCR) was 1.94 times (graph 38b).<sup>40</sup>

**Graph 38**  
**Insurance Companies' Solvency Indicators**



Figures as of June 2013  
Source: CNSF

Figures as of June 2013  
Source: CNSF

1/ Countries with catastrophic exposure have created intertemporal compensation mechanisms as part of their insurance system design. The most common compensation mechanisms are catastrophe reserves and compensation funds, which aim at guaranteeing insurance coverage and widening insurance penetration for catastrophic risks. Apart from the creation of catastrophe reserves, in Mexico there is the Natural Disaster Fund (Fonden in Spanish), which is a federal financial device used to deal with contingencies caused by natural disasters.

Mexico is highly exposed to natural disasters, particularly earthquakes and floods. For this reason, even though prudential regulation does consider catastrophic reserve creation, sound reinsurance management is essential to reduce losses and keep the system solvent even in extreme cases. By way of illustration, recent hydro-meteorological events have put the thus far implemented schemes to the test. Costs for the insurance sector derived from hurricanes Ingrid and Manuel are estimated to be a fifth of total damages, that is, a gross amount of claims of 2.9 billion pesos.<sup>41</sup> This was because losses, albeit geographically spread out, were

<sup>39</sup> The General Mutual Insurance Company and Institutions Law (LGISMS) sets forth that institutions shall at all times maintain the investments destined to back technical reserves. The technical reserve coverage ratio (TRCR) is calculated by dividing total investments backing technical reserves by the reserve amount. When this ratio is above or equal to one, it means that investments cover technical reserves and that the company has enough funds to meet its liabilities.

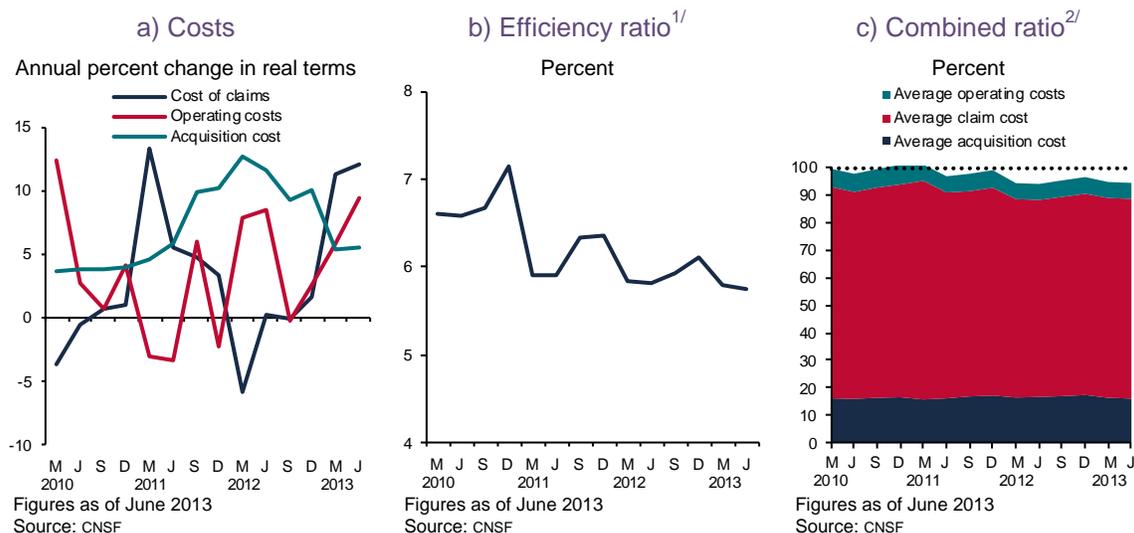
<sup>40</sup> The minimum capital guarantee (MCG) is the capital requirement for insurance companies, and is based on assumed risks. The MCG must be backed by assets invested pursuant to the General Mutual Insurance Company and Institutions Law (LGISMS). The minimum capital guarantee coverage ratio (MCGCR) measures insurance companies' solvency and is obtained by dividing the sum of investments that back the MCG and excess investments backing technical reserves by the minimum capital guarantee requirement. An MCGCR greater than one implies that investments cover the MCG requirement and that the company has additional investments to meet it; when below one, investments that comply with security and liquidity provisions are insufficient to back the requirement.

<sup>41</sup> Insurance and Surety National Commission (CNSF in Spanish) figures as of October 25, 2013.

concentrated in uninsured goods and infrastructure, hence the limited financial effect on the insurance sector.<sup>42</sup>

As of June 2013, the insurance sector's net profits totaled 10.5 billion pesos, which implied a 17.1 percent drop in real terms with respect to the same period in the previous year. This decline resulted from an increase in claims (12.1 percent in real annual terms and 12 percentage points above the real annual change registered in June 2012) and a 15 per cent decrease in financial investments results (in real annual terms). Profitability, measured as the net profit-to-equity ratio was 15.3 percent, that is, it fell 3.6 percentage points compared with the previous year; yet, a sustained improvement in efficiency levels is noteworthy (graph 39).

**Graph 39**  
**Insurance Sector Costs**



1/ The efficiency ratio is defined as net operating expenses divided by direct premia.

2/ A combined index lower than 100 per cent implies that the value assigned to the premium is enough to cover the premium's generation and management costs as well as claims while the policy is valid.

## Impact of Solvency II

The new Insurance and Surety Institutions Law was published In April 2013, although it will fully enter into force in April 2015. This law introduces the international directive known as Solvency II, which recommends that capital requirements should be in line with insurers' assumed risks. The new law also introduces a different liquidation procedure for insurance companies in distress, far better than the current one, and includes most of the Financial Stability Board's (FSB) established "key attributes".

Nevertheless, the introduction of Solvency II should not have a major impact on insurance companies operating in Mexico, because, among other reasons, current regulation already considers a number of elements introduced by the new international directive. Unlike other countries which are transitioning to new regulatory frameworks –especially in Europe–, in Mexico, current capital requirements for insurance companies already encompass the underwriting, financial and operating risks introduced by Solvency II.

<sup>42</sup> CNSF figures as of October 25, 2013. This figure does not include insurance taken out by Fonden, whose insured sum through international reinsurance companies is about five billion pesos.

## Banco de México

Therefore, the adoption of Solvency II in Mexico, rather than broadening the scope of credit risk capital requirements, puts forth a clear-cut methodology to establish capital requirements on the basis of insurance companies' specific risk profiles. Additionally, it allows for the possibility of using internal models. Furthermore, current domestic regulation already deals with credit risk capital requirements based on credit ratings and capital requirements stemming from differences in assets' and liabilities' terms –relative to the nature of insurance companies' operations.

On the other hand, although the impact of the new regulation in insurers' appetite for investments in banking capital instruments has become a source of concern for European regulatory officers, this situation has not found an echo in Mexico. Firstly, this has been the case because insurance companies' investments in stock and subordinated non-convertible debentures issued by banks account for a negligible proportion of their total investments. And secondly, because, pursuant to the current financial regulation, insurance companies are not allowed to invest in subordinated convertible securities; in consequence, all new subordinated debt issuances that belong to the issuing bank's regulatory capital are ineligible as investment for insurance companies.<sup>43</sup>

Last but not least, beyond quantitative capital and reserve requirements, Solvency II introduces improvements in corporate governance practices, internal oversight, risk management, transparency and information disclosure.

### 3.5 Infonavit

The National Workers Housing Fund Institute (Infonavit in Spanish) is the major provider of mortgages in Mexico. Since workers' debt is collected through payroll deductions, delinquency levels in this portfolio are lower than in other financial institutions' mortgage portfolios. Particularly, workers losing their job or abandoning the formal sector is a source of risk for Infonavit, although since 2007 all granted loans include unemployment insurance.<sup>44</sup> As of June 2013, Infonavit's mortgage loan portfolio accounted for 58.2 percent of total mortgage loans in Mexico; indeed, Infonavit's mortgage portfolio was 1.9 times bigger than that of commercial banks. Further, at the end of June, current Infonavit's portfolio had grown 4 percent in real terms, whereas the portfolio with extended payment plans, which is part of the current portfolio<sup>45</sup>, decreased by 1.2 percent.

At the end of September, delinquency rate for the current portfolio was 7.1 percent, whereas the portfolio with extended payment plans accounted for 5 percent of the total portfolio. In order to reclassify a loan with an extended payment plan as a current loan, three consecutive payments have to be made. As of September 2013, the non-performing loan portfolio increased 15.6 percent *vis-à-vis* the same period in the previous year (graph 40). The uptrend was sharper during the first half of 2013, fueled by the economic deceleration –in the second quarter alone, the increase in the non-performing portfolio was 0.7 percentage points, owing to

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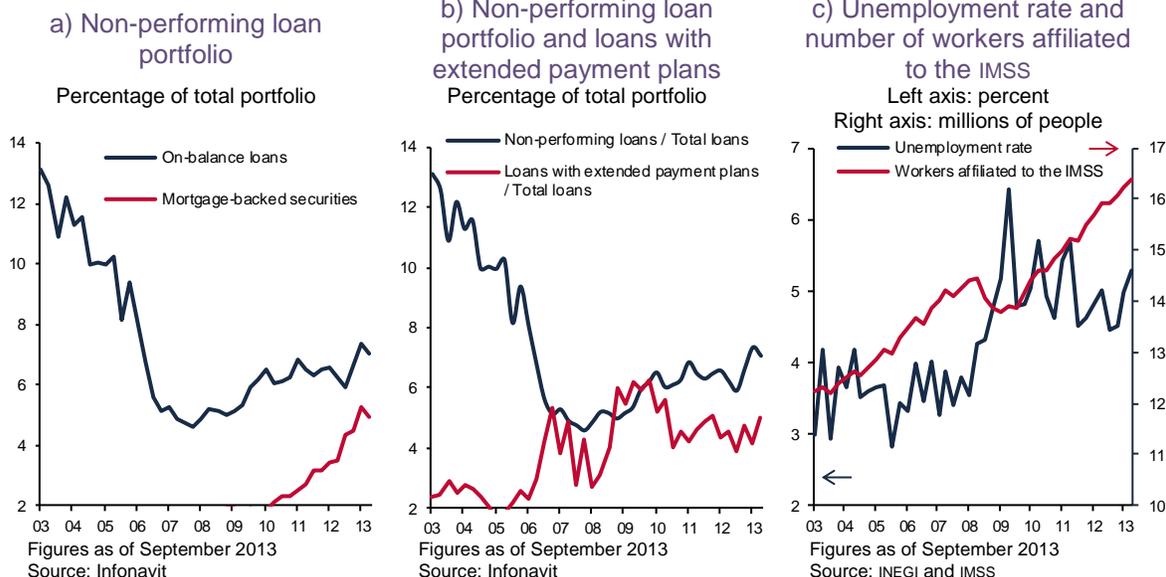
<sup>43</sup> As of January 2013, bank capitalization rules mandate that, in order to be considered part of regulatory capital, all subordinated debentures must be convertible.

<sup>44</sup> Unemployment insurance covers up to six months every five years and is granted by the Pension Protection Fund, a trust created by Infonavit. For loans granted between 2007 and 2008, Genworth provides such coverage.

<sup>45</sup> When Infonavit borrowers lose their jobs, they are legally entitled to request a payment extension on their mortgage of up to twelve months, in two separate periods during the life of the loan. In order to reclassify the loan as non-performing, 90 days must go by after the end of the extension period.

the reclassification of loans from the current to the non-performing portfolio, particularly of loans with extended payment plans (this portfolio diminished 0.6 percentage points).

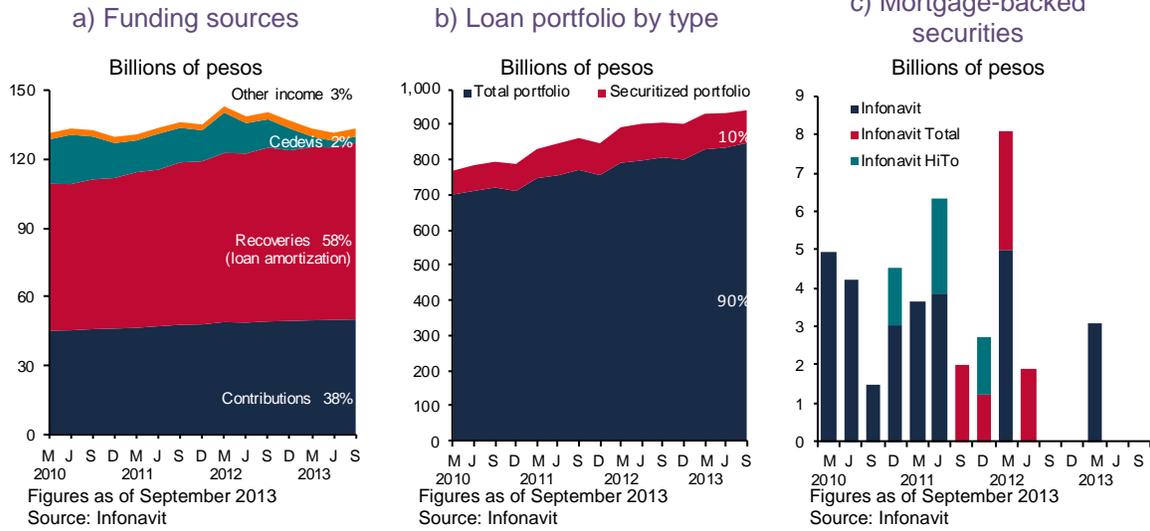
**Graph 40**  
**Infonavit Loan Portfolio Quality**



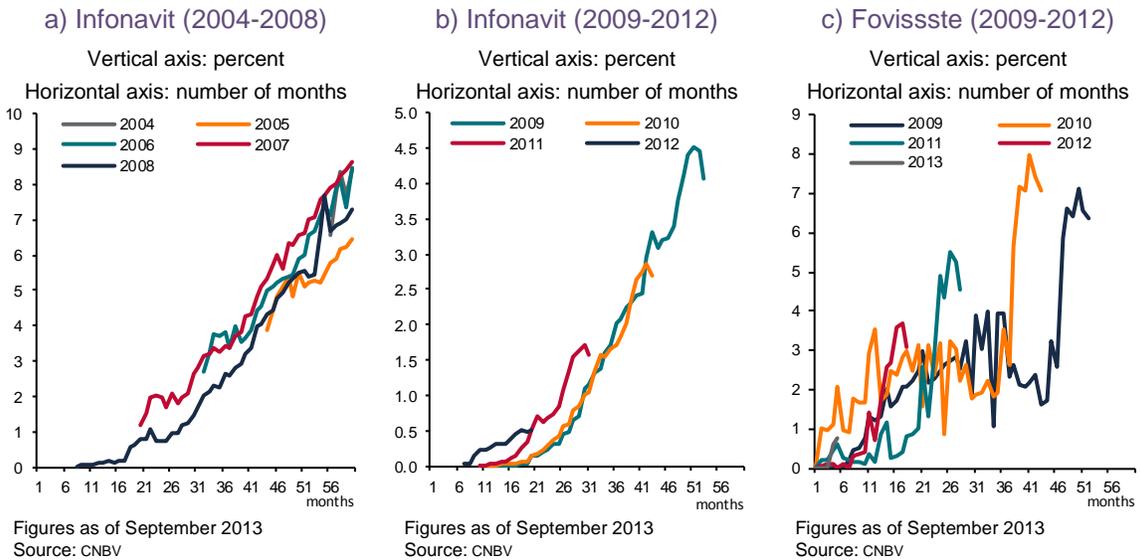
Apart from workers' contributions, Infonavit has tapped significant additional resources by issuing mortgage-backed securities. The solidity of these issuances is a reflection of investors' confidence therein: they've been successfully placed despite the adverse scenario of recent years. Nevertheless, in 2012 and 2013, the pace of Infonavit's placements slowed down, in relation to the three years prior to 2012; actually, only three issuances have been placed since the beginning of 2012 until now, compared with eight issuances on average per year between 2008 and 2010 (graph 41). As a result, there has been a decline in this funds, albeit partially offset by other income from financial products and others. As of September 2013, the securitized portfolio accounted for 9.9 percent of the Institute's total portfolio. Delinquency is lower for the Infonavit's securitized portfolio than for the on-balance mortgage loan portfolio<sup>46</sup>; when dividing the securitized portfolio by year of bond issuance, no significant differences were registered in delinquency levels between 2005 and 2008 –it was slightly lower in recent years (graph 42).

<sup>46</sup> While securitizing, the entity that originated the loan portfolio throws it off balance towards a vehicle issuing securities for investors. Therein, the flows that these securities will periodically pay are backed by the income that the vehicle receives from the transferred portfolio. Infonavit continues to manage the securitized portfolio.

**Graph 41**  
Infonavit's Funding Sources



**Graph 42**  
Delinquency for Securitizations by Year of Issuance



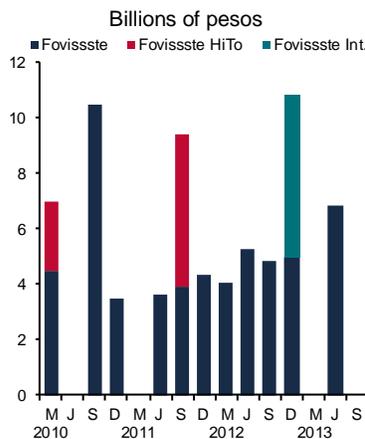
### 3.6 Fovissste

Fovissste is the entity in charge of granting housing loans to state workers. In recent years, mortgage-backed securities have become one of the major sources of funding for Fovissste. Contrary to Infonavit, Fovissste has been regularly placing issuances of considerable amounts, which by the way have a high level of credit protection, measured as overcollateralization—28 percent, a similar level to that of Infonavit.

As of June 2013, 41 percent of Fovissste’s total portfolio (both on- and off-balance sheet) was securitized. Delinquency for the Fovissste’s on-balance loan portfolio has remained stable over the last years, and as of December 2012 it was 11.3 percent of total portfolio, well above commercial banks’ and Infonavit’s mortgage loan portfolio.<sup>47</sup> In contrast, delinquency in the securitized portfolio continues to record low levels (3.5 percent); yet, between March and June 2013, its level doubled, mainly as a result of increased delinquency in the issues placed between 2009 and 2010 (graph 43).

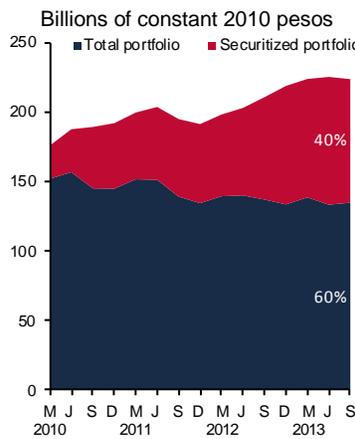
**Graph 43**  
**Fovissste Securitizations**

a) Mortgage-backed securities



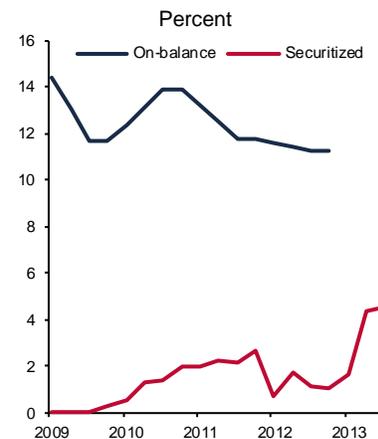
Figures as of September 2013  
Source: Inveval

b) Securitized and total on-balance portfolios



Figures as of September 2013  
Source: Fovissste and CNBV

c) Delinquency levels



Figures as of September 2013 for the securitized portfolio and as of December 2012 for the on-balance portfolio.  
Source: CNBV

<sup>47</sup> As of June 2013, the delinquency rate on the commercial banks’ loan portfolio for low income housing was 4.1 percent, whereas that of Infonavit was 5.9 percent.

## Banco de México

### 3.7 Development Banks

Thanks to development banks and trusts<sup>48</sup>, the public sector can provide services and products that complement those offered by private financial intermediaries. The institutions that make up the development financial system, namely development banks, Fideicomisos Instituidos en Relación con la Agricultura (FIRA) and Financiera Rural (FR), provide first- and second-tier credit and guarantees, while offering special development programs and technical assistance. Particularly, in times of economic distress, such intermediaries have become an important vehicle for the implementation of counter-cyclical policies.<sup>49</sup>

#### Credit Granting

As of September 2013, the direct loan portfolio<sup>50</sup> of development banks, FIRA and FR totaled 589.9 billion pesos, accounting for 16.9 percent of total credit granted by the Mexican banking system as a whole (commercial and development banks) and 3.7 percent of GDP. Actually, development banks guaranteed 348.5 billion pesos-worth of additional loans (“induced credit”).<sup>51</sup> As of that date, the sum of both concepts was 938.5 billion pesos (figure 3), which accounted for a share of 27.1 percent in total banking financing (graph 44).<sup>52</sup>

Direct credit can be classified in different ways: as first-tier, second-tier and federal-government-agent credit; or as credit to the private sector, to the public sector, and federal-government-agent credit; or by market segment. As of the end of the third quarter of 2013, the direct loan portfolio recorded a real annual increase of 6.7 percent, of which first-tier credit accounted for 65.8 percent, second-tier for 33.2 percent and federal-government-agent credit for the rest (graph 45).

Development banks have registered high growth rates, particularly in the placement of loans for infrastructure through new financial schemes (real annual growth rate of 26.0 percent in the last three years). By the same token, first-tier credit continued to soar, primarily to the non-financial private sector (real annual growth rate of 26.5 percent in the last three years).

As of the end of September 2013, first-tier credit grew by 13.5 percent in real annual terms (graph 47). This was mainly driven by real annual growth in the Banobras and Bancomext portfolios –17 and 14 percent, respectively. During that period, Banobras and Bancomext accounted for 79 percent of first-tier loans. With respect to the second-tier loan portfolio, as of the end of the third quarter of 2010, Nafin, FIRA and the SHF<sup>53</sup> accounted for 93 percent thereof. This portfolio registered a real annual decline of 2.7 percent, compared to September 2012.

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<sup>48</sup> The term development banks refers to the Banco Nacional de Obras y Servicios Públicos (Banobras), Nacional Financiera (Nafin), Banco Nacional de Comercio Exterior (Bancomext), Banco Nacional del Ejército, Fuerza Aérea y Armada (Banjército), Banco del Ahorro Nacional y Servicios Financieros (Bansefi), and Sociedad Hipotecaria Federal (SHF).

<sup>49</sup> See box 8 in the *Financial System Report June 2010* published in November 2010.

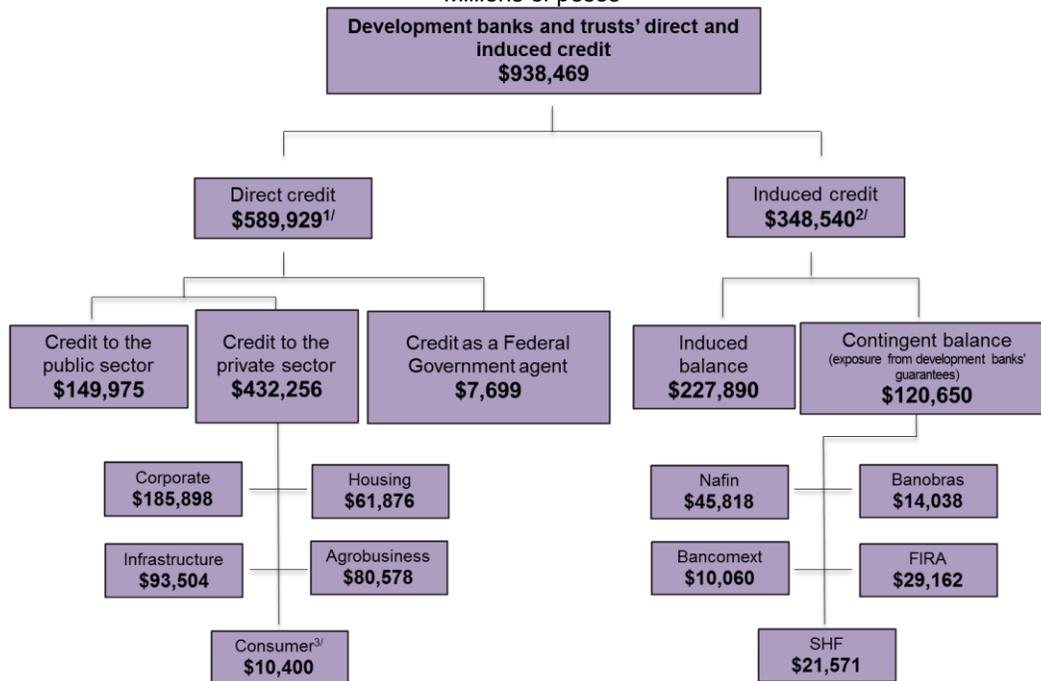
<sup>50</sup> This figure does not include the Fovisste portfolio balance of 21.853 billion pesos.

<sup>51</sup> Induced credit refers to the credit granted by diverse private financial intermediaries that is partially guaranteed by development banks, FIRA or FR. The figures above are Banco de México estimates. The amount includes guarantees issued by the SHF Mortgage Insurance Division.

<sup>52</sup> Total financing refers to the sum of the loan portfolio and the induced balance by granted guarantees. The amount includes guarantees issued by the SHF Mortgage Insurance Division.

<sup>53</sup> Credit granted by the SHF includes personal and bridge loans.

**Figure 3**  
**Direct and Induced Credit by Guarantees Granted**  
 Millions of pesos



Figures as of September 2013

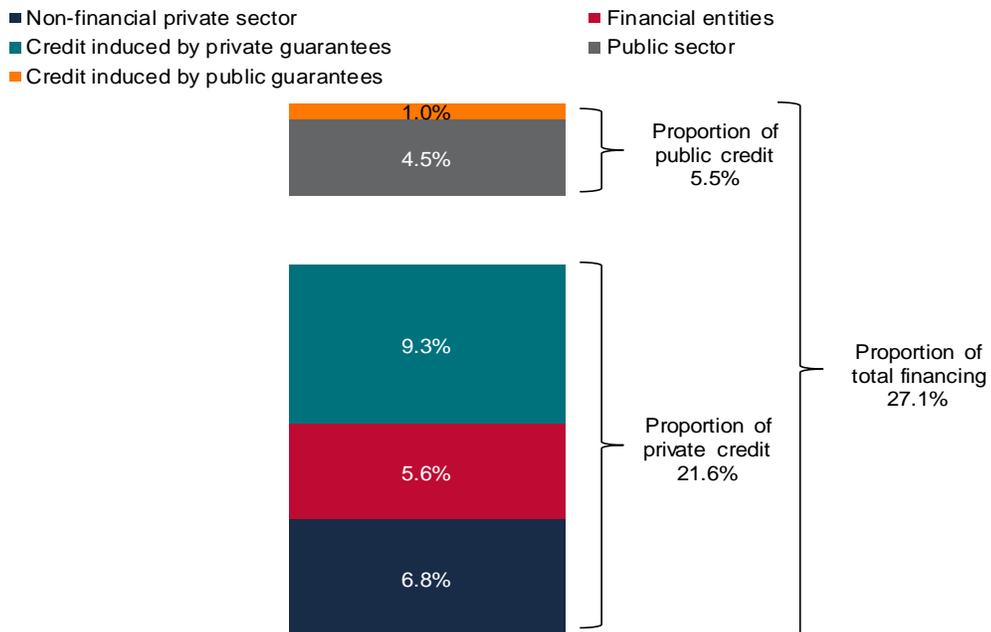
Source: Banco de México and CNBV

1/ Development banks' credit balance. First-tier credit: 386.6 billion pesos; second-tier credit: 195.6 billion pesos.

2/ Includes guarantees issued by the SHF Seguros de Crédito a la Vivienda (scv).

3/ Consumer credit is comprised of loans granted by Banjército to army forces and loans granted to development banks' employees as an employment benefit.

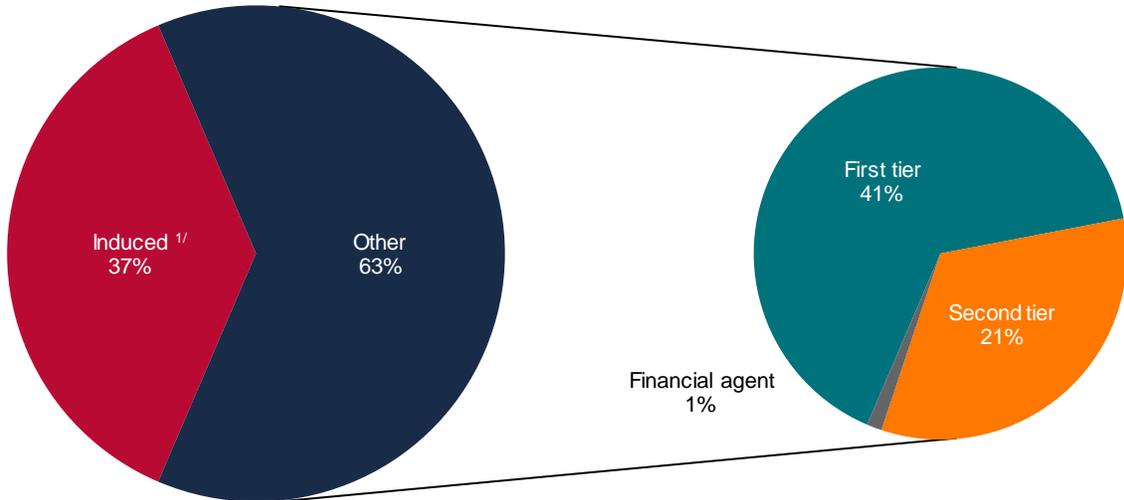
**Graph 4**  
**Development Banks, FIRA and Financiera Rural's Share in Total Bank Credit**  
 Percent



Figures as of September 2013

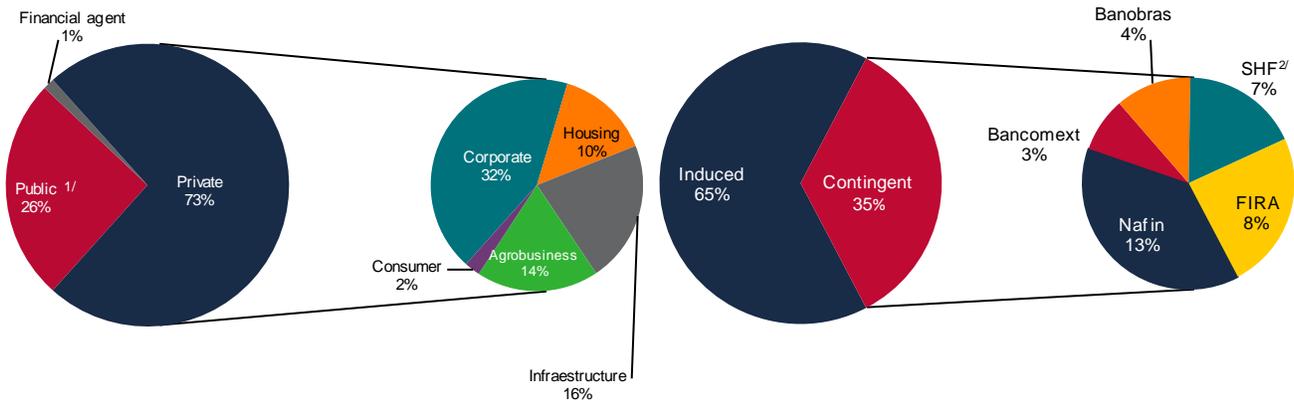
Source: Banco de México

**Graph 45**  
**Composition of Total Credit Balance**  
 Percent



Figures as of September 2013  
 Source: Banco de México  
 1/ Induced credit includes scv.

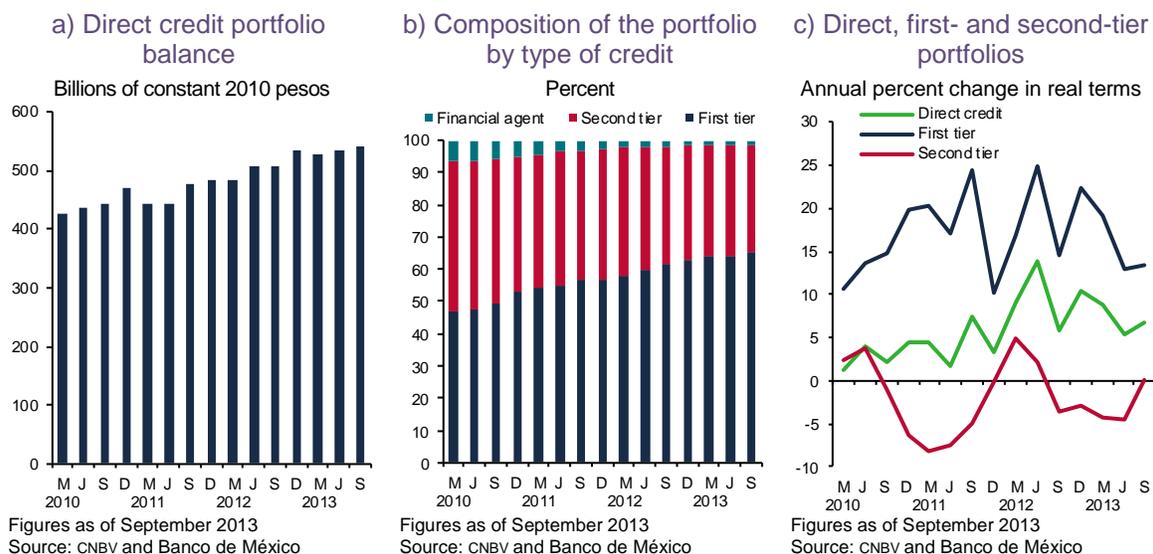
**Graph 46**  
**Composition of Direct and Induced Credit Balances**  
 a) Composition of direct credit balance  
 Percent  
 b) Composition of induced credit balance  
 Percent



Figures as of September 2013  
 Source: CNBV and Banco de México  
 1/ Credit to states and municipalities totaled 127 billion pesos  
 2/ Includes guarantees granted by the scv

Figures as of September 2013  
 Source: CNBV and Banco de México

**Graph 47**  
**Loan Portfolios of Development Banks, FIRA and Financiera Rural**



**Trends in Direct Credit to the Private and Public Sector**

Direct loans granted to the private sector by development banks, FIRA and FR accounted for 73 percent of these institutions’ total loan portfolio –credit to the private sector alone was 43 percent (graph 48b). Between September 2012 and September 2013, this portfolio registered real growth of 6.8 percent (graph 48c). Particularly, the real annual growth rate of 17.1 percent in loans to the infrastructure sector is worthy of mention, followed by the corporate sector with a real annual growth rate of 10.2 percent.

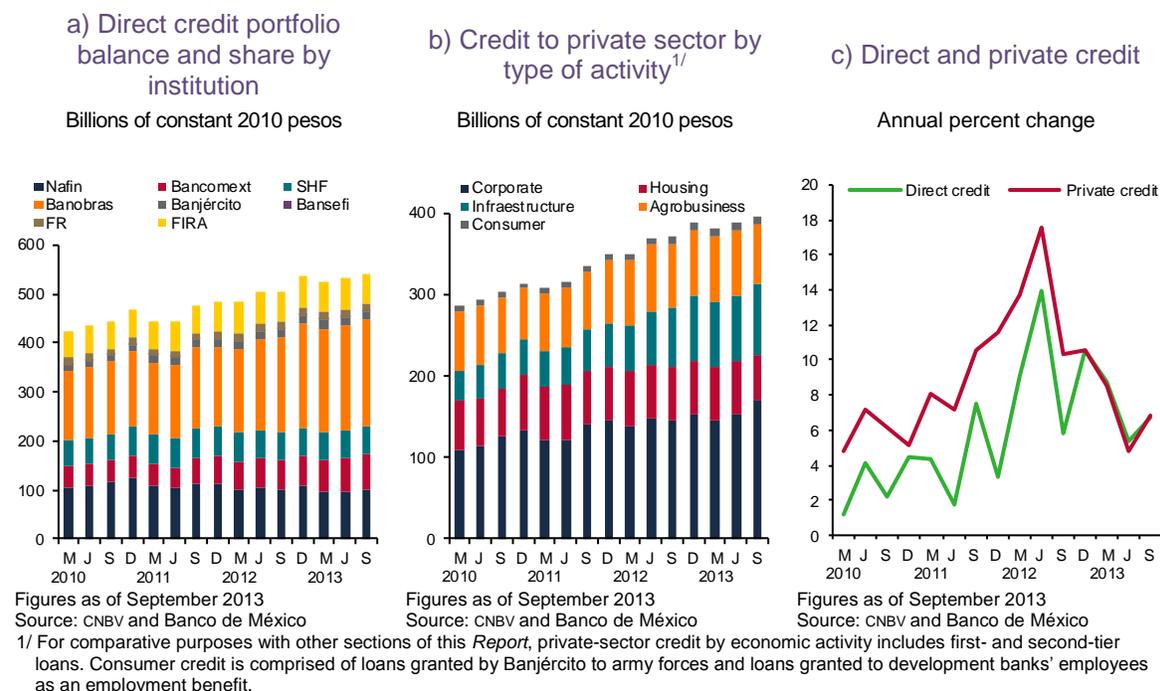
The share of development bank loans in public-sector financing continues to recede, except for Banobras, whose main purpose is the funding of public-sector infrastructure projects (federal government, state-owned entities, states and municipalities). Over the last year, loans to this sector decreased by 15.3 percent in real terms. Considering Banobras, however, the public sector loan balance exhibits a growth rate of 6.5 percent *vis-à-vis* September 2012.

As of June 2013, direct loans to the infrastructure sector for projects with their own source of payment was 81 billion pesos, essentially distributed among road construction, power stations and water treatment plants. Over the last three years, loans to this sector granted by Banobras nearly doubled. It should be noted that some of these projects were additionally funded by the National Infrastructure Fund through subordinated loans, which in this manner supports Banobras syndicated loans.

On the other hand, private sector loans granted by Nafin and Bancomext increased 10.2 percent in real annual terms, as a result of greater support for priority sectors, particularly for the construction of industrial buildings and large wind energy projects. With respect to Nafin, 33 percent of gross loans granted through development programs were destined to production chains, 9 percent to the traditional discount program, equipment and micro-enterprises, and 58 percent to induced credit derived from the guarantees program. Approximately 88 percent of loans granted by Bancomext were channeled to first-tier transactions; among the recipients,

the following sectors stand out: tourism, in-bond export, auto, auto parts, manufacturing and industrial parks.

**Graph 48**  
**Direct Loan Portfolios of Development Banks, FIRA and Financiera Rural**



As of September 2013, loans granted to the housing sector decreased one percent in real annual terms. The decline can be mainly attributed to a fall of 2 percent in the SHF portfolio, partially offset by the 7.4 real annual percent growth rate of Banjército. During said period, SHF and Banjército accounted for 98 percent of housing loans. Between September 2012 and September 2013, direct loans to the agribusiness sector granted by FIRA and FR dropped four percent in real terms, owing to the lower credit demand derived from the reduction in a number of crop prices (sugar cane, maize and coffee, among others) during the same period.

## Issuance of Credit Guarantees

A high percentage of development bank, FIRA and FR transactions are destined to the granting of credit guarantees. Even though these transactions are not recorded on the balance sheets of development banks, they have a far from negligible impact on loan supply. As of September 2013, the so-called induced credit<sup>54</sup> amounted to 348.5 billion pesos, with an average guarantee of 35 percent (graph 49a). Importantly, induced credit is placed through commercial banks, non-bank financial institutions and loan securitization vehicles.

The contingent guarantee balance exhibited a real annual increase of 12.9 percent in regard to the same period in the previous year. This jump was chiefly driven by higher Nafin and Bancomext balances, which presented real annual growth rates of 14 and 11 percent, respectively. The SHF balance, including its mortgage insurance branch, Seguros de Crédito a

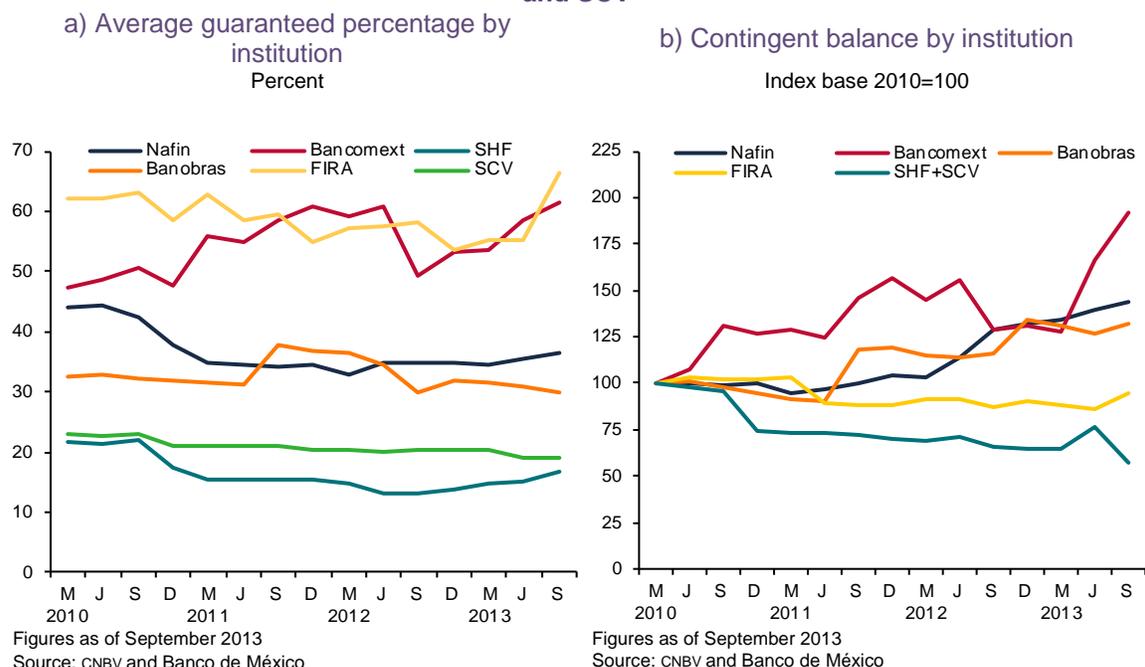
<sup>54</sup> See footnote 50 for a definition of induced credit.

la Vivienda (scv),<sup>55</sup> grew 8.4 percent in real annual terms. As of September 2013, 80 percent of current guarantees had been granted by Nafin, SHF (including SCV) and FIRA.

As of September 2013, induced credit registered an average of 2.9 pesos of credit granted per peso guaranteed (graph 50a). If the scv is excluded, the induced credit balance amounts to 258.4 billion pesos, and the average falls to 2.5 pesos of credit granted per peso guaranteed. The contingent balance of development banks is partially backed by counter-guarantee budgetary funds, granted by several entities such as the federal government, the Ministry of Economy, the Ministry of Finance and Public Credit (SHCP), among others.

Guarantees issued by development banks foster loans via two channels: first, guarantees absorb a portion of credit risk, and hence commercial banks are able to grant loans they would not provide otherwise; second, they reduce the cost of capital for credit institutions, which is in itself a benefit.

**Graph 49**  
**Contingent Balance of Guarantees Granted by Development Banks, FIRA, Financiera Rural and SCV**



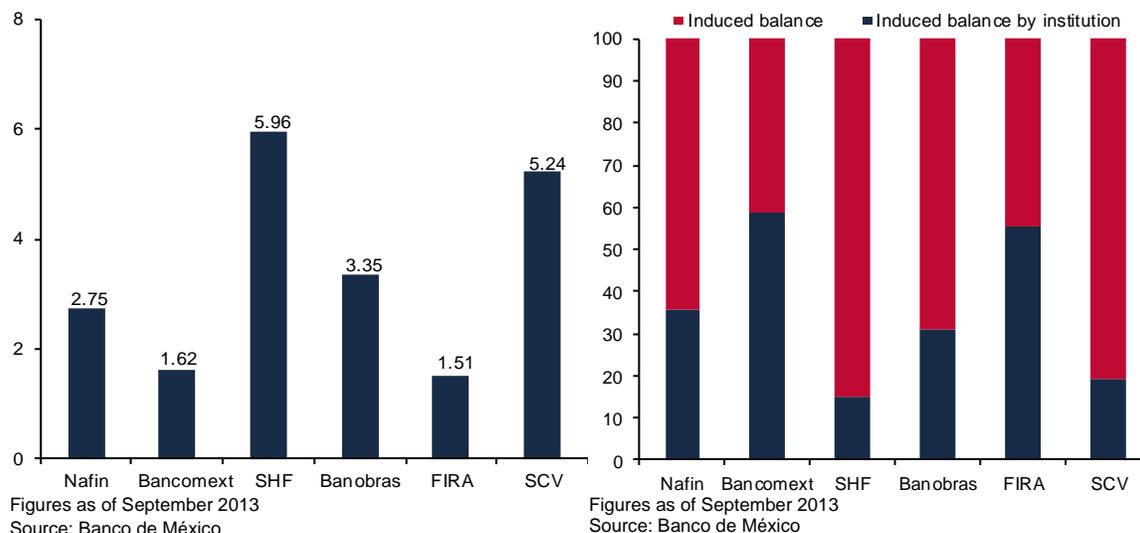
<sup>55</sup> In March 2009, the SHF subsidiary, Seguros de Crédito a la Vivienda (scv), started operating, and, as of September 2009, the transfer of SHF guarantees to scv began. See box 3 in the *Financial System Report: September 2011*.

Graph 50

Performance of Guarantees Issued by Development Banks, FIRA and Financiera Rural

a) Pesos of final credit granted per peso guaranteed (induced credit by institution)  
Number of times

b) Induced credit by institution as of September 2013  
Percent



Financial Indicators

As of the end of September 2013, the net interest income declined 5.1 percent compared with the same period in the previous year (graph 51a). In contrast, loan loss provisions surged by 201.3 percent in real annual terms (graph 51b), as a result of the increase recorded in Bancomext, Nafin and SHF. As of the end of the third quarter of 2013, net profit dropped 21.8 percent in real annual terms (graph 51c), owing to a large extent to the increase in SHF's loan loss provisions.

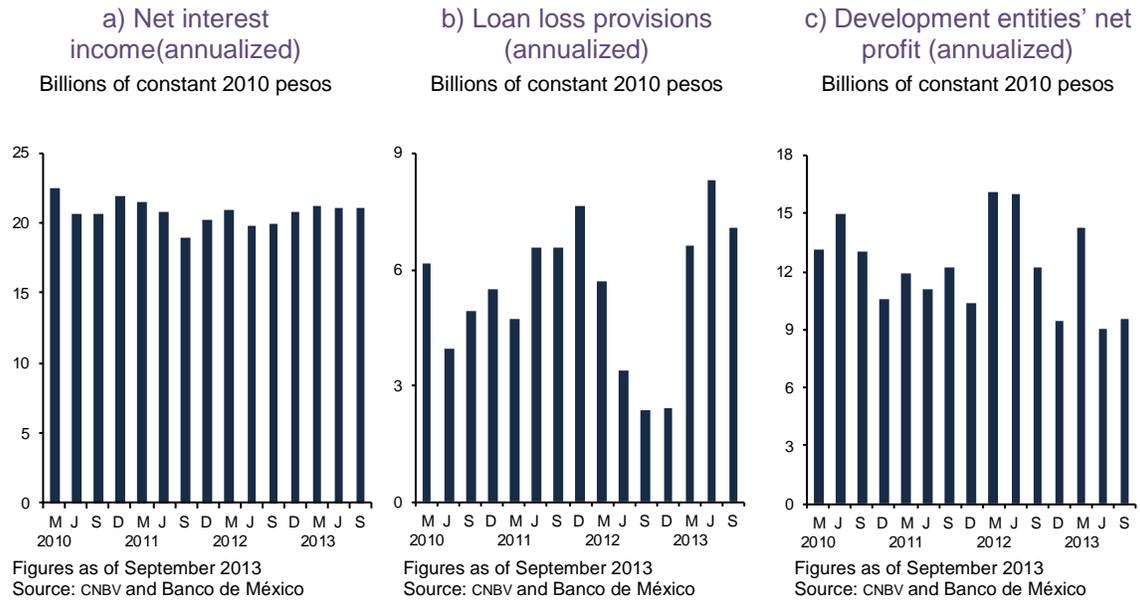
On the other hand, development banks' average capital adequacy ratio has remained at 15.3 percent over the last three years.<sup>56</sup> As of September 2013, the ratio was 14.8 percent.<sup>57</sup> In consequence, the development banking sector is adequately capitalized.

As of September 2013, the non-performing loan portfolio of development banks, FIRA and FR soared 36 percent in real annual terms, by virtue of an increase in the non-performing mortgage portfolio, and in those of Nafin and Bancomext as well. Specifically, SHF accounts for 79 percent of the non-performing loan portfolio, Nafin for 6.6 percent, FIRA for 5.7 percent, and FR, Bancomext and Banobras for the remainder (graph 52a). Simultaneously, the coverage ratio decreased from 1.43 to 1.28 times over the same period (graph 52b) and the delinquency rate was 4.5 percent. The adjusted delinquency rate followed a similar pattern, as certain write-offs for lower amounts were undertaken. Thus, the average adjusted delinquency rate for the period was 4.8 percent (graph 52c).

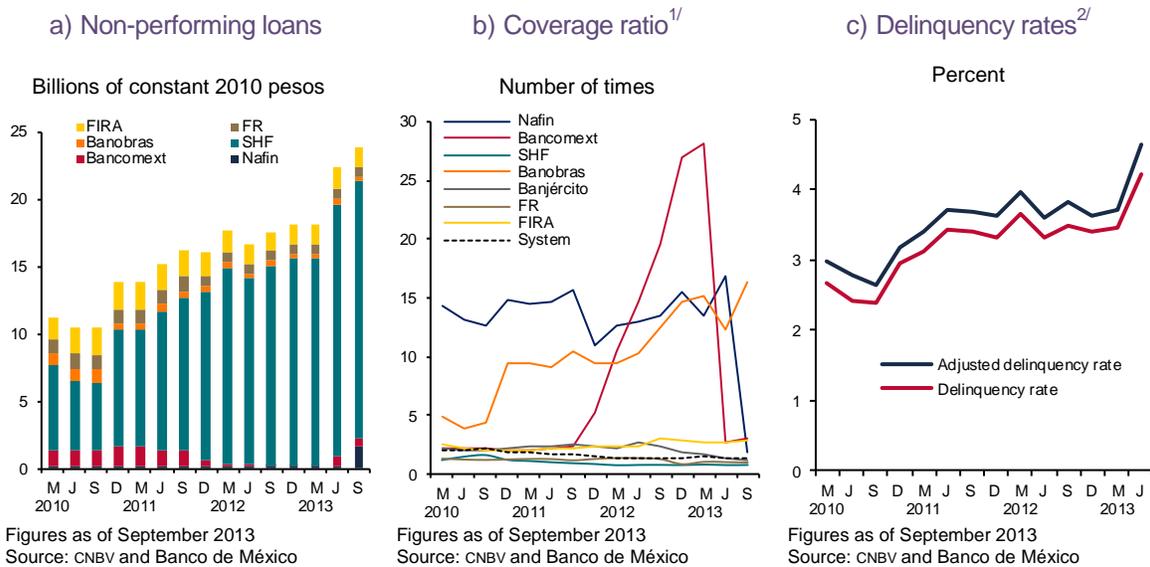
<sup>56</sup> FIRA and Financiera Rural are not banking institutions, and therefore do not calculate capital adequacy ratios.

<sup>57</sup> As of 2013, the calculation of the ratio follows Basel III regulation.

**Graph 51**  
**Financial Indicators of Development Banks, FIRA and Financiera Rural**



**Graph 52**  
**Loan Portfolio of Development Banks, FIRA and Financiera Rural**



1/ Loan loss provisions as a percentage of non-performing loans.  
 2/ The adjusted delinquency rate is the non-performing loan portfolio plus write-offs over the previous twelve months divided by total loan portfolio plus write-offs over the previous twelve months.

### 3.8 Other Financial Entities and Activities Not Subject to Traditional Banking Regulation

The vigorous expansion of credit intermediation and financial activities not regulated by banking standards were underlying factors of the international financial crisis.<sup>58</sup> This boom led financial authorities and market participants in some developed countries to underestimate risk in the financial system as a whole; thus, a number of risks went unnoticed before materializing. Yet, risks in the financial system stem not only from intermediaries not subject to traditional banking regulation, but also from their interconnections with the rest of the financial system. The magnitude of losses during the recent crisis can be explained by both the size of the shadow banking sector in certain countries and their close ties with the regulated financial system.

It should be noted that financial regulation has been significantly strengthened in the wake of the crisis, particularly banking regulation. Undertaken measures have entailed rises in capital requirements for certain assets and transactions. Self-evidently, this has had an impact on such positions' potential profitability, hence the concern that financial activities historically carried out by banks or regulated intermediaries may be transferred to less regulated sectors that already possess or are capable of establishing solid interconnections with the rest of the financial system.

Along these lines, the Financial Stability Board (*FSB*) is conducting studies to assess the real scale of activities and entities not subject to banking regulation, as well as to pinpoint risks and interconnections with the rest of the financial system and their historical development –the purpose of such studies also being to assess the proportion of these entities and activities in credit intermediation chains within an economy. In sum, that is the reason why the *FSB* developed a methodology aiming at pinpointing financial intermediaries, tools and activities that, given their distinct features, belong to less regulated sectors.

According to said methodology, brokerage firms, *sofomes*<sup>59</sup> (regulated and unregulated), mutual funds, credit unions, popular credit and savings institutions, companies or entities granting all kinds of loans (e.g. auto financing companies or those issuing non-bank credit cards), together with entities issuing asset-backed securities or securitizations<sup>60</sup>, local exchange traded funds (ETFs), development capital certificates (DCDs) and infrastructure and real estate trusts (*Fibras* in Spanish)<sup>61</sup> are all part of the system not subject to traditional banking regulation in Mexico. Importantly, some financial entities in Mexico, such as brokerage firms, are subject to rules similar to those applicable to banks, namely capitalization rules. Nonetheless, with the purpose of assessing activities in detail and ultimately suppressing such entities or activities that do not pose a systemic risk, the *FSB* methodology encompasses the

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<sup>58</sup> Pursuant to the *FSB Report: "Shadow Banking: Strengthening Oversight and Regulation"* 27 Oct. 2011), this kind of credit intermediation is commonly known as shadow banking system, which can be defined in short as the credit intermediation system involving activities and entities outside traditional banking regulation.

<sup>59</sup> Reforms to financial legislation passed seven years ago aiming at deregulating *sofoles*, financial leasing and factoring companies came into effect in July 2013. As stated in such reforms, all authorizations granted to those entities lost validity, and already authorized financial leasing and factoring companies ceased to be regarded as auxiliary credit organizations – in fact, their winding-up and liquidation were declared by the new regulation, unless they had modified their articles of association so as to suppress any reference to their previous regime and submitted to the SHCP in a timely manner the public document containing the aforesaid amendments to their articles of association.

<sup>60</sup> In Mexico, complex securities such as the investments instruments that gave birth to the US crisis are used but rather marginally (e.g. *ABCP conduits*, complex securitizations, etc.)

<sup>61</sup> If ETFs, CDCs and *fibras* were leveraged, they would be part of entities and vehicles analyzed in this section, for they would entail a risk similar to that of the remaining entities and activities.

highest possible number of activities and entities not subject to banking regulation. Table 9 presents the kind of prudential regulation applicable to financial entities in our country.

Table 10 presents an approximation to the size of entities and activities that, pursuant to the FSB methodology, are not subject to banking regulation in our country. In conformity with such criteria, as of June 2013, financial entities and activities not subject to traditional banking regulation accounted for 23.4 percent of GDP (22.4 percent of total assets in the financial system).<sup>62</sup> Importantly, and just to shed light on this figure, in the US, this sector accounted for 431 percent of GDP in 2007. If we apply more strict criteria and thus only include in that category entities carrying out credit intermediation activities, the size of the sector in Mexico shrinks to 18.8 percent of GDP.<sup>63</sup> The swift growth in capital securities is noteworthy, particularly that in Fibras.

**Table 9**  
**Regulation Applicable to Entities Not Subject to Traditional Banking Regulation**

Entity	Capitalization Requirements	Deposit Insurance	CNBV Accounting Criteria	Prudential Criteria					
				Risk Management	Loan portfolio provisioning	Risk Diversification	Liquidity Ratio	Disclosure of information	Credit Process
Commercial banks	✓	✓	✓	✓	✓	✓	✓	✓	✓
Regulated sofomes	✓	n.a.	✓	✓	✓	✓	✗	✓	✓
Unregulated Sofomes	✗	n.a.	✗	✗	✗	✗	✗	✗	✗
Sofoles <sup>1/</sup>	✓	n.a.	✓	✓	✓	✓	✗	✓	✓
Financial leasing companies <sup>1/</sup>	✗	n.a.	✓	✗	✗	✗	✗	✓	✗
Factoring companies <sup>1/</sup>	✗	n.a.	✓	✗	✗	✗	✗	✓	✗
Deposit warehouses	✗	n.a.	✓	✗	✗	✗	✗	✓	✗
Sofipos									
Level 1	✓	✓	✓	✗	✓	✓	✓	✓	✗
Levels 2 - 4	✓	✓	✓	✓	✓	✓	✓	✓	✓
Socaps									
Basic level	✗	✗	✗	✗	✗	✗	✗	✗	✗
Level 1	✓	✓	✓	✗	✓	✓	✓	✓	✗
Levels 2 - 4	✓	✓	✓	✓	✓	✓	✓	✓	✓
Credit unions	✓	n.a.	✓	✓	✓	✓	✓	✓	✓
Financial companies issuing debt	✗	✗	✗	✗	✗	✗	✗	✓	✗
Financial companies not issuing debt	✗	✗	✗	✗	✗	✗	✗	✗	✗

Source: Ley de Instituciones de Crédito, Ley de Protección y Defensa al Usuario de Servicios Financieros, Ley General de Organizaciones y Actividades Auxiliares del Crédito, Ley de Ahorro y Crédito Popular, Ley para Regular las Actividades de las Sociedades Cooperativas de Ahorro y Préstamo y Ley de Uniones de Crédito, together with circulars issued by CNBV for each financial entity.

<sup>1/</sup>The legal figures of sofomes, leasing and factoring companies were annulled as of July 2013.

n.a. not applicable

<sup>62</sup> In order to estimate the size of the sector, we generally use balance sheet information or the approximate value of the amount of debt issued, provided the total asset value is not available. Said balance sheet information is available for most of the above mentioned financial entities, except for unregulated sofomes which do not issue debt in the market. As for entities devoted to issuing asset-backed securities and non-financial companies granting credit and issuing debt, the size of entities over time is estimated by calculating the current issued amount. .

<sup>63</sup> Entities which are not currently leveraged or that represent capital investments, and therefore do not directly undertake credit activities, are excluded.

**Table 10**  
**Financial Intermediaries Subject to Rules Other than Banking Regulation**  
**(FSB Methodology)**

Entities / Instruments	June-13 Billions of pesos	Real annual change 2T13-2T12 Percent
<b>INTERMEDIARIES</b>	<b>2,860</b>	<b>9.7</b>
<b>Brokerage firms</b>	<b>457</b>	<b>2.6</b>
<b>Financial companies</b>	<b>766</b>	<b>7.4</b>
Regulated sofomes <sup>1/</sup>	314	2.1
Unregulated sofomes <sup>2/</sup>	217	14.5
Popular credit and savings entities	134	5.4
Companies specialized in commercial loans <sup>4/</sup>	32	17.3
Companies granting consumer loans <sup>5/</sup>	69	12.2
<b>Mutual funds<sup>6/</sup></b>	<b>1,638</b>	<b>13.0</b>
Debt funds	1,320	10.9
Equity funds	310	23.4
Capital funds	8	4.3
<b>INSTRUMENTS</b>	<b>798</b>	<b>28.6</b>
<b>Securitizations<sup>7/</sup></b>	<b>493</b>	<b>12.3</b>
Mortgage-backed	238	12.6
Infonavit	88	3.1
Fovissste	80	33.7
Commercial banks	33	10.0
Mortgage sofomes	37	2.2
Non-mortgage	254	12.0
States and decentralized organs	137	9.2
Private companies	117	15.5
<b>Capital instruments<sup>7/</sup></b>	<b>305</b>	<b>68.0</b>
Local exchange traded funds (ETFs)	122	17.1
Real estate and infrastructure trusts (fibras)	114	372.9
Development capital certificates (CCD)	70	29.9

Memo: For reference purposes –and to shed light on the data presented above–, the figures consider commercial banks', insurance companies' and pension funds' assets (excluding ER sofomes):

Commercial banks	6,242	0.5
Insurance companies	890	3.4
Siefores	2,042	6.1

Figures as of June 2013

Source: CNBV, Indeval and Valmer

1/ Includes both banks' and other financial groups' regulated sofomes.

2/ Includes sofoles, financial leasing and factoring companies, as these companies no longer exist as of July 2013 –they had to be dissolved and liquidated unless their articles of association were amended in response to the new regulation. For calculation purposes, we assume that companies under the previously valid legal figures as of June 2013 managed to successfully modify their articles of association to become unregulated sofomes.

3/ Includes credit unions.

4/ Non-financial companies granting loans to corporate customers, namely financial branches of auto makers, non-financial companies undertaking leasing and factoring activities, etc.

5/ Non-financial companies issuing credit cards for their customers, such as department stores.

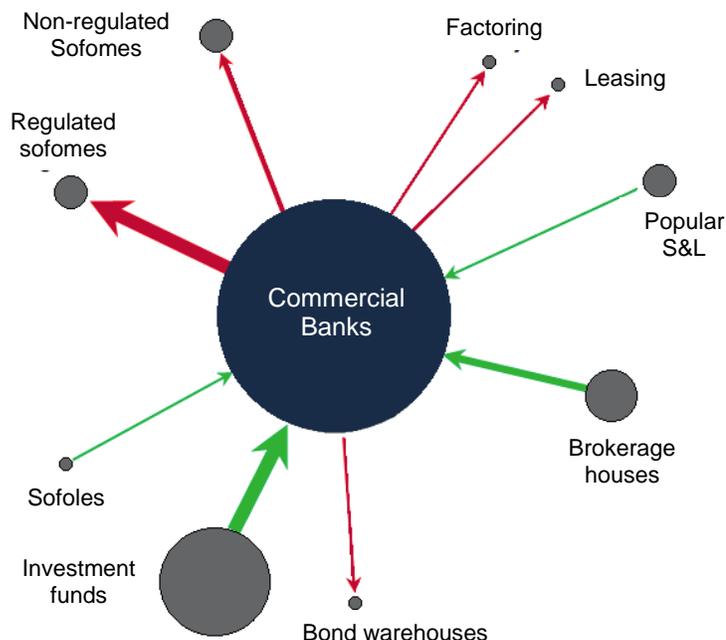
6/ Unlike other countries, in Mexico, all mutual funds' assets are marked-to-market.

7/ The amount of current issuances is considered.

**Interconnections with Banks**

The analysis based on the *FSB* methodology stresses the importance of measuring interconnections between the traditional banking sector and financial entities and activities that partake in non-traditional credit intermediation. Commercial banks' net exposure to regulated sofomes is the highest exposure by type of intermediary that these institutions register. These sofomes are subsidiaries of the same bank that grants the loan or the financial group the latter belongs to (graph 53). Commercial banks' exposure to unregulated sofomes ranks second in the list. As of June 2013, commercial banks' exposure to the whole sector accounted for barely 2.4 percent of total portfolio, without the amount corresponding to regulated sofomes, and 8.5 percent if regulated sofomes are included.<sup>64</sup> Therefore, risks that may be transferred from the non-banking sector to the banking sector are limited. On the other hand, mutual funds and brokerage firms have the highest exposure to commercial banks, namely 3.4 and 1.0 percent, respectively (graph 53).<sup>65</sup>

**Graph 53**  
**Commercial Banks' Net Exposure to Financial Entities Not Subject to Traditional Banking Regulation<sup>1/</sup>**



Figures as of September 2013

Source: Banco de México, CNBV and AMFE

1/ Net exposure is the difference between financial entities' assets held in commercial banks (e.g. deposits and investments in banking securities) and financial entities' liabilities vis-à-vis commercial banks (e.g. bank loans and investments in said entities). Red arrows indicate that commercial banks are funding the entity in net terms, whereas green arrows imply that the entities are funding commercial banks in net terms –the thicker the arrows the greater the interconnection.

<sup>64</sup> Such entities are governed by prudential regulation similar to that of commercial banks; if we adopt a more strict approach to define the group of entities that belong to the analyzed sector, regulated sofomes would be excluded for not exhibiting quasi-bank run risk, as they do not take deposits.

<sup>65</sup> Exposure to commercial banks accounts for 11.6 percent of mutual funds' assets and 12.5 percent of brokerage firms' assets.

## Banco de México

The mushrooming of unregulated *sofomes* in recent years is at the root of a financial reform initiative sent to Congress aiming at revising the applicable regulatory framework. On one hand, according to said proposal, *sofomes* materially linked to regulated entities should be subject to similar regulation in order to avoid potential regulatory arbitrage. Hence, *sofomes* linked to popular credit and savings entities and savings and credit cooperative societies should become regulated entities, in line with a similar change undertaken in 2006 related to *sofomes* linked to banks or financial holding companies.

On the other hand, the expansion in *sofomes* credit granting may translate into the over-indebtedness of households and companies. This may in turn have a negative effect on *sofomes* themselves and other credit grantors such as banks. The financial reform puts forth that unregulated *sofomes* should be obliged to share information on their borrowers with at least one credit information corporation.

### Repo Transactions

The *FSB* considers that both the high level of leverage generated by repo transactions<sup>66</sup> and the characteristics of reported instruments and entities carrying out said transactions brought about perverse dynamics, particularly in developed countries. The plummeting value of assets related to repo transactions together with concerns over the solvency of counterparties triggered far from negligible margin calls among counterparties. Indeed, the high leverage allowed by these transactions made margin calls translate into numerous sales of assets, while generating increasing default and the abandonment of guarantees. This situation degenerated into a negative spiral of losses and successive margin calls, thereby highlighting the elevated pro-cyclicality of this market under stress scenarios.

Consequently, the *FSB* is currently working on developing recommendations to alleviate risks related to repo transaction; yet, in Mexico, said transactions are subject to a more strict regulation than in other countries. In particular, the *FSB* has put forth certain constraints on the type of financial intermediaries eligible for repo funding and on the characteristics of assets than can be transacted in this fashion. Market risk derived from bank and brokerage firms' repo funding is limited, as these transactions are subject to capital requirements for market risk. Besides, banks and brokerage firms must be authorized by Banco de México to enter into the long-term repo market.

A general description of the situation of major intermediaries that, conforming to the *FSB*, are part of the financial system not subject to traditional banking regulation is presented below.

### Brokerage Firms

Even though brokerage firms are subject to National Banking and Securities Commission (CNBV) regulation, the *FSB* classifies them within the group of entities that, given their type of activity and market risk-taking, should be followed up closely. As of September 2013, assets managed by brokerage firms grew 6.0 percent in real terms compared to the same month of the previous year, owing to the decline in assets experienced by bigger entities.<sup>67</sup>

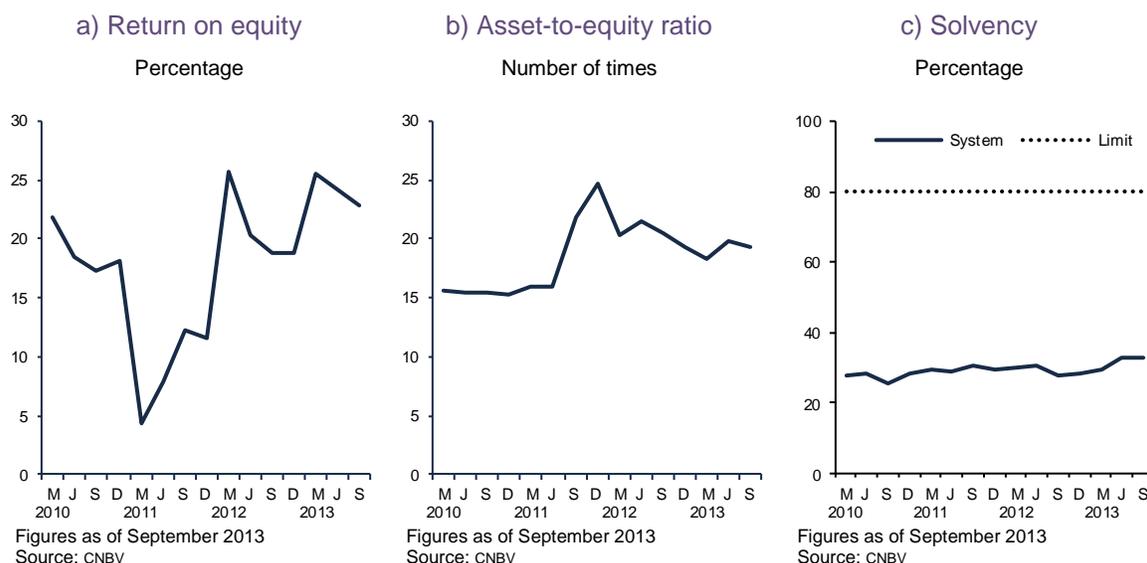
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<sup>66</sup> Repos are transactions in which a financial intermediary (borrower) sells securities to investors (lenders) for a sum of money (price), together with an agreement for the seller to repurchase such securities at a later date (prior to their maturity) and to pay back the original sale price plus a premium.

<sup>67</sup> The decline in the assets of the seven largest brokerage firms is noteworthy (0.7 percent), as well as that of the group with a limited range of authorized brokerage activities (0.2 percent).

Brokerage firms' assets accounted for 3.5 percent of total assets in the financial system. Just like commercial banks, this sector has seen the exit of subsidiary entities due to the restructuring of parent companies abroad. As of September 2013, brokerage firms' net profit increased by 15.7 percent in real terms, compared to the same period of previous year, thus becoming one of the sectors with a significant increase in annual profitability. Return on equity was 22.8 percent (graph 54).<sup>68</sup> Additionally, solvency remained within adequate levels during that period and the leverage level grew by one percentage point, thus reaching a weighted average of 19.3 times their equity.

**Graph 54**  
**Brokerage Firms' Return on Equity, Leverage and Solvency<sup>1/</sup>**



1/ The graphs present weighted averages based on each institution's share in brokerage firms' total assets.

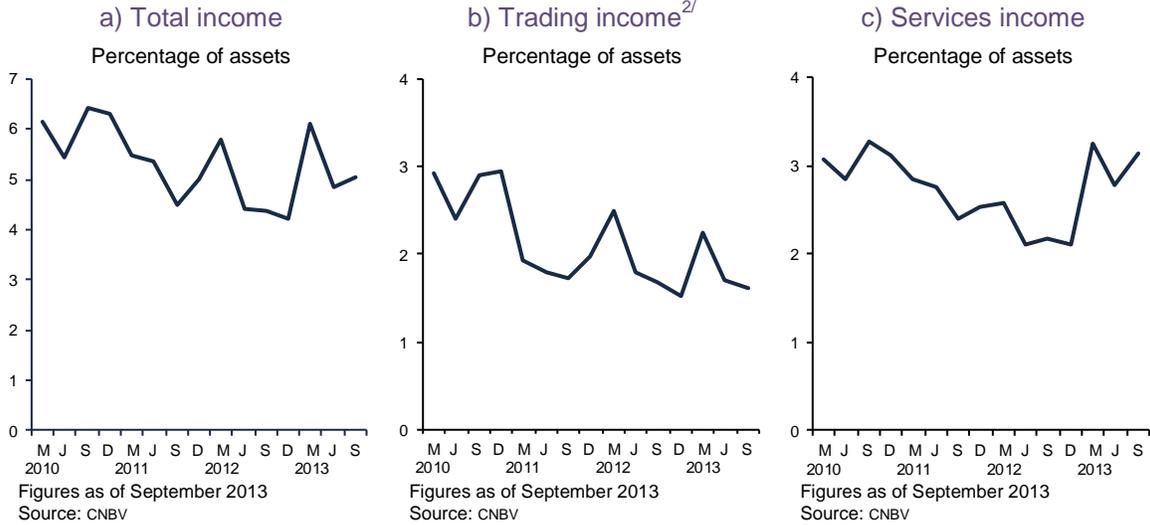
2/ The capital consumption index is used to measure the solvency of brokerage firms. It is the ratio of capital requirements for market, credit and operating risks divided by the brokerage firm's capital. In order to be regarded as solvent, brokerage firms must maintain their capital consumption index below 80 percent.

### Market Risk

Brokerage firms' market risk –using VaR– is mainly concentrated in the equity portfolio: it accounted for 71 percent of total risk, while the bond portfolio only represents 27 percent, and the foreign exchange portfolio 2 percent (graph 56).

<sup>68</sup> This figure takes into account annualized cumulative net profit and average equity for the same period.

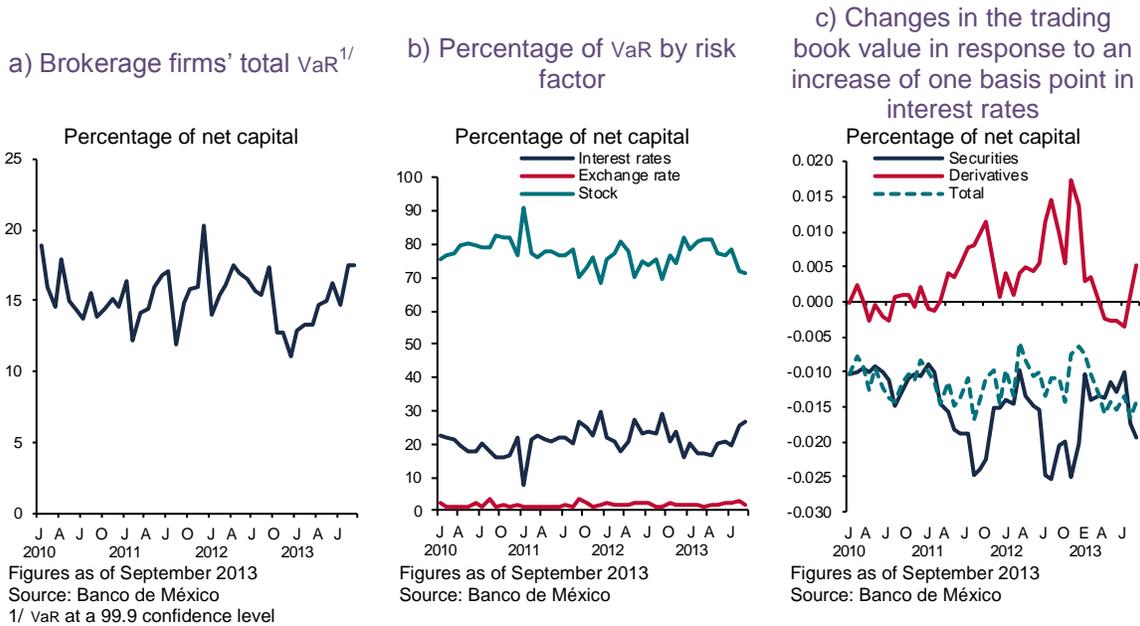
**Graph 55**  
**Brokerage Firms' Sources of Income<sup>1/</sup>**



1/ The graphs present weighted averages based on each institution's share in brokerage firms' total assets.

2/ Trading income consists of profit and loss generated by the purchase and sale of securities, currencies, metals and derivatives, as well as the revaluation of positions in such instruments.

**Graph 56**  
**Brokerage Firms' Market Risk**



1/ VaR at a 99.9 confidence level

## Mutual Funds

According to the *FSB* methodology, mutual funds are also part of the universe of entities not subject to traditional banking regulation, for they broker customers' resources by investing in debt instruments. For the *FSB*, money market funds<sup>69</sup>, that is, mutual funds that invest in very short-term securities, are of special interest given their role in the last financial crisis. Mutual fund investors may withdraw resources following the established regulation for every case. Some funds count on clauses aiming at precluding the massive outflow of resources and mitigating falls in prices of assets that are part of the investment portfolio. In turn, this prevents investor outflows, which in a scenario of high volatility and uncertainty, might increase losses.<sup>70</sup> The *FSB* recommends that this measure, known as redemption restrictions, should be implemented at an international level.<sup>71</sup>

In order to assuage uncertainty over the value of funds placed in money market funds, the *FSB* has also recommended that mutual fund share prices should vary according to the market valuation of the financial assets in which funds are invested –variable net asset value (*VNAV*)–, contrary to what has been done with some mutual funds in the US, whose prices remained constant –constant net asset value (*CNAV*). The purpose thereof is not to offer a promise to redeem at minimum value, so as to make investors clear that investments in those entities entail risks in comparison with insured term bank deposit, for instance. Importantly, in Mexico, all existing mutual funds are considered variable net asset value (*VNAV*).

As of September 2013, funds managed by mutual funds totaled 1.6 trillion pesos, accounting for 10 percent of GDP and real growth of 6.9 percent in regard to the same month of the previous year. Debt funds managed 80.2 percent of assets, while equity funds managed the remaining 19.8 percent.<sup>73</sup> Debt fund assets were primarily concentrated in government securities –through both repo and outright transactions– (graph 57a and 57b). The number of mutual fund contracts was 2.0 million as of September 2013, which implied a 2.3 percent drop compared to the previous year.

<sup>69</sup> In Mexico, the legal figure of money market funds was included in the General provisions applicable to mutual funds (Circular on Mutual Funds) in 2009.

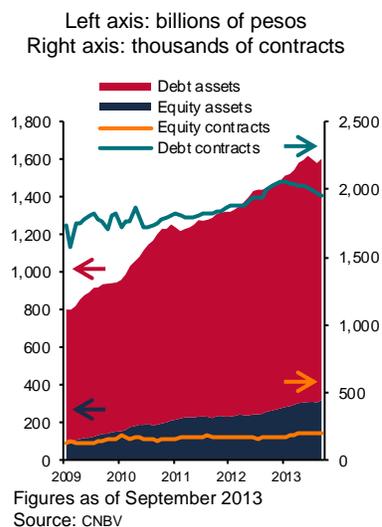
<sup>70</sup> In the case of commercial banks, institutions count on the deposit insurance as a defense mechanism against bank runs.

<sup>71</sup> In Mexico, the Law on Mutual Funds acknowledges two types of funds (article 7): open-end and closed-end. Open-end funds are those obliged –in conformity with applicable legislation and prospectuses– to buy back shares of their capital stock or to redeem them by using their own investment assets, unless said prospectuses temporarily and extraordinarily annul the repurchase. In contrast, closed-end funds are not allowed to buy back shares of their capital stock.

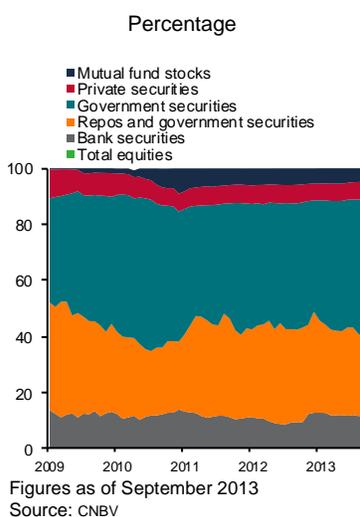
<sup>73</sup> The Law on Mutual Funds establishes that debt funds shall exclusively transact investment assets such as securities, certificates or documents representing debt owed by a third party. By the same token, equity funds shall transact investment assets such as stock, liabilities and other securities, certificates or documents representing debt owed by a third party.

**Graph 57  
Mutual Funds**

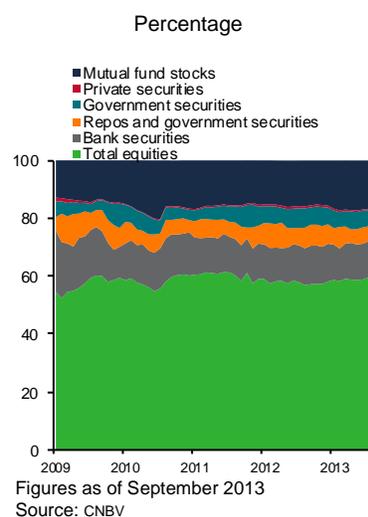
a) Assets managed by mutual funds



b) Structure of debt fund assets



c) Structure of equity fund assets



## Returns

As of September 2013, equity funds' nominal annual rate of return was 7.0 percent<sup>74</sup>, whereas that of debt funds was 2.7 percent. Over the last four years, fees charged by mutual funds to their customers have fallen by 21.6 percent and they account for 0.9 percent of assets. Equity funds charge higher fees on managed assets (1.1 percent), compared to fees charged by debt funds (0.9 percent) (table 11).

## Risks

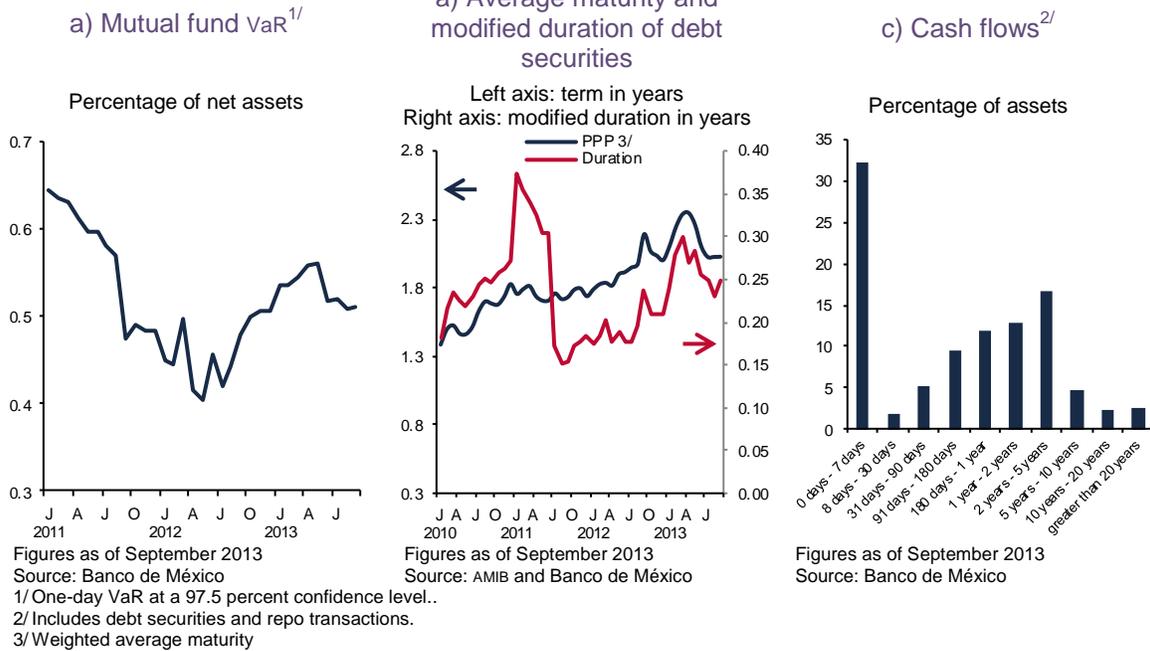
As of September 2013, 30 percent of the mutual fund portfolio was concentrated in short-term instruments, namely repos and cetes (graph 57b); the portfolio's weighted average maturity was 2 years. Likewise, the modified duration<sup>75</sup> of debt securities was 0.2 years (graph 58b), and mutual funds' market VaR<sup>76</sup> was 0.5 percent of assets (graph 58a). The sensitivity analysis suggests that a one hundred basis points increase in interest rates would lead to a 0.2 percent loss in the portfolio value (graph 40c). Additionally, the stress analysis shows that, were the percentage changes observed during the 2008 crisis to occur again, by September 2013, mutual funds would undergo a depreciation of 7.1 percent in their asset value (graph 59a).

<sup>74</sup> Calculated using mutual fund share prices.

<sup>75</sup> Modified duration measures the security's price sensitivity to changes in interest rates and depends on both the term and distribution of the flows generated during the instrument's life. The formula for the calculation of modified duration is:  $(P+ - P-)/P = -2 \times \text{modified duration} \times dr$ , where  $P+ y P-$  (adding up or subtracting the change, respectively) are the security prices given a parallel one-basis point change in the curve employed to discount flows,  $dr$  is the change in the curve (one-basis point in this case) and  $P$  the debt security value.

<sup>76</sup> One-day VaR at a 97.5 percent confidence level.

**Graph 58**  
**Value at Risk, Maturity and Duration: Mutual Funds**



**Table 11**  
**Fee Structure<sup>1/</sup>**  
Percent

Type	2009	2010	2011	2012	2013
Debt	1.10	1.12	0.94	0.95	0.88
Equity	1.27	1.41	1.30	1.14	1.11
<b>System<sup>2/</sup></b>	<b>1.16</b>	<b>1.18</b>	<b>1.01</b>	<b>0.99</b>	<b>0.93</b>

Figures as of September each year

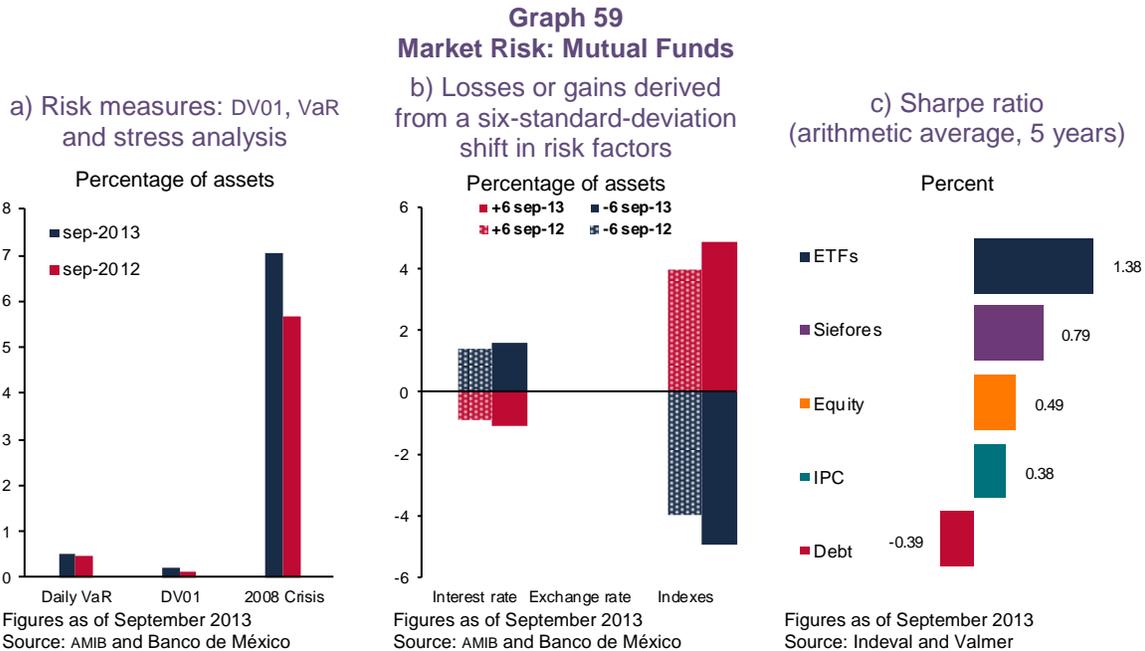
Source: CNBV

1/ Includes entry, exit, management, transaction and distribution fees.

2/ Weighted average of every entity's asset share in the system

## Banco de México

Graph 59b shows mutual funds' potential profits and losses in response to a six-standard-deviation shift in all major financial market variables –stock index, interest and exchange rates. The biggest loss would be triggered by a fall in the IPC (4.9 percent of assets if the IPC decreases by six standard deviations). According to the Sharpe ratio, a measure that allows comparison of risk-adjusted returns on various investment portfolios, mutual funds have been outpaced by other investment options (graph 59c).



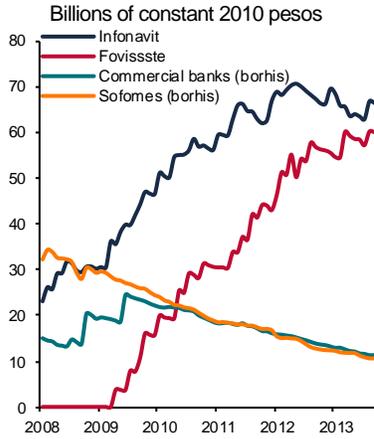
## Asset Securitizations

One of the main factors that contributed to the worsening of last financial crisis was the increase in credit intermediation via securitizations. Banks and other financial institutions came up with investment vehicles in order to throw loan portfolios off their balances and hence reduce their capital requirements. The risk related to securitized portfolios was underestimated, and consequently, an unprecedented credit boom took place. Further, in some cases, business models allowed securitization issuers to keep no part of any such transaction on their balances. Moreover, the assessment made by credit rating agencies had no link whatsoever to the real risks attached to the assets involved.

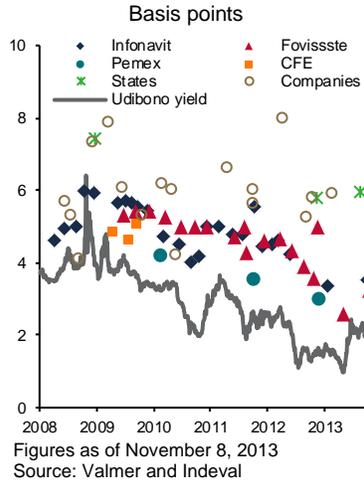
With the purpose of properly aligning incentives, issuers of securitized assets are required to retain part of the risk and not to fully transfer it to the instrument, and hence, to investors. On the other hand, information transparency should be enhanced, so as to allow investors to assess the risk attached to asset-backed bonds, including the origination criteria of the relative loan portfolio. In Mexico, Infonavit and Fovissste are the main stakeholders in the mortgage-backed securities market. Risks are limited by the fact that the funds they receive to grant loans primarily stem from contributions made by member workers, their employers and governments. Withal, the issued amount is too little in comparison with the securitized portfolio's value. Therefore, the risk of the portfolio suddenly losing value and thus not being able to pay bond holders is lessened (graph 60). That is the rationale for the high quality of mortgage-backed securities; in consequence, the possibility of a crisis similar to the one that battered the US a few years ago is remote. Yet, it should be noted that the loosening of loan origination standards should be properly assessed.

**Graph 60**  
**Characteristics of Mortgage-Backed Securities**

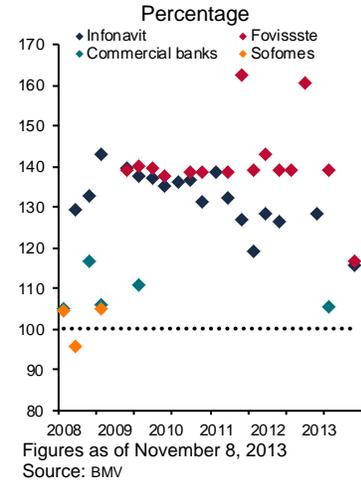
a) Outstanding amount of mortgage-backed securities



b) Rate of return minus udidibono's 10-year return



c) Securitized portfolio amount as a proportion of issued amount



## 4. Financial Markets and Infrastructures

### 4.1 Financial Markets

The performance of financial markets in Mexico can be divided in two different periods; the first, from September 2012 through early May 2013, saw numerous investment flows to developing countries, fueled by loose monetary policies in developed nations; during the second period, which started in the second half of May 2013, speculation over a slowdown in monthly asset purchases by the Fed had a significant impact on capital flows towards emerging markets. Recently, and contrary to market expectations, the Fed decided to put off the slowdown in the pace of asset purchases, arguing that the US economic recovery is not sufficiently robust yet. As a result, it is expected that, in the next months, monetary policy in the US and other developed countries will continue to determine to a large extent the performance of global financial assets.

#### 4.1.1 Foreign Exchange Markets

During the first period of analysis (from September 2012 to May 2013), the peso clearly appreciated, benefitting from the loose monetary policy of developed countries and the solid Mexican economic fundamentals. By the same token, already approved reforms and those whose approval is under way, made Mexico become one of the main destinations for foreign investments. Thus, during said period, the peso appreciated and volatility dropped. On April 9, 2013, the Foreign Exchange Commission decided to withhold auctions at minimum prices for 400 million dollars, a device that had been operating since November 2011.<sup>77</sup> Throughout this period, international reserves picked up steam and reached an all-time high level (graph 61b) of above 170 billion dollars. Additionally, by the end of November 2012, the International Monetary Fund (IMF) renewed for two more years the Flexible Credit Line to Mexico for an amount of 47.292 billion in Special Drawing rights (SDR) equivalent to 72 billion dollars.<sup>78</sup> This was a clear signal of macroeconomic strength in Mexico.

During the second period (May through October 2012), the positive outlook of financial markets changed dramatically. During the first half of May, some comments made by Fed officials raised speculations over a slowdown in the pace of said institution's monthly asset purchases.<sup>79</sup> This possibility could mark a turn in the US monetary policy bias; therefore, a significant adjustment in virtually all financial markets took place. In Mexico, the peso depreciated and reached levels that had not been registered since late December 2012 (graph 61a). Notwithstanding, depreciation was lower or similar to that of other currencies in major emerging countries –in certain cases central banks even had to intervene to curb their currency depreciation. Withal, despite substantial capital outflows from emerging markets, in Mexico, the peso turnover increased and, unlike previous episodes, trading conditions –as measured by the bid-ask spread and the implied volatility of one-month peso options– did not deteriorate (see section *Determinants of Financial Stability*).

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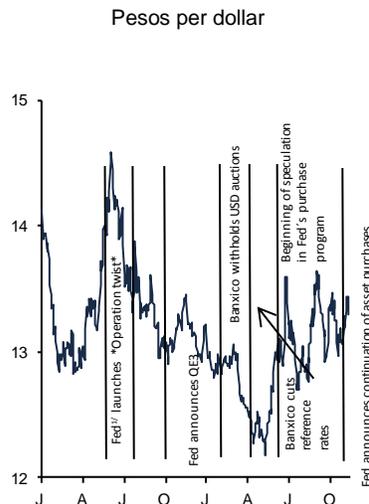
<sup>77</sup> For further explanation on daily US-dollar auctions and auctions to the central bank of US-dollar put options, see box 11 of the *Financial System Report* published in July 2009.

<sup>78</sup> SDR/USD = 1.52637 at the end of November 13, 2013.

<sup>79</sup> The Federal Reserve announced in September 2012 its third round of open-ended asset purchases, buying 40 billion dollars per month of mortgage-backed bonds. In December 2012, it also announced the open-ended purchase of long-term Treasury bonds for a monthly amount of 45 billion dollars.

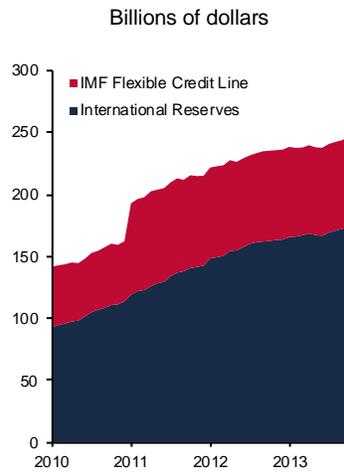
**Graph 61**  
**Foreign Exchange Rate and International Reserves**

a) Fixed exchange rate and significant high-impact risk events



Figures as of November 13, 2013  
Source: Banco de México  
1/ US Federal Reserve System

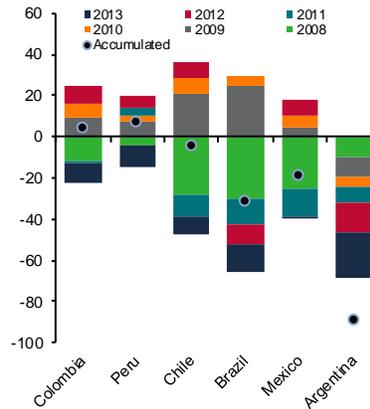
b) International reserves



Figures as of November 13, 2013  
Source: Banco de México

c) Performance of Latin American currencies

Appreciation (+) / depreciation (-) percentage



Figures as of November 13, 2013  
Source: Bloomberg

### 4.1.2 Capital Market

#### Debt Market

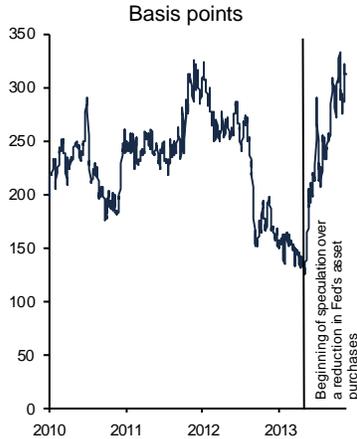
The government debt market followed a trend similar to that experienced in foreign exchange markets. At the beginning of the period covered by this Report, interest rates plummeted, reaching all-time low levels in early May. The slope of the yield curve flattened substantially between September 2012 and May 2013, registering levels that had not been observed since 2009 (graph 62a and b). Further, the record lows of US interest rates notwithstanding, the interest rate spread between US dollar- and peso- denominated bonds continued to fall, and even down to near-record minimums in some cases (graph 62c).

Additionally, foreign investors continued to increase their holdings of peso-denominated bonds –both bonds and cetes reached all-time highs– and even took greater interest in udibonos. However, it should be noted that the high share of foreign investors in local money markets might have an adverse effect on liquidity. In certain cases, foreign investors hold more than 80 percent of the total outstanding amount of certain issues, having a negative impact on trading turnover (graphs 63a and b). Importantly, institutional funds account for a significant proportion of these investors.

The favorable trend led federal debt to reach all-time highs in average maturity and duration. Thus, refinancing risk in Mexico is lower, although investors are more exposed now to interest rate changes. The peso-denominated federal debt portfolio has an average duration of slightly more than five years (graph 64a). Likewise, the average maturity has continued to increase at a faster pace than that of US public debt (graph 64b).

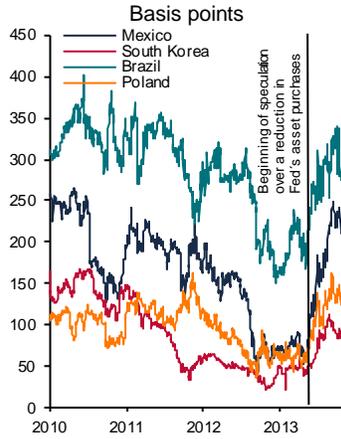
**Graph 62**  
**Interest Rates**

a) Slope of the 30- and 3-year yield curve in Mexico



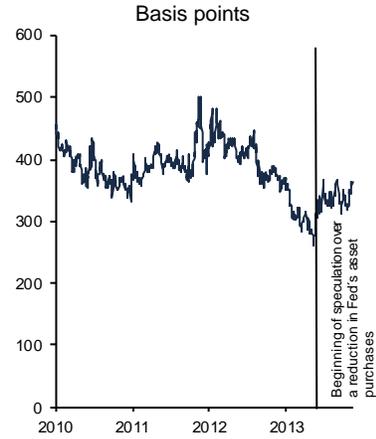
Figures as of November 13, 2013  
Source: Proveedor Integral de Precios (Pricing Services Provider)

b) Slope of the 10- and 2-year yield curve



Figures as of November 13, 2013  
Source: Bloomberg

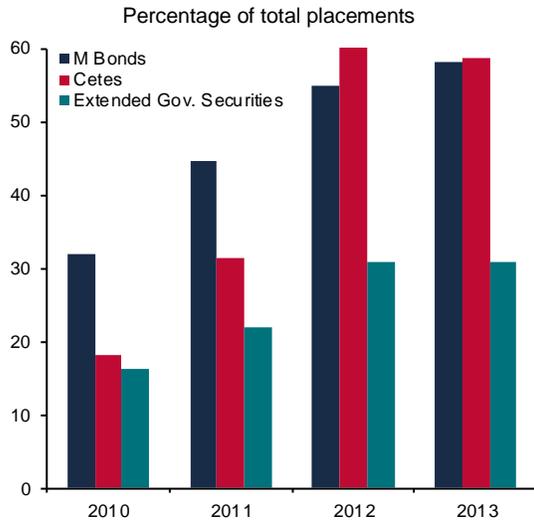
c) 10-year interest rate spread between US and Mexico



Figures as of November 13, 2013  
Source: Bloomberg

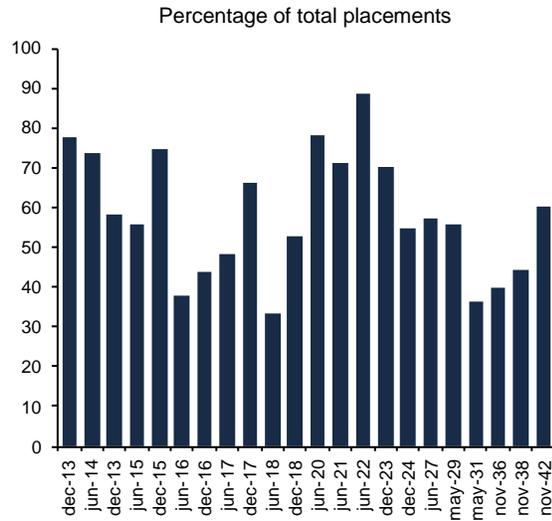
**Graph 63**  
**Government Securities Holdings by Foreign Investors**

a) Holdings of different government securities<sup>1/</sup>



Figures as of November 13, 2013  
Source: Banco de México

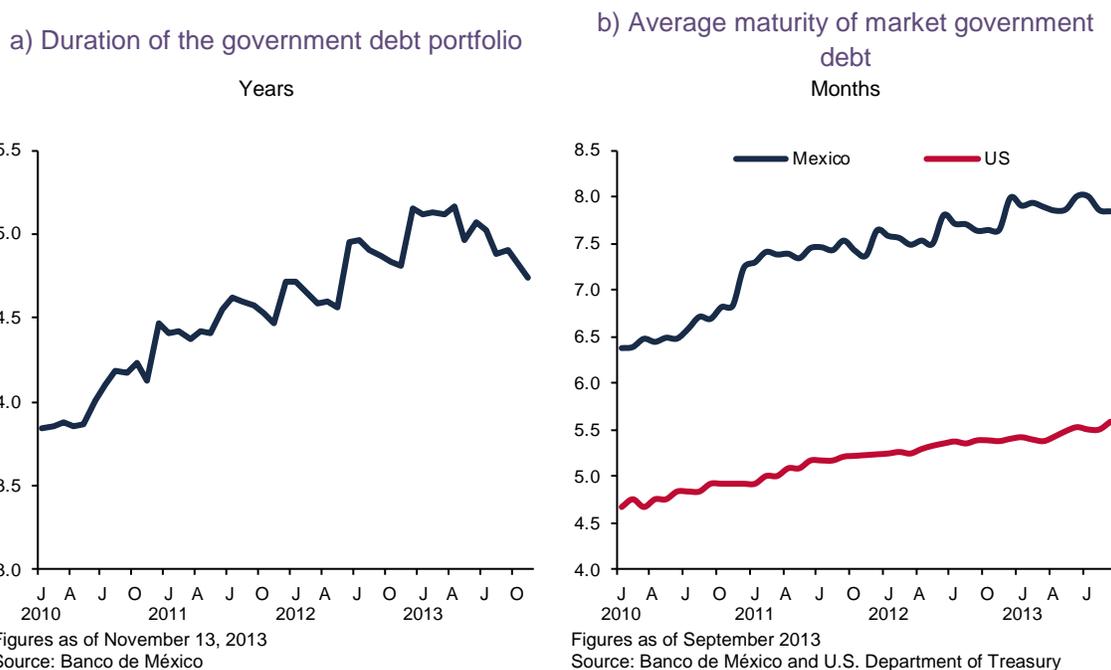
b) Concentration of foreign holdings by bond maturity



Figures as of November 13, 2013  
Source: Banco de México

<sup>1/</sup> Securities issued by the Federal Government, Banco de México and the IPAB.

**Graph 64**  
**Duration of Government Securities**

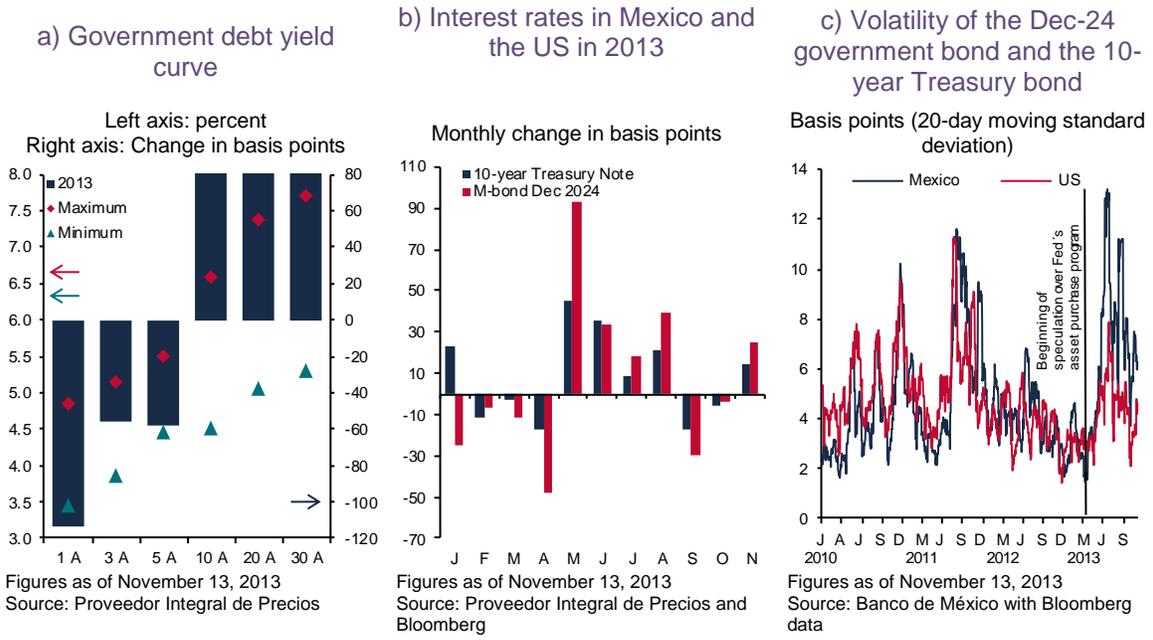


From May through October 2013, expectations over a monetary policy adjustment by the Fed triggered considerable changes in asset prices: increases of more than 100 basis points in the rates of long-term peso-denominated federal debt (graph 65a) which raised the yield curve slope. This phenomenon was not exclusive to Mexico, and is rather due to extremely low prospects of normalized interest rates in developed countries. The spike in long term interest rates in Mexico resulted to a large extent from adjustments in US Treasury bond rates, which have historically displayed a strong correlation with Mexican peso-denominated issues (graph 65b). The adjustment that took place in the Mexican debt market was less orderly than in the foreign exchange market. Yet, trading turnovers were close to their historical averages. In addition, regardless of the aforesaid spike in interest rates, foreign investors did not curtail their holdings of peso-denominated securities. Moreover, Mexican rates' volatility was similar to that observed in markets of more developed countries, namely the US Treasury bond market (graph 65c).

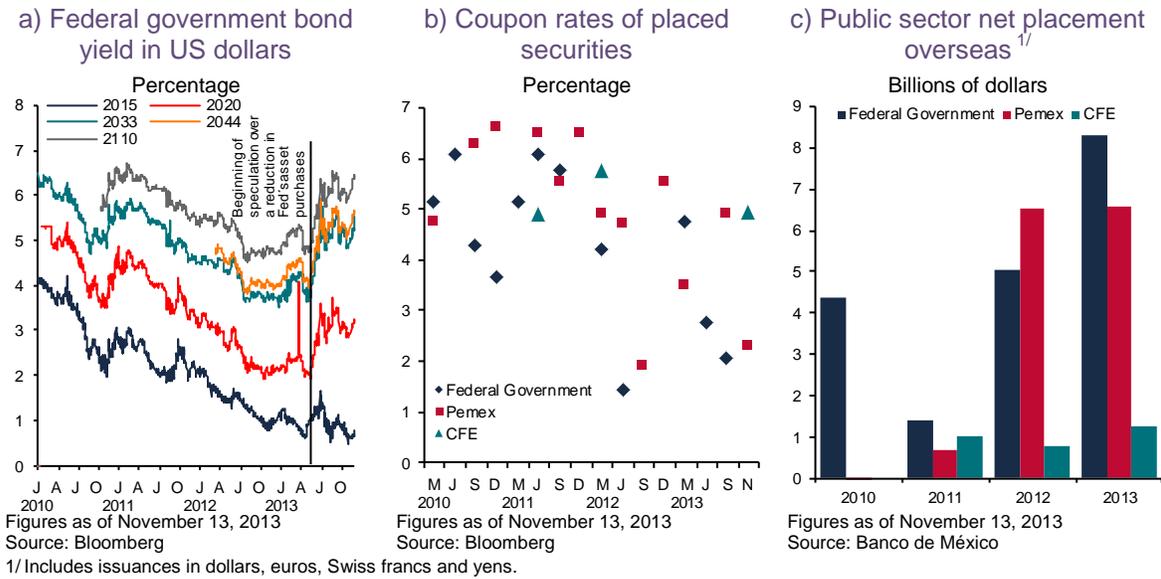
On the other hand, the Mexican government also placed bonds in international financial markets. In January 2013, a 30-year dollar-denominated bond was reopened with the all-time lowest spread versus US Treasury bonds (graph 66a). In like manner, a 10-year euro-denominated bond was placed in April, and in July, for the second year in a row, an unguaranteed Samurai bond was placed in three tranches of 3-, 5- and 6-year maturities with respective yields of 1.16, 1.39 and 1.54 percent. This placement represented the all-time lowest financing cost in yens for the federal government (graph 66b).

As for other public issuers in international markets, Pemex placed dollar-denominated debt due in 2041 (graph 66c), and the Federal Electricity Commission (CFE) followed suit with a 10-year dollar denominated issue.

**Graph 65**  
**Interest Rates in Mexico and the US**



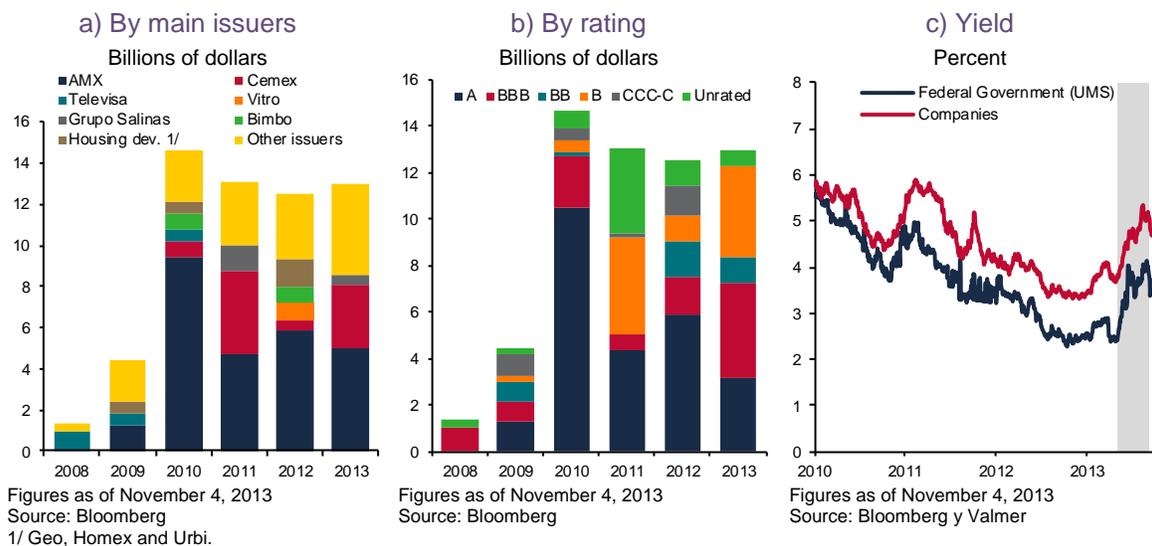
**Graph 66**  
**Placement of Public Debt Overseas**



The corporate debt market also benefitted from the fall in interest rates registered at the beginning of the period. Indeed, a number of issuers benefitted from highly competitive rates. It should be noted that the improvement in financing conditions was registered both in local and foreign currencies. In addition, the positive outlook for the Mexican economy fostered more private sector issuances.

The level of Mexican companies' debt issuances so far in 2013 was similar to the one registered in the same period of the previous year (graph 67a). Private sector issues placed abroad were not affected by the negative performance of Mexican house building companies, which defaulted on payments and, therefore, are currently undergoing a debt restructuring process. Whereas the issues of long-term peso-denominated debt securities were higher in 2013 than in 2012, the pace of issuances has been similar (graph 68b) and the amount of placements in terms of less than one year dropped two percent. In addition, the amount of peso-denominated debt placed by foreign entities and supranational agencies surged in 2013, compared with the previous year (graph 68a).<sup>80</sup>

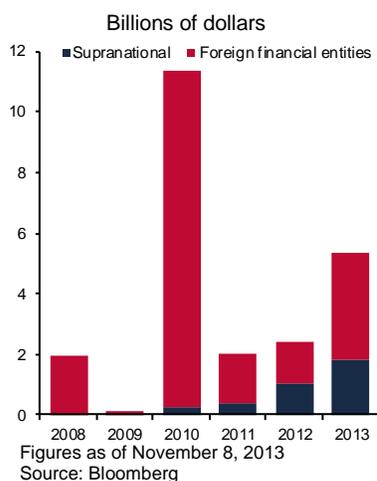
**Graph 67**  
**Private Sector Placements Overseas**



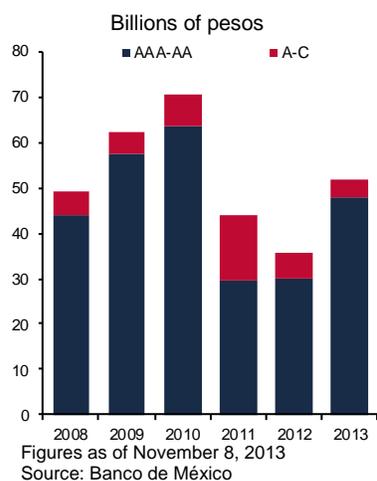
<sup>80</sup> A supranational agency is an entity created by two or more central governments via international treaties, namely the Inter-American Development Bank, the Asian Development Bank, the International Bank for Reconstruction and Development, etc.

**Graph 68**  
**Peso-Denominated Placements by Foreign Entities and Mexican Companies**

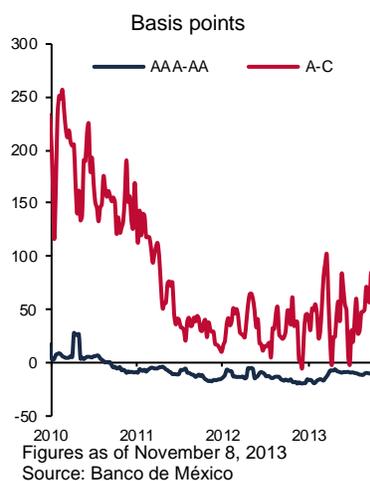
a) Issuances by foreign entities



b) Long-term issuances by Mexican companies



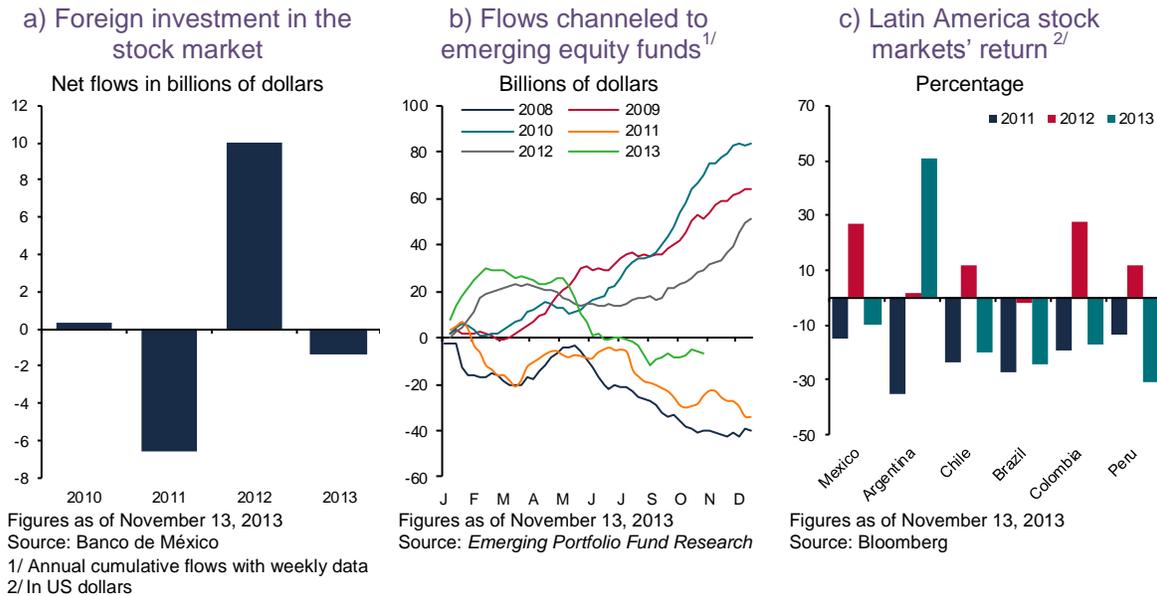
c) Spread between coupon rate of peso denominated issues by Mexican companies and TIIE



## Equities

The equity market exhibited a heterogeneous pattern during the period of analysis, similar to what happened in foreign exchange and debt markets. During 2012 and the beginning of 2013, the IPC had a good performance, partly driven by capital inflows resulting from abundant international liquidity and expectations of growth for the domestic economy. Conversely, the IPC downtrended in the first three quarters of 2013. The main reasons for this fall were: a) expectations of the curtailment of asset purchases by the Fed; b) capital outflows from emerging countries –the *Emerging Portfolio Fund Research* data (graph 69b) shows that in a number of emerging economies capital outflows have been registered as of May 2013; c) the slowdown in the Mexican economy, together with the delicate financial situation of construction companies. At the end of October, foreign investors accumulated sales for 1.95 billion dollars (graph 69a).

**Graph 69**  
**Investment Flows and Performance of Emergent Stocks**



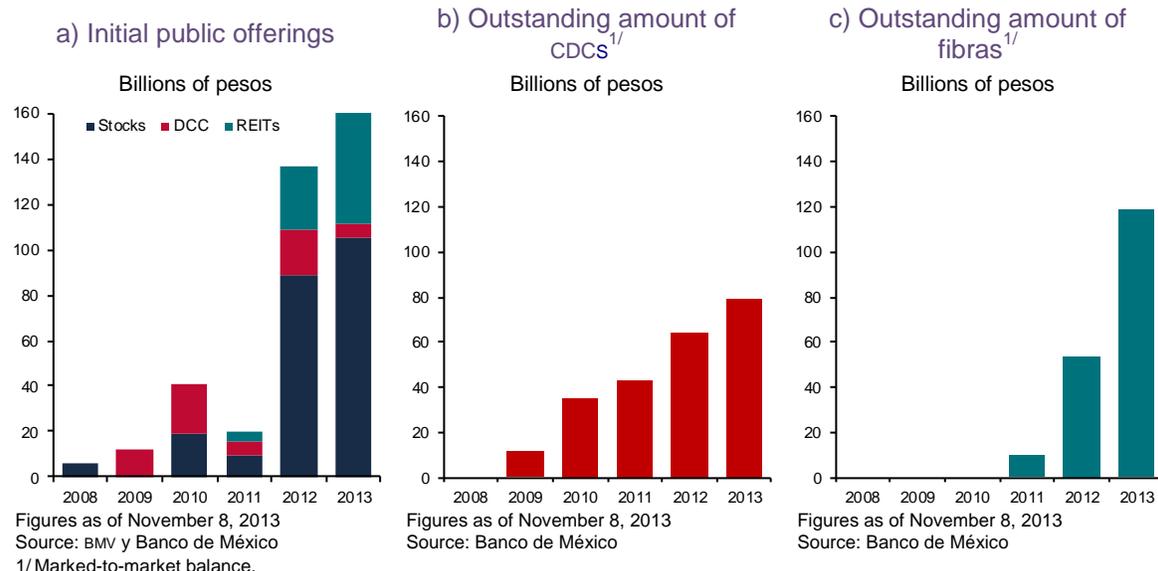
During the period covered by this Report, initial public offerings continued to grow, especially placements by several non-financial and financial companies, real estate trusts (fibras), Development Capital Certificates (DCC) and Exchange-Traded Funds (ETFs) (graph 70a). Indeed, initial public offerings have picked up steam in the last two years. For example, in September 2012, Grupo Financiero Santander México, a subsidiary of Banco Santander España made an offering for 52.798 billion pesos, which accounted for 22 percent of their capital and represented the biggest offer ever made in Mexico.

Other financial companies undertook stock operations to widen their capital: Grupo Financiero Banorte made a secondary offering for 2.5 billion dollars in July. Funds will be used to settle recent acquisitions made by the group and to strengthen their capital structure. In addition, some companies listed their stock for the first time: six new issuers did it in 2012 and ten in 2013 (graph 70a).

The issuance of other equities such as CDCs and *ETFs* slowed down compared with the previous year. As for CDCs, even if they are attractive for institutional investors, the number of new issues diminished and, unlike previous years, no reopenings were made in the current year. The outstanding amount of CDCs is 74.9 billion pesos. Yet, only 27.9 percent of the placed amount has been invested in projects. In recent years, assets managed by *ETFs* have substantially grown the world over. In Mexico, as of September 2013, the outstanding amount of *ETFs* was higher than 111 billion pesos, regardless of the fact that no new placements have been made.<sup>81</sup>

<sup>81</sup> With the purpose of making the operation and issuance of fibras, CDCs and *ETFs* more efficient, as well as fostering more clarity in the responsibilities of users, intermediaries and other market participants, the financial reform to the Securities Market Law introduces the following senior trust bonds: a) capital development certificates (CDCs); b) real estate certificates (fibras); and c) exchange traded funds (*ETFs*). Further, the investors' minimum rights that issuance documents related to real estate or development senior trust bonds must contain are therein specified.

**Graph 70  
Equities**



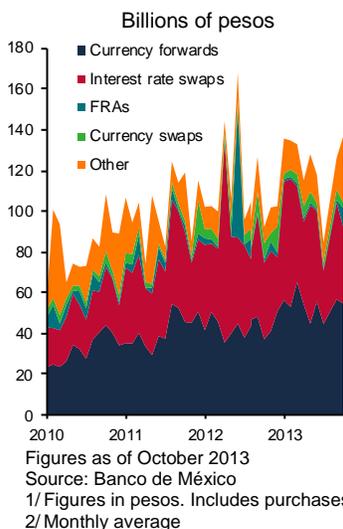
As far as fibras are concerned, in 2013 new four issuances for approximately 50 billion pesos were placed in 2013, not to mention two reopenings: the outstanding amount now adds up to 145 billion pesos (graph 70c). These securities are quite advantageous for financial markets, as they provide real estate assets with liquidity and enable investors to access the sector, without having to deal with managerial or liquidity situations. Nevertheless, the high level of the outstanding amount and swift growth are good reasons to analyze the incentives of all market participants involved, as well as governance thereon, taking into consideration studies and recommendations undertaken by international organizations such as the *FSB* and *IOSCO* based on other countries' experiences.

#### 4.1.3 Derivatives Market

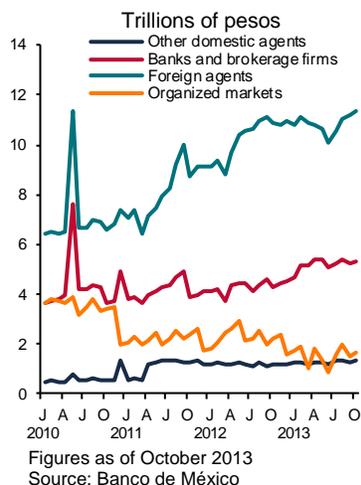
The derivatives market followed a pattern similar to that observed in foreign exchange and debt markets. At the beginning, investors' positions in derivatives instruments were in line with the appreciation of the peso and a reduction in interest rates. From the beginning of the period covered by this Report through the first quarter of 2013, investors kept long peso positions via foreign exchange forwards and futures. From the second quarter on, there was a substantial fall in such positions, which was consistent with expectations over lower capital inflows towards emerging markets. This change in investors' positions raised volatility, although the levels registered were not as high as in previous episodes. There was also a slowdown in the market during the first half of the year, mainly due to the exit of foreign counterparties, who sought to restructure their portfolios and reduce their exposure to emerging markets. Withal, during the third quarter, the market came back to previously observed levels (graph 71).

**Graph 71**  
**Turnover and Current Notional Value in the Derivatives Market**

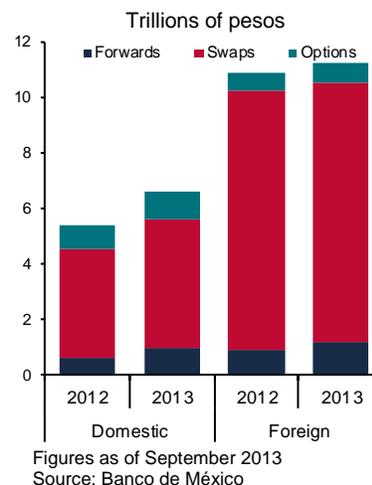
a) Daily turnover in the derivatives market by type of instrument and underlying asst<sup>1/2/</sup>



b) Monthly turnover in the derivatives market by type of counterparty as of transaction date<sup>1/</sup>



c) Current notional value by type of instrument for foreign and domestic counterparty<sup>1/</sup>



### Reforms to the Over-The-Counter (OTC) Derivatives Market

Financial derivatives are instruments used by financial market participants for risk diversification and hedging, as well as an investment alternative. The derivatives market can contribute to the stability of the financial system, as far as, even in stress scenarios, it is liquid and deep enough to meet the needs of its participants and it operates under the appropriate regulatory framework that clearly establishes responsibilities of its participants and enforcement mechanisms. Central counterparties who clear and settle derivatives transactions can play an important role in strengthening the market, and thus, foster financial stability. An effectively managed central counterparty can promote market liquidity and transparency, strengthen and simplify risk management and alleviate the effects of default on other participants. These attributes are particularly relevant in the case of OTC derivatives, as these instruments have long maturities and market participants' exposures generally vary.

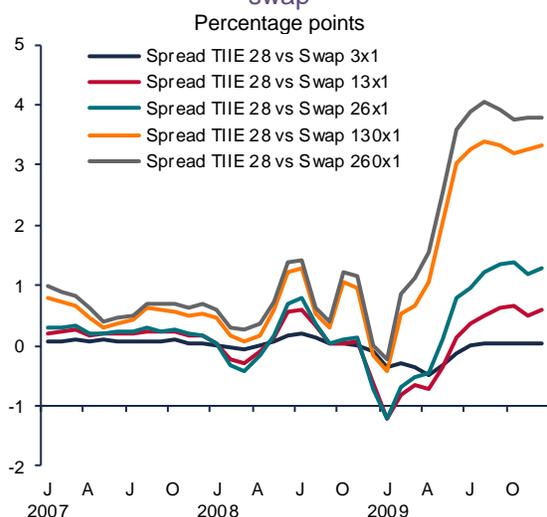
In the aftermath of the global financial crisis of 2008, financial authorities managed to identify sizable weaknesses in the OTC derivatives market that had heightened risk. For instance, information available on derivatives transactions was insufficient to determine both the risk that market participants were exposed to and the risk of contagion among them. Also, risk management inefficiencies were detected in a number of institutions. Financial authorities found out that, in low-liquidity scenarios such as the referred crisis, settling standardized contracts through central counterparties might have lessened contagion among participants. Indeed, when it comes to clearing transactions and centralizing collateral, central counterparties manage participants' liquidity more efficiently. Moreover, in case of bilateral agreements, liquidity pressure on the valuation of assets which serve as collateral, together with the closing of credit lines backing transactions, may exacerbate the descent in turnover and dampen market recovery. In such scenarios, uncertainty over credit risks raises unease and, ultimately, impinges on market liquidity.

## Banco de México

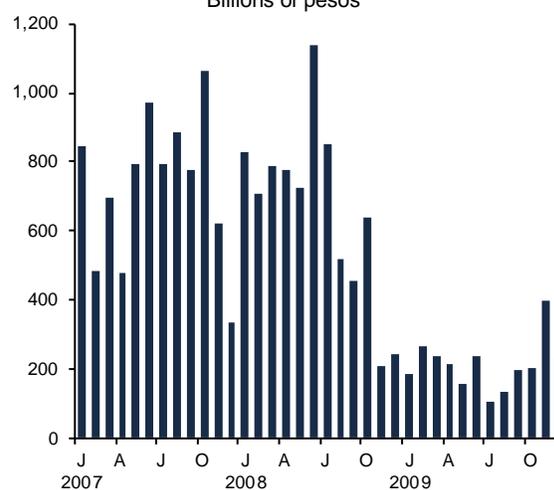
In Mexico, this kind of repercussions were observed in the TIE swap market in the form of high volatility during the climax of the financial global crisis of 2008 –especially after the Lehman Brothers collapse, one of the major market makers. The average monthly turnover of TIE swaps from early 2007 through to Lehman Brothers bankruptcy was 739 billion pesos, whereas for the remainder of 2008 and 2009 such figure plummeted down to a mere 243 billion pesos (graph 72). It should be underscored that the 2008 crisis widened the spread between the TIE swap and 28-day TIE yield curves, especially during the first months after the onset of the crisis resulting from expectations of liquidity crunches in the interbank market. In December 2008, said spread narrowed, as the TIE went up. Uncertainty swirled throughout 2009, especially around long-term TIE swap spreads (graph 72).

**Graph 72**  
**TIE**

a) TIE Spread between 28-day TIE and TIE swap



b) Monthly TIE swap turnover by banks and brokerage firms



As a response to the crisis, in 2009, G20 financial authorities and several international organizations agreed to the following reforms to strengthen the derivatives market:

- i. All standard OTC derivative contracts should be traded on exchanges or electronic trading platforms, and cleared through central counterparties.
- ii. OTC derivative contracts should be reported to trade repositories, and
- iii. Non-centrally cleared contracts should be subject to higher capital and bilateral margin requirements

In Mexico, financial authorities (SHCP, CNBV and Banco de México) already work on a project to amend the existing regulation, so as to align it with the above mentioned reforms. The following amendments are being considered:

- i. Parties engaged in listed derivative contracts shall be subject to Tripartite Rules issued by the three aforesaid financial authorities;

- ii. Companies that manage trading devices for listed securities shall be subject to rules for electronic trading platforms;
- iii. Capitalization rules set forth in the Circular Única de Bancos (banking circular) issued by the CNBV; and,
- iv. Circular 4/2012 for derivatives transactions issued by Banco de México (Circular Banxico).

The regulatory reform to the OTC derivatives market will be implemented in two stages. During the first stage, the Tripartite Rules will be published, under which Asigna, the central counterparty clearing house (CCP), will settle agreed transactions on OTC trading platforms. The amendments will both enable foreign entities to act as clearing agencies and bolster the strengthening of Asigna risk management and operational processes. The foregoing, in conformity with the *Principles for Market Infrastructures* published by the CPSS and IOSCO in 2012, which put the accent on risk management methodologies and provide for a higher level of authorities' engagement in their definition.<sup>82</sup>

As for the centralized record of derivatives transactions, reforms entitle Asigna to serve as central information repository. The current regulatory framework mandates that financial intermediaries (banks and brokerage firms) must report detailed information on derivatives transactions to Banco de México. Intermediaries provide this information at the end of every working day; additionally, they submit a valuation of current transactions at the end of every month. This procedure will remain valid, as it provides authorities with sufficient information on derivatives transactions carried out by local financial intermediaries.

In regard to capitalization rules, the CNBV will issue norms in accordance with Basel Committee agreements relating to the handling of derivatives transactions. Specifically, as far as initial and variation margins are concerned, rules for non-centrally cleared contracts celebrated between financial institutions will be put forth. These rules will follow international best practices and help authorities to encourage centralized clearing.

Turnover in Mexico is concentrated in OTC MXP/USD forwards and interest rate swaps. Regarding the second category, turnover is concentrated in TIEE28 swaps –thanks to their high level of standardization, MexDer announced they would be listed in July 2013, and thus, operation rules will be initially applied thereto (graph 73).

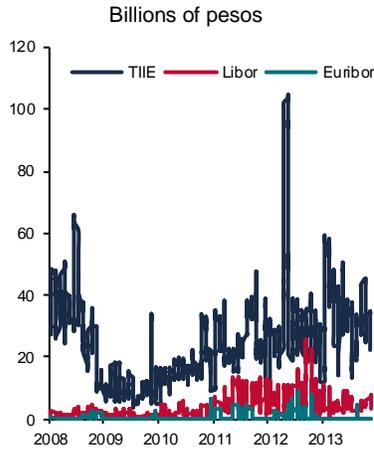
Amendments to CNBV Tripartite Rules and electronic trading platforms will help Asigna to comply with European and US authorities' requirements, and thus, obtain their recognition. Such acknowledgement will be indispensable for foreign entities from those jurisdictions to settle TIEE swaps through Asigna, be exempt from international margin requirements and subject to capital requirements lower than those applicable to non-centrally cleared derivative contracts. All this would contribute to maintain liquidity in the TIEE swap market.

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<sup>82</sup> See section "4.2 Financial market infrastructures".

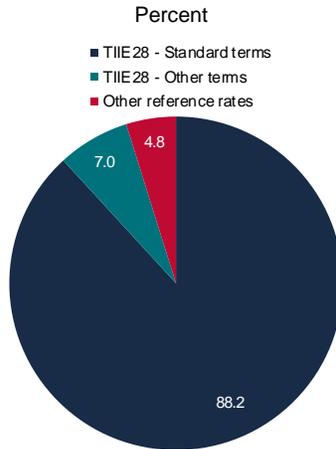
**Graph 73**  
**Turnover in Interest Rate Swaps**

a) Daily turnover in interest rate swaps by reference rate



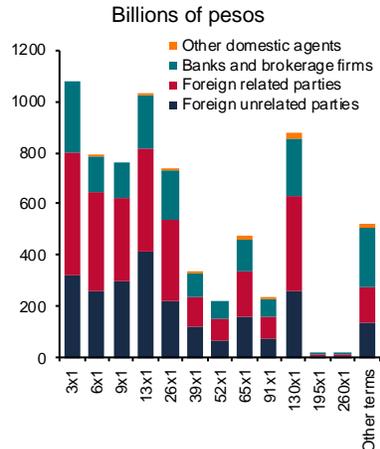
Figures as of November 14, 2013  
Source: Banco de México

b) Turnover by type of contract



Figures as of November 14, 2013  
Source: Banco de México

c) Accumulated turnover in TIIE28 swaps by maturity



Figures as of November 14, 2013  
Source: Banco de México

In the second implementation stage, amendments to the regulatory framework will introduce measures to bolster centralized clearing. Said changes will enable Asigna to process derivatives transactions carried out on electronic trading platforms. In addition, banks and brokerage firms will be obliged to trade TIIE28 swap contracts celebrated between them and with other foreign financial entities on: i) derivatives exchanges established in Mexico, ii) foreign recognized exchanges; iii) electronic trading platforms established in Mexico and authorized by the CNBV; or iv) platforms established abroad and recognized by the CNBV. Eventually, derivatives contracts shall be cleared and settled through: i) central counterparties established in Mexico or ii) foreign institutions recognized by Banco de Mexico that serve as central counterparties.

Importantly, foreign financial entities celebrate a good number of TIIE28 swap transactions, which are the most liquid financial product in the Mexican OTC derivatives market. Further, authorities shall periodically assess the convenience of subjecting other derivatives instruments to centralized clearing. The purpose of the described measures is to strengthen Asigna risk management and operational processes and modify the regulation applicable to electronic trading platforms, so as to reinforce their functioning and, to a certain extent, bring them under the requirements applicable to derivatives exchanges.

The impact of reforms implemented in other countries on derivatives transactions in Mexico should be borne in mind. On October 2<sup>nd</sup>, a new regulation came into effect in the US, which obliges all electronic trading platforms executing derivatives contracts whereby entities considered by US legislation as “US persons” are involved, first, to register with the Commodity Future Trading Commission (CFTC) as Swap Execution Facilities (SEF), and second, to submit all required information.<sup>83</sup> This commission will single out transactions that must be celebrated through swap execution platforms as of November 2013. Hence, domestic electronic trading

<sup>83</sup> See *FTC*. “Core Principles and Other Requirements for Swap Execution Facilities” (17 CFR Part 37); Procedures To Establish Appropriate Minimum Block Sizes for Large Notional Off-Facility Swaps and Block Trades (17 CFR Part 43), Swap Data Recordkeeping and Reporting Requirements (17 CFR Part 45).

platforms on which “US persons” trade derivative contracts should register at the Commission –this is all the more important for platforms trading TIE derivatives, given their high turnover. As of the date of entry into force of said rule, the referred electronic trading platforms had not registered in the CFTC yet. This was partially due to a temporary shutdown of the US government. Although a significant impact on liquidity was not observed –in part, because of insufficient clarity about which transactions shall be executed through these platforms–, this situation could ultimately divide the market in two segments: platforms registered with the Commission and those not registered, and therefore, hamper efficiency.

## 4.2 Financial Market Infrastructures

Financial market infrastructures (FMIs) are made up of entities responsible for recording, clearing and settling financial system transactions: payment systems,<sup>84</sup> central securities depositories,<sup>85</sup> securities settlement systems,<sup>86</sup> central counterparties<sup>87</sup> and central information repositories.<sup>88,89</sup>

Most infrastructures were born as mechanisms to facilitate financial transaction processing. Robust FMIs improve risk management and market efficiency, while fostering information transparency for market participants and authorities. The accurate functioning of FMIs strengthens market operation, and encourages financial stability. On the contrary, poor functioning generates more risk, as infrastructures could become a source of contagion, particularly in stress situations. Hence, international financial authorities have underscored the need to reinforce their functioning. Specifically, G20 countries developed and adopted the *Principles for Financial Market Infrastructures (Principles)*, published by the Bank of International Settlements (BIS) Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) in April 2012. These *Principles* are a compilation of best practices for the organization, operation, risk management, oversight and regulation of FMIs.

The main FMI components in the Mexican financial system are: the Electronic Interbank Payment System (SPEI), the Securities Deposit, Administration and Settlement System (DALI), the Central Securities Counterparty (CCV), Asigna Clearing and Settlement (Asigna), and the Banco de México Account Holders Service System (SIAC).<sup>90</sup>

On the other hand, retail payment systems and means promote economic efficiency. The safe and efficient functioning of said systems and means enables the population to carry out day-to-day transactions in a convenient and low-cost manner. Conversely, failures, inefficiencies and the lack of safety and competence in retail payment systems affect a broad segment of the population, incite apprehension about the means in question and may even have a contagion effect on other electronic means.

This section describes the steps that Banco de México is taking to strengthen systemically relevant domestic infrastructures and promote safer, more efficient and accessible retail payment means. With regard to infrastructures of systemic importance, actions proposed aim at alleviating systemic risk, namely: i) the adoption of principles for domestic FMIs, and ii) reforms to invigorate the OTC derivatives market –the aforesaid reforms were discussed in the previous section. On the other hand, measures related to retail payment means seek to promote norms for mobile payments and encourage a higher proportion of settlements via credit cards, so as to ultimately bolster innovation and competition.

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<sup>84</sup> A payment system is a network of instruments, rules and procedures established to effect transfers of monetary funds between parties in the financial system.

<sup>85</sup> A central securities depository is an entity that provides securities accounts, safekeeping services and other services related to securities.

<sup>86</sup> A securities settlement system is a set of institutional agreements for the confirmation, clearance and settlement of securities transactions, as well as the custody thereof.

<sup>87</sup> A central counterparty is an entity mediating between original parties in a transaction, becoming the seller to every buyer and the buyer to every seller.

<sup>88</sup> A central information repository is the entity that keeps centralized electronic record of transaction data.

<sup>89</sup> For further information, see the *Financial System Report 2011* (<http://www.banxico.org.mx/publicaciones-y-discursos/publicaciones/informes-periodicos/reporte-sf/%7B81B0CEC6-0DF8-5E02-CA52-01AA474BB9B9%7D.pdf>)

<sup>90</sup> All acronyms presented in this paragraph are the original acronyms in Spanish.

### 4.2.1 Mitigating Systemic Risk

The appropriate functioning of FMIs is a necessary, albeit insufficient condition for financial stability. This is particularly true for such infrastructures that, given the monetary amount they operate or their role in the financial segment in question, are capable of generating systemic risk. Banco de México seeks to reinforce systemically relevant domestic infrastructures, so that they cease to represent a source of contagion and contribute to efficiency, adequate risk management and market liquidity, both in normal and stress conditions.

For that reason, Banco de México adopted CPSS and IOSCO *Principles* and is set to promote that domestic FMIs which are prone to systemic risk comply with them. The purpose of these actions is to fortify FMIs so that they contribute more to mitigating market risks and facilitating risk measurement and prevention. Moreover, the adoption of said *Principles* will make regulation, supervision and oversight easier for authorities. In particular, the Electronic Interbank Payment System (SPEI), the Securities Deposit, Administration and Settlement System (DALI), the Central Securities Counterparty (CCV) and the Asigna central derivatives counterparty must abide by the *Principles*.<sup>91</sup>

The *Principles* include 24 standards applicable to FMIs and five responsibilities for financial authorities (table 12). The former address issues such as organization, liquidity and credit risk management, settlement of transactions, securities custody and exchange, management of business and operational risks, as well as efficiency, participation and transparency criteria. Responsibilities assigned to authorities have to do with adequate regulation, supervision and oversight, and they address the issue of giving authorities enough powers and resources to fulfill these tasks. Responsibilities also require that authorities define and publish policies relative to FMIs, adopt the *Principles* and enforce them consistently. Further, they must cooperate with local and international authorities to bolster the safe and efficient functioning of FMIs.

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<sup>91</sup> Banco de México transferred the majority of SIAC payment functions to the SPEI. It follows that SIAC's role as payment system is highly limited; consequently, its adoption of the *Principles* was not deemed necessary.

**Table 12**  
**Principles applicable to Financial Market Infrastructures (FMIs)**

	Principle	Payment systems	Central securities depositories	Securities settlement systems	Central counterparties	Central information repositories
1	Legal basis	X	X	X	X	X
2	Governance	X	X	X	X	X
3	Framework for the comprehensive management of risks	X	X	X	X	X
4	Credit risk	X		X	X	
5	Collateral	X		X	X	
6	Margin				X	
7	Liquidity risk	X		X	X	
8	Settlement finality	X		X	X	
9	Money settlements	X		X	X	
10	Physical deliveries		X	X	X	
11	Central securities depositories		X			
12	Exchange-of-value settlement systems	X		X	X	
13	Participant-default rules and procedures	X	X	X	X	
14	Segregation and portability				X	
15	General business risk	X	X	X	X	X
16	Custody and investment risks	X	X	X	X	
17	Operational risk	X	X	X	X	X
18	Access and participation requirements	X	X	X	X	X
19	Tiered participation arrangements	X	X	X	X	X
20	FMI links		X	X	X	X
21	Efficiency and effectiveness	X	X	X	X	X
22	Communication procedures and standards	X	X	X	X	X
23	Disclosure of rules, key procedures, and market data	X	X	X	X	X
24	Disclosure of market data by trade repositories					X

Source: CPSS-IOSCO: *Principles for Financial Market Infrastructures*

The principles are applicable to the five types of FMIs: payment systems, central securities depositories, securities settlement systems, central counterparties and central information repositories.<sup>92</sup> Some of these principles are general, while others were specifically designed for certain types of FMIs (box 4) –18 principles are applicable to payment systems, such as the SPEI, 21 are applicable to systems like the DALI, and 22 are applicable to FMIs like Asigna and CCV.

<sup>92</sup> Central information repositories hold electronic record of financial transfers. These recently established entities have become especially relevant for the derivatives market.

## Box 4

**Principles for Financial Market Infrastructures (FMIs)****General Organization**Principle 1: Legal basis

An FMI should have a well-founded, transparent, and enforceable legal basis for each significant aspect of its activities in all relevant jurisdictions.

Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

**Credit and liquidity risk management**Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a central counterparty (CCP) that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain enough additional financial resources to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Principle 5: Collateral

An FMI that requires collateral to manage its own or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment

obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

**Settlement**Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

**Central securities depositories and exchange-of-value settlement systems**Principle 11: Central securities depositories

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimize and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilised or dematerialised form for their transfer by book entry.

Principle 12: Exchange-of-value settlement systems

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

**Default management**Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

## General business and operational risk management

### Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

### Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimize the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

### Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

### **Access**

### Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

### Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

### Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

### **Efficiency**

### Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

### Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

### **Transparency**

### Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

### Principle 24: Disclosure of market data by trade repositories

A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

## Responsibilities of Central Banks, Market Regulators, and Other Relevant Authorities for Financial Market Infrastructures

### Responsibility A: Regulation, supervision and oversight of FMIs

FMIs should be subject to appropriate and effective regulation, supervision and oversight by a central bank, market regulator, or other relevant authority. Responsabilidad A:

### Responsibility B: Regulatory, supervisory, and oversight powers and resources

Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising, and overseeing FMIs.

### Responsibility C: Disclosure of policies with respect to FMIs

Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMIs.

### Responsibility D: Application of the principles for FMIs

Central banks, market regulators, and other relevant authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures and apply them consistently.

### Responsibility E: Cooperation with other authorities

Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.

Based on CPSS-IOSCO methodology, Banco de México is currently assessing the extent to which the SPEI complies with the *Principles*. The evaluation process includes drawing up an action plan to address any shortcomings spotted during the process. Given the SPEI design features, especially its ability to immediately process transactions, it does not require credit links between parties, nor between these and the system. These features enable the SPEI to foster financial stability, as it processes companies' and financial institutions' high-value settlements in a timely manner and without engendering credit and liquidity risks to its participants.<sup>93</sup> The aforementioned characteristics, together with other features, such as being a one-tier system managed and operated by the central bank, and the fact that it solely settles transactions denominated in local currency, make it evident that it complies with the principles relative to credit risk (4), collateral (5), liquidity risk (7), exchange-of-value settlement systems (12), participant-default rules and procedures (13), custody and investment risk (16), and tiered participation arrangements (19). As soon as Banco de México's assessment of the SPEI is ready –this is estimated to occur during the first half of 2013–, it will be disclosed.

With regard to DALI, CCV and Asigna, Banco de México has requested their managers to conduct self-evaluations about compliance with the *Principles*. Said infrastructures' managers have already carried out one self-evaluation based on CPSS-IOSCO methodology and, as a result, reported to Banco de México action plans to address the identified opportunities for improvement. In addition, DALI, CCV and Asigna are expected to disclose their self-evaluations in 2014.

#### 4.2.2 Retail Payment Systems

Retail payment systems, which do not use money but rather certain instruments, process transactions carried out by the general public to transfer funds and settle obligations. The main instruments processed through this system are: i) debit and credit card payments, ii) electronic transfers, including automatic and recurring charges, also known as direct debits; and iii) cheques.

Retail payment systems are widely used by the general public, and thus, failures may affect a large sector and generate distrust to the detriment of economic efficiency. In addition, institutions that provide settlement services, such as banks, may suffer from said failures, and see their interaction with other financial institutions troubled and their reputation damaged. In order to provide and permit the use of payment means other than money, banks have developed their own infrastructure, or rather use that of other companies specialized in the processing of the corresponding means of payment. Most banks have developed their own infrastructure for payment means other than money to operate transfers within the same bank, that is, transactions where payer and payee have accounts in the same bank. When payer and payee have accounts in different banks, other infrastructures are used to process, clear and settle transactions.

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<sup>93</sup> This is possible because the SPEI exclusively settles a payment when its originator has enough funds; and only then, these are immediately transferred to the payee. This significantly differs from the processing of payments in a netting system, where transactions are accumulated in order to be cleared and settled at the end of the settling cycle. In the latter case, the payee will not be certain about payment receipt until the clearing and settlement process ends, when all participants with net debtor balances are subject to meet said debits.

## Banco de México

In Mexico, there are three infrastructures that process interbank payment means: i) E-Global and PROSA, which are automated clearing houses<sup>94</sup> owned by some of the largest banks in the country; ii) Cecoban, a cheque clearing house, that apart from cheques, processes direct debits and electronic fund transfers (EFT), which by the way are credited the day following their instruction –said entity is owned in equal shares by the banks that directly partake therein; and iii) SPEI, the payment system that immediately processes electronic transfers, which is managed and operated by Banco de México.

Although commercial banks and Banco de México have thus far developed not inconsiderable infrastructures to process a higher number of electronic payments, there is still great potential for growth, which along these lines, has been restrained by the limited access that the vast majority of the population has to credit card and electronic transfer channels –there are a few 621 thousand point-of-sale (POS) terminals, and only around 20 million users have access to internet banking services.

The following subsection explains the different types of mobile payments, and describes their current situation. It also points out efforts made by Banco de México and other financial authorities to foster the development of this payment means domestically. The Bank Card Payments subsection describes the current situation of the payment means in question, as well as the evolution of interbank fees and discount rates. The subsection closes with a list of provisions that Banco de México is set to release with the purpose of promoting innovation and progress in bank card payments.

### Payments via Mobile Devices

The domestic widespread use of electronic transfers has been constrained by certain factors, such as bank funding costs and lack of internet access. Nevertheless, the increasing use of mobile phones and their adaptability as channels to bank accounts for the purpose of effecting payments and purchases, offers an excellent opportunity to bring more people into the formal banking system and broaden electronic payment services. At present, other ways of using mobile phones to carry out payments have already been identified in certain economies:<sup>95</sup>

1. **Mobile wallets.** Payments in stores, where customers bring their mobile device near a reader for the latter to charge the corresponding amount. This is similar to settling public transportation fares with prepaid cards.
2. **Mobile devices as POS terminals.** Mobile devices have been used as POS terminals at highly affordable costs, allowing small-sized commercial establishments and individuals with a business activity to take card payments. This “terminalization” scheme has significantly increased the number of POS terminals in developed countries. For instance, the number of terminals has grown by more than 25 percent in the US ever since this new scheme emerged.<sup>96</sup>

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<sup>94</sup> An automated clearing house is a centralized processing mechanism, through which participants exchange payment orders or other financial obligations related to an available payment means (bank cards, cheques, mobile money transfers, etc.).

<sup>95</sup> According to the website *Mobile Payments Today* (<http://www.mobilepaymentstoday.com>), payments via mobile phones will amount to one billion dollars in 2015.

<sup>96</sup> As reported by *First Annapolis Consulting*, as of 2012, the number of mobile POS terminals was estimated to have grown by 25 percent; in other words, more than 2.5 million new stores –mainly small-sized businesses– joined the credit card settlement network.

3. **Person-to-person (P2P) mobile money transfers.** Electronic fund transfers via mobile phones are executed through text messaging or internet, and they are generally used for person-to-person (P2P) settlements. This new scheme has had tremendous impact on financial inclusion, especially in countries lacking broad banking or internet infrastructures (e.g. Kenya).
4. **Direct carrier billing.** Customers can purchase digital apps and goods for their mobile telephones, and these are billed together with their mobile telephone services.
5. **Closed-loop mobile payments.** Some enterprises have developed mobile wallets, but unlike the previous categories, customers can only use them to effect payments to a specific commercial chain.

Schemes 2, 3 and 4 are already in use in Mexico, albeit partially and with a low level of penetration. Mobile phones represent the best electronic channel offered to potential users that could speed up the adoption of electronic payments. Currently, there are more than one hundred million mobile phone subscriptions in Mexico, as stated by former COFETEL at the beginning of 2013. And, as reported by the INEGI, in June 2010, there were more than 112 million inhabitants in Mexico. In consequence, financial authorities are promoting a regulatory framework that permits the use of the aforementioned devices, both to open accounts and conduct mobile payments and P2P mobile money transfers.

Person-to-person (P2P) mobile money transfers offer the advantage of minimizing the need to use further infrastructure –which is costly–, not to mention the benefits of mobility, safety and simplicity of operation. In addition, P2P mobile money transfers widen the range of payment services and can be potentially offered to broader population segments, particularly to unbanked segments who do not possess a mobile phone. Not only that, they offer higher flexibility and an additional payment means for already banked users.

This section focuses on the third category of mobile payments, that is, person-to-person (P2P) mobile money transfers, where service is linked to the payer's account from which funds are transferred to the payee's account. In Mexico, by mid-2011, financial authorities launched rules to encourage banks to provide access to low-cost or easy-to-open accounts that linked mobile phone numbers to effect P2P mobile money transfers.<sup>97</sup> This service started operating in Mexico at the end of 2011. Bancomer and Banorte developed infrastructure to offer both easy-to-open accounts and P2P mobile money transfers. Express and Mifon, the respective schemes of the aforementioned banks, were developed without any special agreements with mobile carriers. For their part, Banamex and Inbursa also offer easy-to-open accounts to fulfill P2P mobile money transfers under a scheme known as *Transfer*. For said product, new infrastructure was jointly developed by Banamex, Inbursa, and the mobile network carrier Telcel.

P2P mobile money transfer services currently provided by domestic banks work better for same-bank transfers than when the accounts involved belong to different banks (interbank transfers). Indeed, same-bank P2P mobile transfers offer more operating hours, are faster and, in some cases, less expensive. Besides, they are more easily instructed, as their only two requirements are payee's mobile phone number and payment amount, whereas in the case of interbank transfers, the 18-digit standardized bank key (CLABE) or the payee's 16-digit debit card number is mandatory –self-evidently, this information is not as readily available for users

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<sup>97</sup> These accounts have fewer opening requirements, and customers may not even have to be physically present during opening.

## Banco de México

as mobile phone numbers. Importantly, banks use the SPEI to process interbank mobile payments.

As a result of more favorable conditions for same-bank mobile transfers, 90 percent of P2P mobile money transfers fall within this category. Thus, Banco de México is already advocating for amendments to existing regulation, so as to boost interbank mobile payments and improve competition between current schemes. Provisions launched by Banco de México will aim at setting favorable conditions for interoperability between the two schemes. In other words, customers should be provided the same level of service and user-friendliness in both categories.

Banco de México also studies some changes to enhance the functioning of SPEI, in order to contribute to the immediate processing of interbank mobile transfers, and in more hours of operation. That is why efforts are being made so that the SPEI operates 24/7/365. Last, Banco de México is also working on a simple operational scheme for interbank mobile transfers.

## Bank Card Payments

Bank card payments have substantially grown in Mexico in the last three years, that is, they have recorded a real annual growth rate of 21 percent. In 2012, more than 1.45 billion bank card payment transactions were processed (roughly 13 payments per capita per year). Indeed, bank card payments rank second only to cash. This upsurge can be partly attributed to lower bank card interbank fees (IFs), an initiative promoted by Banco de México, together with actions taken by other financial authorities. As a result, commercial businesses are increasingly incorporating this means of payment. As of December 2005, approximately 201 thousand establishments had a POS terminal, whereas in 2012, this number soared up to 621 thousand, exhibiting a growth rate of more than 200 percent.

Reduced IFs –at the behest of Banco de México– have translated into a greater number of card payments (graph 74). Bank card IFs are paid by commercial establishments' banks (acquiring banks) to customers' banks (issuing banks), every time cardholders settle a payment.<sup>98</sup> In general terms, bank card IFs represent a proportion of the amount paid (*ad valorem* charge); yet, in certain cases, such fees are fixed.<sup>99,100</sup>

As for credit card transactions, the weighted average IF<sup>101</sup> charged by issuing banks between January and June 2012 was 1.42 percent of total amount paid. In the case of debit cards, the weighted average IF was 0.69 percent. It should be noted that the maximum IF allowed for a debit card transaction is 13.50 pesos. Between 2004 and 2013, IFs for credit card payments fell by 131 basis points, while those for debit cards declined 204 basis points.

On the other hand, acquiring banks charge commercial establishments certain fees –known as discount rates– for accepting card payments. In most cases, discount rates represent a percentage of the transaction and cover both the IF cost and other acquiring banks' operational

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<sup>98</sup> For further information on interbank fees (IFs), see: <http://www.banxico.org.mx/sistemas-de-pago/material-educativo/intermedio/%7B7BBBF9D063-4B57-B0A7-8D40-D9EE45CADC43%7D.pdf>

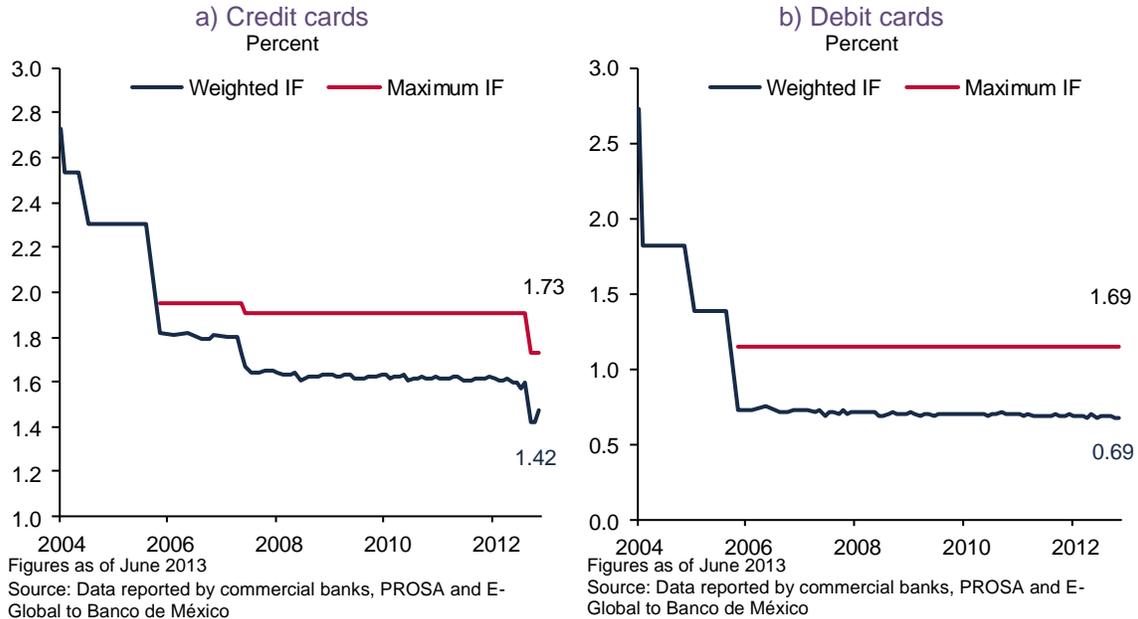
<sup>99</sup> A Fixed IF is applied to debit card transactions carried out in department stores.

<sup>100</sup> Banco de México publishes current IFs for every type of business by type of card. These are the same for all banks: <http://www.banxico.org.mx/sistemas-de-pago/servicios/tarifas-y-comisiones/cuotas-de-intercambio/por-uso-tarjetas.html>

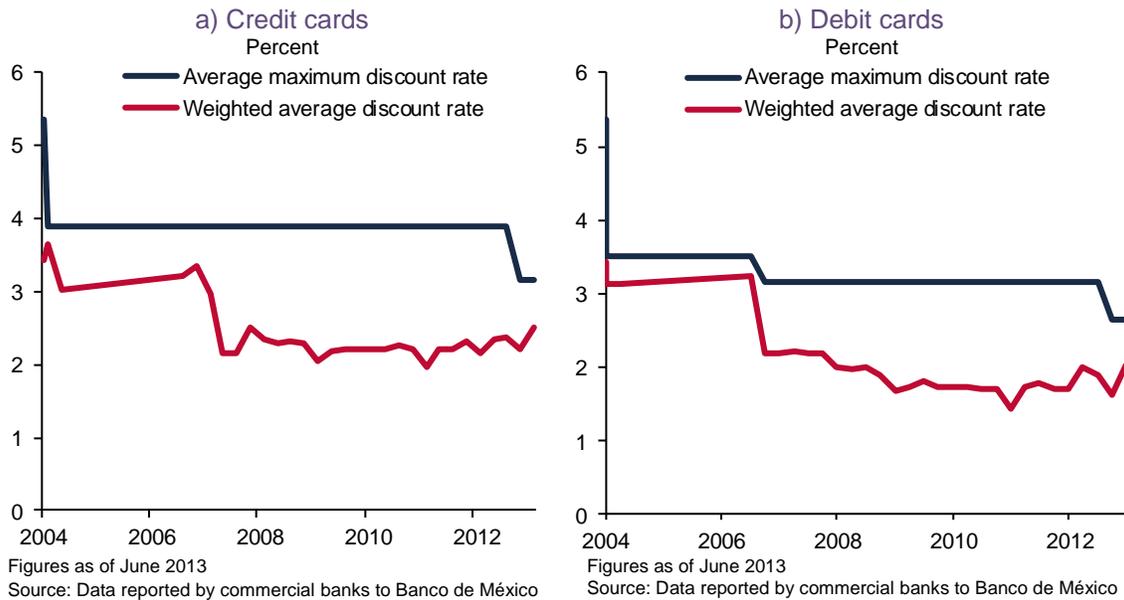
<sup>101</sup> The weighted average IF is obtained by assigning weights on the basis of transaction amounts for every type of business. Depending on the type of business, the maximum IF is the highest fee that banks are allowed to charge,

costs.<sup>102</sup> Broadly speaking, lower IFs at the behest of Banco de México (graph 74) have brought discount rates down (graph 75), and this is estimated to have contributed to a higher number of bank card payments.

**Graph 74  
Interbank Fees (IFs)**



**Graph 75  
Discount Rates**



<sup>102</sup> For further information on discount rates, see: <http://www.banxico.org.mx/sistemas-de-pago/material-educativo/intermedio/%7BE68B02F9-0A38-791A-3E85-A96DB5954D98%7D.pdf>

## Banco de México

The weighted average discount rate<sup>103</sup> for credit card transactions that acquiring banks charged between January and July 2013 was 2.22 percent,<sup>104</sup> whereas the weighted average discount rate for debit card transactions was 1.62 percent.

Although the cuts in IFs have brought about important benefits and fostered the progress of the payment means in question, when comparing with other countries, it is clear that both the number of POS and the use of cards for settlements in commercial establishments are significantly lower in Mexico (table 13). This suggests the need for new strategies, first, to promote the broader acceptance of bank card payments among commercial establishments and individuals, and second, to generate incentives to make a higher number of customers settle payments through bank cards.

**Table 13**  
**International Comparison: Bank Card Payments and per Capita POS Terminals**

Country	Per capita card payments in 2011	Infrastructure available as of December 2011	
		Cards per capita	POS terminals per million inhabitants
US <sup>1/</sup>	235	3.7	16,978
Canada	210	3	21,487
Sweden	206	2.2	21,701
Australia	191	2.6	33,577
South Korea	168	5.2	42,009
Netherlands	146	1.5	16,713
United Kingdom	133	2.3	19,083
France	121	1.3	22,152
Belgium	105	1.8	12,843
Switzerland	77	1.8	19,461
Brazil	39	2.1	30,025
Italy	26	1.2	20,795
South Africa	22	n.d.	5,481
Mexico 2012	13	1.1	5,534
Russia	12	1.1	3,697
Mexico 2005	4	0.5	1,955

Source: For South Korea, POS terminal data from 2010: Jeong-Gyu Kim, Bank of Korea. Other countries: *B/S*.  
1/ Importantly, for the US, more than 2.5 million individuals and medium-sized commercial establishments that currently accept card payments through Square are not taken into account.

<sup>103</sup> The weighted average discount rate fee is obtained by assigning weights on the basis of transaction amounts for every type of business. Depending on the type of business, the maximum discount rate is the highest rate that banks are allowed to charge.

<sup>104</sup> Banco de México publishes current maximum discount rates by commercial bank, type of business and type of card: <http://www.banxico.org.mx/sistemas-de-pago/servicios/tarifas-y-comisiones/comisiones-por-pagos-con-tarjetas-bancarias/comisiones.html>

One of Banco de México's strategies to prop up bank card payments is to issue rules that foster competition in the payment processing market, where the role of companies known as processors is fundamental –these entities specialize in providing transaction processing services to issuing and acquiring banks. The aforesaid initiative could contribute to lowering the costs of using said means of payment for both commercial establishments and cardholders.

At present, there are only two processors in Mexico –PROSA and E-Global– and they are owned by commercial banks.<sup>105</sup> These enterprises are in charge of processing, clearing and settling card payments, as well as setting rules for operating and connecting to the technological platform; overall, they serve as payment networks.<sup>106</sup> Any credit institution undertaking acquiring or issuing banks' functions must hire E-Global or PROSA services. Thus, the banks who own said processors have come up with access policies for new participants, which are contained in the Bank Card Acceptance Contract (CATB in Spanish).<sup>107</sup> Banco de México deems it necessary to support the emergence and participation of more processors specialized in services for acquiring and issuing banks, so as to promote the innovation and efficiency of this payment means, and, above all, to improve competition in said market. Accordingly, Banco de México will issue a set of provisions, in order to foster innovation and progress in this sector, and ultimately, bring benefits to users and commercial establishments.

The new provisions seek to:

- a) Make operational rules and technical specifications more transparent and accessible, in order to enable new processors to enter the market in an equitable and non-discriminatory manner.
- b) Define access, routing, clearance and settlement rules for processes to be equitably executed.
- c) Profit from current network's operational and technological infrastructures, so that proposed measures be easily implemented at a low cost.
- d) Foster competition in the acquirers' market, and facilitate a low-cost adoption of technological innovation –even for banks and processors– that leads to the inclusion of small- and medium-sized commercial establishments.
- e) Promote lower processing costs for issuing and acquiring banks.
- f) Continue to push for lower fees and discount rates for small- and medium-sized commercial establishments.

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<sup>105</sup> E-Global is owned by Banamex, Bancomer and HSBC; PROSA is owned by Scotiabank, Banorte, Santander, HSBC, Invex and Banjército.

<sup>106</sup> A payment network is the entity responsible for: (i) routing acquirers' authorization requests to issuers, and receiving from the latter the corresponding replies, (ii) clearing and settling payments, (iii) defining rules and procedures for the exchange of messages among participants, (iv) requesting collateral to participants, and (v) setting risk management standards. In other countries, processors are independent entities and do not serve as payment networks, they are merely a part of said network.

<sup>107</sup> The Bank Card Acceptance Contract sets the rules for operating and connecting to bank card payment systems; it is currently managed by the Cards Committee at the Mexican Bankers Association (ABM in Spanish).

## **5. Stress Tests**

This chapter presents the results derived from stress tests performed to assess the Mexican financial system's resilience to exogenous shocks in risk factors. A high number of simulation scenarios with varying levels of severity –representing extreme, albeit plausible situations– made it possible to assess the level of the system's overall exposure, as well as that of brokerage firms and banks. Results show that banks and brokerage firms would maintain reasonable solvency levels. Nevertheless, market stress tests showed that, in extreme albeit plausible scenarios, some financial institutions could suffer significant losses. Last, in credit stress tests, a number of institutions displayed capital adequacy ratios below the minimum level of 10.5 percent.

### **Macroeconomic-Based Stress Scenarios**

Stress scenarios were generated using a macroeconomic model that considers both foreign and domestic variables. Aside from the aforementioned macroeconomic model, the scenario generation procedure includes three submodels. The first one was used to obtain interest rate curves denominated in local currency resulting from shocks in the macroeconomic model. The second was used to determine delinquency rates and the evolution of credit by sector (commercial bank, consumer and mortgage loans), on the basis of macroeconomic variables –this led to estimates of potential credit losses under the stress scenario. Last but not least, the third model was used to calculate losses in the granting of new loans, reserves and loan portfolios for every bank. The methodology employed is presented in detail in box 5.

Two set of scenarios of varying stringency were generated: the first one is characterized by moderate variations in risk factors, whereas the second presents severe scenarios resulting from higher interest rates in the US and a recession in Mexico. At a first stage, the effect of such scenarios on intermediaries' market positions was evaluated; and then, said scenarios were projected over the next 36 months, in order to assess losses in loan portfolios.

Box 5

Stress Testing Methodology

The availability of in-depth information about financial institutions' balances and transactions, as well as risk analysis model building, sheds light on potential gains and losses linked to changes in financial and credit variables.

Stress tests are built upon scenarios in which risk factors' baseline values undergo changes resulting from extreme but plausible macroeconomic situations. On the basis of said scenarios, it is possible to analyze the effect of risk factors' new levels on the balances of financial institutions.

In order to build stress scenarios, a macroeconomic model that generates changes in major macro-financial variables is used; in turn, these variables are used as input for three other *submodels* or *satellite models*. The first one generates interest rate curves; the second, changes in delinquency rates and commercial bank loan portfolios; and the third submodel focuses on changes in banks' capital.

The trajectories of macroeconomic variables are drawn up using a vector autoregressive model (VAR). These models use all available information to explain interactions among variables and make forecasts. In mathematical terms, the model can be explained as follows:

$$Y_t = \sum_{i=1}^p A_i Y_{t-i} + e_t,$$

where  $Y_t$  is the variable vector at time  $t$ , the  $p$ -parameter is the value of past lags in the dependency structure;  $A$  is the coefficient matrix that determines variable interdependence including lags; and  $e_t$  is the error term at  $t$ .

Certain restrictions are imposed on matrix  $A_i$  in terms of interactions among variables, so as to work with a structural model, consistent with the assumption of a small and open economy. That is the reason why foreign variables interact among themselves and affect domestic variables, whereas domestic variables exclusively interact among themselves.

Interest rate curves are generated by a VAR that models the most representative interest rate nodes, including those used in the macro VAR.<sup>1</sup> Once the macro model forecasts are produced, these are used in the interest rate model to register changes in slopes and curve levels.

For delinquency rate estimates, an ARIMA model that incorporates macro variables as exogenous is used. In mathematical terms, the delinquency rate model can be explained as follows:

$$\Delta^d PD_{it} = \alpha_0 + \alpha_1' x_t + \sum_{j=1}^p \beta_j \Delta^d PD_{it-j} + \sum_{j=1}^q \theta_j \eta_{it-j} + \eta_{it}$$

where  $PD$  is the delinquency rate,  $x_t$  is a vector of current and lagged macroeconomic variables,  $\eta_{it}$  is a random shock,  $\alpha_0$ ,  $\beta_j$ ,  $\theta_j$  and  $\alpha_1$  are parameters to be estimated, and  $i$  represents the type of loan portfolio, either commercial bank, consumer or mortgage loans.

All models are estimated using the maximum likelihood method.

The herein discussed models are used to generate macro-financial variable values under stress scenarios, as well as the interest rate curves and delinquency rates associated with every scenario. Two sets of scenarios of varying severity are thus built: the first one is characterized by moderate variations in risk factors, whereas the second presents severe scenarios resulting from higher interest rates in the US and a recession in Mexico.

The macroeconomic variables used in this exercise are 28-day cete rates, current loan portfolio balance, unemployment rate, IGAE, IPC, inflation, oil price, foreign exchange rate, Dow Jones index, US industrial production index and US Treasury 3-month and 10-year bond rates. This set of variables enables the assessment of changes in banks' market position values, and therefore the modeling of these intermediaries' gain and loss distributions.

By using credit losses and the performance of loan portfolios and interest rates, the trajectory of banks' capital<sup>2</sup> is drawn up. In turn, this trajectory is used to estimate capital requirements throughout the corresponding time horizon.

**Table 1**  
Average, maximum and minimum levels of variables in different scenarios

Factor	Initial value	Market stress shock on a one month time window		Credit stress test: 36 months trajectories <sup>3/</sup>		
		Average		Average	Min	Max
		Moderate	Severe	Moderate		
Cete 28	3.78	3.92	5.01	4.14	2.40	7.42
Unemployment	5.04	4.98	5.33	5.58	4.28	7.20
IGAE <sup>1/</sup>	0.44	-0.30	-1.37	133	-5.47	4.46
IPC	40,623	38,639	32,008	51,523	31,173	78,062
Exchange rate <sup>2/</sup>	12.94	13.11	13.77	16.16	11.70	21.99
TBill 10y	2.49	2.73	6.49	2.32	1.73	3.42
<b>Probability of default:</b>						
Commercial	3.97	4.64	4.75	6.21	4.35	8.91
Consumer	8.63	9.33	9.40	11.89	7.84	17.62
Mortgage	2.87	2.89	3.05	4.37	2.56	6.64

<sup>1/</sup> Real annual percent change

<sup>2/</sup> Pesos per dollar

<sup>3/</sup> Table 1 only shows results for: 36-month trajectory, credit stress, set of moderate scenarios. Results for the set of severe scenarios bear a very low likelihood level, and thus, little relevance.

<sup>1</sup> The structural relationships of the macro VAR are preserved in the submodel for interest rate curves.

<sup>1</sup> This is done similarly to what was explained in box 29 of the *Financial System Report 2007* published in May 2008. The fundamental idea is that, even in times of crisis and despite losses in loan portfolios, the bank continues to earn income from credit. This enables the modelling of a more realistic trend in the portfolio performance.

## Banco de México

### Market Stress

At a first stage, the effect of both set of scenarios on brokerage firms' and banks' market positions for a one-month time horizon was evaluated. Also, a first overall loss distribution and, specifically, loss distributions for the two referred types of entities were generated.

The first loss distributions showed that the solvency of some institutions could be affected; a contagion process is therefore possible, which, in turn, would increase losses for the system as a whole. In order to demonstrate this possibility, a second loss distribution was generated. In moderate scenarios, the losses for the system before contagion would account on average for 0.2 percent of banks and brokerage firms' capital. Once the contagion effect is taken into account, average losses do not exhibit a significant increase (graph 76a).<sup>108</sup>

In severe scenarios, losses would concentrate around two levels.<sup>109</sup> In the first level, losses would account on average for 0.8 percent of capital, whereas in the second, they would represent 2.0 percent. These loss levels would not be enough to unleash a significant contagion process, as they would only impinge on some small-sized intermediaries' solvency –other intermediaries would not be significantly exposed thereto. Therefore, distributions before and after contagion are similar (graph 76b).

The system's ability to absorb losses is based on intermediaries' adequate capitalization levels and on differences in risk positions among them. These differences account for the varying effects of market shocks (graph 76c): even though some intermediaries' capital adequacy ratio could drop 2 percent in the aforementioned scenarios, other intermediaries' market position could benefit therefrom and, consequently, increase capital adequacy levels.

The herein described scenario building model was useful to identify the variables whose changes could trigger the biggest losses in the financial system. For that purpose, a subset of extreme scenarios was selected, that is, scenarios where each variable exhibited extreme values. Hence, for every subset, a conditional loss distribution for the system was generated. Results suggest that losses would on average be higher than 2.0 percent of net capital for most variables (graphs 77 and 78). These findings hint at the strength and heterogeneity of Mexican institutions, although there are certainly intermediaries whose capital adequacy levels would remain below the required minimum.

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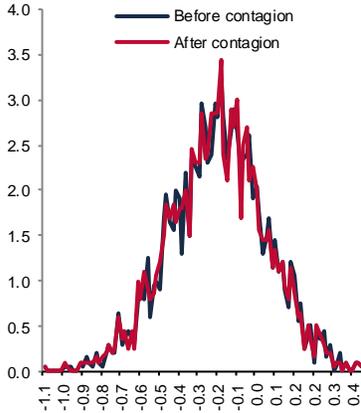
<sup>108</sup> The limited contagion effect observed is partly due to the fact that the interbank risk position matrix employed in this exercises did not contain a significant number of institutions with relevant exposures to a single counterparty (see section Determinants of Financial Stability).

<sup>109</sup> The bimodal distribution is a result of the assumptions upon which the modeling is based.

**Graph 76**  
**Loss Distributions before and after Contagion as a Proportion of Net Capital**

a) Subset of moderate stress scenarios

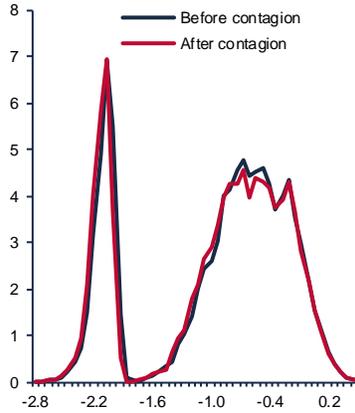
Horizontal axis: percentage of capital  
 Vertical axis: percentage frequency



Figures as of June 2013  
 Source: Banco de México

b) Subset of severe stress scenarios

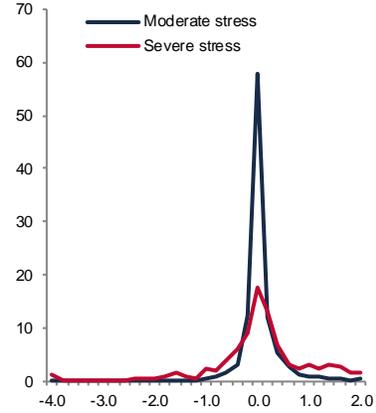
Horizontal axis: percentage of capital  
 Vertical axis: percentage frequency



Figures as of June 2013  
 Source: Banco de México

c) Change distribution of capital adequacy ratio

Horizontal axis: percentage change in the capital adequacy ratio  
 Vertical axis: percentage frequency

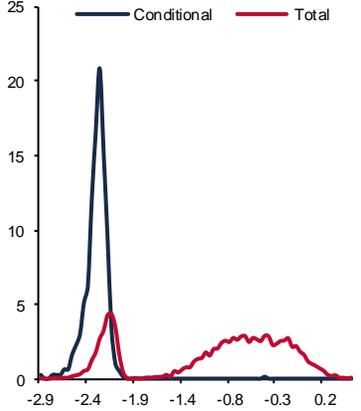


Figures as of June 2013  
 Source: Banco de México

**Graph 77**  
**Conditional Loss Distributions as a Proportion of Net Capital**

a) Domestic interest rates

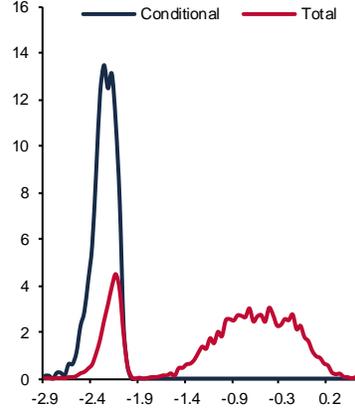
Horizontal axis: percentage of capital  
 Vertical axis: percentage frequency



Figures as of June 2013  
 Source: Banco de México

b) Exchange rate

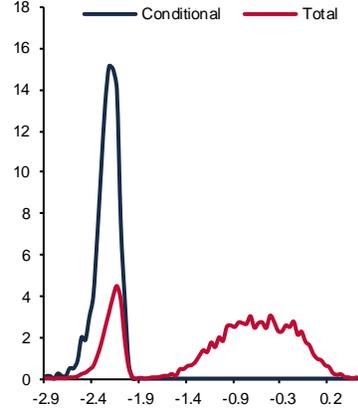
Horizontal axis: percentage of capital  
 Vertical axis: percentage frequency



Figures as of June 2013  
 Source: Banco de México

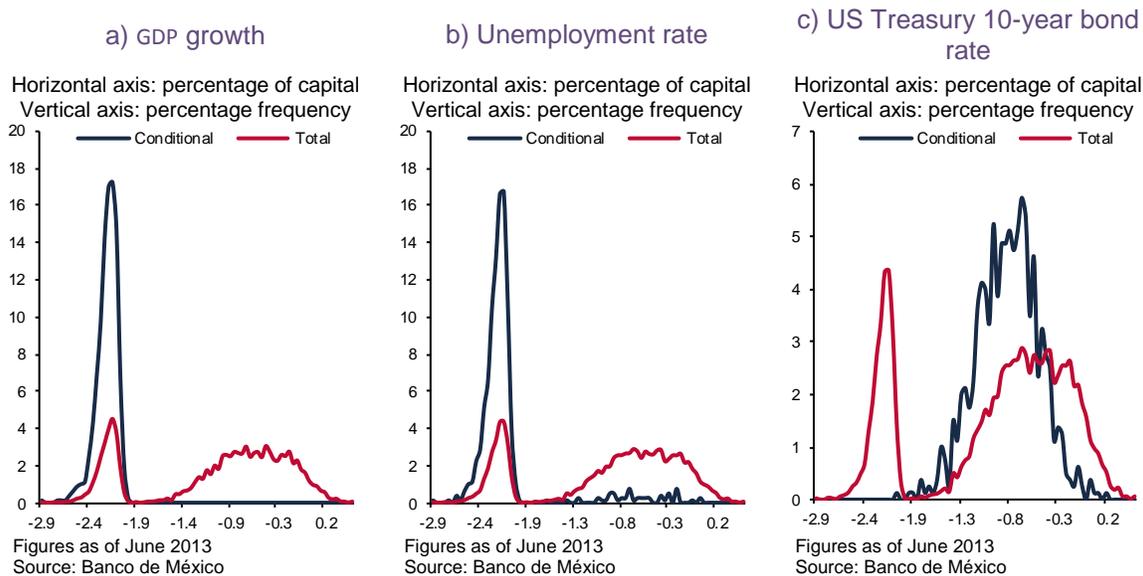
c) BMV's Price and Quotations Index

Horizontal axis: percentage of capital  
 Vertical axis: percentage frequency



Figures as of June 2013  
 Source: Banco de México

**Graph 78**  
**Conditional Loss Distributions as a Proportion of Net Capital**



### Credit Stress Tests

In order to perform the credit stress analysis, the trajectories for every risk factor resulting from the shocks proposed in moderate scenarios were used. For every scenario, banks' losses –relative to both their own market portfolios and the contagion effect– were included at the beginning of the period of analysis. Starting from a highly vulnerable situation, we estimated default rate, the current loan portfolio's growth rate and interest rates for every period. The simulation effects were measured as changes in the non-performing loan portfolio, reserves, monthly net profit, capital and risk-weighted assets. In that manner, it was feasible to estimate losses and the capital adequacy ratio for every bank and the system as a whole for every period and every scenario.

Results indicate that, at the end of the process, the system's capital adequacy level would stand barely above the required minimum. Nonetheless, the solvency of a number of institutions would be compromised (graph 79). On average, the system's capital adequacy ratio would fall five percentage points –for the initial capital adequacy ratio to be kept, all banks taken together would need around 355 billion pesos in capital.<sup>110</sup>

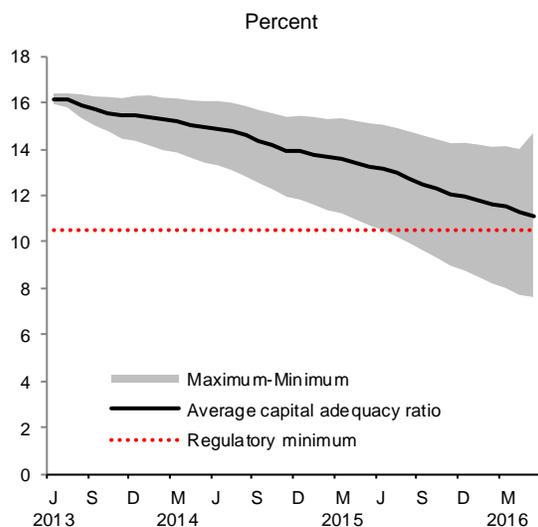
The  $CoVaR^{111}$  was used to determine which macro-financial variables would generate a greater impact. Table 14 presents the system's capital adequacy ratio and capital needs, in the event that losses suggested by  $CoVaR$  for every variable materialized. The capital needs required to maintain the initial capital adequacy ratio would be slightly higher in case of domestic interest rate hikes than in the case of a GDP downfall or rises in US rates.

<sup>110</sup> For the calculation of capital needs, final risk-weighted assets and capital are employed. Thus, capital needs are equivalent to the difference between the initial and final capital adequacy ratios multiplied by final risk-weighted assets

<sup>111</sup> The  $CoVaR$  represents the  $vaR$  of a portfolio loss distribution, conditional on the fact that another portfolio or variable exhibits a loss greater than or equal to its  $vaR$ , and therefore, it is a percentile. That is, the  $CoVaR_{q,ji}$  is implicitly defined by the  $q$ -percentile of the conditional probability distribution:  $P(X_j \leq CoVaR_{q,ji} | X_i \leq VaR_{qi}) = q$ .

**Graph 79**  
**Evolution of Capital Adequacy Ratio**

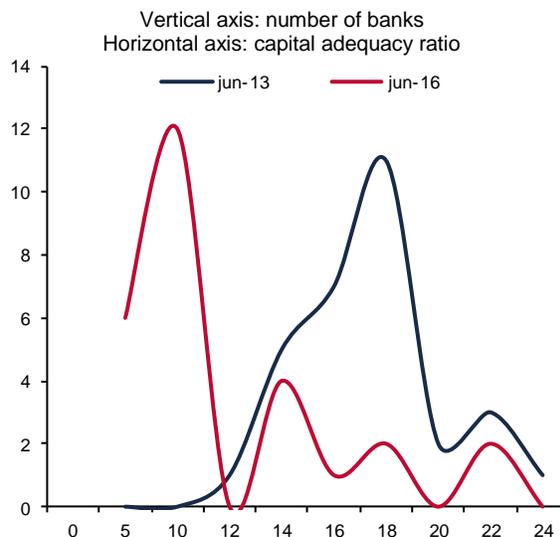
a) Evolution of capital adequacy ratio under moderate scenarios



Figures as of June 2013  
Source: Banco de México

1/ On both dates there were 11 banks with capital adequacy ratios above 25 percent.

b) Distribution of average capital adequacy ratio at the beginning and at the end of stress scenarios<sup>1/</sup>



Figures as of June 2013  
Source: Banco de México

**Table 14**  
**Banking System's Capital Adequacy Ratio and Capital Needs in Case Losses Registered in Various Economic Variables at a 97.5% CoVaR Materialized**

<b>CoVaR 97.5%</b>	<b>GDO</b>	<b>Domestic rate</b>	<b>US rate</b>	<b>Unemployment</b>
Capital adequacy ratio (percent)	8.98	9.18	9.24	9.70
Capital needs* (millions of pesos)	299	301	291	271

\* To maintain the initial capital adequacy ratio  
Source: Banco de México

## Banco de México

Credit scenarios would record the most severe losses for the system, as a result of which, economic activity would dramatically shrink. At the end of the third year, in 26 per cent of these scenarios, GDP would already trail behind its initial level, and the system's capital adequacy ratio would also stand below the required minimum.<sup>112</sup> The impact of these scenarios on the loan portfolio is not as much due to the severity of initial shocks as to the persistence thereof (36 months). In contrast, in market scenarios, the system maintains its capital adequacy ratio above the minimum, even under more adverse scenarios. Commercial banks' overall solvency was not jeopardized in most simulated scenarios. Yet, considering a 36-month time horizon, the capital adequacy ratio would fall down to less than one basis point above the required minimum.

Stress tests allow the quantification of capital needs under adverse scenarios. For that reason, they are used by supervisors to assess the solvency of institutions in extreme circumstances. In line with international best practices, the financial reform initiative makes it mandatory for credit institutions to fulfill this kind of testing, with the purpose of evaluating their plans and capital needs in the most stringent scenarios.

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<sup>112</sup> For the end of the three-year period, in the two thousand evaluated scenarios, the average GDP growth rate was near 1.33 percent with regard to its initial level, after registering an average contraction of 3 percent over the six first months of the stress period. In these scenarios, rises in the interest rate ranged between 40 and 50 percent with respect to its initial level, whereas unemployment jumped up to 17 percent and loan portfolio delinquency rates increased on average between 50 and 8 percent *vis-à-vis* their initial levels.

## 6. Balance of Risks and Conclusions

Major risks to the stability of the domestic financial system stem from both domestic and international factors, which should be constantly monitored. Even though in this chapter the risk analysis of said factors is presented separately, it is possible that they could materialize simultaneously and give way to feedback loops.

### 6.1 Foreign Risks

#### Global Investors' Reaction to Expectations of the Fed's Unconventional Monetary Stimulus Withdrawal

Risks associated with financial market reactions to the eventual withdrawal of the unconventional monetary stimulus by the US Federal Reserve are considered to be amongst the key risks to the Mexican economy and financial system. At the time of writing, said curtailment is not expected to begin this year; yet, the risk remains real as long as the current extremely lax monetary stance is kept.

Key risks derive from financial intermediaries' and investors' potential losses, given a drop in the value of their financial assets generated by sudden rises in interest rates and the ensuing impact on economic activity, debtors' payment capacity and loan portfolio quality. The announcement made by the Fed in September that they would await further evidence of sustained economic recovery before adjusting the pace of financial asset purchases put financial markets at ease; notwithstanding, the risk of being in for bouts of volatility similar to those observed in previous months is latent, and could materialize in the near future, depending on the evolution of the US economy.

Central banks have little control over interest rate risk premia, and consequently, over the unwind of the compression thereof, both in the current scenario as well as once the monetary stimulus withdrawal by developed economies starts. Thus, it comes as no surprise that the Fed's efforts in recent years to make the communication of monetary decisions more effective have turned out to be insufficient to mitigate the repercussions of policy change expectations on financial markets. Hence, the disclosure of prospective action plans dependent on economic performance, employment and inflation has failed to lessen volatility. Financial market reactions have demonstrated the persistence of international investors' high sensitivity to Fed announcements. In consequence, a high degree of uncertainty remains in global financial markets. That is why, to a large extent, developed economies' central banks are thought to be navigating uncharted waters. Financial market reactions to US economic performance and monetary policy announcements may vary in intensity and duration. We deem it therefore appropriate to consider the following three scenarios:<sup>113</sup>

#### a. Scenario for a Significant US Economic Recovery

The first scenario is characterized by a surge in interest rates, given the full-fledged recovery of the US economy. In such an environment, budgetary disagreements in Congress have no major consequences on economic activity. Domestically, temporary tensions in financial markets could be expected, particularly once the Fed starts normalizing its monetary policy. However, tensions would ease as US economic recovery takes hold and the domestic economic outlook improves. The tension period would result from the immediate impact of higher interest rates on the value of

<sup>113</sup> In these scenarios, monetary policy decisions in other developed economies are held constant.

## **Banco de México**

financial assets, as benefits from the improvement in economic activity would take some time to materialize. The losses experienced by financial intermediaries, investors and savers would give way to adjustments in financial balances and, thus, to higher interest rate and exchange rate volatility.

### **b. Scenario for a Weak US Economic Recovery**

This scenario is characterized by a hike in interest rates, given a weak recovery in the US economy owing to fiscal and other type of tensions. In this scenario the period of turmoil would be longer. Hence, interest rate hikes could hamper an early recovery in the US, which has been actually driven by sectors particularly sensitive to financing costs. The high level of integration in global capital markets would provide the conditions for US interest rate hikes to affect long-term rates in other currencies, and thus, hinder global economic activity.

In the medium-term, there is still the risk related to the effects of US lawmakers' agreements to ensure debt sustainability. If an inter-annual fiscal adjustment, more concentrated in the program's early years, is agreed upon, US economic activity could again decline, putting an additional burden on global growth. This scenario is of utmost importance for the Mexican economy, given its close links with its US counterpart, and particularly, the major role of manufacturing exports as a driving force thereof.

### **c. Scenario of global stagnation and instability in emerging markets**

The risk related to a drop in confidence and global economic activity has persisted throughout the year, despite the US economic pickup. This is due to ongoing threats stemming from the Eurozone situation and, more importantly, from the slowdown in the largest emerging economies, namely, China, India, Brazil, South Africa and Indonesia. As for the Eurozone, the sluggish restructuring process of financial institutions could slow down a full-fledged economic revival; and, as for emerging markets, there are concerns that the rebalance of growth engines may entail a deeper deceleration of the Chinese economy in the short term and that the current crisis in India may hamper this country's potential growth. On the other hand, the rapid expansion of credit to the private sector in the last decade in some emerging economies like China, Brazil and Turkey could deteriorate the quality of intermediaries' loan portfolios, curb the granting of new loans and hamper economic growth in the near future.

It is therefore prudent to consider an additional scenario where the normalization of Fed monetary policy occurs in a setting of global stagnation and financial volatility in emerging countries. Under this scenario, the effect of lower risk appetite at an international level would be reinforced by deteriorating growth prospects for emerging economies. In other words, short-term capital outflows would be matched by a reduction in medium- and long-term capital inflows –the degree of said decline would depend on the depth and length of the deceleration in those economies.

It is worth adding that the handling of the shock would be harder for those emerging economies with greater macroeconomic imbalances, as there would be little room for implementing expansionary fiscal and monetary policies, and simultaneously curbing capital outflows. In any case, all emerging economies must continue to take actions to improve their financial system's resilience, especially to address sudden capital outflows and economic slowdown (e.g. ensure the timely enforcement of Basel Committee rules relative to capital and liquidity, undertake structural reforms to heighten productivity, etc.).

### Continuation of lax economic policies in developed countries

The further weakening of US economic activity is a latent risk that should not be ruled out. If that was the case, the Fed would be obliged to extend and increase its monetary stimulus, as occurred with the European Central Bank, the Bank of Japan and the Bank of England. The probability of this scenario would increase with the reemergence of the fiscal debate in the US.

The continuation or increase in monetary stimulus in developed countries poses a risk in the opposite direction. It could revive capital flows towards emerging economies, especially portfolio inflows, thus strengthening domestic currencies and rekindling financial and housing bubble risks. Indeed, the longer it takes to developed economies to normalize their monetary policies, the higher the risks related to capital inflows towards emerging economies. Although during the period covered by this report the effects of capital inflows did not manage to derail the domestic financial system, the exacerbation and continuation thereof may entail undesirable consequences in the longer term.

### The Worsening of the European Crisis

The likelihood of a disastrous event in the Eurozone has substantially diminished in the last year. Nevertheless, structural problems in that region are not resolved yet. The current recession and fears of inflation falling significantly below the target have further complicated matters. The strengthening of European banks has been slow and uneven, credit markets are still segmented and some countries' fiscal adjustments, particularly in the European periphery, risk reform fatigue –not to mention the ongoing political instability in some countries like Italy. Certainly, measures announced by regional authorities have played a part in assuaging markets, but their implementation has been sluggish. Unless actions are concreted at a faster pace and the European economy fully completes its recovery, a new wave of instability in international financial markets could emerge, and all the aforementioned factors taken together would negatively impact the world economy.

A scenario like the one described before would generate further disruption and fragmentation in European interbank markets, and this would in turn make banks in the region even more dependent on the European Central Bank. This situation would further restrain banking credit in the Eurozone and speed up banks' deleveraging processes. The Mexican economy could be hit were European banks' domestic subsidiaries to register changes in their behavior, derived from the deteriorating European landscape. Yet, the effect is not expected to be significant, thanks to the fact that funds raised by said subsidiaries stem from the domestic market. Besides, current regulation already considers a series of prudential limits to curb contagion risks between parent and subsidiary companies.

### Potential US Federal Debt Default

In the wake of the Second World War, the US dollar took a central role as reserve currency in the international financial system, and thus, debt issued by the federal US government became one of the safest in the world. A deliberate US default has not occurred ever since;<sup>114</sup> that is why this country has always obtained all necessary funds in international markets at relatively low interest rates, and also the reason why the possibility of US default in the near future is viewed with disbelief. This kind of behavior is consistent with what is known as “disaster myopia”, that is, it is certain that a

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<sup>114</sup> In 1979, there was a temporary default on US Treasury bonds, due to administrative confusion associated with US Congress's delay to lift the federal debt ceiling. Although holders affected were few, such involuntary default triggered a slight albeit permanent increase in US Treasury bond rates.

## **Banco de México**

high-impact event will not occur because it has not occurred in the past. Yet, as happens with “black swans”, these rare high-impact events are extremely difficult to predict, and once materialized, they have deep consequences and change the way we see the world.

Although the probability of US debt default is considerably low, difficulties to reach fiscal consensus on fiscal matters in Congress has become a source of ongoing volatility in international financial markets. Events registered between July 2011 and October 2013 brought under the spotlight the effects of US domestic political disagreements on international financial stability. As long as fiscal imbalances are not permanently adjusted, it is not unlikely that these events occur again. If the US debt default materialized, its consequences would be unpredictable and its impact greater than the collapse of Lehman Brothers, as it would change international perceptions of sovereign risk.

### **6.2 Domestic Risks**

#### **A More Pronounced Slowdown in Domestic Economic Activity**

A further escalation of the slowdown in domestic economic activity observed during the first half of 2013 –and the ensuing rise in delinquency rates on banks’ loan portfolios– represents a major internal risk for the Mexican financial system. Thus far this year, growth prospects have been repeatedly revised downwards, owing to both domestic and foreign factors. There are still elements that may contribute to the further worsening of economic performance. As for foreign demand, the risk remains that the US economic pickup loses steam as a result of hikes in US long term interest rates, an early withdrawal of the monetary stimulus and uncertainty associated with measures adopted by the US Congress to consolidate public finances. As for domestic demand, it is possible, first, that the weakening in investment recorded in the first half of the year, particularly in the construction sector, deepens and, thus, lasts longer; and, second, that consumption loses momentum owing to the negative trend in family remittances and lower growth in the wage bill. Nevertheless, the normalization in the pace of public expenditure and expectations over the structural reform’s early effects are expected to mitigate said risks.

#### **Business Models Vulnerable to Extreme Shocks or with High Levels of Liquidity Risk**

There are certain financial intermediaries particularly exposed to liquidity risk, given their high dependence on money market funds. The money market is highly sensitive to adverse scenarios. Therefore, in case of shock, bidders may immediately withdraw liquidity supply. Liquidity risk is especially important for institutions concentrating their funds on few counterparties. These business models’ vulnerability was made evident during the first stage of the last international financial crisis, when global financial institutions had to be liquidated after having lost access to money markets. With the purpose of strengthening Mexican banks and their ability to tackle illiquidity situations, Banco de México and the CNBV are currently working on the design and implementation of regulation based on international best practices and recommendations issued by the Basel Committee on Banking Supervision.

Meanwhile, banks that have not made changes in their business model must strive to adjust it, so as to depend less on short term funds. It is essential that these institutions undertake said changes as soon as possible in order to meet Basel Committee Standards in a timely manner. On the other hand, other banks have seen their liquidity positions deteriorate, as they have financed growth in their loan portfolios with market liabilities, a part of which are short-term. Institutions in this case should jointly define strategies for fund raising and credit granting, in order to balance the proportion of stable funds they receive and the growth of credit granting.

## Long-Term Securities Financed through Overnight Repos

Banks usually finance most of their securities positions through overnight repo transactions. Brokerage firms also finance their securities stock in this way, but they do not have other choices, for they are not authorized to raise funds from the general public. Repo transactions are worrisome, especially when they are overnight and securities involved are long-term. Overnight repos are not subject to collateral security margins because the potential change in securities prices is not significant. Nevertheless, over a long stress period, banks and brokerage firms might be obliged to clear their securities positions, given their inability to raise additional collateral to settle losses in those securities positions involving repo transactions. Banks generally finance their securities positions through repo transactions, because, unlike bank liabilities, these are not subject to the premium of 4 per thousand required by the IPAB. Further, repo transactions have high liquidity, due to the high integration of the Mexican interbank market –as opposed to the fragmented European interbank market– and the fact that Mexican government securities are considered to be credit risk-free.

## Balance of Risks –Last Considerations

Given their likelihood and potential impact, we could argue that, externally, the most salient risks are those related to the normalization of Fed monetary policy and the recurring tensions stemming from US Congress's difficulties to reach consensus on fiscal matters. On the other hand, internally, the biggest threat to financial stability is posed by the potential deepening or continuation of the slowdown in domestic economic activity, with the ensuing deterioration in the quality of regulated and unregulated financial intermediaries' loan portfolios. This event could aggravate the adverse feedback loop between credit and economic activity.

On the other hand, the normalization of US monetary policy, together with a strong deceleration in emerging economies, could give way to an extremely adverse scenario. Yet, even in that case, a clear differentiation among such economies might be registered, based on their particular macro fundamentals and financial situation. It is therefore crucial for Mexico, first, to continue strengthening public finances and controlling inflation, and second, to fully implement financial reforms aiming at heightening the financial system's resilience, in order to be in a better position to address significant changes in capital flows.

## 6.3 Conclusions

During the period covered by this report, there were significant changes in the global arena that had an influence on the performance of the Mexican economy and financial system. The global economic slowdown weakened the domestic economy, while expectations of a short-term adjustment in the Fed's quantitative easing program increased volatility in international financial markets for several months. Although last September the Fed announcement of putting off said adjustment put markets at ease, the latent risk of renewed bouts of volatility in the near future persists.

Lax monetary policies in developed countries have opened the door to substantial capital flows towards emerging economies; this has enabled the public and private sectors in said economies to tap funds under very favorable conditions. Yet, at the same time, this situation has made these economies depend more heavily on the availability of foreign funds under highly favorable circumstances, while driving their indebtedness levels up. A change in the global scene that suddenly diminished international investors' risk appetite would not only translate into tensions in

## Banco de México

financial markets, but could also speed up the need for adjustment programs in regions with greater imbalances.

The US economy continues to pick up steam, albeit at a more moderate pace over recent months. In fact, US growth has been led by sectors particularly sensitive to financing costs, and this elevates the fragility of the process, especially in an environment of volatility in long term interest rates. In addition, growing fiscal tensions in the US threaten early economic recovery. On the other hand, in the Eurozone, there are worries about the strength of the economic recovery and progress around the cleaning up of credit institutions' balances, the correction of fiscal imbalances in some countries and the consolidation of the required structural changes. As a result, the balance of risks to global growth has moderately deteriorated thus far this year.

As far as domestic risks to financial stability are concerned, the fact that the economic deceleration is higher than expected and that it has had significant effects on bank portfolios' delinquency rates is particularly relevant. It should be underscored that this deceleration could be more than the mere result of the international environment described before, and also stem from domestic factors. Indeed, other factors are worth mentioning, such as the existence of credit products that open the door to borrowers' over indebtedness, deterioration of origination processes that occur with the rapid growth of credit portfolios and some intermediaries' business models that are particularly vulnerable because they tap funds directly from financial markets. Although not a source of systemic risk, these events could play a part in generating greater turbulence in stress periods; in consequence, they should be adequately monitored.

Among emerging economies, Mexico stands out for its solid fundamentals, which are the result of transparent and foreseeable market-based economic policies –namely, a floating exchange regime and free capital mobility. Both the low level of Mexican sovereign debt and an easily affordable current account deficit have allowed a favorable positioning in the context of emerging economies. Mexico is also several years ahead of other emerging countries, as far as the adoption of preventive actions is concerned. The reform that transformed major pension fund systems from a scheme of definite benefits to one of definite contributions was instrumental in tackling future fiscal contingencies and paved the way for a broad and liquid debt market. Additionally, the introduction of more strict capital regulation –including most of Basel III capital rules– nearly a decade before the outbreak of the last financial crisis, made it possible for the Mexican financial system to face the ensuing global repercussions from a position of strength. Thanks to the early action described before, Mexican public finances are sustainable, and the financial system is adequately capitalized and sufficiently liquid. Moreover, unlike other emerging economies, Mexico is reaching the consensus needed to push through a series of structural reforms –the implementation thereof is expected to bolster the domestic economy. Although their benefits will not be immediate, they will drive growth rates higher in the years to come. Importantly, these reforms are of great significance as they affect virtually all economic sectors and some of them entail changes at the constitutional level.

Given its relevance for the stability of the financial system, the financial reform initiative sent to the Congress of the Union deserves special mention. Said initiative introduces various amendments that will reinforce the financial system to tackle adverse scenarios that may arise in the foreseeable future; namely, the introduction of the Basel Committee new standards relative to capital and liquidity regulation, the strengthening of the bank winding-up and bankruptcy regime and the CNBV's power to apply prudential measures when counterparties related to a banking institution face financial problems affecting their stability or solvency. Other relevant changes include: a) bank institutions' obligation to fulfill stress tests, and if necessary, present an action plan with capital projections, which, given the case, will allow them to meet estimated losses and adjust their transactions based on obtained results: b) the broadening of the current regulatory framework so that authorities can count on information about sofomes, including the normative criteria under which a sofom shall be

considered as a regulated entity; and c) the inclusion of the Financial System Stability Board's Law Regulating Financial Groups.

Nevertheless, for the Financial Reform initiative to fully meet its target of strengthening the financial system, it should be appropriately implemented. In that sense, secondary regulation stemming from the approved reform should be drawn up in a timely manner and be consistent with international guidelines and best practices; equally, its enforcement should be subject to strict supervision. Further, the referred initiative should be complemented with the approval and implementation of other relevant regulation, like that being currently prepared by Mexican financial authorities, relative to the centralized operation and settlement of derivative products, the record of derivatives transactions, and the strengthening of the chief financial market infrastructures' risk management and operating procedures.

Last, it should be underscored that a country's financial and economic stability is an ongoing task. Therefore, in the face of the complex international setting and future risks relative to the dangers posed to emerging economies by changes in US economic policies, it is essential to stick to fiscal and monetary discipline in Mexico. In like manner, it is necessary to continue efforts to maintain a financial regulatory framework appropriate to current circumstances and guarantee the efficiency of financial supervision.

## **Annex: Financial Reforms**

The financial reform package put forth by the Executive seeks to enhance the soundness, flexibility and certainty of the financial system's regulatory framework. The intent is to offer incentives for private sector financial institutions and development banks to increase credit and provide it in better conditions to borrowers –the ultimate goal being to boost economic activity, employment and well-being.

The initiatives set forth a series of guidelines aiming at: a) fostering credit, sound competition and financial inclusion; b) getting development banks to contribute more to the expansion of the financial sector; and c) safe-keeping the soundness of the financial system. For that purpose, amendments to thirty-four laws relative to the financial system have been put forth, through thirteen initiatives that revolve around four axes:

- i. foster credit through development banks;
- ii. increase competition in the financial sector, by bolstering consumer inclusion and protection;
- iii. broaden credit granted by private financial institutions, and
- iv. ensure soundness and prudence in the financial system as a whole.

Elements pertaining to all four relevant axes are described below, emphasizing those that contribute to reinforcing financial stability.

### **i. Foster Credit through Development Banks**

Given its relevance as a driver for domestic growth, the development banking sector should be strengthened. This is to ensure the implementation of policies that boost productive activities and support popular savings. In that sense, the goal of the first axis is to allow development banks to complement commercial banks' actions. For that purpose and with a view to strengthening development institutions, the axis aims at making the development banking regulatory framework more flexible. Development banks should operate with greater freedom in order to foster financial inclusion and boost credit to the private sector.

The current mandate of development banks prescribes that they must preserve and maintain their capital, which, in case of strict interpretation –far from the nature of banking activities–, curbs credit granting. The reform assigns development banks the essential mandate of facilitating access to financial services and credit, and allows boards of directors to design programs for specific sectors, which should take into account measurable and foreseeable risks, as well as longer-term projects. All this, without disregarding the obligation to ensure the sustainability of development banks through the efficient, prudent and transparent channeling of resources.

### **ii. Increase Competition in the Financial Sector, by Bolstering Consumer Inclusion and Protection**

The goal of the second axis is to inform, advise and protect users of financial services for the possible best utilization of market products and services. The specific objectives are: to implement actions that promote competition among financial institutions, to provide authorities responsible for the protection of users with new tools, to improve protection services related to financial services, and to promote fairness in the relationship between financial institutions and users.

The reform acknowledges in the corresponding financial regulation the Federal Economic Competition Commission's powers to assess competition conditions in the financial system and issue the appropriate recommendations aiming at bolstering a more competitive financial environment.

Indeed, the financial system has undergone serious changes in recent years, such as an increase in the coverage of financial services throughout the country, the emergence of new market participants and product diversification. As a result, there is the need for a new regulation that sorts out the controversies that may arise between financial institutions and users in a clearer and more efficient manner. In this regard, this axis considers a series of tools aiming at reaching a balance between financial services suppliers and users. In particular, the reform includes:

- strengthening the Condusef, so that its resolutions gain strength *vis-à-vis* financial institutions;
- fostering competition, by giving individuals greater freedom to select and transfer their financial products towards the institutions offering better conditions, and by explicitly forbidding tied sales; and,
- facilitating transfers of credit guarantees.

These measures seek both to strengthen protection to financial services users and to promote 'bankization' (adherence to the formal banking sector) and financial inclusion. The reform adapts the current Condusef's regulatory framework and reorients its objective in favor of financial system users. For that purpose, it recognizes that the provision of information, advice and protection to financial institutions' users represents a fundamental axis upon which the development of any given financial system should be centered.

The reform also seeks, first, to make securities market operations more efficient by accelerating issuance processes and reinforcing legal certainty and security, and second, to improve the functioning of entities and foster more clarity as to the responsibilities of users, intermediaries and other market participants. With a view to making the operation and issuance processes of senior trust bonds more efficient, as well as fostering more clarity as to users', intermediaries' and other market participants' responsibilities, the bill to reform the Securities Market Law introduces a special regime for the following certificates: a) development certificates (DCCs), housing certificates (fibras), and c) indexed certificates (ETFs). Furthermore, the bill specifies the minimum rights that documents relative to the issuance of DCCs and fibras must contain.

Also, certain provisions related to securities sales practices applicable to credit institutions and brokerage firms are worthy of mention: they must specify the customer profile, the financial product and portfolio diversification. Last, limits are imposed upon credit institutions and brokerage firms for the placement of securities and the provision of consultancy services.

### **iii. Broaden Credit Granted by Private Financial Institutions**

The Commercial Bankruptcy Law was issued to support corporate operational continuity, even in a situation of generalized default. This focus privileges employment, investment and access to goods and services, while minimizing to the best extent possible negative effects on counterparties with whom companies in distress have business relationships. First, companies' value is protected through their preservation, with a view to restoring their viability –in cases when this was not possible, the Law provided for an orderly liquidation.

In spite of serious efforts made to modernize the bankruptcy system, the recent financial crisis and the study of some practical cases showed that current legislation lacks elements to ensure the

## Banco de México

efficiency of procedures. Current bankruptcy system provisions disregard certain key aspects, such as protection of creditors and definitive mechanisms to preclude the indefinite duration of proceedings. This raises uncertainty over creditors' right of payment and increases the cost of credit and other fund sources. In consequence, the reform makes an in-depth reassessment of rights that the Commercial Bankruptcy Law should protect and aims at preventing misuse, by providing creditors with stronger legal mechanisms. In particular, it prohibits judges from extending the periods prescribed by law; it introduces the possibility of filing for bankruptcy before filing for insolvency, provided its imminence is proven; it proposes the creation of a civil regime of responsibilities for the board of directors and relevant employees of companies in distress, when these are responsible for property damage and the company is defaulting on payments; and, it lays down more strict rules so that intercompany loan creditors can form a majority. Additionally, it considers the possibility of acquiring emergency loans to preserve corporate assets during the bankruptcy process.

With the purpose of expediting proceedings, the bill also seeks to introduce more modern and standardized technological and accounting tools, such as electronic signatures and the use of forms to file for bankruptcy. Furthermore, with a view to fostering credit growth, the bill seeks to bring additional legal certainty to parties involved in credit contracts, especially to creditors. In case of default, it is critical to have the necessary tools and resources to recover debt or its guarantees. This will not only translate into a higher number of loans, but also improve the conditions –interest rates, terms and amounts– under which loans are granted. Last, aiming at facilitating both credit granting and the activation of guarantees in case of default, a number of amendments to the Commercial Code relating to procedural matters were introduced. As an additional effort to promote credit, the third axis reinforces financial authorities' powers to evaluate commercial banks' performance; specifically, the SHCP is empowered to assess credit provision performance.

### **iv. Ensure soundness and prudence in the financial system as a whole**

The four axis puts forth measures to ensure that credit growth is achieved within the context of a stable financial system. The main reforms proposed in that sense refer to the reinforcement of the bank resolution regime, including bankruptcy procedures for said institutions, the broadening of the scope of sofomes' rules and supervision, and the improvement of regulation applicable to financial groups.

It should be noted that the legal framework for bank resolutions has been developed in three successive stages: the first stage, in effect since 2004, refers to early preemptive measures and is a tool for the prevention and correction of problems that an institution may be confronted with. The next stage, in effect since 2006, refers to the bank resolution procedure and provides authorities with tools to conduct the timely resolution of institutions, whose financial distress results in solvency or liquidity problems. Last, the third stage refers to bank bankruptcy, that is, when banks' liabilities exceed their assets. The bank liquidation initiative, which is part of the financial reform, introduces improvements to the first two stages in the Credit Institutions Law, while laying down the specialized bankruptcy procedure –currently, bank bankruptcies, as all types of bankruptcies, are regulated by the Commercial Bankruptcy Law.

Improvements to the bank resolution regime include the following major amendments: (i) shorter terms for the right to hearing in the case of certain grounds for resolution, in order to allow authorities to respond more swiftly; (ii) the strengthening of the regime of transfer of assets and liabilities as a resolution tool; (iii) the Federal Economic Competition Commission' expeditious participation in case of concentration in the banking sector as a result of resolution proceedings –the Commission could be exempted when the Committee on Banking Stability laid down in the corresponding Law

determines that the revocation of an institution might have a systemic impact;<sup>115</sup> (iv) the adjustment of creditors' priority status, giving preference to the IPAB over the rest of common creditors when the former is subrogated to rights of payment related to secured obligations, and the prioritization of savers complying with requirements for deposit insurance protection; and (v) the automatic granting of a two-day period to exercise rights related to the early termination of certain transactions (e.g. derivatives transactions) when a bank enters resolution.

Furthermore, in order to prevent default on loans granted by a bank entering liquidation from affecting the recovery value of assets, the financial reform instructs the IPAB to settle, for the same counterparty, the balance of liability transactions covered by deposit insurance with past-due balances of loans granted by the same institution. In the event that Banco de México became the lender of last resort, the banking institution in question would have to abide by certain prudential measures to safeguard its solvency and stability such as, withholding dividend payments, settlements and extraordinary bonuses to senior-level employees, and refrain from increasing funds granted to related parties. In the event that the banking institution defaulted on a last-resort loan, and this event was in turn presented as a ground for revocation, but the Committee on Banking Stability had determined that said revocation might entail systemic risk, the precautionary administrator appointed by the banking institution would have to take a loan from the IPAB for the corresponding amount needed to settle the loan granted by Banco de México. The IPAB would be subrogated to Banco de México's rights *vis-à-vis* the banking institution, including all guarantees, and would proceed to put the institution on a sounder financial footing using a mechanism similar to that used for institutions that have not been subject to the conditioned operation regime and whose revocation due to lack of capital might entail systemic risk.

Regarding bank bankruptcy, that is, when a bank exhibits negative capital, the reform lays down a special regime, which maximizes the recovery value of insolvent institutions' assets under the supervision of a federal court assisted by the IPAB as official liquidator. Further, the reform includes a number of international standards suggested by the Financial Stability Board to improve the effectiveness of resolution regimes. For instance, institutions shall be obliged to draw up contingency plans with the breakdown of actions to restore their financial situation in case of adverse scenarios affecting their solvency or liquidity. In addition, the IPAB, in conjunction with the SHCP and the CNBV, is empowered to draft resolution plans describing the suitable forms and terms for institutions to be resolved in an expeditious and orderly fashion.

Commercial banks shall also be obliged to conduct stress tests in order to assess whether they have enough capital to meet possible losses derived from the risks they face. Said tests must consider a variety of scenarios, including stringent cases, and results shall be reported to the CNBV. Moreover, when results indicate that, in any given scenario, the bank would not have enough capital to cover potential losses, they should be accompanied by an action plan with capital projections to meet such potential losses.

Additionally, the financial reform gives the CNBV powers to put in effect prudential measures, in order to preclude financial events affecting the stability or solvency of persons of significant influence, exerting control, or having business or property links with commercial banks from having an impact on banks' stability.

As far as sofomes are concerned, the current regulatory framework is broadened so that authorities can count on information about the sector, which enables them to monitor such institutions.

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<sup>115</sup> In the bill, the Committee on Financial Stability changes its name for Committee on Banking Stability, in order to avoid any possible confusion with the Financial System Stability Board.

## **Banco de México**

Normative criteria under which any given sofom shall be regarded as a regulated entity are also broadened. Aside from sofomes that relate to credit institutions and financial groups, other entities are also subject to regulation, such as those having property links with popular savings and credit entities, savings and loan cooperative societies, and entities issuing debt in the securities market to finance their operations. Sofomes will have to provide information to at least one credit information bureau, be registered with the Condusef and keep their data up to date; otherwise they will lose recognition as financial entities.

Finally, capital and liquidity requirements based on the Basel III framework are introduced in the Credit Institutions Law. With regard to capital requirements, the bill puts forth a more robust regime, in line with the new minimum capital requirements, capital preservation, contracyclical capital and systemic risk buffers. Also, the CNBV is empowered to set leverage limits on banks. Last, regarding liquidity requirements, as part of the reform, the Regulating Committee on Banking Liquidity shall be founded, with a mandate to issue guidelines to determine liquidity requirements by which commercial banks must abide. Banco de México, in coordination with the CNBV, shall have the power to issue the provisions that will specify the aforementioned liquidity requirements.