The global financial crisis and policy response in Mexico

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Introduction

The intensification of the global financial crisis, especially as of September 2008, had a significant negative effect on Mexico, which faced two shocks of considerable magnitude. First, the global economic recession, particularly that of the United States, led to a drop in Mexico's exports and a deterioration in its terms of trade. Second, the climate of extreme risk aversion among international investors and the global deleveraging process significantly constrained access to international financial markets.

There was a distinct possibility that at least part of those shocks could be of a permanent nature. For example, part of the fall in export demand was due to the necessary adjustment in the patterns of expenditure to sustainable levels in advanced economies. There were also concerns that the large increase in fiscal deficits and public debt levels in such economies, which was associated with the adoption of expansionary fiscal policies, an ageing population, and the implementation of financial support programmes, could reduce financing for emerging economies in the medium term.

Other emerging economies also faced similar external shocks. However, in the case of Mexico, the particular features of its economy magnified the impact of these shocks, which explains why Mexico entered into a deeper recession than other economies. Perhaps the most important of those features is its high dependence on exports to the United States, as well as their composition. Almost 80% of Mexico's total exports are destined for that market, and a considerable proportion of those exports are durable goods.

The deepening of the financial crisis following the collapse of Lehman Brothers led to a sudden currency depreciation, followed by an episode of extreme volatility in the foreign exchange (FX) market. The currency depreciation brought about considerable financial problems for a number of leading corporations that had speculated against peso depreciation with complex derivatives operations. These firms incurred significant losses, triggering a huge demand for US dollars. When market participants realised that those corporates could become insolvent, there was a widespread loss of confidence among them and, consequently, a rise in counterparty risk that disrupted the normal operation of the domestic financial markets. As a result, liquidity shrank significantly in those markets.

The country's fiscal position weakened because oil revenues fell, partly due to the drop in international energy prices brought about by the global recession as well as the decline in domestic oil production. These conditions, together with the downward rigidity in public expenditure, raised concerns about the sustainability of fiscal policy. In turn, the deteriorating outlook for external revenues generated doubts about the country's capacity to finance the growth in the current account deficit for 2009.

The economy had to adjust to a new external environment characterised by lower foreign currency revenues and limited access to external borrowing. Since the adverse external shocks were not temporary, the real exchange rate should have depreciated permanently.

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[1] Bank of Mexico. The opinions expressed are exclusively those of the authors and do not necessarily reflect the point of view of the Bank of Mexico.

The challenge was to stabilise the domestic financial markets and avoid a systemic risk episode and, at the same time, provide a macroeconomic policy stance consistent with real exchange rate appreciation. Thus, policymakers enjoyed a limited degree of freedom in providing economic stimulus through fiscal and monetary policies. The appropriate macroeconomic policy stance was a policy mix that led the economy through the necessary adjustment at the lowest cost possible in terms of inflation and economic activity.

A fiscal stance with lower levels of domestic absorption and demand for financing was required in order to produce an orderly depreciation of the real exchange rate. This made it difficult to implement an aggressive countercyclical fiscal policy, which would have tended to make the real exchange rate adjust in the opposite direction. As for the monetary policy stance, given the rise in the price level caused by the depreciation of the exchange rate, it was important to prevent inflation expectations from deteriorating, as this would have led to a further worsening of the inflation outcome. Thus, there was reduced scope to provide monetary stimulus.

This paper is structured as follows. The conditions prevailing in the Mexican economy at the onset of the global financial crisis are discussed in section 1. Section 2 describes the external shocks (both real and financial) that Mexico faced during the crisis and the global recession. Section 3 describes the measures implemented by the authorities to preserve the normal functioning of the domestic financial markets and the FX market, as well as to restore investors' confidence in the Mexican economy. Section 4 focuses on the macroeconomic policy stance adopted under an adverse external environment, and section 5 provides some final remarks.

1. The Mexican economy at the onset of the global financial crisis

When the international financial crisis emerged in 2007, the Mexican economy was in a relatively better position to withstand its effects than during past episodes of financial turbulence, mainly due to the following factors.

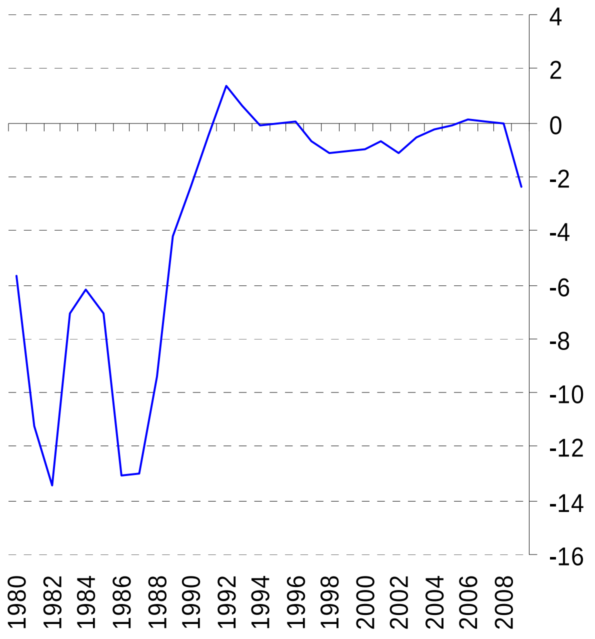
First, similarly to many other emerging economies, Mexico had reformed its macroeconomic policy framework over recent years and had therefore strengthened its fundamentals. For instance, prudent fiscal policy management had helped to eliminate the large and persistent budget deficit previously exhibited by Mexico (see Figure 1, left-hand panel), thereby contributing to a significant reduction in the public debt to GDP ratio. An active strategy of debt management had allowed for an improvement in its structure. As a result, when the financial crisis emerged in 2007, total public debt measured by the historical public sector borrowing requirements accounted for 28.1% of GDP, with total external public debt standing at 7.4%.

Since the early 1990s, several emerging market economies, including Mexico, have adopted flexible exchange rate regimes and introduced an inflation targeting regime as a framework to conduct monetary policy. This framework, supported by a balanced budget and a more than manageable public debt to GDP ratio, has helped to reduce both inflation and its volatility in Mexico, as well as to anchor inflation expectations (see Figure 1, right-hand panel). An inflation targeting regime allows monetary authorities to have some flexibility in the use of monetary policy as a tool to cope with shocks to the domestic economy.

Figure 1

Fiscal balance in Mexico

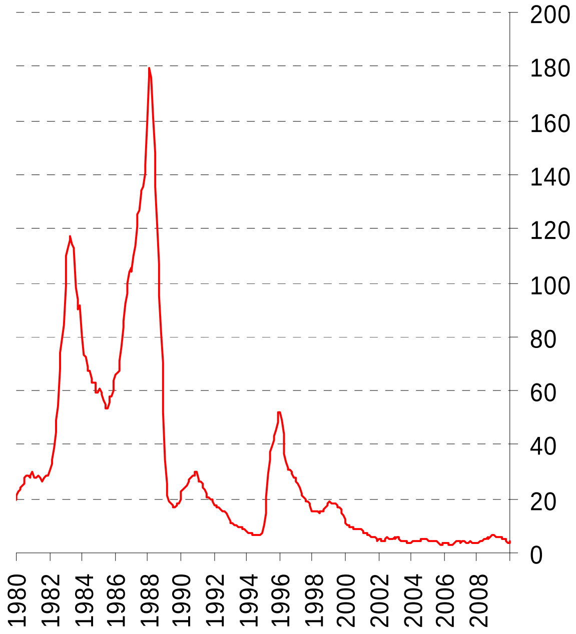
% GDP



Source: Ministry of Finance (SHCP).

Inflation in Mexico

Annual %



Source: Bank of Mexico.

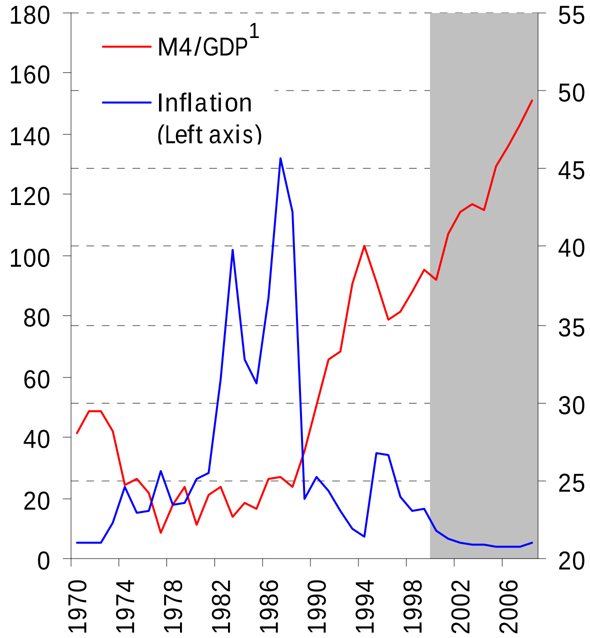
Second, a more stable macroeconomic environment contributed to the development of the domestic financial markets in Mexico (see Figure 2, left-hand panel). In particular, the greater certainty associated with low and stable inflation extended the planning horizons of economic agents, and made it easier for financial institutions to assess potential debtors' repayment capabilities by reducing the information problems present in financial transactions. As a result, the development of several markets, such as those for medium- and long-term financial instruments and derivatives markets, was possible. These factors made financial resources more easily available to the economy at better terms and with better conditions. Economic agents were therefore able to extend their debt maturities (see Figure 2, right-hand panel).

Deeper and more developed financial markets have allowed agents to pool and distribute risks more efficiently and have facilitated the allocation of savings to their most productive uses, thereby making the economy less vulnerable to adverse shocks. One example of the benefits of financial development has been the issuance of fixed interest 30-year peso-denominated bonds by the government. Moreover, in sharp contrast to the early 1990s, when mortgages were granted at floating interest rates and often in foreign currency, today, the development of the derivatives markets has allowed financial institutions to grant fixed interest 20- to 30-year peso-denominated mortgages. Another example is that, following the emergence of the financial crisis in 2007, when Mexican corporations found it difficult to obtain external financing, they were able to offset this restriction by issuing debt in the domestic markets. The domestic financial markets have therefore allowed companies residing in Mexico to substitute, at least partially, external borrowing for domestic borrowing.

Figure 2

Inflation and financial depth (M4/GDP)[1]

%; moving average

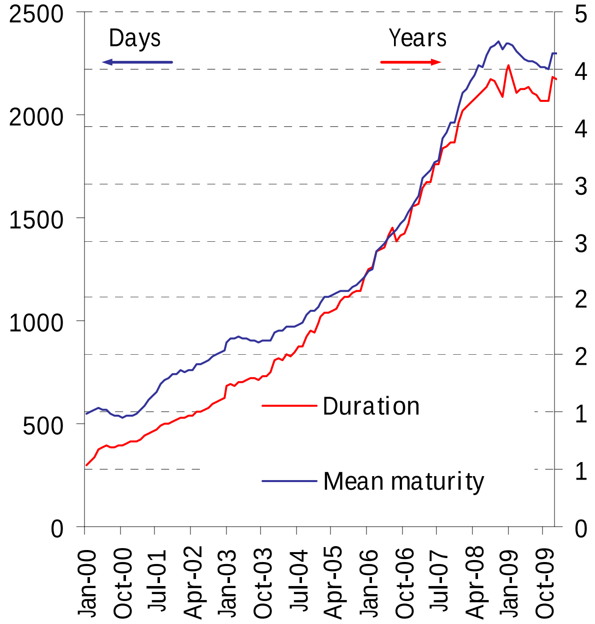


[1] Moving averages are calculated at five-year intervals, centred in the reference year.

Source: IMF.

Maturity and duration of government securities

In days and years



Source: Bank of Mexico.

Third, local banks were in a solid position and, for all practical purposes, did not have exposure to “toxic assets”. Furthermore, although most banks in Mexico are subsidiaries of foreign financial institutions, the legislation sets rigorous credit limits to related parties, which restricts the possibility of domestic banks being asked to provide liquidity support to their parent banks.[2]

Several factors have contributed to the resilience of the banking sector:

i. The banking system had adequate levels of capital when the episode of financial stress evolved into a full-blown crisis in 2008. Furthermore, banks have maintained high levels of capital adequacy despite the adverse conditions (see Figure 3, left-hand panel).

ii. Leverage ratios were lower than those observed in advanced economies. In Mexico, total assets were between 10 to 11 times equity.

iii. Banks continued to generate profits during the crisis, despite the adverse economic conditions. However, their profitability declined in 2008 compared with the high levels of 2007 (see Figure 3, right-hand panel).

[2] The Credit Institutions Law (Ley de Instituciones de Crédito) states that banks’ operations with related parties must not exceed 50% of their Tier 1 capital.

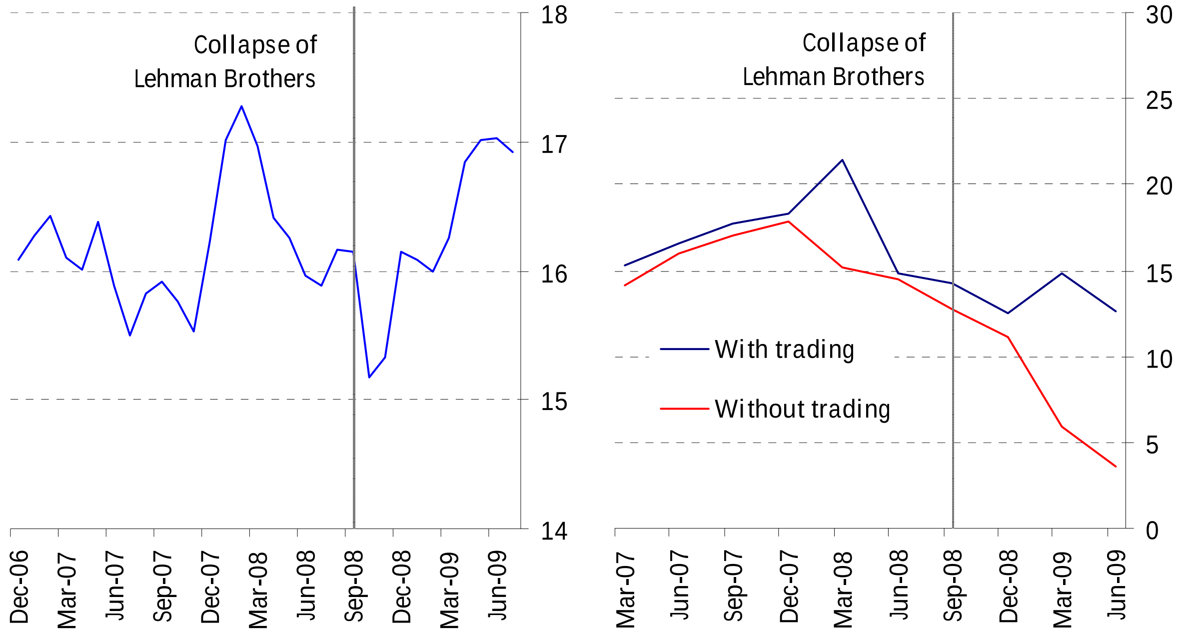
Figure 3

Mexican banks: capital adequacy ratio

%

Return on equity (ROE)

%



Source: Bank of Mexico.

Source: Banking and Securities Exchange Commission (CNBV).

These factors led to the perception that Mexico would not be significantly affected by the global crisis. Up until mid-September 2008, the financial conditions and economic activity in the country had not been severely affected by the episode of financial stress and economic slowdown prevalent in some major economies, especially in the United States.[3]

2. Intensification of the crisis and its impact on Mexico

A second, much more dangerous, phase of the international financial crisis began in September 2008. The deepening of the international financial crisis significantly deteriorated the perspectives of the global economy due to the collapse of the interbank funding market and the adverse feedback loop between financial conditions and economic activity. The Mexican economy was not immune to the climate of high risk aversion and to the worsening of economic prospects for the world's major economies. It faced two adverse shocks of considerable magnitude: a collapse in export demand and substantial constraints in accessing international financial markets.

3 Similarly, other emerging economies were also able to cope, albeit temporarily, with the financial turbulence in the international markets. The relatively good economic performance in Asia and Latin America up until September 2008 led several analysts to embrace the decoupling hypothesis, which argued that the business cycles of emerging markets had become detached from advanced economies. However, this hypothesis underestimated the possible channels of contagion. Financial and trade integration has increased significantly, leading to more interconnected economies around the world, which implies that adverse developments in advanced economies can be quickly transmitted to developing economies through several channels, some of which are not completely understood or have not been fully analysed.

2.1. Real shock

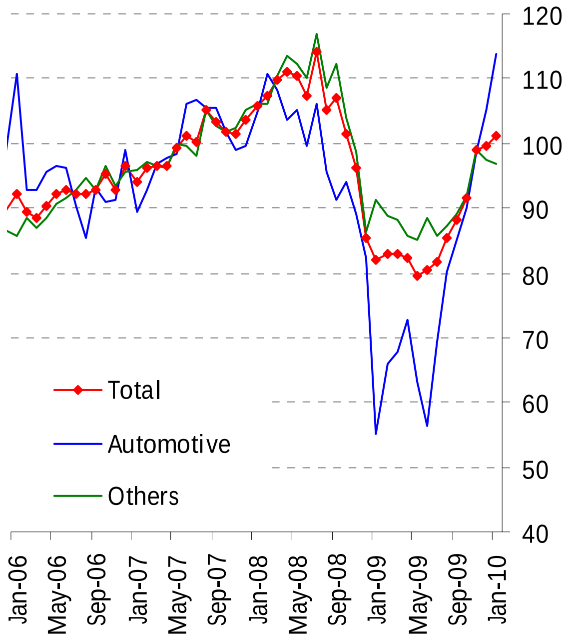
The deep recession in the global economy, predominantly in the United States, led to a drop in Mexico's export demand. Non-oil exports fell by 28% from May 2008 to May 2009.

Mexico's high economic dependence on the United States made the external demand shock particularly severe. In particular, the economic integration between the two economies has expanded since the North American Free Trade Agreement (NAFTA) came into force in 1994. Cross-border production-sharing intensified as labour-intensive segments of production processes were reallocated to Mexico, which explains the increasing importance of intermediate goods within the trade structure and the high correlation between exports and imports. Mexico has specialised in assembling and exporting manufactured products such as automobiles and other durable goods. Exports of these goods account for nearly 80% of total manufacturing exports to the United States (see Figure 4). Trade links constitute an important channel of transmission between the two economies.[4]

Figure 4

Manufacturing exports

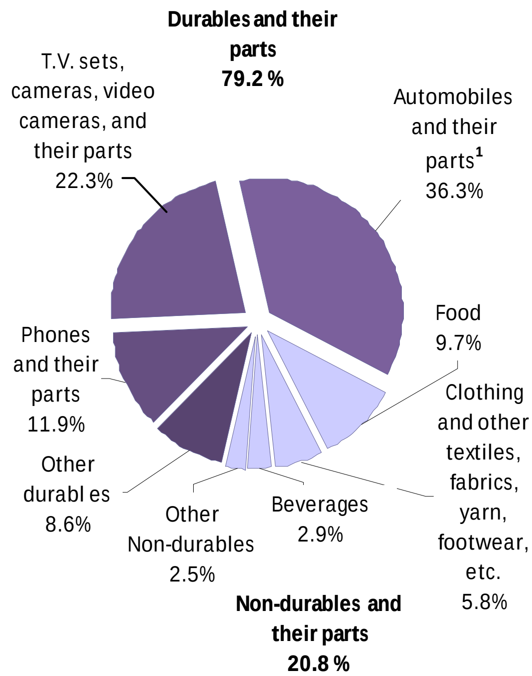
Index 2007 = 100; seasonally adjusted



Source: Bank of Mexico.

Exports of durable and non-durable goods to the United States

Percentage structure in 2008



[1] Includes parts for trucks, tractors, buses and special-use automobiles.

Source: Estimated by the Bank of Mexico using data from the US Department of Commerce.

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[4] Prior to the emergence of the current global crisis, the relative price of manufacturing goods had already experienced a decline. Since China joined the World Trade Organization in 2001, the growing supply of its exports has exerted downward pressure on the prices of durable consumer goods. If the effects of China's growing exports on these prices are permanent, the impact on Mexico's external revenues ceteris paribus, could indeed be significant.

The global recession also led to a drop in international energy prices, which has had an unfavourable effect on Mexico's foreign currency revenues. Although these prices recovered in 2009, they are still considerably below the levels observed in mid-2008, when oil prices reached maximum levels in July (see Figure 5, left-hand panel). There were concerns that the fall in oil revenues would be aggravated by a contraction in domestic oil production associated with the observed decline in proven reserves in the last few years.[5] The lower public sector revenues associated with the drop in oil revenues also represented a negative shock for public finances.

Figure 5

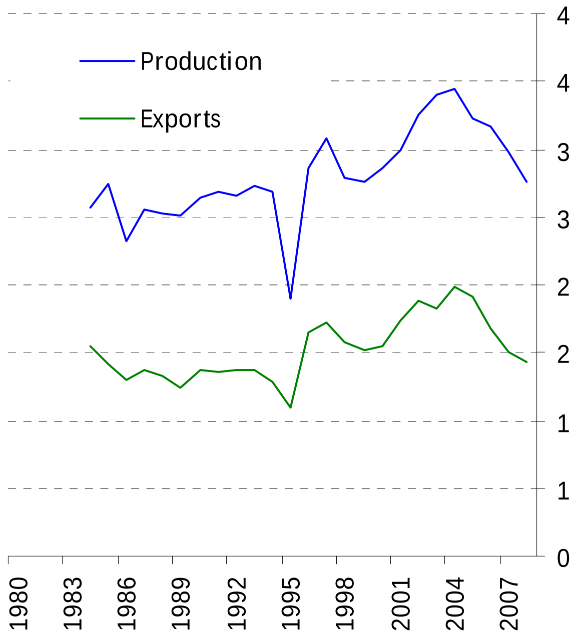
International oil prices

Index 31 Dec 2002 = 100

Source: Bloomberg.

Mexican oil rig

Millions of barrels per day



Sources: Ministry of Finance (SHCP); Bank of Mexico.

On the other hand, due to the recessive labour market conditions in the United States, immigrant workers faced greater difficulties in finding and keeping jobs, which negatively affected the flow of remittances to Mexico. Many Mexican immigrants work in the construction sector, which explains the close relationship between the flow of remittances and the performance in that sector.

To put the impact of a decline in remittances on the Mexican economy into perspective, it is important to note that they represented 3.9% of private consumption in 2007. Even though this figure does not seem high, the consumption of low-income families in the regions of Mexico with high migration rates depends heavily on the flow of remittances from the United States.

5 It has been argued that, in the absence of a comprehensive energy reform, Mexico could become a net importer of oil in the not too distant future (see Figure 5, right-hand panel).

2.2. Financial shock

The sudden increase in risk aversion among institutional investors following the events of September 2008, along with the deleveraging process in advanced economies, led to a reversal in capital flows to emerging economies. The result was a massive liquidation of domestic assets such as government and corporate bonds in emerging economies. This led to currency depreciation, extreme volatility in the FX markets, a drop in liquidity in the domestic debt markets, and to even more stringent conditions in the international financial markets for domestic economic agents.

Although almost all emerging economies were negatively affected by the climate of high risk aversion, in Mexico the impact of the shock was magnified by the exposure of corporates to foreign currency through complex derivatives instruments. Most of those large corporations, which were listed on the stock exchange and were major participants in the domestic debt markets, had engaged in complex derivatives transactions speculating against a large and abrupt peso depreciation, which consequently brought a high degree of risk to their balance sheets.

The derivatives instruments generated profits for those companies as long as the exchange rate remained within a certain range. However, as soon as the peso began to fluctuate outside that range, significant losses would be incurred. A sharp depreciation of the US dollar – which was wrongly perceived by the involved firms as a very unlikely event – would lead to massive losses and to an enormous demand for US dollars. Therefore, when the environment of high risk aversion led to a significant depreciation of the peso, the exchange rate adjustment was exacerbated by an additional demand for US dollars that these derivatives had imbedded (details of such operations are presented in the Appendix).[6] These events triggered a depreciation of the peso of 22.8% from 15 September to 16 October and an increase in the implied volatility of FX (USD/MXN) options (see Figure 6). It should be noted that, prior to this episode of turbulence, the Mexican peso had enjoyed a prolonged period of low volatility.

The disclosure of losses generated an episode of high uncertainty in the domestic financial markets, since investors did not know to what extent these problems had become widespread among the corporate sector. The worsening in the credit rating of a number of these firms contributed to a further deterioration in the already negative scenario. The fact that important companies faced severe financial problems led to a significant increase in counterparty risk and a widespread loss of confidence among market participants.

As for the private debt markets, there was a sharp contraction in the demand for securities issued by private firms due to the sudden increase in counterparty risk and the consequent perception that some debtors would no longer be able to meet their financial obligations. Since corporations, small banks and non-bank financial institutions were unable to issue commercial paper, the cost of financing for these companies and financial institutions in the short-term debt market rose significantly.

Particularly affected were several non-bank financial institutions (Sofoles) that specialise in granting mortgages and that finance their operations through the issuance of short-term debt. Since a considerable proportion of mortgages in Mexico are granted by Sofoles, the financial problems of these institutions had a negative effect on the mortgage market.

The decline in demand for commercial paper and the fall in liquidity in the secondary market had an adverse impact on mutual funds that invest in such instruments. The value of the

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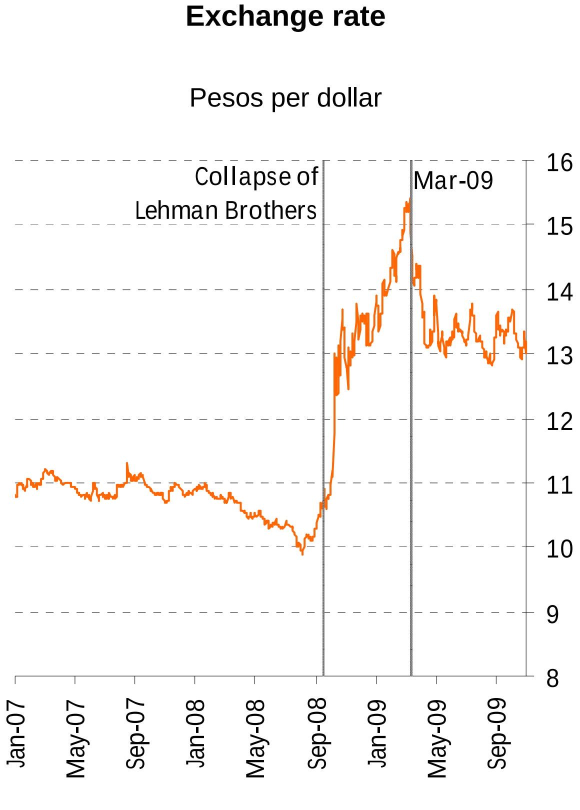
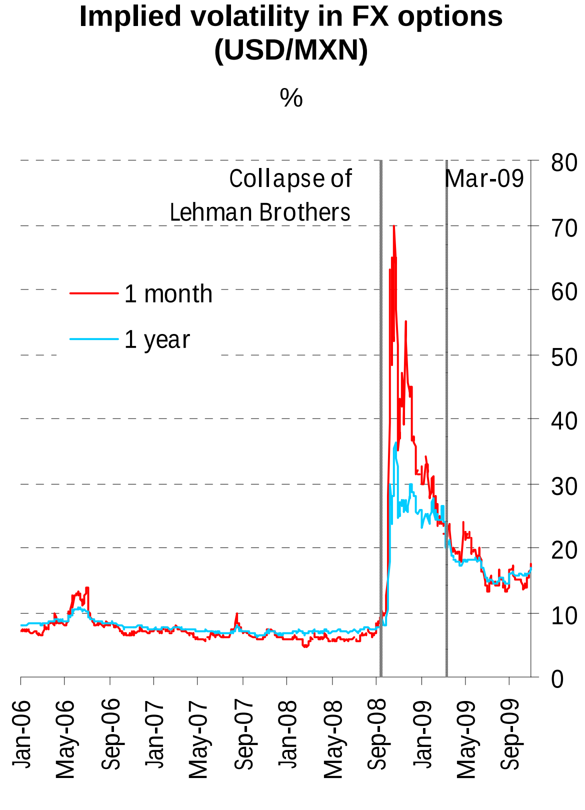
6 Under such a scenario, the increase in the demand for US dollars takes place even if corporations can no longer meet their obligations, given that their counterparties have to demand US dollars in order to meet their own foreign currency positions.

portfolios managed by these institutions suffered substantial losses associated with the decline in the price of their assets. Since mutual funds started facing an increase in the number of redemptions, their need for liquidity increased significantly. However, they also encountered increasing difficulties in selling their assets and obtaining such liquidity. As a result, had there been no policy intervention, asset fire sales could have occurred. In order to illustrate the scope of the problem, it should be noted that, up until September 2008, around one fifth of total voluntary financial savings was allocated to mutual funds.

Figure 6



Source: Bloomberg.



Source: UBS.

The market for long-term bonds was also negatively affected. Among other factors, the reversal in capital flows was associated with a liquidation of these types of assets. Investors significantly reduced their demand for government securities such as fixed-rate peso-denominated bonds (Bonos M) and inflation-indexed bonds (Udibonos). The increase in interest rates and their volatility due to the climate of uncertainty had a negative impact on the value of these bonds since, clearly, long-term instruments are very sensitive to fluctuations in interest rates. Under these circumstances, there was a considerable increase in risk premia on these assets and a drop in liquidity in the secondary market. This had an unfavourable impact on the portfolio value of institutions such as pension funds (Afores) that invest heavily in these types of assets. As these funds began to report losses, both workers and Congress expressed growing concerns about the situation.

Even the deposit insurance agency (Instituto para la Protección del Ahorro Bancario (IPAB)), was negatively affected by the loss of confidence among market participants, which led to a decrease in the demand for savings protection bonds (BPAs), which are considered quasi-government paper.

The climate of high uncertainty and the adverse developments in the debt markets also threatened the normal operations of the interbank market. First, as the adverse confidence shock led to a decline in the price of several securities, which, for practical purposes, also became highly illiquid, a number of them were no longer accepted as collateral. Second, the rise in counterparty risk also had a direct impact on this market. In particular, it posed a severe potential problem for the majority of new small commercial banks and some medium-sized banks, since they depend heavily on funding from the interbank market to finance their activities.

3. Policy actions to restore the orderly functioning of the financial markets

Several measures were put in place in order to re-establish the functioning of these markets and restore investors' confidence.

3.1. Foreign exchange market and policy response

In light of the significant drop in liquidity in the FX market during the fourth quarter of 2008, the Foreign Exchange Commission, composed of officials from the Ministry of Finance and the Bank of Mexico, decided that the central bank should intervene in this market.

In October 2008, the Bank of Mexico began to allocate US dollars to the market through two types of auctions. First, through extraordinary auctions, a mechanism by means of which US currency was sold directly to the market. The purpose of these auctions was to provide liquidity to the market in a timely way in order to meet the demand for US dollars that emerged during the last quarter of 2008. Extraordinary auctions took place in October and the total amount sold through them was USD 11 billion.

Second, in order to reduce exchange rate volatility, on 9 October, the Bank of Mexico started to carry out three daily auctions for a cumulative amount of USD 400 million, with a minimum price of 2% above the previous working day's exchange rate.[7,8] Allocations through this mechanism amounted to USD 4.18 billion by the end of 2008. The total amount sold through both types of auctions during the last quarter of 2008 was USD 15.18 billion.

On 22 October 2008, the Bank of Mexico also started to remunerate US dollar deposits that domestic financial institutions could maintain at the central bank. It paid the US overnight interest rate minus 1/8. The purpose of this measure was to make US dollar deposits relatively more attractive and reduce the incentives to liquidate positions in Mexico and send the funds abroad.

In order to supplement foreign reserves, a foreign currency swap line with the US Federal Reserve for up to USD 30 billion was agreed on 29 October 2008.[9] The Federal Reserve established similar mechanisms with other countries. The purpose of this measure was to improve liquidity conditions in the international financial markets and mitigate the difficulties in obtaining US dollar funding in countries with sound economic fundamentals.

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[7] This mechanism was previously used from February 1997 to June 2001.

[8] The cumulative amount was reduced to USD 300 million on 9 March 2009, and the amount was readjusted to USD 250 million on 29 May 2009. These auctions were suspended on 12 April 2010.

[9] This agreement was initially authorised until 30 April 2009. However, on 3 February 2009, the term was extended to 30 October 2009, and on 25 June 2009 it was further extended to 1 February 2010. The Bank of Mexico decided to activate the swap line in April 2009.

These measures contributed to a stabilisation of the FX market during the last months of 2008. However, in early 2009, the risk perception of the Mexican economy deteriorated, leading once again to market disruption. Given the illiquidity in the FX market, the Foreign Exchange Commission decided to restore the extraordinary auctions. These operations were carried out throughout February 2009 and the amount sold was USD 1.83 billion.

The total amount that the Bank of Mexico allocated to the FX market from October 2008 to February 2009, both through extraordinary auctions and through the programme of daily dollar sales (with a minimum price), was USD 28.01 billion.

By the end of the first quarter of 2009, the decline in international oil prices, and the expectation that those prices would not rise significantly in the medium term, together with the fall in domestic oil production led to a drop in government revenues (see Figure 7, right-hand panel), which raised concerns about the sustainability of Mexico's fiscal accounts. The deep contraction in economic activity in the first half of 2009 contributed to these problems, as it led to plummeting tax revenues. In addition, the deepening of the US recession also increased worries concerning both reduced foreign currency revenues for Mexico, which generated some doubts about the country's ability to finance even the moderate increase in the current account deficit expected for 2009 (see Figure 7, left-hand panel), and the possible impact on the central bank's foreign reserves, specifically after their partial depletion due to the adverse developments in late 2008 and the first two months of 2009.

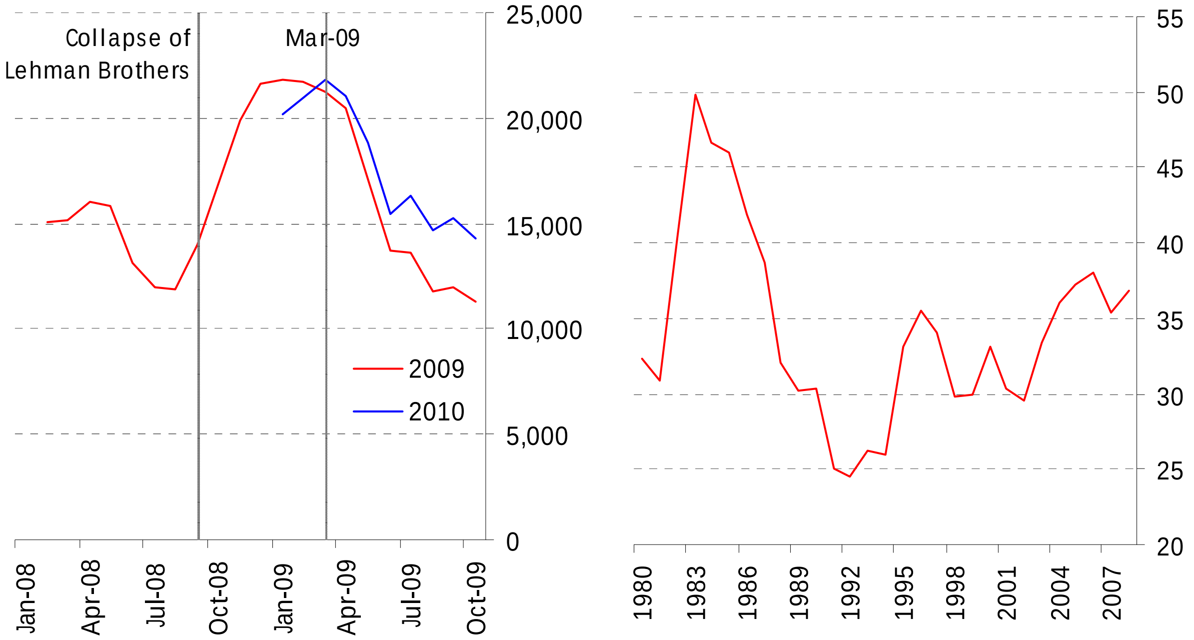
Figure 7

Current account deficit expectations

USD millions

Oil revenue

% of total revenue



Source: Bank of Mexico's survey on Private Sector Economic Analysts' Expectations.

Source: Ministry of Finance (SHCP).

In order to restore investors' confidence, on 5 March 2009 the Foreign Exchange Commission released a detailed analysis of the balance of payments outlook for 2009. The analysis included two important elements affecting the capital account:

First, the Ministry of Finance had adopted an oil price hedge programme for 2009. In particular, it had acquired put options on the price of the Mexican crude export mix, thereby guaranteeing a price of USD 70 per barrel. At that time, given the fall in the price of oil, the government expected to receive close to USD 10 billion as a result of the programme.

Second, the federal government decided to increase its borrowing from international financial institutions (IFIs) such as the World Bank and the Inter-American Development Bank. In particular, the public sector was expected to borrow almost USD 13.8 billion from those institutions in 2009.

The analysis indicated that Mexico would not encounter any problems in financing the current account deficit, since the marginal increase in the deficit expected for 2009 would be more than sufficiently financed with funds from both the oil price hedge and IFIs' long-term financing. Furthermore, given the government's expected foreign currency revenues for 2009, the level of foreign reserves in that year was not expected to decline with respect to the level registered at the end of 2008.

The increase in the public sector's external revenues implied that the government would run a surplus in its foreign currency transactions. In turn, the private sector would have a deficit, mainly due to its reduced access to foreign financing. In order to use the public sector's foreign currency revenues to offset the private sector's deficit, the Foreign Exchange Commission established a mechanism to guarantee that a significant part of the forecasted accumulation of foreign reserves for 2009 would be allocated to the FX market. It began to sell USD 100 million daily through auctions without a minimum price.[10]

Two additional measures were adopted to ensure that, even in the event of a further deterioration in the global markets, there would be no major problems in financing the external accounts.

i. On 3 April 2009, the Bank of Mexico announced its decision to draw on the foreign currency swap line with the Federal Reserve. On 21 April 2009, the Bank of Mexico carried out a US dollar auction for commercial and development banks, using dollars drawn from the swap line. In turn, these banks would provide dollars to corporations that required them in order to meet their foreign currency obligations. In total, USD 4 billion was auctioned, but only USD 3.22 billion was allocated.

ii. On 17 April 2009, the IMF approved Mexico's access to its Flexible Credit Line facility (FCL) for an amount of 31.5 billion Special Drawing Rights (around USD 47 billion). The arrangement was for one year, with the possibility of renewal. Until now, the FCL has not been used by the Mexican authorities, although Mexico's access was renewed on 25 March 2010.

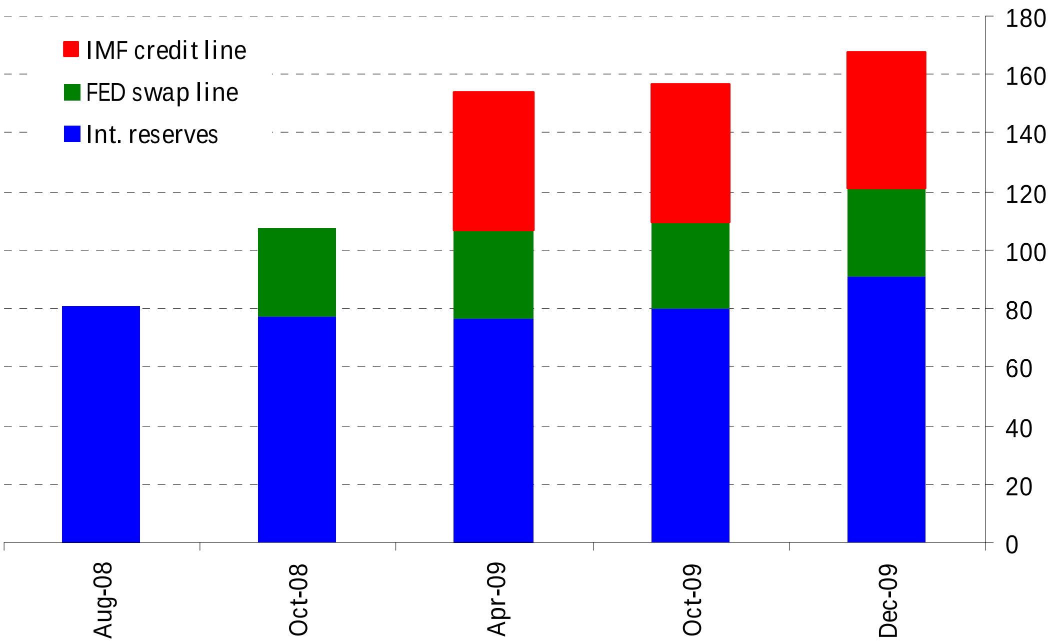
The aforementioned elements helped to normalise conditions in the FX market. Particularly relevant factors were, on the one hand, the publication of the projected balance of payments figures for 2009 by the Foreign Exchange Commission, which reassured markets that Mexico would have no trouble in meeting its obligations, and, on the other hand, the amount of the central bank's international reserves, which, together with the resources from both the Federal Reserve's swap line and the IMF's FCL (see Figure 8) were essential in restoring investors' confidence.

[10] The amount for the auctions without a minimum price was later reduced to USD 50 million on 29 May 2009. Finally, the Foreign Exchange Commission announced on 1 September 2009 that these auctions would be carried out until 30 September 2009 and suspended on 1 October 2009.

Figure 8

IMF credit line, Federal Reserve swap line and international reserves

USD billions



Sources: Bank of Mexico; IMF.

3.2. Domestic financial markets and policy response

First of all, as a preventive measure to maintain the normal functioning of the interbank market and to address the potential funding problems that a number of small- and medium-sized commercial banks might face, in October 2008 the Bank of Mexico decided to establish a new liquidity facility, in addition to the one already operating. The new facility expanded the range of eligible assets to be used as collateral, thereby supporting the commercial banks that did not have the eligible collateral securities to obtain funding from the Bank of Mexico using the existing facility, and also lowered the applicable interest rate. Table 1 shows the financing conditions through the traditional and new liquidity facilities.

The government and the Bank of Mexico implemented several measures to restore the orderly operation of a number of domestic financial markets. As for the commercial paper market, on 29 October development banks specialising in promoting industry and foreign trade (Nafin and Bancomext) introduced a support programme to refinance securities issued by private corporations and non-banks, for up to MXN 50 billion in guarantees, in order to ensure that those sectors could continue having access to financing.[11] The guarantees insured up to 50% of the amount issued. These measures supported the rollover of commercial paper issued by several companies and had a positive effect on the risk premia of these instruments (see Figure 9, right-hand panel). It should be noted that firms had to pay a fee in order to have access to the guarantees, which helped to align their incentives.

[11] These guarantees were provided by two development banks (Nafin and Bancomext), which specialise in promoting industry and foreign trade.

Table 1		
	Traditional liquidity facility	New liquidity facility
Maturity	One business day	One business day, renewable
Interest Rate	2 times the current overnight interbank interest rate	1.2 times the current overnight interbank interest rate
Collateral	Federal government bonds, BPAs, BREMs and deposits at Bank of Mexico	Federal government bonds, BPAs, BREMs, deposits at Bank of Mexico, and private and public AA-rated securities*
Valuation	According to prices and discounts determined by Bank of Mexico	According to prices and discounts determined by Bank of Mexico

*Domestic currency denominated bonds with at least a AA-rating and issued by public firms, municipal and state governments, non-financial firms residing in Mexico, financial firms, and trusts which securitise morgage portfolios
Source: Bank of Mexico.

To re-establish the normal operation of long-term government debt markets and to decrease the sensitivity of investors' portfolios to interest rate fluctuations, the authorities adopted a number of measures that contributed to a reduction in the risk premia on long-term government bonds (see Figure 9, left-hand panel), mainly by allowing investors to shorten the duration of their portfolios.

First, the federal government and the deposit insurance agency (IPAB) made changes in the auction schedule of their securities for the last quarter of 2008. The federal government reduced the issuance of fixed-rate long-term securities, and increased that of short-term bills (Cetes) in such a way that the total net domestic financing remained unchanged. In turn, IPAB reduced the issuance of its paper, thereby offsetting the reduction with higher financing from the banking sector. In general, these measures helped to reduce the adverse impact of a lower demand for long-term securities on the price of these assets and, at the same time, to meet the higher demand for short-term government securities.

Second, starting on 14 November, the Bank of Mexico implemented an interest rate swap auction programme for domestic financial institutions. Under the programme, the central bank would pay a floating rate (the 28-day interbank equilibrium rate (TIIE)) and financial institutions would pay a fixed rate. There were two types of auctions: unique rate and multiple rate auctions. Under both types of auctions, financial institutions would bid the fixed rate and the nominal amount, and the Bank of Mexico would set the minimum fixed rate it was willing to pay and the maximum bound for the total nominal amount it was willing to accept. Financial institutions' bids were placed in descending order according to the fixed rate, and then allocated by the central bank in that order, without exceeding the maximum value for the total nominal amount specified by the Bank of Mexico. Under the unique rate auction, all financial institutions that entered the swap contract with the central bank would pay the same fixed rate, which corresponded to that of the last bid allocated. Under the multiple rate auction, each financial institution would pay the fixed rate it offered in the auction. By entering the swap programme, financial institutions were able to cap their payments and reduce the sensitivity of their portfolios to further movements in interest rates. The programme was for a total amount of up to MXN 50 billion for domestic financial institutions; however, the total amount allocated through this programme was MXN 4.40 billion.

The government also put in place a programme to repurchase long-term government bonds in the secondary market for up to MXN 40 billion. This programme included both Bonos M and Udibonos. The auctions were carried out in December 2008 by the Bank of Mexico. The auctions to repurchase Bonos M were for a total amount of up to MXN 33 billion, although only MXN 4.34 billion was allocated. As for the repurchase of Udibonos, the auctions were for up to MXN 6.95 billion, although only MXN 2.95 billion was allocated. In turn, the Bank of Mexico implemented a programme to repurchase securities issued by IPAB for an amount of up to MXN 150 billion. The total amount of securities purchased through this programme was MXN 146.7 billion.

In order for mutual funds to cope with the problem of having several of their clients withdrawing their resources from them, some regulatory forbearance was allowed. The Banking and Securities Commission (Comisión Nacional Bancaria y de Valores (CNBV)) issued a new rule that allowed financial institutions to carry out purchases and sales of government securities with mutual funds of the same financial group for a six-month period starting on 30 October 2008. This measure gave mutual funds more flexibility to restructure their portfolios, helping them to obtain liquidity and meet their clients' withdrawals.

In April 2009, the funding problems faced by the non-bank mortgage companies (Sofoles), further deteriorated due to defaults on securities issued by two Sofoles. In response, in May 2009 the Federal Mortgage Corporation (Sociedad Hipotecaria Federal (SHF)) began to guarantee 65% of the debt issued by Sofoles maturing between 2009 and 2012. This measure, which also required a fee to be paid by the Sofoles, contributed to the reduction of the funding costs for these institutions (see Figure 9, right-hand panel). To the extent that investors' confidence improved, companies were once again able to issue short-term debt without guarantees. These support programmes therefore helped to gradually restore the orderly functioning of the commercial paper market.

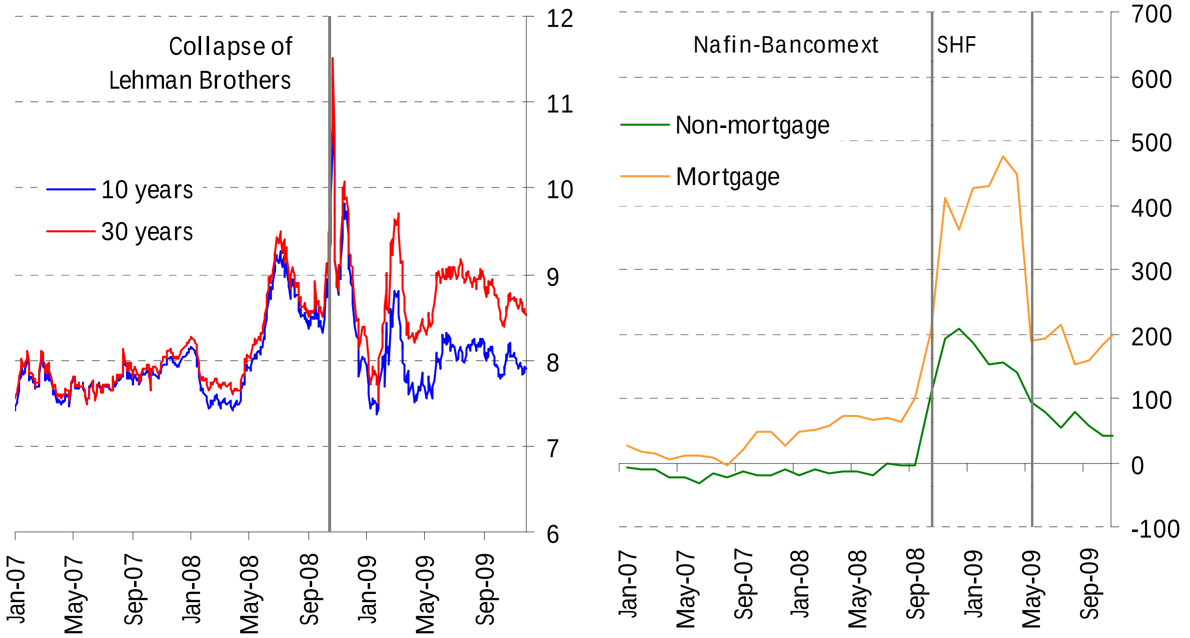
Figure 9

Long-term government bond yields

%

Spread between interest rates and 28-day TIIE of commercial paper issuances

Basis points



Source: Bank of Mexico.

4. Macroeconomic policy stance

The negative shocks faced by Mexico and the subsequent deterioration of investors' confidence significantly constrained the policy options available to the authorities. First of all, in order to establish the correct policy stance, policymakers have to determine whether the shocks are permanent or transitory. On the one hand, part of the high global economic growth registered in the period prior to the financial crisis could have been associated with an untenable expansion of aggregate demand in a number of advanced economies such as the United States; therefore, economic activity in those economies would probably not return to the levels associated with that period of excessive credit expansion and "bubbles" in asset prices. Thus, the adverse external shock may not be a purely cyclical phenomenon and could last for quite some time.

On the other hand, the reduced access to external financing could very well not be a transitory shock either. For instance, the expansionary fiscal policies adopted in a number of developed economies as a result of the crisis have significantly deteriorated their fiscal outlook and could lead to a sharp increase in those governments' financial requirements over the medium term. The ratios of government debt to GDP are expected to continue growing in the next few years, even if the majority of advanced economies undergo an effort to consolidate their public finances. To the extent that the financing needs of advanced economies' governments further increase, the amount of financial resources available to Mexico and other emerging economies in the medium term will correspondingly be reduced.

Under this scenario, domestic absorption had to adjust to the adverse global environment characterised by a reduced amount of financial resources available to emerging economies and a decline in the country's external revenues, ie the real exchange rate had to depreciate. The macroeconomic policy stance thus required a policy mix that would lead the economy through the necessary adjustment in an orderly way. Consequently, the Mexican authorities had a narrow margin of manoeuvre to provide economic stimulus through fiscal and monetary policies.

4.1. Fiscal policy

In the years prior to the financial crisis, the Mexican Government had followed a balanced budget rule in line with the Federal Budget and Fiscal Responsibility Law (Ley Federal de Presupuesto y Responsabilidad Hacendaria (LFPyRH)). Thus, when the global crisis escalated in September 2008, the budget was balanced. However, there were a number of sources of vulnerability for the fiscal accounts. First, a high dependence of government revenues on oil income, given that between 30 and 40% of public sector revenue comes from crude oil exports. Second, the deterioration in the outlook for economic activity was expected to reduce tax revenues. Third, the rigid structure of public expenditures leaves little room to adjust them. In particular, Mexico had enjoyed a windfall of oil revenues for several years, and a significant part of those extraordinary revenues was used to increase public spending, for example in social programmes, which are extremely difficult to adjust.

As the crisis began to hit the poorest segments of society, the federal government made efforts to adopt measures to try to attenuate the adverse impact of the crisis on economic activity, particularly on low-income families. Those measures included increasing public expenditures on infrastructure, freezing household energy prices, decreasing industrial electricity tariffs, and implementing programmes to support employment. In order to implement such measures, the budget for 2009, set out in light of the LFPyRH, was modified, allowing it to shift from a balanced budget to a moderate deficit.

However, by mid-2009, the economic recession had turned out to be deeper than anticipated and oil prices were also lower than had been expected. Under those conditions, there was a substantial decline in public sector revenues. This situation, along with the aforementioned downward rigidity of public expenditures, weakened the country's fiscal position, which limited Mexico's access to international credit markets to an even greater extent.

It thus became urgent to adopt measures to close the increasing gap in the fiscal accounts. At first, the federal government used non-recurrent revenue sources such as savings previously made in the oil revenue stabilisation funds and exercising the oil price hedging options. However, the government also expressed the need to implement fiscal reform in order to structurally strengthen public finances. The Mexican Congress approved fiscal tightening measures for 2010, including some public expenditure cuts and higher taxes. Among other things, these included a permanent increase in the general VAT rate, permanent and temporary increases in excise taxes, temporary increases in income taxes, and limits on tax deferral mechanisms for corporate groups. The fiscal effort amounted to approximately 2% of GDP.

This fiscal consolidation package was implemented under an extremely adverse environment, characterised by a sharp contraction in economic activity. However, it improved the country's fiscal position and was crucial in restoring investors' confidence. It is worth mentioning that the recent concerns about the sustainability of the fiscal accounts in a number of euro area economies highlight both the risk of weak fiscal positions, and the urgent need to implement corrective measures, even under extremely difficult conditions.

Fiscal consolidation also contributed to an orderly adjustment of the real exchange rate. In particular, since government spending is concentrated in non-tradable goods, the measures adopted exerted downward pressure on these prices, thus making the economy's adjustment less complicated. In sum, a fiscal policy implying lower levels of absorption and demand for financing was required, leading in turn to an orderly depreciation of the real exchange rate.

4.2. Monetary policy stance

The challenge for the central bank was to help restore the orderly functioning of a number of financial markets in order to prevent a systemic risk episode, and at the same time avoid a deterioration in inflation expectations, which could put price stability at risk.

During the first half of 2008, the sharp increase in the international price of commodities led to higher inflationary pressures in Mexico. At the time, economic activity had not been significantly affected by the crisis originating in advanced economies, and the Bank of Mexico decided to tighten monetary conditions. The target for the overnight interbank interest rate was raised from 7.5% in June to 8.25% in August. These actions were partly preventive, as they were implemented to avoid the increase in inflation from affecting inflation expectations.

As mentioned previously, in the second half of 2008 the global financial crisis escalated, negatively affecting economic activity and disrupting the normal functioning of the financial markets. The stabilisation of domestic financial conditions was, indeed, crucial. At the same time, the following factors contributed to a further worsening of inflation in the last few months of 2008:

i. Increases in international commodity prices affect domestic prices with a lag; consequently, their effects on consumer inflation remained present during the last quarter of 2008.

ii. The domestic currency depreciation following the events of September 2008 also affected inflation.

Under this scenario, although the outlook for economic activity began to deteriorate, the Bank of Mexico decided to leave its policy rate unchanged, mainly in response to increasing concerns about inflationary pressures and their potential negative impact on inflation expectations. At the time, the central banks of advanced economies had already implemented aggressive policy rate cuts. Therefore, the Bank of Mexico's decision contributed to widening the interest rate differentials among Mexico and developed economies, particularly the United States. This implied a further tightening of the monetary policy stance in Mexico.

By early 2009, inflation appeared to reach a peak and started to fall, while prospects for growth deteriorated. Lower food and energy prices and a wider output gap reduced inflationary pressures, although inflation remained higher than in advanced economies. The balance of risks deteriorated significantly, tilting towards the side of economic activity, while inflation expectations remained relatively well anchored. The weak economic activity during the first quarter of 2009 worsened in the second quarter of that year. This poor performance led to a downward revision in growth prospects for the year as a whole. A potential recession became the main cause for concern. Thus, the central bank began a loosening cycle, rapidly cutting the policy rate from 8.25% in January to 4.5% by July (see Figure 10). There were no further policy rate cuts in subsequent months mainly due to concerns about the potential effect on inflation of the fiscal measures proposed to Congress for 2010. Congress approved a rise in VAT and other indirect taxes, which led to a temporary increase in inflation. In spite of this, inflation expectations remained well anchored.

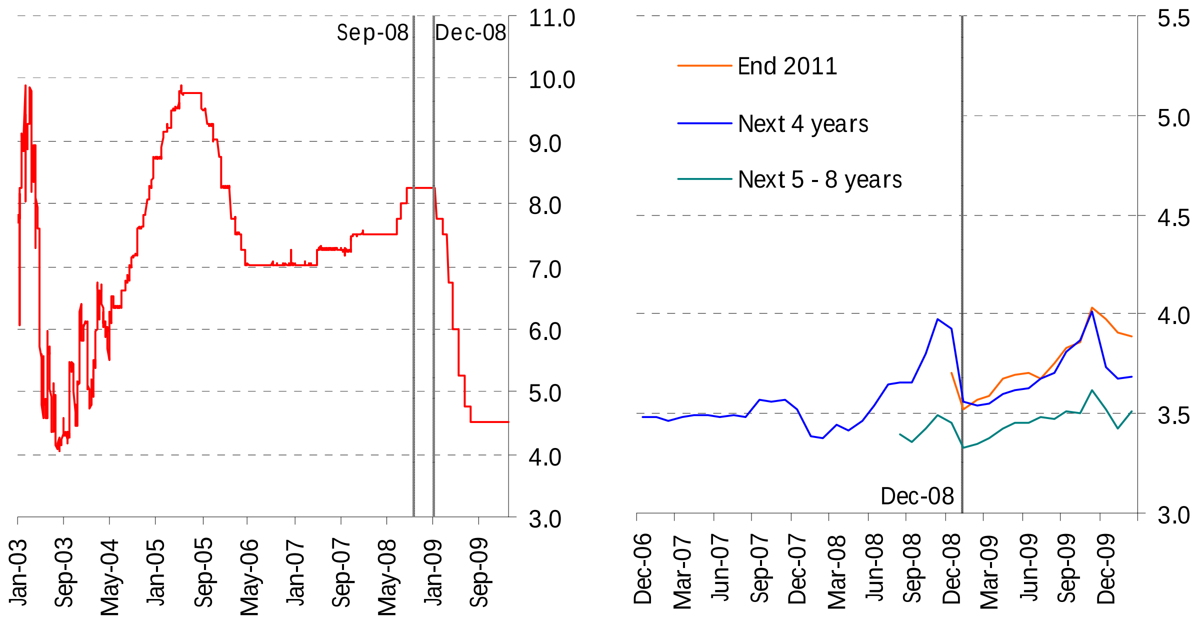
Figure 10

Overnight interest rate[1]

Index 2007 = 100; seasonally adjusted

Headline inflation expectations for end of 2011, medium and long term[2]

%



[1] The target for the overnight interest rate is shown since 21 January 2008.

Source: Bank of Mexico.

[2] Monthly average from Infosel's survey.

Sources: Bank of Mexico's survey; Infosel's survey.

5. Final remarks

The worsening of the international crisis, especially from September 2008 onwards, had a major impact on emerging economies, which were confronted with two adverse shocks: a collapse in export demand related to the world recession, and reduced access to external financing resulting from the sudden increase in risk aversion and the global deleveraging process.

In the case of Mexico, the domestic financial markets and the FX market began to deteriorate following the events of September 2008 in the global economy. In particular, the domestic currency suffered a sharp depreciation and the volatility of the FX rate increased significantly. The losses incurred by some important Mexican corporations through derivatives instruments exacerbated the demand for foreign currency and gave rise to a widespread loss of confidence, leading to contagion in the other domestic financial markets. Consequently, there was widespread disruption in the domestic financial markets characterised by illiquidity and high volatility.

Policymakers faced the challenge of restoring orderly conditions in the financial markets: timely and decisive actions were needed. In particular, coordination among the different authorities was crucial, given the need to use different policy instruments. In this setting, several measures were implemented to provide liquidity in both domestic and foreign currency, as well as to restore the normal functioning of a number of domestic financial markets and reduce exchange rate volatility. The policy response in Mexico helped to contain the financial crisis and prevented the drop in liquidity from evolving into insolvency problems for some domestic financial institutions. This situation would have significantly threatened the stability of the Mexican financial system. The Mexican banking system ultimately proved to be very resilient to the shocks facing the global financial system. In fact, throughout the worst period of the crisis, Mexico continued to be in the black with capitalisation indices well above those required by law.

The Mexican economy had to adjust to an environment characterised by lower external revenues and reduced access to external financing. It seems that the fiscal and monetary policy mix used was the appropriate macroeconomic policy stance, as it led the economy through the required adjustment with the lowest cost. Furthermore, the tax reform approved by Congress improved the fiscal position of the country, which helped to reduce the risk perception of the economy, while also diminishing pressures on non-tradable goods inflation. Central bank actions were geared to restoring orderly conditions in the domestic financial markets and monetary policy was loosened as the balance of risks tilted towards economic activity. The use of monetary policy to support economic activity, however, was limited by the need to contain inflation expectations generated by the nominal exchange rate depreciation and the indirect tax hike.

As a result of these actions, the economy was able to transit through the international financial turmoil by avoiding a crisis and minimising moral hazard. The different actions to restore the domestic financial markets also seem to have been successful, as market conditions have gone back to normal, although the volume of operations has still not returned to its pre-crisis levels. Overall, the different measures undertaken by the Bank of Mexico have brought back liquidity and deepness to these markets, and the efforts to structurally strengthen the fiscal position have paid off, as the recent episodes of global financial instability have not had a major effect on Mexican markets.

Appendix:
exotic options

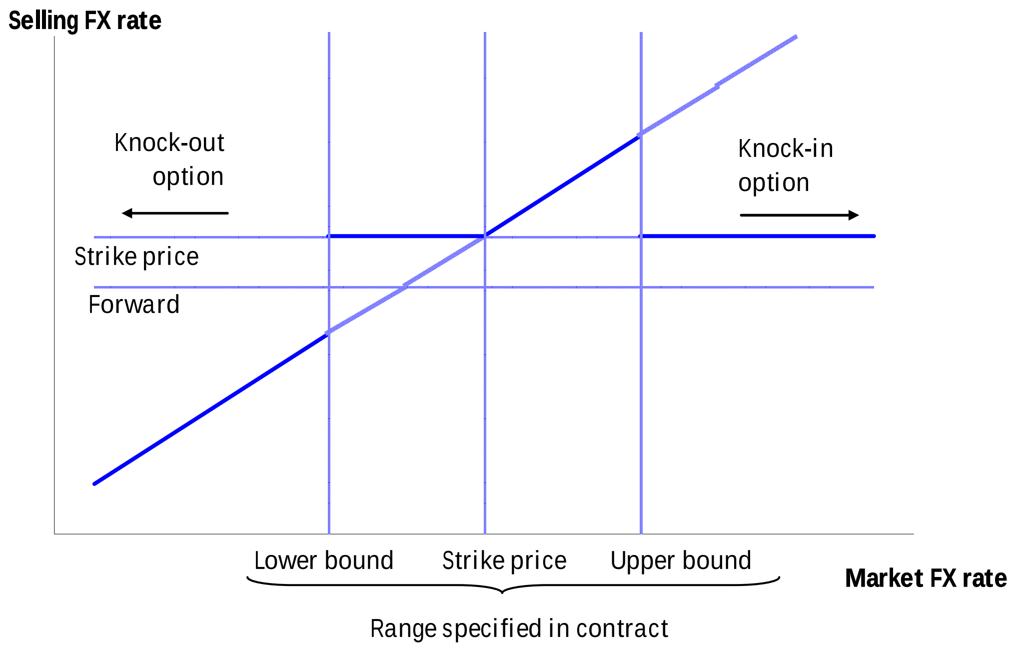
Under the expectation of an appreciation of the domestic currency, a complex derivatives structure known as KIKO (knock-in knock-out) was used by a number of corporations in Mexico and some other countries (see Figure 11). This strategy operated as follows: the contract specified a strike price, higher than that implied by the forward rate, at which the firm could sell US dollars whenever the exchange rate remained within a certain range. Thus, as long as the peso appreciated moderately, that is, without moving out of the lower bound of the range, the firm would sell US dollars at the agreed-upon rate and obtain a gain.

However, if the domestic currency depreciated, two possible scenarios could emerge. If, despite the depreciation, the exchange rate remained below the upper bound of the range specified in the contract, the firm could sell US dollars at the market price; however, if the exchange rate moved beyond such bound, the firm would then be compelled to sell US dollars at the strike price and incur losses. Thus, a sharp depreciation could lead to great losses and put the solvency of firms at risk. The solid line in Figure 11 corresponds to the rate at which firms sell US dollars for different values of the FX rate.

In sum, these transactions in FX derivatives generated profits whenever the exchange rate remained within a defined range. However, in the event of a sharp depreciation of the peso, they could generate substantial losses.

Figure 11

Knock-in knock-out option



Source: Bank of Mexico.