*Chapter 1*

Macroeconomic and structural policies to further stabilise the economy

Improvements in the macroeconomic policy framework over the past two decades and prudent regulation of the financial system have contributed to reduce output volatility in Mexico relative to other OECD countries. The sharp recession in 2008-2009 illustrated that output volatility has nonetheless remained high. The fiscal rule has helped to balance the federal budget and keep the level of government debt low, while enhancing fiscal credibility, but it should be strengthened to allow building a larger buffer of financial assets to respond to shocks. Although output contracted sharply in early 2009, actual and expected inflation remained above target, in part because rigidities in product and labour markets limit price flexibility. This constrained the monetary policy response. The banking system withstood the recession of 2008-2009 well, but the contraction in bank credit was sharper than in other OECD countries, in part related to a boom-and-bust cycle in consumer credit that preceded the recession. While in other OECD countries the services sector stabilises output, in Mexico it contributes to output volatility. The volatility partly reflects the dominance of services with strong links to manufacturing, while modern and more stable consumer-related services remain underdeveloped. Output volatility could be further reduced by amending the fiscal rule to accumulate larger buffers of financial assets during economic upswings or periods of high oil prices, and by taking measures to enhance the flexibility of prices. Mexico should also adopt internationally-accepted statistical conventions for its budget accounts to make them more easily comparable with those in other countries. There would be merit in moving towards macro-prudential regulation and supervision to reduce the pro-cyclicality of the financial system. Finally, entry barriers to services should be lowered to boost the development of a modern consumer-related services sector.

Thanks to an improved macroeconomic policy framework and prudent regulation of the financial system, Mexico did not endure the type of fiscal and financial crises experienced in some other OECD countries during the global crisis of 2008-09. The improvements in the macroeconomic policy framework have contributed to a reduction in the volatility of Mexican output relative to other OECD countries. Nevertheless, output volatility in Mexico remains high (Figure 1.1). This can have large costs for individuals and for long-term economic growth. Temporary disruptions in output tend to be accompanied by temporary falls in consumption, in particular in countries like Mexico where a large share of the

Figure 1.1. **The output gap widened sharply during the recession**
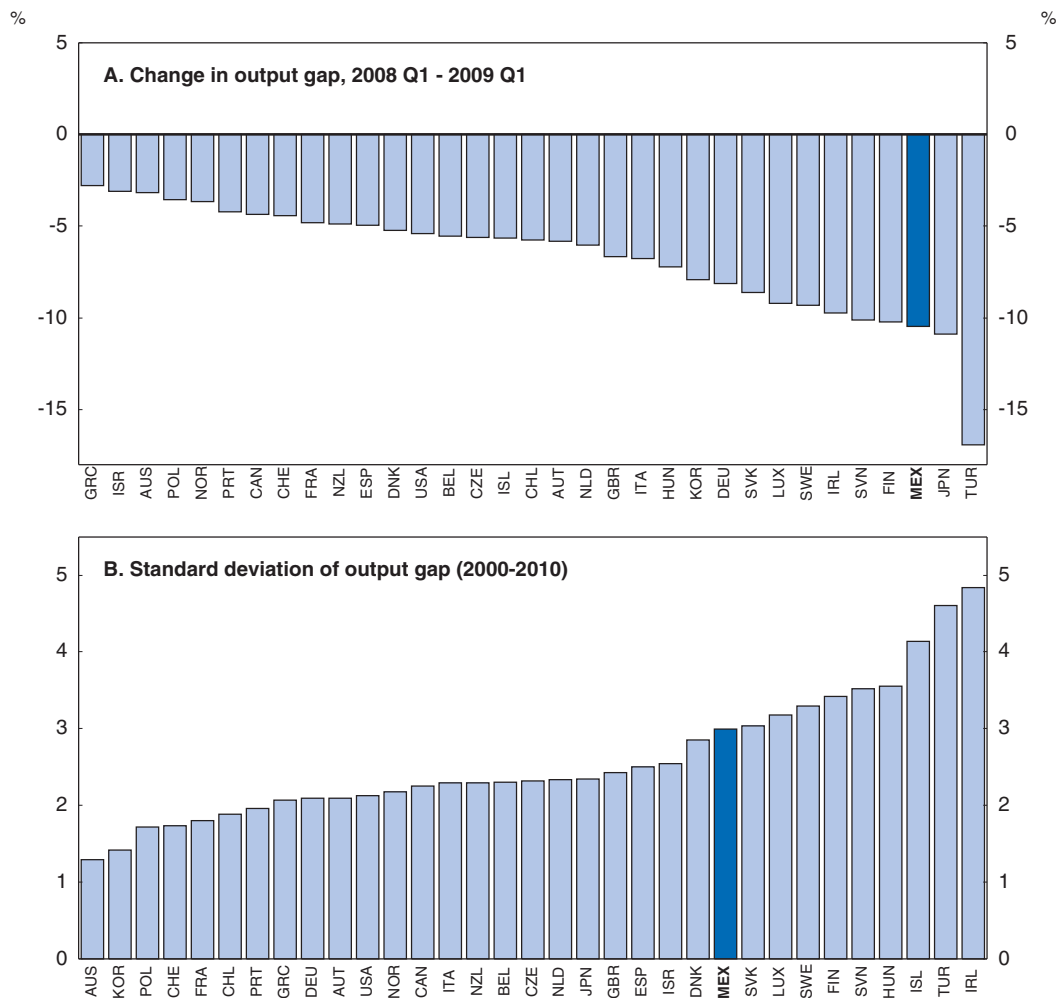
Source: OECD, *OECD Economic Outlook Database.*

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population is credit constrained and the social safety net is weak. This generates costs for individuals who tend to prefer a smooth path of consumption and are averse to spells of unemployment or poverty (Reis, 2009). Moreover, the literature suggests that high output volatility can have adverse effects on long-term economic growth through hysteresis effects or through higher uncertainty (Ramey and Ramey, 1995; Fatás, 2002; Aghion *et al.*, 2010). This chapter discusses the sources of Mexico's output volatility and recommends reforms that would enhance fiscal buffers; increase the central bank's room for manoeuvre; reduce the pro-cyclicality of the financial system; and contribute to the development of a more stable, consumer-oriented services sector.
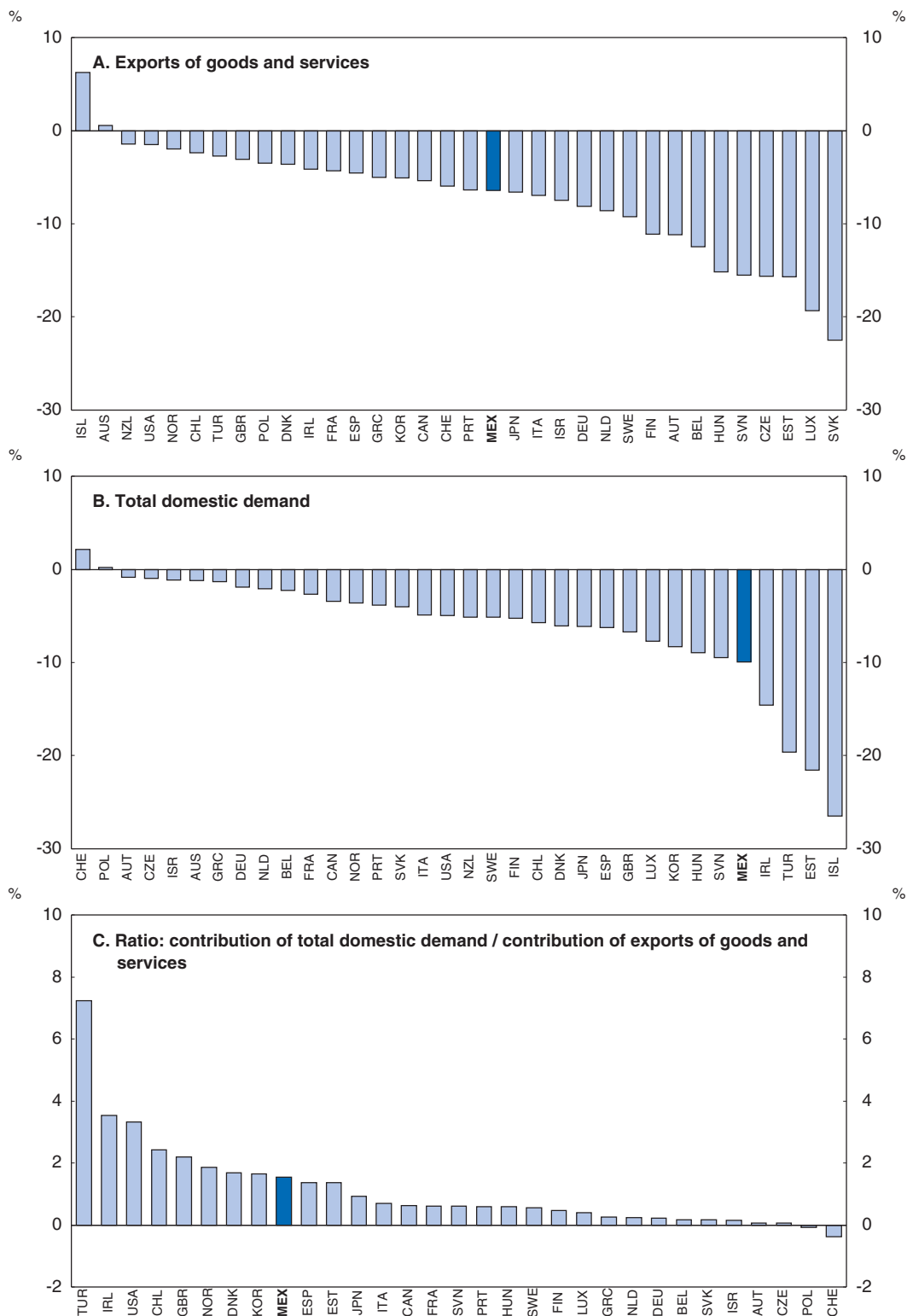
The recession of 2008-09 in international perspective

To some extent, the sharpness of the recession of 2008-09 reflects the concurrence of several large adverse shocks. The recession of 2008-09 hit Mexico first through the trade channel, with exports falling sharply when world trade collapsed in the second half of 2008. The volume of exports was around 20% lower in the first quarter of 2009 than one year before. The sharp fall in exports was mainly the result of Mexico's specialisation in manufacturing (around 80% of total exports) and close trade links with the US (80% of exports go to the US), which both experienced particularly sharp downturns during the global economic and financial crisis of 2008-09. The generalised flight to safety, which penalised emerging market assets during the global crisis of 2008-09, resulted in a widening of sovereign bond spreads and a substantial tightening in financial conditions. Finally, Mexico was also hit by the fall in remittances from migrant workers in the US and the outbreak of the A(H1N1) influenza in April 2009.

Despite the sharp fall in exports, external factors alone cannot explain the sharpness of the recession in Mexico. The contribution of exports to GDP growth between the first quarter of 2008 and the same period of 2009 was around the OECD average (Figure 1.2). Income effects cannot account for the sharpness of the recession either, as the terms of trade declined less than in other countries. Although Mexico is a large exporter of oil (around 15% of total exports), the terms of trade declined by only around 5½ per cent between the first quarter of 2008 and the same period of 2009. This compares with a decline of around 12½ per cent in Canada, for instance. The reason for the relative mildness of the decline is that the share of manufacturing imports in total exports is relatively high and Mexico is simultaneously an exporter of unrefined petroleum and an importer of refined petroleum. Moreover, the effects of lower oil prices on the real economy tend to be transmitted through fiscal policy in Mexico, but the 2009 budget was shielded against sharp declines in the oil price through a clever oil price hedge.

The contribution of domestic demand to the fall in GDP was large in international perspective (see Figure 1.2, Panel B), indicating that the export shock spilled over to the rest of the economy. Nonetheless, when the contribution of domestic demand is normalised by the export shock, the spillover was not larger than in other export-oriented economies (see Figure 1.2, Panel C). Private consumption contracted by more than in other countries that experienced similar shocks to exports. In Mexico, private consumption fell by 9% between the first quarter of 2008 and the same period of 2009, whereas it hardly decreased in Canada, for instance, which experienced a similar shock to exports, though it did better than other emerging markets controlling for the size of the shock.

Figure 1.2. **Contributions to GDP growth during the crisis**

2008 Q1-2009 Q1

A. Exports of goods and services

B. Total domestic demand

C. Ratio: contribution of total domestic demand / contribution of exports of goods and services

Source: OECD, *National Accounts Database.*

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The fall in migrants' remittances and the outbreak of the A(H1N1) influenza contributed to the fall in private consumption, but the magnitude of these effects was moderate. In USD terms migrants' remittances fell by around 5% year-on-year in the first quarter of 2009 after having recorded strongly positive growth rates in the previous years. Due to the strong depreciation of the currency, however, remittances continued to record positive annual growth rates in peso terms throughout the first half of 2009. Moreover, remittances are small relative to the size of the Mexican economy (around 2.5% of GDP). The A (H1N1) influenza broke out in April 2009, contributing to weak private consumption in the second quarter of 2009.

Although the macroeconomic policy response was broadly appropriate, there remains scope for further enhancing the flexibility with which macroeconomic policies can respond to large shocks. The social safety net is limited and the automatic fiscal stabilisers are weak, possibly resulting in large increases in precautionary savings. A larger counter-cyclical fiscal response could have been implemented in 2009 if larger fiscal buffers would have been available. The central bank reduced the policy rate during the recession of 2008-09, but above-target inflation expectations may have precluded an even stronger policy response.

The sharp depreciation of the peso contributed to persistently high inflation, but rigidities in labour and product markets may also have played a role. The peso depreciated by around 20% in USD terms over the second half of 2008. Importers of manufactured goods pass a depreciation of the currency through to consumer prices to some extent, but in the presence of large excess capacity the degree of pass-through should be limited. Empirical analysis conducted for the *OECD Economic Survey of Mexico 2009* (OECD, 2009) showed that the degree of exchange rate pass-through declined over the period 1990-2008 and became statistically insignificant after the adoption of inflation targeting in 2001. Moreover, due to the global nature of the recession of 2008-09, prices on world markets in foreign currency fell, which should have compensated for part of the depreciation of the Mexican peso. In fact, inflation of tradable goods in Chile fell rapidly during the recession of 2008-09, despite a similar currency depreciation (18% between September and December 2008, Figure 1.3). Exchange rate pass pass-through in the services sector is likely

Figure 1.3. **Inflation fell by less than in Chile**

Year-on-year percentage change
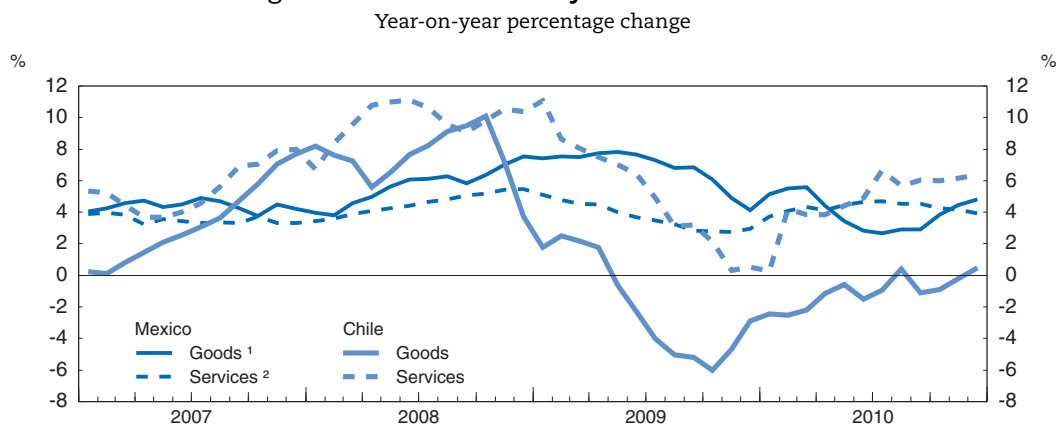
1.   Including processed foods, beverages, tobacco and other goods.
2.   New definition. Including housing, education and other services.
Source: Banco de México and Banco Central de Chile.

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to be limited, as services remain largely non-tradable. However, inflation in the services sector came down much more slowly in Mexico than in Chile (Figure 1.3). To some extent this may reflect that the depreciation of the exchange rate was perceived to be permanent in Mexico but a higher degree of price rigidities may also have played a role.

The contraction in domestic bank lending contributed to the propagation of the export shock to the rest of the economy and the fall in private consumption, but the contraction in bank credit started before the recession. Bank lending was already on a declining path when the international crisis hit Mexico in the second half of 2008, in particular lending to consumers. Total bank lending had grown at high rates (around 20% in real terms) up to the first quarter of 2008. The adjustment in consumer credit was particularly sharp: its annual growth rate decreased from around 30% in 2007 to –9% in the second quarter of 2008. The fact that the contraction in consumer credit pre-dated the sharp collapse in private consumption suggests that it was not primarily lower consumer demand that drove the fall in consumer credit but instead tighter credit conditions, as standards for the origination of

Figure 1.4. **Bank credit and services value added contracted sharply**
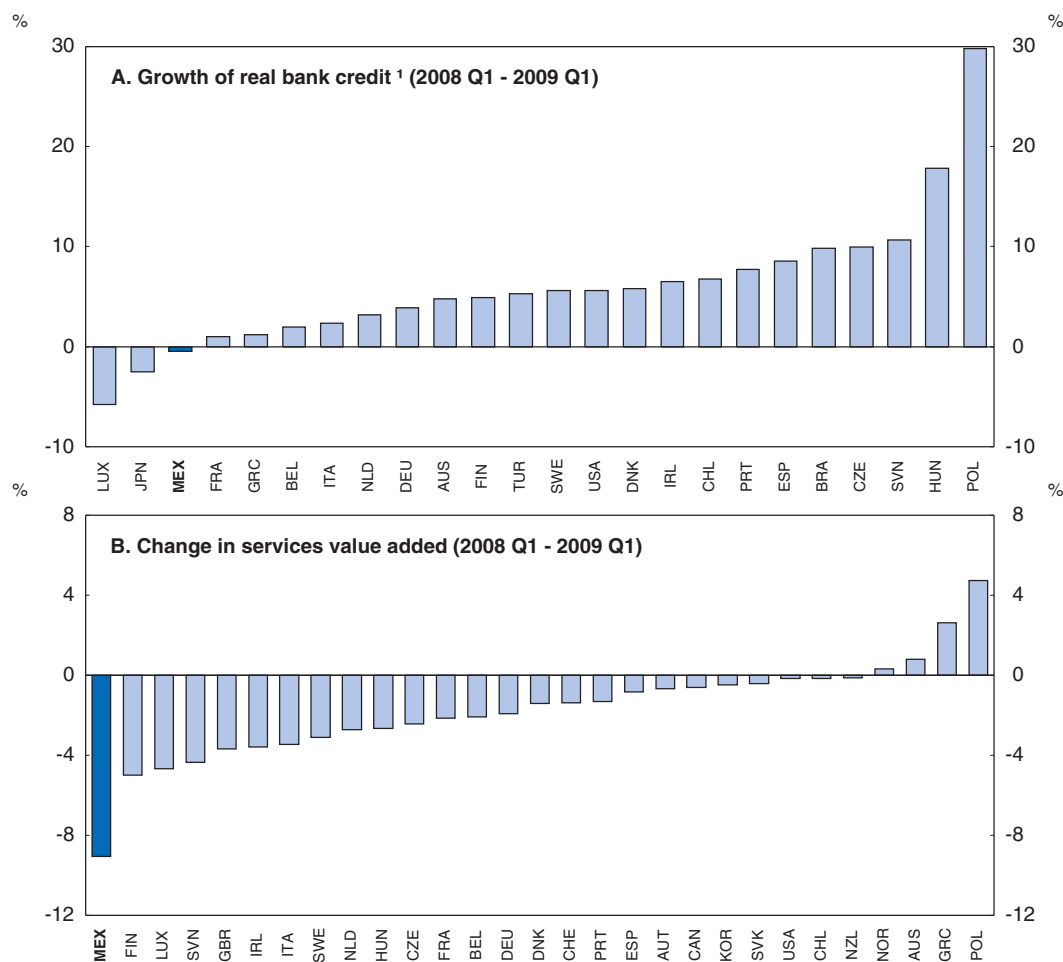
1. Deflated by CPI. Claims of depository corporations (excluding central bank) on all domestic sectors (including financial corporations, state and local government, public non-financial corporations and private sector).

Source: OECD, *National Accounts Database*; and IFS, *Monetary Statistics Database*.

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consumer credit were tightened in 2007. This may, in turn, have affected consumers' ability to smooth their consumption over the cycle. Overall, bank credit contracted by 0.5% in real terms between the first quarter of 2008 and the same period of 2009 (Figure 1.4).

Strong links between the Mexican manufacturing and services sectors also contributed to the rapid spill-over of the export shock to the overall economy. Services value added contracted by around 9% between the first quarter of 2008 and the same period of 2009 (see Figure 1.4). The reason is that the services sector is dominated by the transport and wholesale trade sectors, which are heavily dependent on manufacturing production. Partly because of entry barriers, more stable consumer-related services account for a much smaller share of value added than in most other OECD countries.

Macroeconomic policies could contribute more to output stabilisation

The balanced budget rule needs to be amended to accumulate larger fiscal buffers

The balanced budget rule guiding fiscal policy in Mexico that has been in place since 2007 resulted in low fiscal savings despite high oil prices in 2007 and 2008. According to the Fiscal Responsibility Law the government aims for a balanced budget for the budgetary public sector, which includes public enterprises but excludes state and local governments. The balanced budget rule has been helpful in establishing fiscal discipline and achieving long-term fiscal sustainability. The budget was balanced in the years prior to the recession and net government debt, at around 30% of GDP, is lower than the OECD average of around 60% of GDP. But *a priori* balanced budget rules are pro-cyclical as they imply high public spending when economic activity and revenues are buoyant, and spending restraint when economic activity and revenues are weak. In Mexico, the Fiscal Responsibility Law allows the government to save revenues in excess of those in the budget in a system of stabilisation funds and an exceptional circumstances clause allows it to run a budget deficit if an adverse event hits the economy. Therefore, even though there was a tight link between revenues and expenditures in the years prior to the recession (Figure 1.5), this was partly due to a fiscal reform in 2008 and policy was countercyclical in 2009 and 2010. Despite an unprecedented oil price boom, fiscal savings accumulated in the oil stabilisation funds therefore amounted to less than 2% of GDP at the end of 2008.

Figure 1.5. **Real government revenue and expenditure growth**[1]
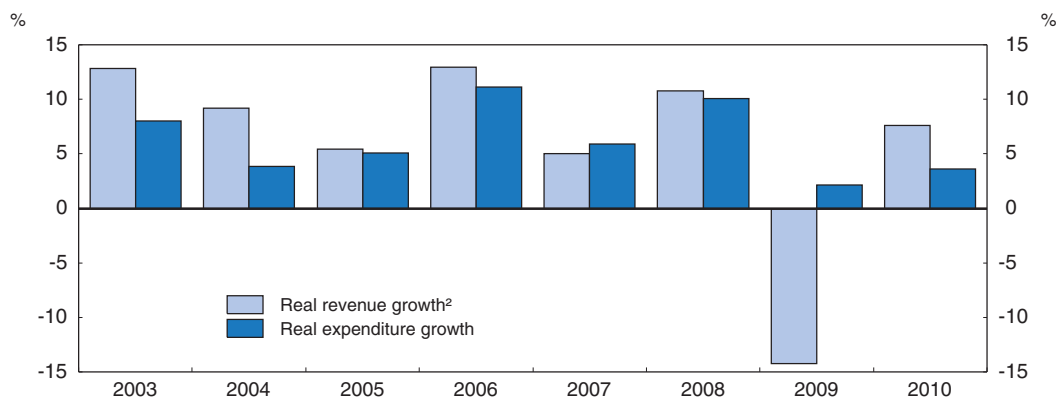
1. Deflated using CPI.
2. Net of non-recurrent revenue and financing operations.
Source: Ministry of Finance.

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Structural balance calculations suggest that the fiscal stance deteriorated in 2008, in spite of record high oil revenues (Figure 1.6).

The exceptional circumstances clause in the Fiscal Responsibility Law and the hedging of oil revenues on financial markets allowed the government to conduct a counter-cyclical fiscal stimulus in 2009, and it also started to withdraw the stimulus gradually in 2010 as the economy recovered. In the past few years the government has limited revenue volatility by hedging oil revenues against declines by buying put options on financial markets. The put options provide the government with an oil price similar to that in the budget, even when oil prices fall well below the budgeted price as during 2009. Indeed, in 2009 the exceptional circumstances clause and the oil price hedge provided a welcome buffer to government expenditure: although oil and non-oil revenues fell sharply (around 21% and 11%, respectively), real government expenditure continued growing, albeit at a slower rate (around 2%) than before the downturn (see Figure 1.5).

Further output stabilisation could be achieved by amending the fiscal framework to accumulate a larger buffer of financial assets during economic upturns. This would make the fiscal position more symmetric over the business cycle. Headline budget surpluses in economic upturns would result in the accumulation of financial assets, which would be used to finance headline budget deficits during economic downturns. Villafuerte et al. (2010) find that across Latin America those countries that implemented more prudent fiscal policies during the boom years 2003-08 were able to conduct more expansionary policies during the downturn in 2009. Similarly, Sutherland et al. (2010) find that across OECD countries those with a more favourable budget position on the eve of the recession of 2008-09 were able to conduct stronger counter-cyclical policies during the downturn.

The government should consider accumulating a buffer of financial assets not only during economic upturns but over the business cycle as a whole to insure against large risks. Alternatively, a faster decline in debt could be attained. This would require measures to raise tax revenues or enhance the efficiency of spending (Chapter 2). Although a relatively large proportion of revenues is accounted for by corporate tax and VAT revenues, which are generally found to respond strongly to the business cycle (Girouard and André, 2005), low overall non-oil tax revenues as a proportion of GDP limit the size of the automatic fiscal stabilisers. A rule of thumb is that the automatic fiscal stabilisers approximately equal the share of tax revenues in GDP times the output gap (Baunsgaard and Symansky, 2009). In Mexico, the share of non-oil tax revenues to GDP is around 12%. Thus, a fiscal rule allowing the automatic fiscal stabilisers to operate freely would only have weak stabilising effects in Mexico. A prudent fiscal framework would therefore need to go well beyond the simple operation of automatic stabilisers. It would warrant the accumulation of a buffer of financial assets over the business cycle, which could then be used in the event of future large contingencies, such as a particularly sharp recession or a natural disaster.

Accumulating a buffer of financial assets over the business cycle would also be advisable to prepare for longer-term fiscal challenges. Even though oil production has stabilised recently and the risk balance on oil production has improved, oil revenues continue to be sensitive to volatile international oil prices. In any case, the ratio of oil revenues to GDP is set to decline eventually. Moreover, maintaining oil production at the current level will require high investment, as existing oil fields mature and tapping new reserves, for instance through deep-sea drilling, becomes more costly. Aiming for the accumulation of a buffer of financial assets over the business cycle would contribute to

making the budget more independent of oil revenues and ease the transition to the non-oil economy.

While the federal pension systems for private workers (IMSS), public workers (ISSSTE) and the state-owned electricity company (CFE) have been transformed into capital funded defined contribution schemes, reform of the PEMEX pension system is still lacking and many states run severely underfunded defined-benefit systems for their staff. Moreover, several states have recently introduced non-contributory pension pillars, which are financed through taxes, and more are set to follow suit. The federal government should work with the states to co-ordinate conversion of the existing defined-benefit systems to the schemes prevailing at the federal level. If the government decides to introduce a basic, tax-financed pension for workers who have contributed to their pension accounts but attained only a low balance, its design should be unified across states and ensure that strong incentives remain to contribute to the prevailing federal defined-contributions schemes. While these measures will minimise the fiscal risks from population ageing, the government should nevertheless consider accumulating financial assets over the business cycle by raising taxes or enhancing the efficiency of spending to ease the demographic transition. The share of the population above the age of 60 is projected to double from 8½ per cent in 2010 to around 17% in 2030 and reach 30% in 2030 (CONAPO, 2006).

The planned expansion of the non-contributory health insurance, *Seguro Popular*, will also require setting aside financial assets over the business cycle by raising tax revenues or enhancing the efficiency of spending. The government is on track to cover 100 million out of its 112 million inhabitants with health insurance by 2011, a major improvement compared to a coverage of 50% before 2004. The enhanced coverage has been achieved through the expansion of *Seguro Popular*, a tax-financed health insurance programme targeting workers without social security, which covered around 44 million Mexicans in 2010. However, only around 2% of the 44 million people affiliated with *Seguro Popular* pay a fee. Moreover, efforts to harmonise the provision of healthcare through *Seguro Popular* and the different social security programmes has led to an expansion of the original *Seguro Popular* package. To minimise the fiscal risks, a better approach would be to define a very basic health insurance package that should be available to the entire population. The basic package could be financed through taxes or fees, which could be waived for the lowest-income households. Services that go beyond this basic package could be financed via social charges for workers with formal employment or additional fees. While this should be easier to finance than an attempt to provide all individuals without social security coverage with a tax-financed package that approaches the social security healthcare package, it would nevertheless be prudent to set aside financial assets over the business cycle to ensure the long-term sustainability of the programme.

To enhance the accumulation of assets and further stabilise output the government should consider adopting a structural fiscal rule. One option would be to net cyclical tax and non-tax (oil) revenues out of total government revenues, as Chile does. The part of government revenues due to, first, deviations of actual from potential output and, second, the actual oil price from its "structural" price would be considered as cyclical. Alternatively, the government could exclude oil revenues from the structural budget balance calculation altogether, as Norway does. The estimation of the "structural" oil price is fraught with major estimation uncertainties, as the stochastic process describing it makes the identification of a medium-term trend difficult. But even when excluding oil revenue from the structural balance calculation altogether, the government would need to estimate long-

term oil production volumes and prices to set the non-oil structural balance target in such a way that it is consistent with long-term fiscal sustainability.[1] Given the uncertainties regarding long-term oil production volumes in Mexico, the most appropriate policy option appears to be the adoption of a structural fiscal rule including oil revenues.

With a constant structural balance target, government expenditure would be smoothed over the business and oil price cycles, as structural revenues would grow in line with potential output and medium-term oil prices, irrespective of sudden swings in economic conditions. This would reduce economic volatility and would be preferable over the current "exceptional circumstances clause" because the structural balance rule would be symmetrical over the cycle: Headline budget surpluses would be saved during good times and spent during bad times.

Setting a structural surplus target would result in fiscal savings over an average business cycle. In Chile, for instance, the government set the annual structural surplus target at 1% of GDP between 2001 and 2007, which resulted in the accumulation of a large buffer of financial assets (around 20% of GDP at the end of 2008).

Mexico already has in place a system of stabilisation funds, which could accommodate headline budget surpluses from such a structural fiscal rule. Simple and transparent rules on savings and withdrawals for these funds would enhance the transparency of oil revenue management. Although the Fiscal Responsibility Law establishes a transparent rule for calculating the oil price in the budget, rules on the saving of excess revenues with respect to this price have been unduly complex and the ceiling on accumulated assets low (OECD, 2009). As a result, by the end of 2008 these funds had accumulated less than 2% of GDP, despite an unprecedented boom in oil prices. The ceiling on accumulated assets in the oil stabilisation funds has been lifted temporarily for 2010 and 2011. At a minimum, this ceiling should be lifted permanently to ensure high oil prices yield a buffer of financial assets for future contingencies.

Presenting the budget accounts according to national account standards would enhance comparability with other countries and facilitate the implementation of a structural fiscal rule. Financing operations are included in Mexico's current definition of the budget deficit. Judging the cyclical position would be facilitated by Mexico adopting a more standard national accounting framework (Box 1.1). If the government presented the

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Box 1.1. **Structural budget balance calculation**

Although further refinements will be needed to estimate the elasticities of fiscal revenues to the business and oil price cycles more precisely and to identify transitory income and financing operations in official Mexican fiscal data, the following calculations illustrate how the structural budget balance could be estimated for Mexico. Algebraically, the structural budget balance can be represented as:

$$CAB = T(Y^*/Y)^{\eta_T} + R(P^*/P)^{\eta_R} - G \quad , (1)$$

where T is non-oil revenue, Y^* is potential GDP, Y actual GDP, η_t is the elasticity of non-oil tax revenue to the output gap, R is oil revenue, P^* is the "structural" oil price, P the actual oil price, and η_R the elasticity of oil revenues to the gap between the actual and structural oil price. Expenditure (G) is assumed to be acyclical, given the weakness of automatic fiscal stabilisers on the expenditure side in Mexico.

Box 1.1. **Structural budget balance calculation** (*cont.*)

Daude *et al.* (2010) follow standard OECD methodology (Girouard and André, 2005) to estimate the elasticities of tax revenues to the output gap. They find that the semi-elasticity of the budget balance to the output gap (in per cent of GDP) is around 0.12, which is used for the present calculations. It corresponds to the ratio of non-oil revenue to GDP, as suggested by a common rule of thumb (Baunsgaard and Symansky, 2009). The output gap is from the *OECD Economic Outlook Database*. In order to distinguish between the government's intentional and *ex post* fiscal stance, the calculations are carried out using, first, the real-time output gap projected for the following year in the autumn editions of the *Economic Outlook* and, second, the estimated *ex post* output gap in *OECD Economic Outlook* 88 (Autumn 2010). This also controls partly for the increase in the measurement error in the output gap due to the 2008-09 international recession. The gap between the actual and the "structural" oil price is obtained through a Hodrick-Prescott filter.

An important caveat to these structural balance calculations is that official Mexican fiscal data make it difficult to identify purely transitory income, such as large revenues from an oil price hedge in 2009. Moreover, some types of financing operations are reported as revenue. This complicates the calculation of structural revenues. In the above calculations, *i)* non-oil revenue is therefore adjusted for non-recurrent revenue as reported in official Mexican fiscal data and *ii)* oil revenue for net transfers to the oil stabilisation fund. The budget balances reported in Figure 1.6 are thus similar to the definition of the public sector borrowing requirement (PSBR) balance in official Mexican fiscal data. Although these adjustments partly correct for non-transitory revenues and financing operations, it would be preferable to move to national accounts conventions for reporting budget data, as discussed above. This would greatly facilitate the calculation of the structural budget balance.

Figure 1.6. **Structural PSBR balance**[1]
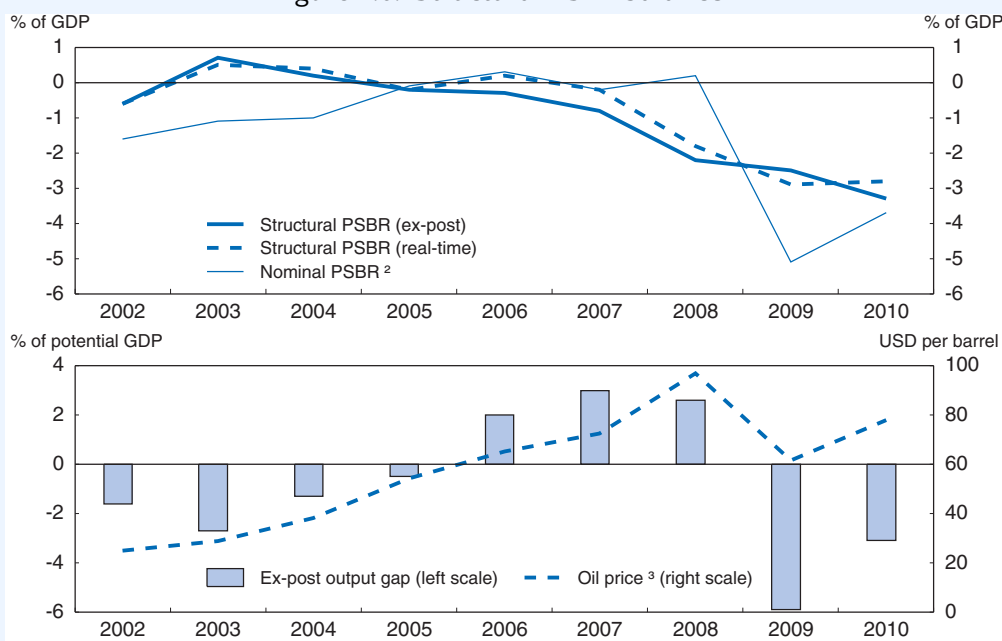
1. Public sector borrowing requirement for central government and public enterprises.
2. Here defined as the budget balance net of non-recurrent revenue and transfers (net) to oil stabilisation fund. This differs slightly from the definition of the PSBR in official Mexican fiscal data.
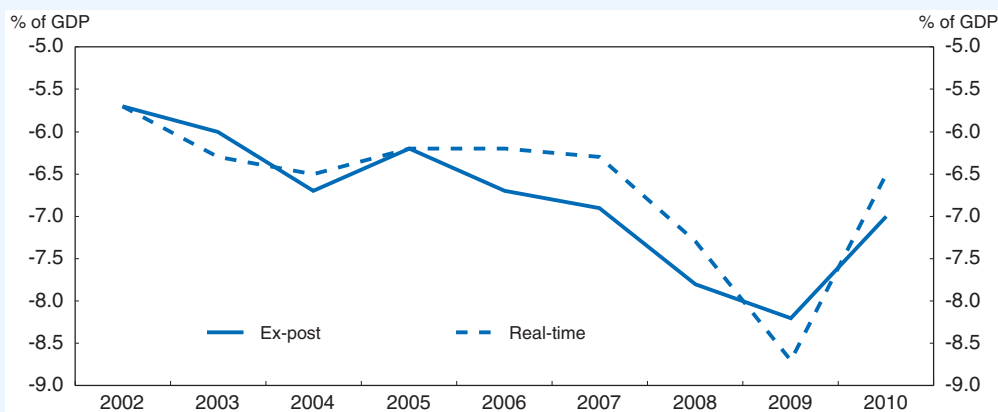3. Brent spot price.

Source: Ministry of Finance; *OECD Economic Outlook Database.*

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> ### Box 1.1. **Structural budget balance calculation** (*cont.*)
>
> Figure 1.6 shows that the structural PSBR balance declined somewhat in the years prior to the recession of 2008 09, despite a recovery from the recession of 2001-2003. This mainly reflected falling structural oil revenues due to declining oil production volumes and increased expenditure, including on social programmes. If the government had kept the structural PSBR balance at its 2003 level (around 0.5% of GDP), it would have accumulated substantial fiscal savings over this period. Figure 1.7 shows that the structural non-oil PSBR balance (defined as structural non-oil revenue minus total expenditure net of oil-related expenditure) amounted to around 8% of GDP in 2009 (Figure 1.7), which is similar to the figure reported in IMF (2011, Table 2).
>
> #### Figure 1.7. **Non-oil structural PSBR balance**[1]
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>
> 1. Central government and public enterprises. Here defined as structural non-oil revenue – total expenditure + oil-related expenditure.
>
> *Source:* Ministry of Finance; *OECD Economic Outlook Database.*
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> *StatLink* ⧉ *http://dx.doi.org/10.1787/888932383432*

budget accounts according to national accounts conventions, pure financing operations – including transfers to and from the oil stabilisation funds – would be treated as such. The authorities have already started to move in this direction, as a new law for government accounting seeking to establish international conventions was adopted at the end of 2008. The government expects that a full set of general government account data will be available by 2013. The National Statistical Institute (INEGI) provided a preliminary set of government account data in line with national accounts conventions up until 2008. These accounts should be provided on a regular basis. To facilitate communication during the transition period the Ministry of Finance should provide explanations where the differences to its own presentation come from.

Even after bringing government accounts to national accounts standards, calculating structural budget balances remains a major challenge. The adjustment of tax revenues for the economic cycle requires the estimation of potential output. The decomposition of observed output into a trend and a cycle component is particularly challenging for emerging countries, as economic shocks have often proved to be very persistent (Aguiar and Gopinath, 2007). Similarly, estimating trend oil prices which are needed for the estimation of cyclical oil revenues or setting a sustainable non-oil structural balance target is a daunting task. Finally, the elasticity of tax revenues to the output gap and oil revenues

to the oil price would need to be calculated to implement the structural adjustments. Box 1.1 provides a simple illustration of such a structural budget balance calculation. Given the large estimation uncertainties, the government may consider delegating the estimation of these parameters to independent expert committees. Chile's experience with this type of setup has been favourable (Ffrench-Davis, 2010; Corbo *et al.*, 2010). Expert committees or simple and replicable ways of calculating the structural parameters would contribute to more transparency, which is of the essence to build up credibility for the new fiscal rule.

Structural fiscal rules merely allow the automatic fiscal stabilisers to operate freely. To achieve sufficient flexibility in case of large adverse shocks the fiscal framework may need to include an escape clause. According to an IMF survey conducted in 2009, only around half of the countries with any type of fiscal rule were able to accommodate a counter-cyclical fiscal impulse during the recession of 2008-09 in their existing fiscal framework (Ter-Minassian, 2010). This highlights the importance of including an escape clause in the fiscal framework, similar to the current exceptional circumstances clause, which could be triggered by predetermined and transparent conditions or the decision of an independent committee, for instance in the case of a particularly sharp recession or a natural disaster. To maintain the credibility of the fiscal rule the escape clause should specify the path back to the rule, once the emergency has been overcome (IMF, 2009).

To avoid a possible loss in hard-won credibility, the timing of the introduction of the structural fiscal rule will be critical. During an economic downturn the introduction of a structural fiscal rule could be interpreted as a loosening of fiscal discipline, as the cyclical adjustment can make the structural budget balance look better than the headline budget balance (see Box 1.1). To start with, the government could regularly publish estimates of the structural budget balance while continuing to adhere to the balanced headline budget rule for some time. The switch to a structural budget balance rule could then be made during an economic upswing when it does not risk undermining fiscal credibility.

Reforms to strengthen mechanisms in support of the low-income population (Chapter 2) may enhance automatic fiscal stabilisation, which, in the medium term, will nonetheless remain weaker than in most other OECD countries. Automatic fiscal stabilisation occurs through relatively rigid government expenditure with an elasticity of tax revenues to output around one; social insurance (*e.g.* unemployment insurance); and the progressivity of income taxes (Blanchard *et al.*, 2010). Enhancing mechanisms to support the low-income population or workers who lose their jobs, as proposed in Chapter 2, would strengthen automatic stabilisation through the second channel.[2] Such strengthening of the social safety net may be particularly effective in stabilising the economy by reducing precautionary savings of credit constrained households in downturns (Cerda and Vergara, 2007). But in the medium term the ratio of tax revenues to GDP and the size of social insurance will remain considerably smaller than in the OECD average, thereby limiting the strength of the automatic fiscal stabilisers.

Measures should be taken to facilitate the conduct of monetary policy

The monetary policy framework is close to international best practice, but inflation expectations have been persistently anchored at the upper end of the central bank's variability interval around its inflation target of 3% (+/–1 percentage point). The central bank became independent in 1994 and the authorities formally adopted inflation targeting in 2001 under a flexible exchange rate regime, which was adopted in 1995. This has helped

to bring consumer price inflation down from double-digit rates in the 1990s to 4½ per cent between 2003 and 2009. During the recession of 2008-09, the central bank reacted to the downturn by reducing the policy rate from 8.25% to 4.5% between January and July 2009. However, in contrast to other OECD countries, rapidly increasing excess capacity in the second half of 2008 and the first half of 2009 only had a minor effect on price inflation and inflation expectations (Figure 1.8). By itself a more rapid slowdown in price inflation would have attenuated the contraction in domestic demand by boosting the real incomes of consumers and strengthening the competitiveness of Mexican firms abroad. Moreover, it would have given the central bank more room for manoeuvre.

Figure 1.8. **Inflation expectations remained above the central bank target range**[1]

Year-on-year percentage change
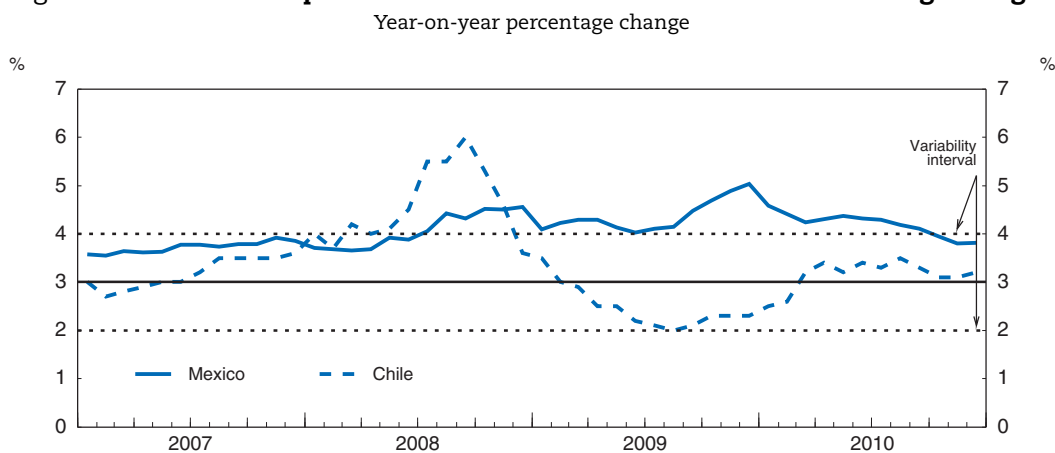
1. One year ahead.

Source: Banco de México and Banco Central de Chile.

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In Mexico, prices of services display a particularly high degree of stickiness and downward rigidity. Using micro-data on the prices of individual goods and services in specific outlets over the period 2002-09, Ysusi (2009) shows that prices of goods change relatively frequently. Around 35% of prices in the CPI categories "processed food" and "other merchandise" change every month and prices of fresh fruit and vegetables (85%) and meat (64%) change even more frequently. By contrast, prices of services change much less frequently, with only between 10-15% of services prices changing every month. Although across countries prices are generally more rigid in services than in manufacturing, the degree of price stickiness in services appears to be particularly large in Mexico, including larger than in Brazil (Gouvea, 2007). Moreover, price decreases are very uncommon. Only 2% of housing prices, 1% of education prices and 4% of other services prices (mainly retail, hotels and restaurants, transport and telecommunication) fall every month against around 14% of processed food and other merchandise prices.

The effectiveness of monetary policy could be enhanced by eliminating product market rigidities. Cournède *et al.* (2005) show that restrictive regulations in product and labour markets slow the response of inflation to changes in the output gap in a sample of OECD countries. According to the OECD Product Market Regulation (PMR) index, product market regulation in Mexico is among the most restrictive in the OECD. Entry regulations in network industries, in particular in the services sector, could be eased to enhance

competition. Chapter 3 discusses specific proposals. There would also be merit in reviewing the mechanisms for setting administered/regulated tariffs, in particular gasoline. In Mexico, the share of administered (electricity, natural gas, gasoline) and regulated (including telecommunication and public transport) prices in the CPI is around 15%.

Action should be taken to anchor inflation expectations more firmly at the central bank's target of 3%. Rigidities in product markets were one element that constrained the central bank's room for manoeuvre by reducing the response of inflation to falling demand. But Mexico also entered the crisis with price inflation and expectations above the central bank's target. While inflation was above target in many OECD and emerging economies in mid 2008 as a result of the global shock to commodity prices, in Mexico average inflation over the period 2003-2008, at around 4.3%, was above the central bank's inflation target (3% +/−1 percentage point variability interval).[3] The estimation of a backward-looking monetary policy response function over the period 2001-08 suggests that the central bank responds strongly to changes in inflation, with the central bank increasing the nominal interest rate by around 3 percentage points in the long-term in response to a one-percentage point deviation of inflation from its target (Annex 1.A1). This is similar to the estimates in Moura and Carvalho (2010). The estimates in Annex 1.A1 further suggest that, controlling for the inflation gap, the central bank does not respond to the output gap. According to column (2) of Table 1.A1.1, this result is driven by the absence of a systematic interest rate response when the output gap is in the upper two thirds of its distribution over the sample period, whereas the central bank appears to reduce the interest rate in response to declines in the output gap when it is in the lowest third of its distribution.[4] However, these results need to be interpreted with caution, including because they are derived from the estimation of simple reduced forms, the sample period is relatively short, and estimates of the output gap are uncertain.

The level of foreign exchange assets in Mexico before the recession of 2008-09 was adequate according to conventional rules of thumb, but lower than in other emerging countries. Foreign exchange assets in the form of central bank reserves covered 3.4 months of imports against 9 in a range of other Latin American emerging countries (Figure 1.9).

Figure 1.9. **International reserves on the eve of the global economic crisis**
End of 2007
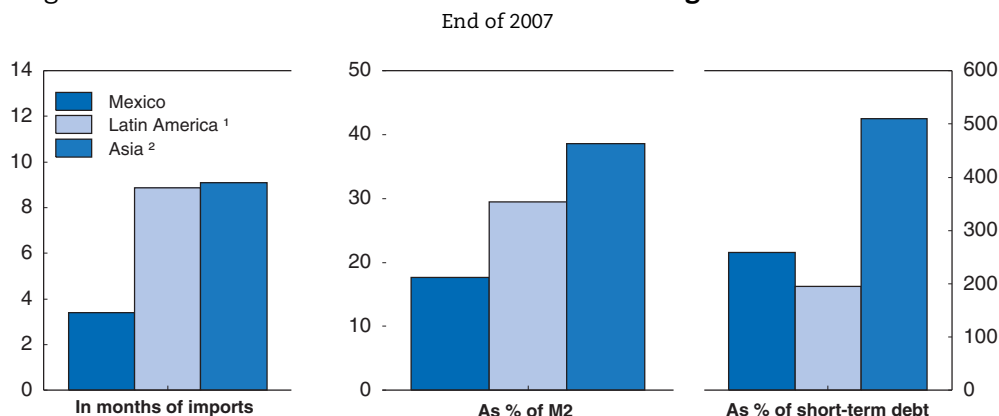
1. Simple average of Brazil, Chile, Colombia.
2. Simple average of China, Indonesia, Korea, Malaysia, Thailand and Singapore.
Source: BIS-IMF-OECD-World Bank, *JEDH Database.*

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However, this may be less of an issue than in other countries, given the automatic adjustment of intermediate goods imports that is observed when non-oil exports decline. According to the so-called "Greenspan-Guidotti" rule, which requires foreign exchange assets to cover short-term external debt, Mexico's foreign exchange cover was somewhat excessive, and higher than in other emerging Latin American countries: Foreign reserves covered around 260% of short-term foreign debt against 200% in a range of Latin American emerging countries at the end of 2007. Obstfeld *et al.* (2010) argue that the "Greenspan-Guidotti" rule is too narrowly focused on "sudden stop" episodes during which capital inflows suddenly cease. Instead, a central bank concerned with limiting currency depreciation would take the possibility of episodes of sudden capital flight into account. They argue that the total amount of domestic liabilities of the banking sector, irrespective of its currency denomination, should therefore be the relevant driver of foreign asset accumulation. Adopting the Obstfeld *et al.* (2010) view of foreign reserve accumulation by calculating the ratio of foreign reserves to broad money (M2), shows that the level of foreign reserves in Mexico (18%) was below that in other Latin American emerging countries (30%). The estimation of a standard foreign exchange demand equation suggests that in 2007 Mexico's level of foreign exchange reserves was below the conditional mean in other countries (around 60%) once several country characteristics, such as the exchange rate regime or financial openness, are taken into account (Annex 1.A2). It should be noted that the results from this exercise do not allow inferring an optimal level of reserves, and the conditional mean may to some extent be driven by countries that accumulate reserves for reasons unrelated to precautionary motives.

A relatively low level of foreign exchange assets may also have constrained the macroeconomic policy response to the sharp contraction in output. During the recession of 2008-09, investors in emerging markets increasingly shifted their portfolios to assets in advanced countries that were considered as safer, thereby contributing to the depreciations of emerging market currencies. While "flight to quality" was a concern in a wide range of emerging markets, in Mexico these concerns were compounded by investors' view that the available level of foreign exchange assets was modest. Along with the uncertain outlook for oil production and the weak outlook for external demand over the coming years, this may have contributed to the increase in risk premia in Mexico,which was larger than in many other emerging markets. This limited the room for manoeuvre of macroeconomic policies. Using data on a range of advanced and emerging countries, Obstfeld *et al.* (2009) show that countries with larger foreign exchange assets generally had more stable exchange rates during the recession of 2008-09.

The central bank has accumulated additional foreign exchange reserves, including through the conversion into pesos of foreign exchange receipts of PEMEX, and an additional rules-based mechanism introduced in February 2010. By November the level of foreign exchange reserves had increased by around USD 20 billion. Moreover, the lifting of the ceilings on accumulated assets in the oil stabilisation funds and the introduction of a structural fiscal rule would also result in the faster accumulation of foreign exchange assets, which could be used for future contingencies. Models of optimal reserves (Jeanne and Rancière, 2006) suggest that the opportunity costs of holding reserves can be substantial. Alternative multilateral insurance mechanisms should therefore be explored. In particular, the authorities should consider risk pooling through agreements with other central banks (Becker *et al.,* 2007) and insurance through the IMF if facilities for members with strong fundamentals become available on a permanent basis. Mexico has been a

pioneer in this area, and in January 2011 Mexico expanded its one-year precautionary USD 47 billion Flexible Credit Line (FCL) agreement with the IMF to a two-year USD 73 billion agreement. Both self-insurance through reserve accumulation and multilateral insurance through international agreements will bolster investor confidence in times of crises.

Structural policy reforms would enhance the economy's capacity to withstand shocks

Measures should be taken to reduce the pro-cyclicality of the financial system

The Mexican financial system weathered the recession of 2008-09 relatively well, but the slowdown in credit was more pronounced than in other OECD and Latin American emerging countries. To some extent, the resilience of the Mexican financial system (see Box 1.2 for an overview) reflects improvements in prudential regulation and supervision after the "Tequila" crisis of 1994: minimum capital requirements are in line with international standards, deposit insurance has been transformed from a blanket guarantee to a scheme with limited coverage, and the institutional framework for financial supervision has been modernised (Financial Stability Board, 2010). Strong profitability of Mexican banks before the recession of 2008-09 resulted in the build-up of large reserve and capital buffers, which also buttressed Mexican banks' ability to absorb losses. As a consequence, official support to the financial system was limited and consisted mainly of liquidity provision. Systemic stability notwithstanding, the slowdown in credit growth in Mexico was sharper than in other emerging and developed countries (see Figure 1.4).


Box 1.2. **The Mexican financial system**

The Mexican financial system is diverse, but is dominated by large foreign groups. It includes commercial banks, pension funds, publicly-owned development banks, investment banks, and non-bank financial intermediaries, among other institutions (Figure 1.10). Foreign groups are present in most lines of financial business and dominate the commercial banking segment, accounting for around 70% of all banking assets. The commercial banking segment is also highly concentrated, with the three largest institutions accounting for around 55% of total assets. Non-bank financial intermediaries do not take deposits and consist of *Sofoles*, which specialise in a single line of business such as mortgages, and *Sofomes*, which can engage in multiple lines of business. Micro-credit and savings and loans institutions (*Sociedades Financieras Populares* and *co-operativas de Ahorro y Préstamo*) are small in terms of overall system assets but relevant in terms of improving financial market access for underserviced segments of the population. The development banks facilitate access to credit to underserviced firms and households and provide funding and guarantees to private financial institutions. Commercial, investment and development banks are supervised by the National Banking and Securities Commission (CNBV); insurance companies by the National Insurance and Sureties Commission (CNSF); and the pension funds by the Pension Fund Commission (CONSAR). The Ministry of Finance is responsible for the overall development and stability of the financial system. The central bank has among its duties to look after the stability of the financial system. The *Sofoles* and those *Sofomes* with equity links to commercial banks are currently supervised by the CNBV, but the remaining institutions remain outside the regulatory perimeter.

Box 1.2. **The Mexican financial system** *(cont.)*

Figure 1.10. **The structure of the Mexican financial sector**

As per cent of total assets, December 2009
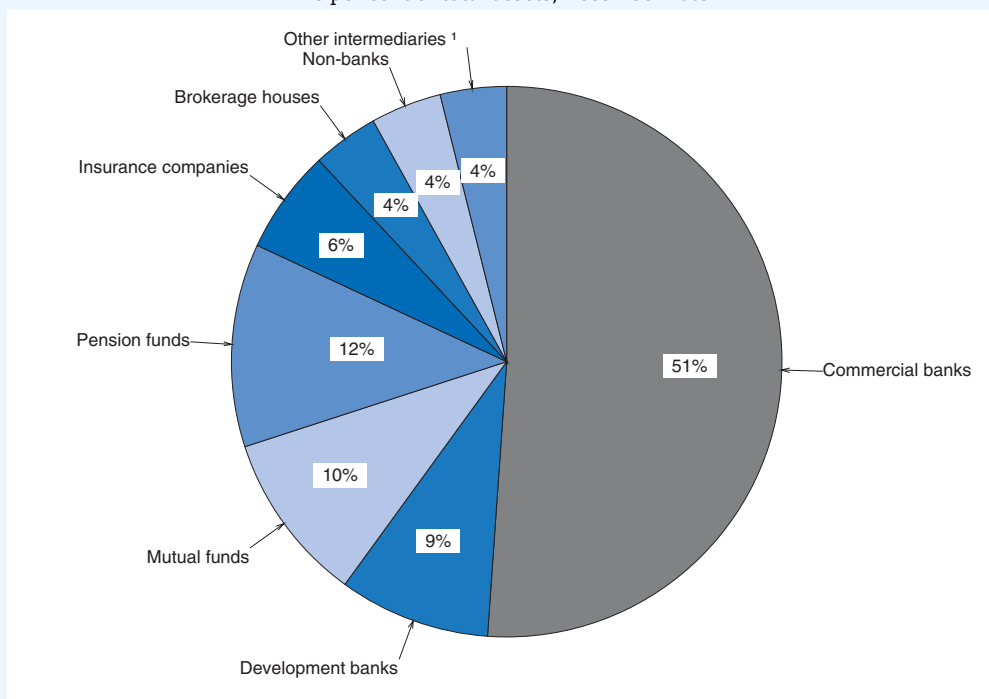
1. Include financial leasing companies, factoring, savings and loans, credit unions and bonding companies.

Source: Banco de México.

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Continued improvements in financial regulation and supervision will be particularly important to maintain financial stability while further developing financial markets. The deepening and modernisation of Mexican financial markets can bring benefits in terms of growth (Rajan and Zingales, 1998). In particular, small and medium-sized firms, including in the services sector, would benefit from better access to credit, as discussed below.

The relatively strong contraction of credit in Mexico compared to other OECD or emerging countries during the recession of 2008-09 was partly related to a bust in consumer credit. Although the credit slowdown may to some extent have reflected a decrease in credit demand due to the sharpness of the recession in Mexico, tighter credit standards clearly contributed. Consumer credit started to contract in 2007, well before the fall in private consumption. Moreover, other countries that suffered sharp contractions in private consumption experienced only mild slowdowns in credit growth. In Mexico, credit was expanding at an average annual rate of close to 20% (in real terms) between 2005 and 2007, mainly on the back of a rapid expansion in consumer credit. The expansion was accompanied by a deterioration in credit underwriting standards, which led to a sharp increase in non-performing loans and loan-loss provisions once the business cycle turned.[5] These losses were manageable for the banks thanks to the large reserve and capital buffers built up before 2007 but they likely constrained aggregate bank lending.[6] Across countries, there is strong empirical evidence that the size of the credit contraction

during the global economic and financial crisis of 2008-09 was positively related to the size of the expansion prior to the crisis (Aisen and Franken, 2010).

The development of a macroprudential framework would facilitate the detection of systemic vulnerabilities during economic upturns and the timely adoption of corrective measures. The government is establishing a Financial System Stability Council, which is a welcome step towards closer co-ordination between financial authorities.[7] The Council's mandate is to identify systemic risks and recommend policies to the supervisors. Over time, it would be useful to establish clear rules on information exchange and clarify the rights and obligations of the sectoral supervisors *vis-à-vis* Council recommendations. In the short term, there is scope to improve the co-operation between the bank regulator (CNBV) and the central bank regarding bank stress testing: despite improved communication on results, stress tests are still designed separately in the CNBV and the central bank.

There is room to further develop counter-cyclical regulatory tools and to improve the bank bankruptcy procedure. The CNBV has already switched from an incurred-loss to an expected-loss approach in loan loss provisioning for consumer credit. It plans to adopt the expected loss approach for mortgage loans and loans to enterprises and municipalities over the coming years. By assuming a probability of default that is independent of the business cycle, the new approach should reduce the pro-cyclicality of loan loss provisions and improve underwriting standards in the economic upturn. The CNBV also plans to introduce a counter-cyclical capital requirement in addition to the current minimum capital requirements. This is a welcome step towards further reducing the pro-cyclicality of credit. The Ministry of Finance, CNBV, the deposit insurance company (IPAB) and Banco de México are also working on a law proposal to improve the bank bankruptcy procedure, including by providing greater legal certainty for depositors and streamline the procedures for the liquidation of assets. This would contain the systemic risks and the fiscal costs from bank failures.

The government may need to consider bringing large non-bank financial intermediaries into the regulatory perimeter and improve information on all non-bank intermediaries. The *Sofoles* and *Sofomes* fund themselves mainly through loans from banks (80%) and the issuance of commercial paper in the Mexican stock exchange. During the recession of 2008-09 the financial soundness of these institutions deteriorated markedly. Funding temporarily dried out while non-performing loans increased, in part due to a focus on firms and households without access to the formal banking system, which resulted in higher credit risk. Although *Sofoles* and *Sofomes* account for only around 3% of total financial system assets, exposure to these institutions through loans or equity links likely acted as a brake on lending by commercial banks. Until now only the *Sofoles* and those *Sofomes* with equity links to commercial banks are regulated and supervised by the CNBV. The government is considering establishing a voluntary regime where other *Sofoles* and *Sofomes* can register. In addition, there may be a need for tighter regulatory standards in part of the sector. A new law has strengthened the regulation of savings and loans co-operatives, including through the creation of a new private deposit insurance fund for members' savings and the supervision through the consumer protection agency for users of financial services (CONDUSEF).

The government should consider adopting tighter rules for related-party lending to reduce the risk of financial contagion through foreign-owned banks. Cetorelli and Goldberg (2010) provide evidence that adverse funding shocks to parent banks in developed countries affect affiliates in emerging countries. Contagion from the parent bank to the affiliate occurs through an increase in borrowing from affiliates abroad to alleviate funding

shortages. This internal capital transfer may reduce loan supply by the foreign affiliate if it does not have access to offsetting funding sources. In Mexico, the bank regulator observed increased flows of liquidity between parent banks and foreign subsidiaries during the recession of 2008-09, but they were not of a magnitude that posed a systemic threat. Although the lending behaviour of foreign banks did not differ significantly from that of domestic banks, the government should consider tightening rules on related-party lending to preclude outflows of liquidity which reduce loan supply by the Mexican affiliate when the foreign bank comes under pressure. Currently, the ceiling on related-party lending is 50% of the Mexican affiliate's capital. The lowering of the ceiling should be carefully calibrated, as the benefits in terms of enhanced resilience of the financial system need to be weighed against reduced investment incentives for foreign banks.

The government should also consider strengthening the budgetary and technical autonomy of the bank supervisor. The relatively large role of public development banks in the Mexican banking system may warrant limiting the weight of the Ministry of Finance in setting the CNBV's budget (Financial Stability Board, 2010). Currently, the Finance Ministry sets the CNBV's budget, which may be a constraint on its independent decision taking although there is no evidence for pressure exerted by the Ministry of Finance on the CNBV, and the lack of problems in the financial system during the recent international financial crisis suggests that regulation and supervision were adequate.

Public development bank lending provided a counter-cyclical impulse to credit during the crisis, but the government now needs to consider retreating from exceptional lending. As in other Latin American countries (IMF, 2010), public development banks sharply stepped up lending when the private financial system was partly frozen up, with lending increasing by around 40% in real terms between September 2008 and December 2009 (Ministry of Finance, 2010). Public development banks are subject to the same rules as private commercial banks and are supervised by the bank supervisor. But stepped up public development bank lending may nevertheless distort competition in non-crisis situations, with possibly large efficiency costs as the explicit state guarantee gives public development banks a funding advantage over private banks and is a contingent liability to the public finances (Prasad, 2010). The development banks should therefore gradually withdraw exceptional lending operations. In particular, direct lending to market segments with access to private credit in non-crisis situations, such as the automotive, tourism and transport sectors, should be terminated. However, these operations only represented 5% of the total balance of development banks in 2009. Instead, in non-crisis situations, public development banks should focus on co-financing arrangements with the private sector, for instance through credit guarantees, as they have done in the past. This would limit the risks to the public finances and enhance financial development through the dissemination of development bank expertise to the private sector, for instance in the area of long-term infrastructure finance (Armendáriz de Aghion, 1999; Levy Yeyati *et al.,* 2004).

Measures should be taken to spur the development of a modern consumer-related services sector

Reducing the services sector's sensitivity to external shocks will be key to reducing macroeconomic volatility, as the sector accounts for more than 60% of GDP. Indeed, during the recession of 2008-09, the fall in manufacturing value added accounted for only a third of the fall in total GDP (Figure 1.11). The 6% fall in services value added in the first quarter of 2009 accounted for the remaining two thirds. In Canada, where the size of the

Figure 1.11. **Real value added growth by activity**

From previous quarter, simple rates

Source: OECD, National Accounts Database.

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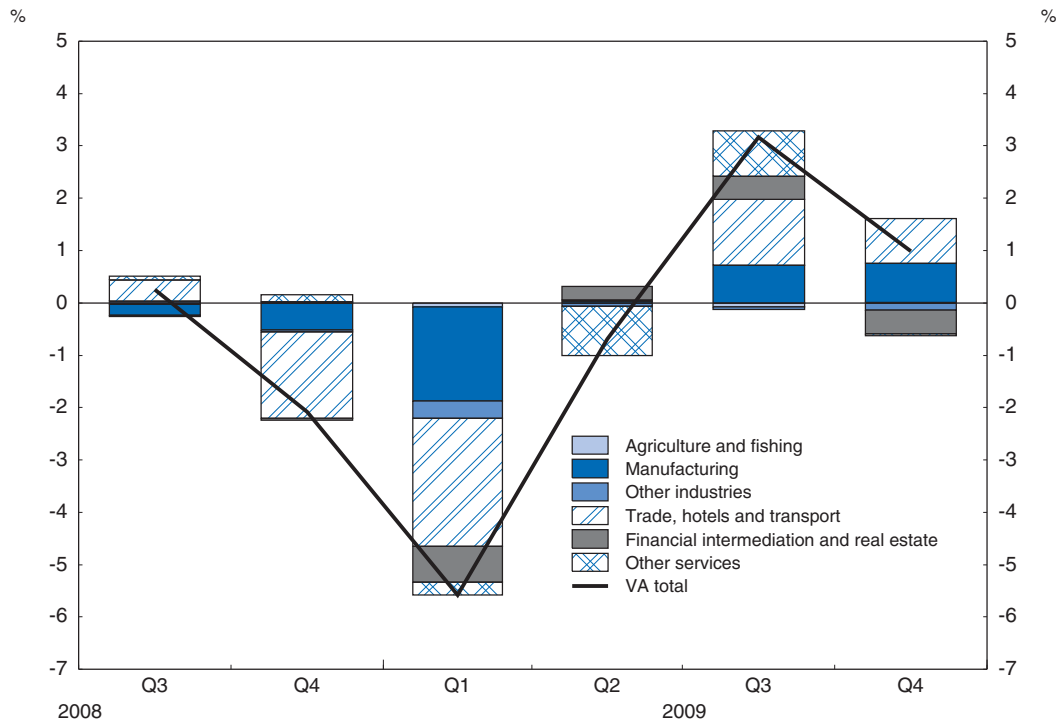
manufacturing sector and the dependence on US exports are similar, the services sector held up much better, which contributed to a milder recession.

Empirical analysis shows that only part of the strong business cycle synchronisation between Mexico and the US stems from manufacturing export links. It is well known that the Mexican business cycle is highly synchronised with economic developments in the US, which is generally attributed to such links (Chiquiar and Ramos-Francia, 2004, 2008; Sosa, 2008). Indeed fluctuations in US industrial production result in an amplified response of Mexican manufacturing value added (Box 1.3). A one percentage point increase in US industrial production leads to an increase in Mexican manufacturing GDP of one


Box 1.3. **VAR analysis of the transmission of external shocks in Mexico and Canada**

● **Motivation:** Both countries have similar links to the US through trade, FDI and the financial system.

● **Specification:**

  ❖ The sample covers the period 1996Q1 to 2009Q4. The number of included lags is determined using the Akaike criterion, which suggests an optimal lag length of four quarters. A unit root in the time series for Mexican manufacturing and services value added cannot be rejected using a simple Augmented Dickey-Fuller test. All variables are therefore first-differenced to avoid spurious regression results.*

Box 1.3. **VAR analysis of the transmission of external shocks
in Mexico and Canada** (cont.)

❖ The impulse response functions shown in Figure 1.12 correspond to the estimation of a
block-exogenous VAR including US industrial production, Mexican manufacturing value
added and Mexican services value added. The imposed block-exogeneity constraint is
that developments in the Mexican manufacturing and services sectors do not impact on
US industrial production, which is achieved by setting the coefficients on the lags of
Mexican manufacturing and services value added in the US industrial production
equation to zero. Identification of the impulse-response functions additionally requires
imposing constraints on the contemporaneous correlation between shocks. This is
achieved through the following simple Cholesky decomposition: US industrial production
may contemporaneously impact on Mexican manufacturing and services value added
and Mexican manufacturing value added may impact on services value added but not
vice versa . Granger causality tests confirm the plausibility of these assumptions.

Figure 1.12. **Impulse-responses to US industrial production shocks
in Mexico and Canada**[1]

Negative 1% shock to US industrial production
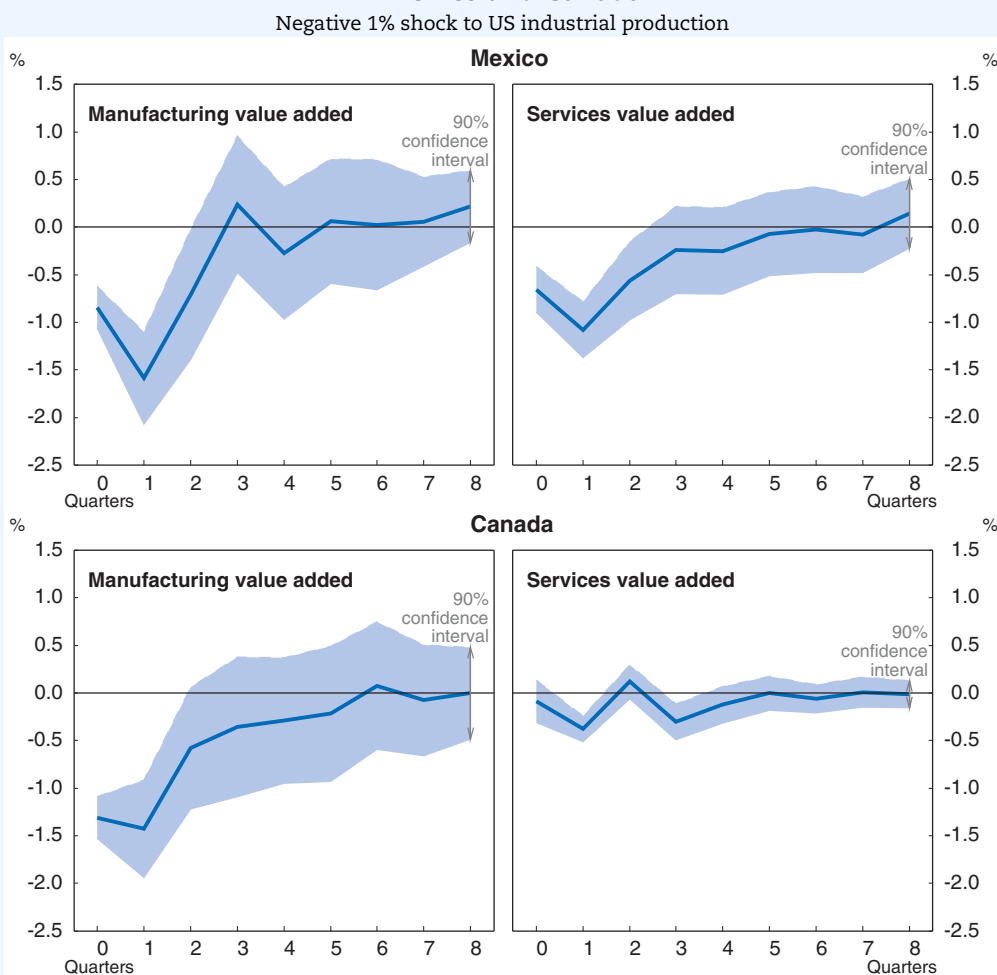
1. Impulse-responses estimated from a block-exogenous VAR including US industrial production,
manufacturing value added and services value added over the period 1996 Q1 to 2009 Q4.

Source: INEGI; Statistics Canada; OECD, *Economic Outlook Database.*

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> Box 1.3. **VAR analysis of the transmission of external shocks**
> **in Mexico and Canada** (*cont.*)
>
> ● **Robustness:** The impulse-response functions shown above are robust to several changes in model specification:
>
>   ❖ Inclusion of other determinants of manufacturing and services value added: real effective exchange rate, oil prices, real interest rate in the US.
>
>   ❖ The use of a different US shock variable: US GDP, US import demand, US private consumption.
>
>   ❖ The use of a different sample: exclude the 2008-09 recession from the sample by restricting it to the period 1996Q1-2008Q4.
>
>   ❖ The use of a different set of structural constraints on the variance-covariance matrix between shocks instead of a simple Cholesky decomposition: constrain the direct transmission of US shocks on Mexican services value added to zero. This yields a 40% lower response of Mexican services value added to a US shock, which is broadly in line with the estimated direct response in the unconstrained model.
>
> ● **Conclusion:** While the response of the manufacturing sector to US shocks is similar in Mexico and Canada, the Canadian services sector seems to be better insulated.
>
> * A unit root for US industrial production over the sample period is rejected at the 1% significance level which precludes cointegration and the estimation of a Vector Error Correction Model (VECM).

percentage point in the same quarter and a more than one percentage point increase in the following quarter.[8] But the empirical analysis also shows that the sensitivity of the Mexican services sector to developments in the US contributes to business cycle synchronisation. Over the period 1996-2009, Mexican services value added responded to a one percentage point increase in US industrial production by a 0.7 percentage point increase in the same quarter and a 1.1 percentage point increase in the quarter immediately following the shock (Figure 1.12). Starting in the second quarter following the shock, the effect gradually fades. By contrast, in Canada services value added does not immediately respond to shocks in US industrial production and the response in the quarter immediately following the shock is much weaker than in Mexico: the response to a 1 percentage point increase in US industrial production is around 0.35 percentage points.

In Mexico, strong links between manufacturing and services add volatility to the economy. The sensitivity of Mexican services value added to fluctuations in US economic conditions appears to be driven in part by stronger links between the manufacturing and services sectors. This can be seen from the response of the Mexican services sector to a shock in the manufacturing sector: a one percentage point increase in Mexican manufacturing value added is translated into an immediate 0.4 percentage point increase in Mexican services value added against a statistically not significant response of services to manufacturing in Canada. This is because Mexico's services sector is geared towards activities that are highly dependent on manufacturing, such as transport and wholesale trade. By contrast, in Canada and most other OECD countries the share of consumer-related services is much larger (Figure 1.13).

Easing services sector regulations that constrain competition would spur the development of a modern consumer-oriented services sector. According to the OECD ECTR indicator, which measures regulation in specific services sectors, Mexico is among the

Figure 1.13. **Share of consumer-related services in total services value added**[1]

2008[2]
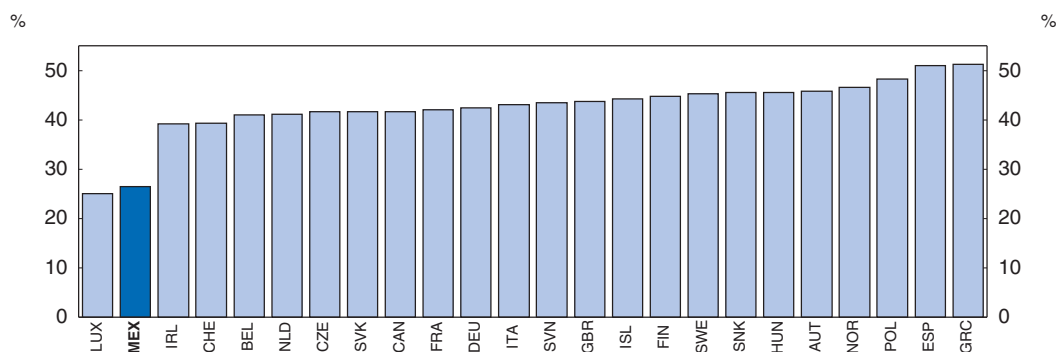
1. Consumer-related services are defined as total services less wholesale trade, transport, storage and communications, finance, insurance, real estate and business services.
2. 2007 for Ireland, Belgium, Canada, Germany, United Kingdom, Sweden, Hungary, Norway and Poland.
Source: OECD, *STAN Database*.

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countries with the most restrictive regulations in the OECD.[9] Chapter 3 shows that there are high entry barriers across a wide range of services sectors, including telecommunications, passenger transport and retail banking. Even though important improvements have been made, more action may need to be taken in order to promote stronger competition and growth in these sectors. Easing these regulations along the lines of Chapter 3 would spur productivity growth and make the composition of services in Mexico more similar to that in other OECD countries.

Credit constraints have also contributed to the relative underdevelopment of the domestic consumer-related services sector in Mexico. Tornell *et al.* (2004), for instance, find that credit constraints affect the Mexican services sector particularly severely. After the "Tequila" crisis of 1994 tight financial conditions held back investment and growth in the services sector, while the manufacturing sector benefited from foreign financing, including through FDI. Even though credit started to expand strongly from 2003 onwards, this expansion decelerated, initially due to problems related to consumer loans and then during the recession.

There is room for strengthening creditor rights. The bankruptcy law was reformed in 2000 and Mexico now ranks relatively high compared to other emerging markets on the ease of closing a business.[10] Nevertheless, several features of the Mexican economy continue to make it difficult for creditors to repossess collateral. In order to repossess physical collateral there need to be property registries, and a judicial system that provides for adequate law enforcement. In Mexico the property registries are inadequate: individuals consulting the files have access to original files, which allows them to modify entries; many property sales go unregistered; there are multiple owners for the same property; and the property and property tax register are unconnected, limiting municipalities' incentives to update it (Haber, 2009). In order to alleviate this problem, the Ministry of Economy created in 2010 a registry of credit guarantees, the *Registro Único de Garantías Mobiliarias* (RUG). Moreover, when bankers move to foreclose, the repossession of collateral can be delayed for long periods of time through the issuance of *amparos* (constitutional appeal procedures). A current project to set up specialised commercial courts may alleviate this problem.

Collateral and the enforcement of creditor rights are particularly important for enterprise credit. Enterprise lending relies significantly more on the legal system and law enforcement than consumer and micro lending, which often absorb credit risk in interest margins. Some type of collateral involved in enterprise lending (*e.g.* receivables, machinery and equipment, inventories) is more difficult to identify (*e.g.* receivables), has less efficient secondary markets (*e.g.* firm-specific machinery and equipment) and loses value more rapidly (*e.g.* raw material inventories) than real estate or durable consumer goods, such as cars. Moreover, credit bureaus have more difficulties to track the credit histories of firms than individuals, in particular in an economy in which the informal sector is large. Credit developments in the years prior to the recession of 2008-09 are consistent with this view, as access to credit remained difficult for enterprises while other forms of credit boomed. Commercial credit grew 1.4% on average in real terms between 2002 and 2007, while consumer credit expanded at an average real rate of 35%. In a survey of firms across 54 countries, Beck *et al.* (2005) find that the fraction of firms reporting severe financing constraints is highest in Mexico. Since Mexican firms in the tradable sector of the economy often have access to finance from abroad – through banks, customers or suppliers (IMF and World Bank, 2006) – weak creditor rights may hit the services sector particularly hard. To support the development of a domestic consumer-related services sector which is less dependent on manufacturing, the government should diligently implement the envisaged measures to strengthen creditor rights by modernising the property registry. It should also support measures that ensure the repossession of collateral is not unduly delayed through the issuance of *amparos*.

Strengthening competition in the banking sector could contribute to easing credit for small and medium-sized firms in the services sector, but adequate consideration should be given to financial stability issues. Over the past years, several reforms have strengthened transparency and consumer protection in the Mexican banking sector (Chiquiar and Ramos-Francia, 2009). Chapter 3 discusses how costs to consumers of switching banks could be further reduced to enhance competition. The government has also acted to strengthen competition on the supply side. Among other measures, minimum capital requirements for new entrants were reduced and non-bank financial institutions were authorised, including niche banks and *corresponsales bancarios*. The authorities have also liberalised the access to the inter-bank payment system, which liquidates transactions between financial institutions. Nevertheless, discriminatory access to the retail payments systems persists. These systems liquidate transactions between individuals and firms, mainly checks, payment cards and electronic transfers. Large banks with extensive networks can make the access for smaller competitors or new entrants to their payment systems costly by charging high fees. The authorities should therefore continue to enhance the access to the retail payment systems for all banks, which would strengthen competition and likely bring down fees and the cost of credit for firms and consumers alike. At the same time, the authorities should exert sufficient care to preserve financial system stability. Although there is no clear-cut answer to the question of whether there is generally a trade-off between competition and financial stability (Beck, 2008), the difficulties of the non-bank financial institutions during the recession of 2008-09 illustrate that there can be a tension between the objectives of financial deepening and financial stability.

Trade policy could ease exporters' access to a broader range of foreign markets

Exports have increased sharply over the past two decades and are mainly geared towards the United States and manufacturing, in particular export assembly. However, there has been an important process of export diversification during the last decade, which has resulted in a lower share of non-oil exports going to the United States than before NAFTA came into force in 1994. Nevertheless, around 80% of Mexican exports go to the United States (Figure 1.14) and around 50% of Mexican manufacturing exports are produced by so-called *maquiladoras*, or export assembly plants (Hanson, 2010). These plants import their inputs mainly from abroad (primarily the United States), assemble the inputs into final outputs and re-export them to the United States.

Figure 1.14. **The share of non-oil exports going to the US remains high**

As % of total non-oil exports
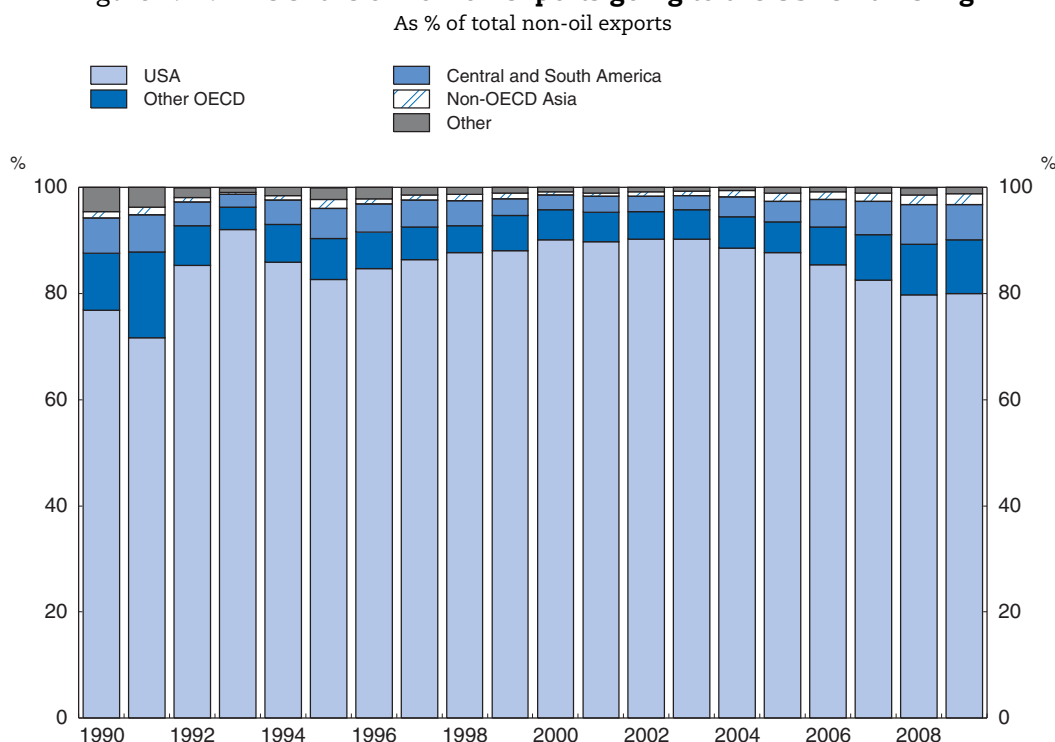
Source: OECD, *International Trade by Commodity Statistics Database*.

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Mexico's export specialisation pattern is largely determined by geography and comparative advantage. Given the size and proximity of the US market, it is unsurprising that the bulk of Mexican exports go to the US (Feenstra, 2003). Countries at early stages of economic development also tend to specialise on relatively low-value added exports (Newfarmer *et al.,* 2009). Most industrialised Asian countries started their industrial development through export assembly but later graduated into the manufacturing of original equipment and the development of own brands. Mexico has not yet made this transition.

The dominance of the United States in Mexican exports and the specialisation on export assembly contribute to output volatility. The transmission of economic fluctuations

in the United States to Mexico is strong: The empirical evidence suggests that shocks to US output are magnified in Mexico (see Box 1.3). During the recession of 2008-09 US GDP declined by 4% from peak to trough, while Mexican GDP fell by 8.5%. Bergin *et al.* (2009) find that even within narrowly defined manufacturing sectors, volatility of value added in Mexico is twice as high as in the United States. One reason may be that firms outsource particularly volatile production stages, such as assembly, to Mexico, while keeping the less volatile ones, such as headquarters and managerial activities, in the US.

Policies that reinforce Mexico's trade specialisation should be reviewed. Haddad *et al.* (2010) find that more diversified exports in terms of products and geography shield countries against external shocks. For the Mexican case this implies that strengthening export links with a wider range of countries and making the transition from export assembly to higher-productivity activities is likely to reduce the vulnerability to adverse shocks from the United States. This could be achieved by promoting the access of Mexican exporters to a wider range of foreign markets on similar conditions as to the United States; and removing barriers to exports in a wide range of sectors, including mining, energy and services.

At the end of 2008 Mexico announced an ambitious unilateral import tariff reduction over the period 2009-13. The unilateral tariff reduction is expected to reduce the average industrial tariff from 10.4% in 2008 to 4.3% in 2013. By enhancing competition and reducing the cost of intermediate goods, the unilateral tariff reduction will help improve the competitiveness of Mexican exports. But achieving greater geographical diversification will also require improving the access of Mexican exporters to a broader range of foreign markets.

Currently, Mexican exporters enjoy tariff-free access to the US and Canada through the North American Free Trade Agreement (NAFTA). Mexico has also signed free trade agreements with the European Union and a range of Latin American countries. In fact, these agreements may have contributed to the fall in the share of exports that go to the United States from around 90% at the beginning of the 2000s to around 80% in 2009 (see Figure 1.14). At the global level, bilateral free trade agreements are a second-best option to multilateral trade liberalisation as, to some extent, trade is diverted from non-member to member countries (Carrère, 2006). But for Mexican firms, bilateral free trade agreements would put more export destinations on an equal footing with Mexico's partner countries in NAFTA, which would reduce the diversion of Mexican exports to the United States and Canada. The decrease in the share of Mexican exports going to the United States suggest that this effect has already declined significantly. In terms of diversifying risk, the ongoing negotiations with Brazil and Korea are particularly relevant, as they represent two fast-growing economies whose business cycles are becoming increasingly synchronised with China and more independent of the United States. To minimise trade diversion the government could also consider the option of negotiating with regional trading blocs instead of single countries. For instance, the government could consider entering into negotiations with the South American common market (MERCOSUR).

Improving competitiveness in mining, energy and services would go a long way towards diversifying exports. Mexico's export potential in energy and mining is large, but inadequate regulation and labour disputes have prevented it from fully exploiting it. In energy, there is scope to improve the productivity of the state-owned monopolies PEMEX (oil) and CFE (electricity), mainly by fully implementing contracts that allow PEMEX to pay

contractors according to performance and moving towards the ownership separation between electricity generation and transmission, with an independent state-owned system operator operating the transmission grid (OECD, 2007). In mining, the world's second-largest copper deposit was blocked by a labour dispute for several years until mid-2010. Services exports as a share of total exports are low in Mexico. This partly reflects the inherent non-tradability of some services, but the fact that the share of services exports (around 6% of total exports in 2008) is well below the OECD average indicates (23%) that there is scope for improvement. Some mineral-rich countries have made the successful transition from pure mineral exporters to exporters of mineral-related services, such as exploration and engineering. In the United Kingdom, for instance, the highest service export intensity is found among oil and mining companies (Breinlich and Criscuolo, 2010). The large mineral exporters Australia, Brazil, Canada and Norway are among the ten largest exporters of engineering services. However, services are still not effectively covered by WTO provisions. While continuing to actively negotiate services trade liberalisation at the multilateral level, the authorities should ensure that free trade agreements include substantial commitments in services.

Concluding remarks

The absence of a major fiscal or banking crisis despite the large shock of the global economic and financial crisis of 2008 09 is testimony to the improvement in macroeconomic and financial market policies over the past two decades. Nonetheless, further reforms, both in macroeconomic and structural policies, would contribute to further reduce output volatility. Modifying the fiscal rule to allow for the accumulation of a larger buffer of financial assets during economic upswings or periods of high oil prices, while taking measures to reduce price rigidities, would be useful in this respect. In financial market policies, the government's plan to move towards macroprudential regulation and supervision will help reducing the pro-cyclicality of the financial system. Enhancing competition and reducing entry barriers in services, which now account for the largest part of Mexican value added, will spur the development of a modern and less volatile consumer-related services sector. A process of geographical trade diversification is already underway, but further reducing barriers to a wider range of export markets may contribute to the diversification of exports and reduce the dependence on a single export partner.

Box 1.4. **Main recommendations for further stabilising the economy**

- Consider the adoption of a structural fiscal rule to accumulate buffers of financial assets during economic upswings and periods of high oil prices and prepare for long-term fiscal challenges. Make the elimination of the caps on accumulated financial assets in the oil stabilisation funds permanent.

- Present the government accounts according to national account standards to improve international comparability.

- Continue the build-up of foreign exchange reserves through a rules-based mechanism as planned.

> Box 1.4. **Main recommendations for further stabilising the economy** (*cont.*)
>
> - Facilitate the conduct of monetary policy by reducing price rigidities in labour and product markets and take action to anchor inflation expectations more firmly at the 3% inflation target.
> - Move to macro-prudential regulation and supervision to reduce the pro-cyclicality of the financial system.
> - Adopt counter-cyclical minimum capital requirements as planned.
> - Continue the exit from exceptional lending by public development banks to avoid distorting competition in banking.
> - Support the development of a modern consumer-oriented services sector by reducing entry barriers in services.
> - Support the diversification of exports by: easing the access of Mexican firms to a broader range of foreign markets, including by developing regional trade agreements, and removing barriers to exporting in energy, mining and services.

Notes

1. To minimise the relevance of estimated oil production volumes and prices in the non-oil structural balance rule, the government could complement the rule by a net assets target. The non-oil structural balance target would periodically be adjusted to make it consistent with the net assets target.

2. This would require adjusting expenditure for the economic cycle under a structural fiscal rule, as otherwise all fluctuations in expenditure would be regarded as structural, requiring offsetting changes in structural revenues.

3. In part, this may be due to cost-push shocks over this period, including an increase in electricity tariffs in 2002 and the tax reform of 2007 that came into force in 2008.

4. The difference between the coefficient on the interaction term (output gap * low output gap) and the one on (output gap * medium output gap) is not statistically significant. The difference between the coefficient on the interaction term (output gap * low output gap) and the one on (output gap * high output gap) is statistically significant at the 10% level.

5. The ratio of non-performing loans and loan-loss provisions to total consumer reached 25% in November 2009.

6. At the peak of the consumer credit boom at the end of 2007 consumer credit accounted for a substantial share of bank assets (around 10%) and total bank credit (around 25%).

7. The Council will be headed by the Minister of Finance and include representatives from the central bank, CNBV, CNSF, CONSAR and the deposit insurance agency.

8. One reason may be that Mexico mainly specialises on volatile production stages, such as assembly, whereas less cyclical managerial, headquarters and R&D activities continue to be carried out in the US (Bergin *et al.,* 2007, 2009).

9. The OECD ETCR indicator covers the telecoms, electricity, gas, post, rail, air passenger transport and road freight sectors.

10. In the 2011 edition of the World Bank Doing Business indicators (World Bank, 2010) Mexico ranks 23rd out of 183 countries on the ease of closing a business.

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ANNEX 1.A1

Monetary policy response function

This annex estimates simple backward-looking monetary policy response functions. To focus on the period after the central bank formally adopted inflation targeting but prior to the recession of 2008-09 the sample includes monthly data from January 2001 to September 2008. The following specifications are estimated by ordinary least squares:

$$r_t = \beta^0 + \rho r_{t-1} + \beta^\pi (\pi_t - \pi_t^*) + \beta^y y_t + \varepsilon_t, \tag{1}$$

$$r_t = \beta^0 + \rho r_{t-1} + \beta^\pi (\pi_t - \pi_t^*) + \beta^{ylow}(y_t < y^{low})y_t + \beta^{ymed}(y^{low} \le y_t \le y^{hi})y_t + \beta^{yhi}(y^{hi} < y_t)y_t + \varepsilon_t \tag{2}$$

r_t is the nominal policy interest rate, π_t is consumer price inflation over the past 12 months, y_t is the output gap, π_t^* the inflation target, ε_t is the regression residual and the ρ and β terms are the coefficients to be estimated.[*] Consumer price inflation is seasonally adjusted using the US Census Bureau X12 programme. The output gap is calculated as the deviation of the logarithm of the seasonally adjusted monthly indicator for global economic activity (IGAE) from its long-term trend (obtained through a Hodrick-Prescott filter). The data on the policy interest rate and consumer price inflation are obtained from Banco de México and the indicator for global economic activity is obtained from the national statistical institute (INEGI).

Specification (1) is a standard monetary policy response function, where the central bank responds to both shocks to inflation and output. The lag of the policy rate is included to account for interest rate smoothing. Table 1.A1.1 reports the long-run responses of interest rates to changes in the inflation and output gaps. Column (1) of Table 1.A1.1 shows that the central bank increases the nominal policy rate by around three percentage points in response to a one percentage point deviation of inflation from its target, thus satisfying the Taylor (1993) principle. The coefficient on the output gap is not statistically significant. These results are similar to those obtained by Moura and Carvalho (2010) for similar specifications.

Specification (2) estimates the central bank's response to changes in the output gap at different levels of the output gap. Specifically, it estimates the interest rate response at "low" (below the 33 percentile), "medium" (between the 33 and 66 percentiles) and "high" (above the 66 percentile) output gaps. Column (2) of Table 1.A1.1 shows that the central bank reduces the interest rate in response to more negative output gaps when the output gap is low: the coefficient on the interaction between the output gap and an indicator variable for "low" output gaps is positive and statistically significant. However, the central

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[*] The coefficients reported in Table 1.A1.1 are the long-run response coefficients $\beta(1 - \rho)$.

bank does not appear to respond to changes in the output gap, when it is in the "medium" or "high" range, as the coefficients on the remaining interaction terms are not statistically significant.

Overall, the results from the estimation of these monetary policy response functions indicate that the central bank responds vigorously to deviations of inflation from its target. While the interest rate response to changes in the output gap appears to be weak overall, there appears to be some loosening of the monetary stance when the output gap turns sharply negative. Although the results are robust to a number of variations in sample period and specification, including disaggregating the output gap into quintiles instead of terciles, there is a need for further research to test whether they hold in a more general setup. In particular, the above monetary policy response functions do not allow to draw conclusions on central bank preferences, which would require setting up a fully-fledged general equilibrium model.

Table 1.A1.1. **Monetary policy response functions**[1]

Dependent variable	Policy interest rate	
	(1)	(2)
Inflation gap	2.983 (1.270)**	2.602 (1.053)**
Output gap	0.424 (0.356)	
Output gap * (Low output gap)		1.539 (0.744)**
Output gap * (Medium output gap)		0.230 (1.311)
Output gap * (High output gap)		−0.268 (0.482)
N	93	93
R^2	0.95	0.95

** statistically significant at 5%, * at 10%. Standard errors in parentheses.
1. Specifications include the first lag of the policy interest rate and a constant. Long-run response coefficients.

ANNEX 1.A2

Foreign exchange demand equation

This annex estimates a simple foreign exchange demand equation in the vein of Obstfeld *et al.* (2010) for a sample of advanced and emerging equations over the period 1995-2010. Algebraically, the estimated equation can be represented as:

$\ln(Res/GDP) = \beta_0 + \beta_1^*TradeOpen + \beta_2^*AD + \beta_3^*SoftPeg + \beta_4^*Peg + \beta_5^*FinOpen + \beta_6^*\ln(M2/GDP) + \varepsilon$, (1)

where *Res/GDP* is the reserves-to-GDP ratio (IMF IFS), *TradeOpen* is the trade-to-GDP ratio (World Bank WDI), *AD* is a dummy for advanced countries (Obstfeld *et al.*, 2010), *SoftPeg* and *Peg* are dummies for the exchange rate regime (Obstfeld *et al.*, 2010), *FinOpen* a measure of financial openness (Edwards, 2007) and *M2/GDP* is the M2-to-GDP ratio (IMF IFS). The βs are the coefficients to be estimated and μ is the regression residual. Country and time subscripts are dropped for notational simplicity. The results from estimating variations of equation (1) by pooled OLS are reported in Table 1.A2.1.

Table 1.A2.1. **Foreign exchange demand equations**

Dependent variable	ln(Res/GDP)		
	(1)	(2)	(3)
ln(TradeOpen)	0.682***	0.634***	0.424***
	(0.045)	(0.047)	(0.050)
AD	−0.786***	−0.957***	−1.199***
	(0.058)	(0.075)	(0.074)
SoftPeg	0.140**	0.140**	0.239***
	(0.060)	(0.058)	(0.055)
Peg	0.297***	0.300***	0.265***
	(0.080)	(0.079)	(0.074)
FinOpen		0.488***	0.897***
		(0.155)	(0.151)
ln(M2/GDP)			0.407***
			(0.043)
Constant	−4.800***	−4.924***	−5.960***
	(0.186)	(0.184)	(0.200)
N	534	532	519
R^2	0.57	0.59	0.66

** statistically significant at 5%; *** at 1%. Standard errors in parentheses.

Column (1) excludes *FinOpen* and *M2/GDP* from the estimating equation. All the coefficients have the expected sign and the equation explains around 57% of the variation in reserves-to-GDP ratios. Including *FinOpen* and *M2/GDP* in columns (2) and (3) improves

the fit of the equation and shows that financially more open and more developed countries accumulate larger buffers of foreign exchange reserves. The ratio of actual-to-predicted reserves for Mexico is consistently around 55% for the year 2007 and around 70% for 2010 across the specifications in columns (1)-(3). However, this should not be interpreted as a gap with respect to an optimal level of precautionary reserves, as some countries in the sample may have accumulated reserves for reasons beyond a precautionary motive.