



BANCO DE MÉXICO

Quarterly Report
July – September 2018



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QUARTERLY REPORT

This report analyzes recent developments in economic activity, inflation and different economic indicators in Mexico, as well as the monetary policy implementation in the quarter July – September 2018, and, in general, the activities of Banco de México over the referred period, in the context of the Mexican and international economic environment, in compliance with Article 51, section II of Banco de México's Law.

FOREWARNING

This document is provided for readers' convenience only. The translation from the official Spanish version was made by Banco de México's staff. Discrepancies may possibly arise between the original document in Spanish and its English translation. For this reason, the original version in Spanish is the only official document.

Unless otherwise stated, this document has been prepared using data available as of November 26, 2018. Figures are preliminary and subject to changes.

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1. Introduction

During 2018, Banco de México has conducted its monetary policy in an environment of high uncertainty, which has been generated by global factors and others that are more directly associated to the Mexican economy, and which have gained relatively more importance.

Among the main factors characterizing the external environment are the continuing trade disputes worldwide, specifically between the United States and China, which could even intensify in the future. During most of the reported period, global financial conditions tightened, mainly reflecting expectations of greater-than-previously-anticipated raises in the Federal Reserve's interest rates. As a result, the U.S. dollar appreciated and interest rates increased. However, based on incoming information, a more gradual normalization process is anticipated by markets, although the risk of an inflationary surprise that would modify this outlook still cannot be ruled out. In addition, political and geopolitical risks persist, and other factors of uncertainty have emerged, such as financial difficulties in some emerging economies and the corresponding risk of contagion. The factors described above led to bouts of volatility in financial markets and to a negative performance of emerging economies' asset prices, albeit with differences according to their macroeconomic fundamentals and idiosyncratic factors.

With respect to the factors that directly affect the Mexican economy, in the reported period uncertainty regarding the future trade relationship among Mexico, the U.S. and Canada decreased, due to both the progress in the negotiation process and the announcement of a new trade agreement in North America. This process, however, has not concluded, since such agreement is still to be ratified by the congresses of the involved countries. Recent events such as the announcement of the intention to cancel the New Mexico City International Airport project, uncertainty related to the business model adopted by Pemex, and concerns regarding the incoming administration's policies and some legislative initiatives prompted several rating agencies to downgrade the country's sovereign risk outlook from stable to negative. The Mexican peso

depreciated, and risk premia and interest rates increased, especially long-term ones. Thus, the current environment is characterized by important risks that could structurally affect the country's macroeconomic conditions, its growth potential and the economy's price formation process. If this environment persists, so that risk premia remain high and long-term inflation expectations are affected, higher interest rates may be necessary throughout the business cycle.

During the reported period, annual headline inflation increased from an average of 4.57% to one of 4.91% between the second and the third quarters of 2018. This evolution stemmed partly from the growing trend of non-core inflation up to September, which reflected the higher energy prices, mainly of gasoline and LP gas, which, in turn, mirrored the evolution of their international references, and, in the case of gasoline, a gradual decline in the fiscal stimuli applicable to its domestic prices. As a result, non-core inflation remained high for a long time. Meanwhile, although the cyclical conditions were less tight as compared to the beginning of the year, annual core inflation showed resistance to continue declining during the third quarter of 2018. This was partly due to the indirect effects of higher energy prices on the production costs of some of its components. The annual changes of some items of this index followed an upward trajectory, especially that of the price subindex of services other than education and housing. Thus, different factors, in addition to the aforementioned indirect ones, also contributed to the persistence of core inflation. Among these are the evolution of the exchange rate, the absence of slack and the development of real wages. In this way, core inflation stopped declining and remained practically constant at levels above the target. In particular, annual core inflation shifted from 3.67 to 3.64% in the reference quarters, and lied at 3.63% in the first half of November. Annual headline inflation decreased in October and during the first half of November, when it located at a level of 4.56%. This is largely attributed to the decline in annual non-core inflation, as a result of the recent price decreases in LP gas, along with lower price increments of gasoline and electricity fares, as compared to the same period of last year.

In the context described, during the period analyzed in this Report, Banco de México conducted its monetary policy seeking to preserve the anchoring of inflation expectations and to foster the downward trend of annual headline inflation to its target. In particular, in its August and October 2018 meetings the Governing Board decided to maintain the target for the overnight interbank interest rate at 7.75%. The Board noted a certain loosening of slack conditions with respect to those observed in the first quarter of the year, and stressed the transitory nature of the shocks that affected inflation and expectations of a downward trend in core inflation, although it also emphasized the risks and the uncertainty regarding the anticipated trajectory of inflation. However, in its November meeting, the Governing Board raised the target for the overnight interbank interest rate by 25 basis points, upon considering that the balance of risks to inflation had deteriorated considerably and is still biased to the upside in both the short and long terms. In addition to non-core inflation remaining high and core inflation showing a resistance to decline, the fact that the price formation process may be structurally affected by the implementation of different policies was also considered as a risk.

Banco de México's monetary policy stance was determined in an environment in which the world economy grew at a more moderate rate in the third quarter, in a context of a persistent divergence in the economic performance of different regions and countries. In particular, although the U.S. economy continued to grow at high rates, it was below second quarter figures, while other advanced economies grew below expectations and emerging economies continued to weaken. In this environment, global inflation moderated its upward trend, in a context of persistent divergence across countries. Although the main central banks are anticipated to continue moving towards a more neutral monetary policy stance, the pace of the normalization of their monetary policy, above all in the U.S., could slow down. However, the risk of a greater-than-expected tightening of global financial conditions that could affect emerging economies particularly those with weak macroeconomic fundamentals or that face idiosyncratic difficulties still cannot be ruled out. Despite a moderate global expansion still anticipated for 2018 and 2019, the short- and medium-term

growth outlook has been adjusted slightly downwards, due to the materialization of some previously described risks. In addition to this, there are other risks to the world economic growth, such as volatility in oil prices and other political and geopolitical factors.

Domestically, economic activity rebounded in the third quarter, after having contracted during the second one, although there persists the negative trend in investment. The behavior of GDP in the period July – September mainly reflected the persistent dynamism of the services sector, as well as a certain recovery of secondary activities, with respect to the weakness they displayed in the previous quarter. Slackness conditions are estimated to have tightened slightly during the reference quarter as compared to the previous one, although they remain at levels that are less tight than those exhibited at the beginning of the year. The balance of risks for Mexico's economic growth from a cyclical perspective is considered to remain biased towards the downside and to have deteriorated at the margin, largely due to the prevailing complex external environment and the aforementioned factors of domestic uncertainty. In particular, despite the agreement reached among Mexico, the U.S. and Canada regarding trade relations in the region, there are certain obstacles to its ratification, in a context in which world trade tensions persist and in which there is still the risk of a tightening of global financial conditions. In addition, as previously mentioned, there is high uncertainty regarding the different aspects of economic policy to be implemented by the incoming administration, and the impacts of their strategies on confidence and performance.

As to the inflation outlook, in the absence of monetary policy actions, a number of factors would have led to a delay in the inflation convergence to its target with respect to that presented in the previous Report. Some of these factors are the already observed higher energy prices, and their indirect effects on core inflation, along with higher-than-expected increases in the growth rate of the services prices. As mentioned above, given these factors, the monetary policy adjusted in November to maintain the convergence of headline inflation to its target in the same horizon as that exhibited in the previous Report, even though during this process headline and

core inflation are anticipated to lie above the previous estimates. Thus, annual headline inflation is forecast to come close to the 3% target in 2019, and to be around this target in the first half of 2020. The trajectory of annual core inflation has also been adjusted upwards for the next months, although, considering the implemented monetary policy actions, it is anticipated to reach the same level as that mentioned in the previous Report in the first half of 2020. Inflation is facing important risks related to the possible adoption of the policies that may structurally affect the price formation process of the economy. In addition, among others, it is subject to the following risks: that the Mexican peso exchange rate continues to be subject to pressures stemming from higher external interest rates, and other external and domestic factors; that pressures on energy prices persist or agricultural product prices increase; that an escalation of protectionist and compensatory measures is registered worldwide; that a deterioration of public finances is observed; that, given the observed shocks and the inflation levels, there is a risk of second-round effects on the price formation process; and, that pressures are generated in the economy insofar as wage negotiations are not consistent with productivity gains. Considering the above, the balance of risks vis-à-vis the anticipated inflation trajectory has deteriorated and displays a significant upward bias, in a context of marked uncertainty.

To guide its monetary policy actions, the Governing Board closely follows the development of inflation

vis-à-vis its anticipated trajectory, taking into account the monetary policy stance adopted and the time frame in which monetary policy operates, as well as available information on all inflation determinants and on medium- and long-term inflation expectations, including the balance of risks to such factors. Monetary policy must respond prudently if, for different reasons, the uncertainty faced by the Mexican economy increases considerably. Should the economy require adjustments wither to the real exchange rate or to medium- and long-term interest rates, Banco de México will contribute to make such adjustments in an orderly manner, in an effort to prevent second-round effects on the economy's price formation process. Considering the challenges to consolidate a low and stable inflation, as well as the risks that the economy's price formation process is subject to, the Governing Board will take the necessary actions, specifically maintaining or strengthening the current monetary policy stance, so that inflation converges to Banco de México's target within the period of influence of the monetary policy.

In sum, the Mexican economy faces an environment that is more complex than previously anticipated. In this regard, it is particularly important that in addition to following a prudent and robust monetary policy, measures to foster greater productivity, and an environment of confidence and certainty for investment are adopted, public finances are consolidated sustainably, and both transparency and accountability of public policies are strengthened.

2. Economic and Financial Environment

2.1. External Conditions

2.1.1. World Economic Activity

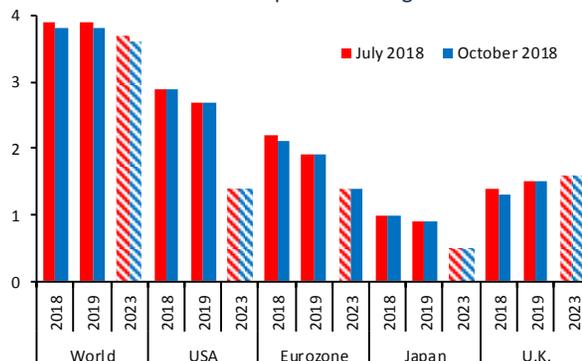
During the third quarter of the year, the world economy observed a more moderate growth rate, while still displaying divergence in the economic performance of different regions and countries. Indeed, while growth in the U.S. remained high, albeit below that observed in the previous quarter, some of the main advanced economies grew at a lower-than-expected rate and emerging economies had a lower dynamism as compared to the previous evolution. In this environment, inflation in the main advanced economies grew at a more moderate rate, despite significant discrepancies persisting across countries. In particular, in the U.S. inflation slowed down during the recent months, mainly driven by the U.S. dollar appreciation, a trend that could be accentuated by the recent drop in crude oil prices. Thus, although the main central banks are expected to continue moving towards a more neutral monetary policy, monetary policy normalization rates, in particular that of the U.S. Federal Reserve, could moderate.

For 2018 and 2019, a modest expansion of the world economy is anticipated, although the growth outlook for both the short and medium terms was slightly adjusted downwards. Such revision reflected the recent evolution in some of the main economies and the materialization of some risks on the international scene, such as the intensification of trade disputes at the global level, which resulted in a weaker growth of world trade and investment, and in lower confidence levels among businesses (Chart 1). In particular, despite the agreements achieved between the U.S. and some of its main trade partners, trade disputes between the U.S. and China have significantly increased. In addition, although the markets expected the monetary policy normalization rate in the U.S. to moderate, the risk of a greater-than-estimated tightening of the global financial conditions affecting the emerging economies still cannot be ruled out, particularly in the economies characterized by weak macroeconomic fundamentals, or those facing adverse idiosyncratic factors. Finally, there are other risks to the world economic growth, such as the volatility of crude oil prices and other political and geopolitical factors. In

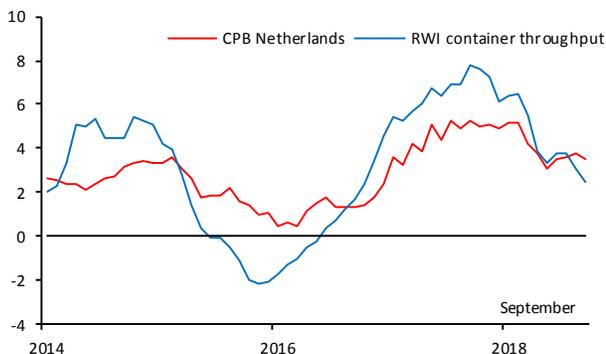
this context of high uncertainty, in the considered period, international financial markets exhibited high volatility and asset prices displayed a negative performance.

Chart 1
World Economic Activity

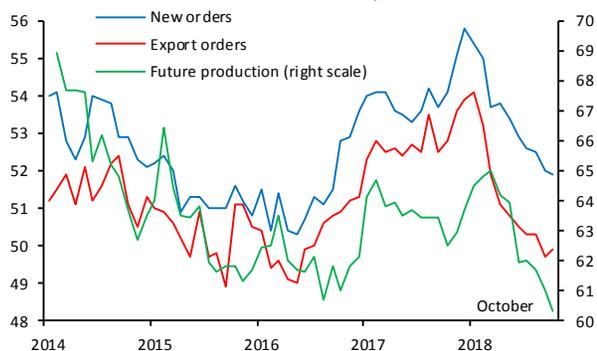
a) GDP Growth Forecast for 2018, 2019 and 2023^{1/}
Annual percent change



b) Volume of World Trade
Annual change of the 3-month moving average in percent, s. a.



c) Global Index of Purchasing Managers' Index of the Manufacturing Sector
Diffusion indices, s. a.



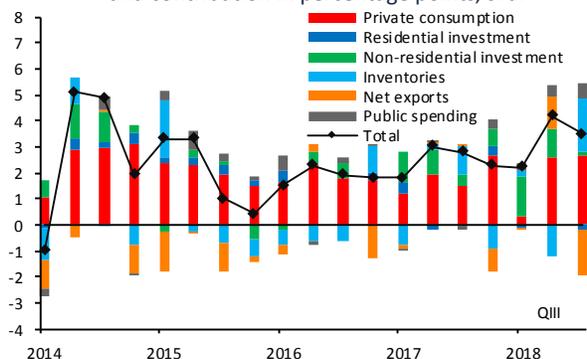
1/ Forecasts for 2023 were obtained from April and October 2018 WEO. s. a. / Seasonally adjusted figures.

Source: IMF, World Economic Outlook, April, July and October 2018, CPB Netherlands, Markit and Haver Analytics.

In the U.S., GDP expanded at an annualized quarterly and seasonally adjusted rate of 3.5% during the third quarter, after growing 4.2% in the second one (Chart 2). In particular, private consumption continued growing, which was supported by high levels of household confidence and by an increase in wage income. Similarly, public spending continued to expand, supported by the fiscal impulse, and businesses' inventories had a high contribution to growth, after a strong disaccumulation in the second quarter. In contrast, gross fixed investment weakened, in light of a lower dynamism of the non-residential component and a contraction of the residential one. Finally, net exports reduced the dynamism of the economic activity, which responded both to the fading of the positive impact of the agricultural exports in the previous quarter, and the appreciation of the U.S. dollar.

Chart 2
Economic Activity in the U.S.
Real GDP and Components

Annualized and seasonally adjusted quarterly percent change and contribution in percentage points, s. a.



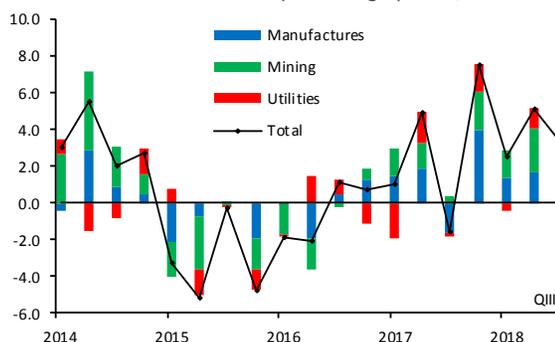
s. a. / Seasonally adjusted figures.
Source: BEA.

Industrial production also moderated its growth rate in the third quarter, as it expanded at an annualized quarterly and seasonally adjusted rate of 4.7%, after exhibiting 5.3% in the second quarter (Chart 3). This moderation reflected a drop in the utilities sector, which stood in contrast with a greater dynamism of the mining and manufacturing activity. In October, the industrial and manufacturing production expanded at a monthly rate of 0.1 and 0.3%, respectively, while the mining sector and the electricity sector contracted 0.3 and 1.9%, in the same order. In this context, the leading indicators available by the fourth quarter, such as the components of future production and exports orders

of the Purchasing Managers' Index (PMI) signal a moderation of economic activity in that period.

Chart 3
Industrial Activity in the U.S.
Industrial Production and Components

Annualized, seasonally adjusted, quarterly percent change and contribution in percentage points, s. a.

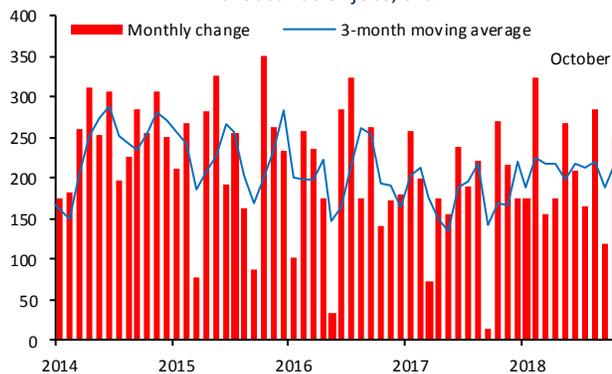


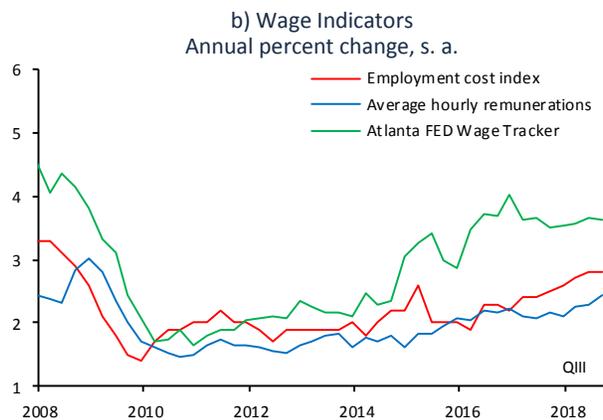
s. a. / Seasonally adjusted figures.
Source: Federal Reserve.

In this juncture, the dynamism of the U.S. economic activity during the reported period translated into a further tightening of the labor market. Indeed, the unemployment rate was 3.7% in October, which has been the lowest rate for nearly five decades, and below the natural unemployment rate of 4.6% estimated by the Congressional Budget Office (CBO). Between July and September, an average of 190 thousand new job positions were opened, which exceeded the rate required to absorb the growth of the labor force, and in October, 250 thousand new job positions were created (Chart 4a). In addition, during this period, hiring and resignation rates attained their maximum levels of this expansion cycle. In this context, wages continued to grow (Chart 4b).

Chart 4
Labor Market in the U.S.
a) Non-farm Payroll

In thousands of jobs, s. a.





s. a. / Seasonally adjusted figures.

Source: Federal Reserve Bank of Atlanta and BLS.

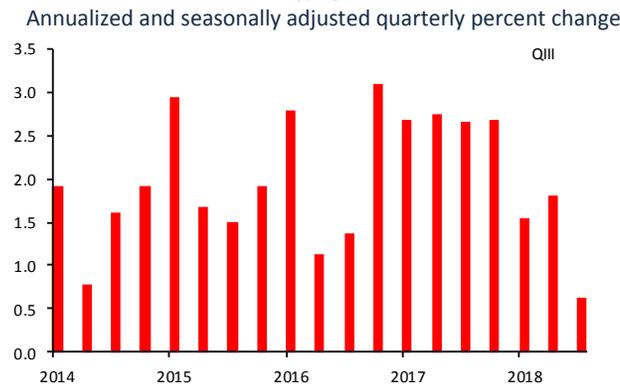
For the remainder of 2018 and for 2019, the consensus of analysts is still anticipating an expansion of the U.S. economy, largely supported by the fiscal impulse and households' confidence. Nonetheless, the U.S. economic growth is expected to moderate in the medium term insofar as certain tax provisions expire, while the Federal Reserve continues to raise its interest rates. Indeed, the increment in mortgage interest rates seems to be accentuating the weakness of residential investment, which has been affected by high construction costs and smaller tax incentives for housing construction. In addition, a less favorable outlook for corporate profits seems to be affecting capital spending plans of businesses. Finally, the still persisting risks of a greater escalation of protectionist measures and a further tightening of global financial conditions may contribute to a greater deceleration of that economy. Thus, although the growth scenario is expected to remain moderate, risks of a lower growth in the U.S. in the medium term have increased.

In the Eurozone, during the third quarter of the year, economic activity decelerated strongly, mainly as a result of weak external demand, the growing political uncertainty, stronger financial tensions in Italy and transitory factors in Germany, such as the automotive sector being affected by the new regulations on pollutant emissions.¹ Thus, in the third quarter, GDP expanded at a quarterly annualized and seasonally adjusted rate of 0.7% after having grown 1.8% in the second one, which is a rate lower than that anticipated by the consensus of analysts (Chart 5).

¹ Car production plummeted as a result of delays in the certification process of the new regulations on pollutant emissions, in part, derived from shortages of skilled labor in Germany.

Although private consumption and investment continued to expand, net exports decreased the dynamism of the economic activity, given the lower external demand and the previously mentioned impacts on the automotive sector. In this context, the unemployment rate remained at 8.1% in September, below the level that is considered as long-term, while wage growth continued to accelerate gradually.

Chart 5
Economic Activity in the Eurozone
Real GDP

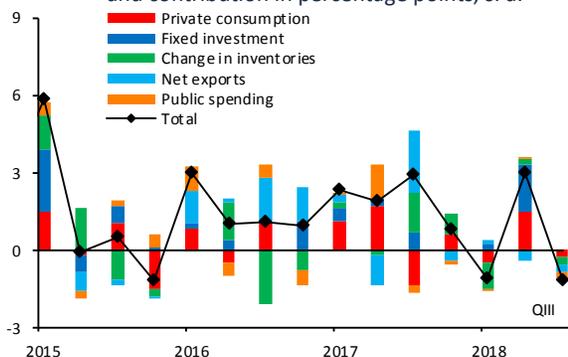


Source: Eurostat.

The economy of Japan contracted at an annualized seasonally adjusted rate of 1.2% in the third quarter, in part driven by the natural disasters, after displaying a growth rate of 3% in the second quarter (Chart 6). Specifically, while domestic demand was strongly affected by different natural phenomena, net exports weakened as a result of a lower external demand. The unemployment rate marked 2.3% in September, close to its minimum level over the last 25 years. In turn, the tightening of the labor market translated into a rebound in wages.

Chart 6
Economic Activity in Japan
Real GDP and Components

Annualized and seasonally adjusted quarterly percent change and contribution in percentage points, s. a.



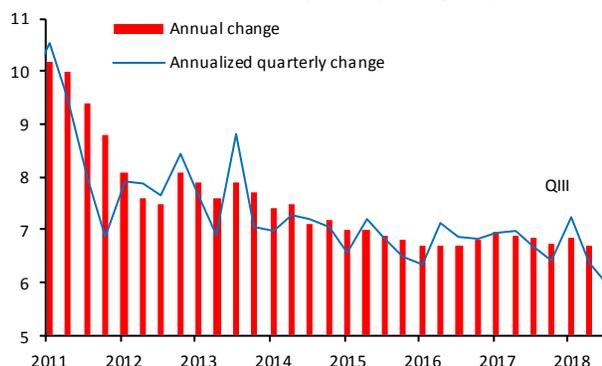
s. a. / Seasonally adjusted figures.
Source: The Cabinet Office.

Across emerging economies, growth moderated during the third quarter, despite the significant differences among the countries. On the one hand, countries such as Brazil and Malaysia slightly recovered, after a weak second quarter. In contrast, economic activity in countries such as Argentina and Turkey was severely affected by the high volatility in their financial markets. In addition, the growth rate of some of the main emerging economies moderated, especially in India and China.

Indeed, the Chinese economy continued to decelerate from an annual growth rate of 6.7% in the second quarter to 6.5% in the third one. This was caused by the government policies aiming to lower the credit expansion and to promote sustainable growth (Chart 7a and Chart 7b). In addition, a further deterioration in the Chinese economic activity derived from the trade disputes with the U.S. cannot be ruled out. In this juncture, the Chinese authorities have relaxed both their monetary and fiscal policies to prevent the greater-than-anticipated deceleration, despite a high uncertainty on whether these measures will be sufficient to offset the effects of the greater trade tensions on the economy.

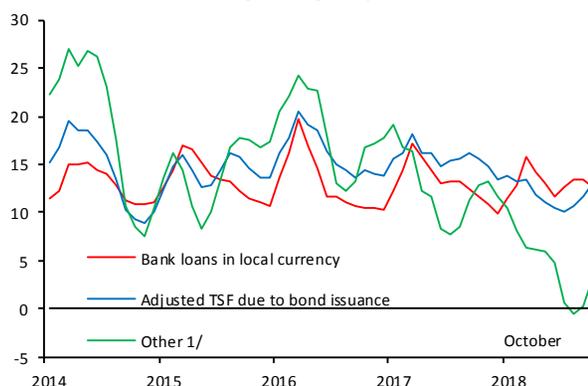
Chart 7
Economic Activity in China
a) Real GDP

Annual and annualized quarterly change in percent



b) Total Social Financing

Annualized quarterly change of the 3-month moving average in percent ^{1/}



^{1/} Includes bank loans in foreign currency, corporate bonds, financial activities that are not subject to bank regulations, local government debt swaps and other credits.

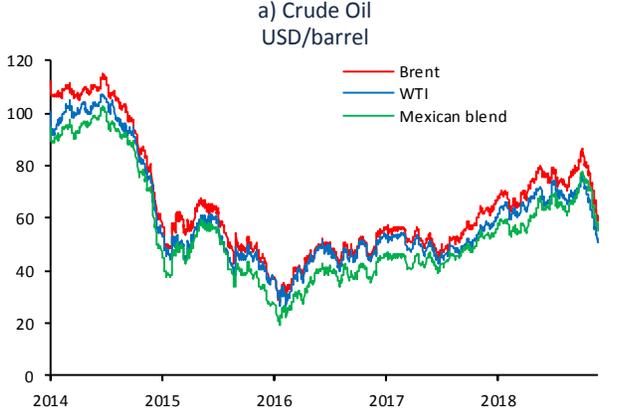
Source: Haver Analytics.

2.1.2. Commodity Prices

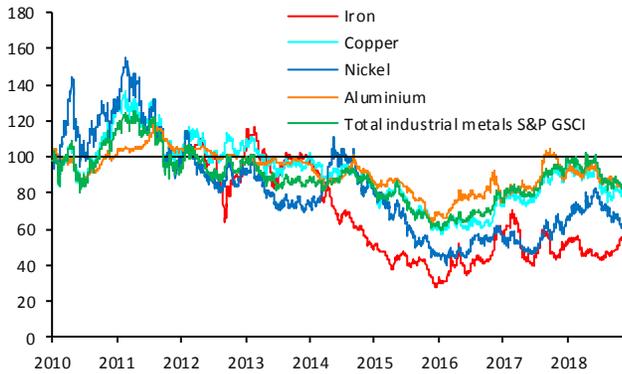
International commodity prices had a mixed performance during the period analyzed in this report. In particular, crude oil prices increased strongly in the mid-third quarter, given the uncertainty over the possible impact on the world supply generated by the U.S. sanctions against Iran and the OPEC members' announcement that they will not adjust their production level (Chart 8a). However, starting from mid-October, crude oil prices tumbled, once Saudi Arabia stepped up its production, a temporary exemption of Iran's oil purchases by eight of its main clients was announced, and the outlook for the OPEC world oil demand decreased. On the other hand, the escalation of trade disputes between the U.S. and China, and the outlook for a lower global manufacturing expansion caused industrial metal prices to remain at low levels (Chart 8b). Finally, grain

prices had an erratic behavior, mainly caused by the changing weather conditions in some regions of the U.S. and South America (Chart 8c).

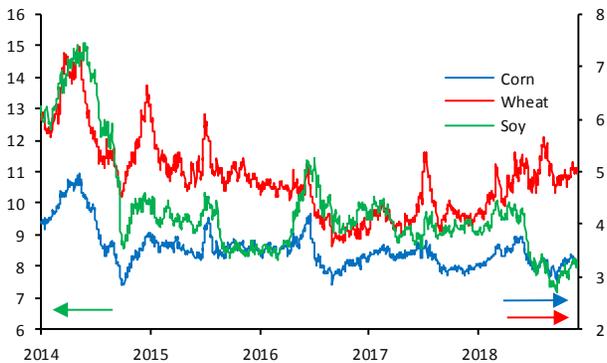
Chart 8
International Commodity Prices



b) Prices of Selected Metals ^{1/}
Index 01/01/2010=100



c) Prices of Selected Grains
USD/bushel



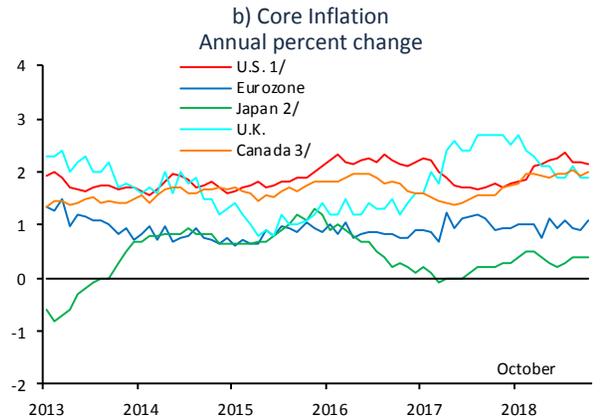
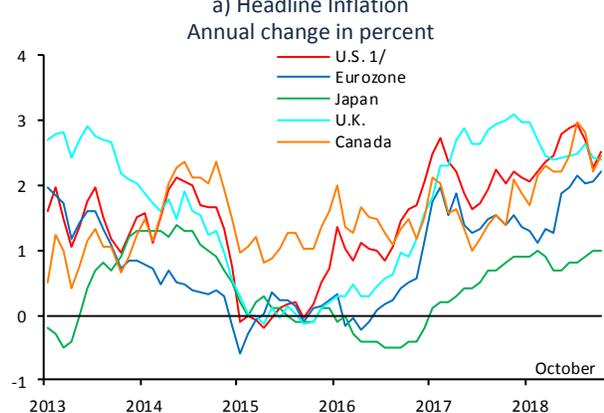
1/ In the case of iron, December 22, 2011 was considered as the base.
Source: Bloomberg.

2.1.3. Inflation Trends Abroad

Headline inflation in the main advanced economies reduced its upward trend, in the context of considerable divergence persisting across these countries. Core inflation in the U.S., measured by the

annual growth of the core personal consumption deflator remained around the Federal Reserve target, while, in the Eurozone and Japan, inflation and its expectations remained below their respective central bank targets (Chart 9a and Chart 9b).

Chart 9
Inflation in Advanced Economies



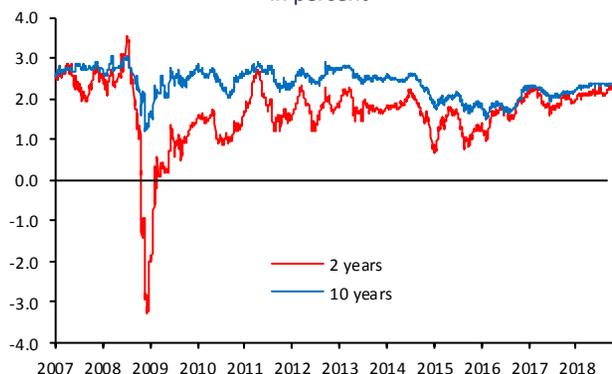
s. a. / Seasonally adjusted figures.
1/ It refers to the Consumer Price Index (CPI).
2/ Excluding fresh foods and energy, as well as the direct effect of the higher consumption tax.
3/ Excluding food and energy.
Source: National Statistical Offices.

In the U.S., the personal consumption deflator shifted from an annual change of 2.3% in June to 2.0% in September, which reflected the fall in energy prices, the impact of the U.S. dollar appreciation and the drop in car prices. Meanwhile, the core subindex of this deflator has maintained an annual growth of 2% since May (Chart 10a). Annual inflation measured with the consumer price index went down from 2.9 to 2.5% between June and October, while the core component declined from 2.3 to 2.1%. This was related to the weakness of goods' prices, while the inflation of the services' component remained relatively stable. The recent drop in crude oil prices is

expected to negatively affect consumer inflation over the next months. In this environment, inflation expectations implicit in financial instruments as well as survey-derived expectations decreased, although they are still consistent with the Federal Reserve target (Chart 10b).

In the Eurozone, headline inflation increased from 2% in June to 2.2% in October, while core inflation went up moderately from 0.9 to 1.1%. This evolution reflected the greater tightening of the labor market, price volatility in tourism services and apparel, and the fading of factors that kept inflation at low levels during last year, especially drops in some services' prices in Italy and Germany. In Japan, annual inflation went up from 0.8 to 1% between June and October, while its core component shifted from 0.2 to 0.4%. The latter took place in a scenario in which the output gap was positive and import prices went up, despite the fact that inflation expectations remained low.

b) Inflation Expectations in the U.S. Implicit in Financial Instruments 1/ In percent



1/ Inflation expected for the next 2 and 10 years, respectively. Expectations obtained from swap contracts, in which one counterparty agrees to pay a fixed rate in exchange for receiving a referenced payment at an inflation rate over a specified period.

s. a. / Seasonally adjusted figures.

Source: BEA, BLS, the Federal Reserve Bank of Cleveland and JP Morgan.

Although headline inflation in most emerging economies also lied below the target of the respective central banks, it continued to increase driven by a number of aspects, such as idiosyncratic factors, the lagged effect of higher energy prices, the depreciation of their currencies and a lower slack in their economies (Chart 11).

Chart 10 Inflation in the U.S.

a) Personal Consumption Deflator and Consumer Prices Annual percent change, s. a.

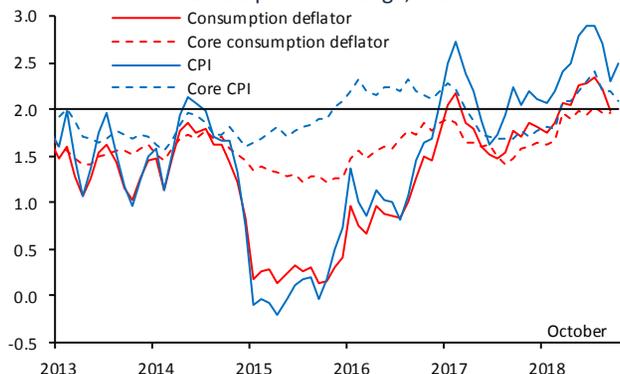
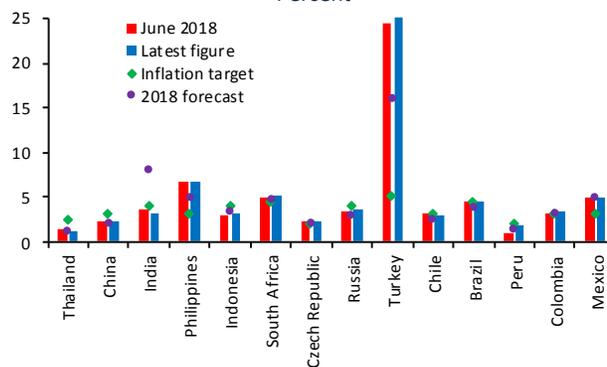


Chart 11 Inflation in Emerging Economies Annual Headline Inflation Percent



Note: For central banks that have no punctual inflation target, the interval midpoint is presented.

Source: Haver Analytics.

2.1.4. International Monetary Policy, and Financial Markets

In the scenario described above, the advanced economies' central banks are expected to continue moving to a more neutral monetary policy stance, although at rates lower than those previously estimated and different across countries. In

particular, in the U.S., the recent evolution of the economy and financial markets have lowered the expectations of the monetary policy normalization rate, although increments in the Federal Reserve reference rates are still expected in December 2018 and during 2019. Meanwhile, the Bank of England and the European Central Bank are expected to raise their rates moderately during 2019, while the Bank of Japan is estimated to do so at a slower pace.

In its meeting of November, the Federal Reserve maintained the target for its federal funds rate in a range of 2 to 2.25%, after having raised it by 25 basis points in September, and confirmed its intention to keep increasing it gradually. During this period, the Federal Reserve excluded the phrase that described the monetary conditions as accommodative, and at the beginning of October the Chair of the Federal Reserve Jerome Powell added that the monetary policy rate could eventually lie above its neutral rate. However, after the meeting of November, some Federal Reserve members noted that the federal funds' rate was closer to its neutral rate and that the future monetary policy decisions would need to consider the evolution of economic and financial indicators. Thus, while the medians of the September Federal Reserve forecasts point to a further 25 basis point increment in the range of the federal funds' rate in December, as well as to three increments of the same magnitude during 2019 and one in 2020, currently the probabilities implicit in the financial markets exclusively anticipate an increase in the range of the federal funds' rate in December and two further increments in 2019.

In this period, the European Central Bank (ECB) maintained its reference rate and its forward guidance unchanged, and stressed that interest rates would remain at their current levels at least until summer 2019, or until necessary to ensure that inflation converges to its target in a sustainable manner. In its meeting of October, the President of the European Central Bank expressed confidence that the generalized expansion of the region will continue, while he also acknowledged that the growth is becoming weaker than previously expected. In addition, in October the ECB lowered its assets purchases' program from EUR 30 billion to 15 billion, and stressed that this program was expected to conclude in December, subject to the evolution of economic data. The ECB moderately adjusted its

growth forecast for 2018 and 2019 downwards, given the expectation of a lower contribution of foreign trade, while it kept its inflation outlook for the next two years unchanged at 1.7%.

The Bank of Japan maintained its short-term deposit rate unchanged at -0.1% and its long-term rate, related to 10-year bonds, at 0%, while it confirmed that it will maintain a highly accommodative policy for the time necessary to reach its price stability target. In particular, the Bank of Japan expressed its intention to maintain short- and medium-term interest rates at extremely low levels for a long period, considering the uncertainty over the course of economic activity and inflation, together with the impacts of higher consumer taxes. Nonetheless, although in the meeting of October the referred Central Bank restated that downward risks to inflation and economic growth have accentuated, and stressed that stronger trade tensions between the U.S. and China could affect the economy of Japan via an impact on global value chains, it expects domestic demand to continue expanding.

The Bank of England maintained its reference interest rate unchanged at 0.75% during the period analyzed in this Report. In its November press release, the Monetary Policy Committee pointed out that the aggregate supply and demand are currently balanced, but excess demand is anticipated in the next years. Indeed, the economic projections released in November showed that inflation would return to its target by the end of 2021, a year later as compared to the August forecast. Although the Bank of England stressed that a gradual and limited process of interest rate increments is still required for inflation to return to its target, a faster upward trajectory is anticipated as compared to that mentioned in its previous Report. In addition, the Central Bank restated that it would adjust its monetary policy stance as needed, if, as a result of the negotiations of the exit from the European Union, significant changes were observed in the outlook for economic growth and inflation.

Across the emerging economies, more central banks have raised their reference rates. While the decision of Argentina, Indonesia, Russia and Turkey came in response to the high risks of a rebound in inflation given the depreciation of their currencies and different idiosyncratic factors, other countries, such

as the Philippines and the Czech Republic have done it in anticipation of higher risks of a rebound in inflation, in a context of the low slack in resource utilization.

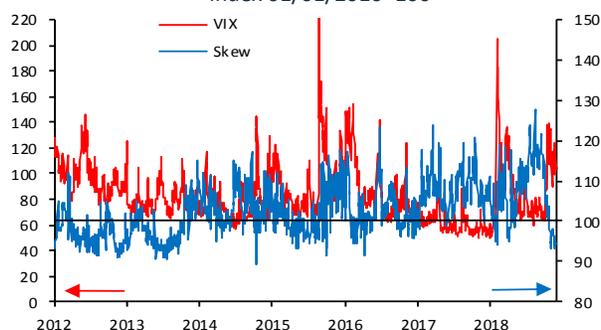
During most of the period covered by this Report, and until the second half of November, global financial conditions tightened, mainly reflecting the expectation of the greater-than-expected upward trend of reference interest rates of the Federal Reserve. This led to the U.S. dollar appreciation, higher interest rates, falls in stock markets (in particular in the U.S.), and, in general, an environment of a lower risk appetite (Chart 12a). Nonetheless, as mentioned above, given this adjustment in the financial markets, the moderation of inflation and the deceleration in the other main economic variables, starting from the second week of November the monetary normalization process was expected to be more gradual than previously estimated (Chart 12b).

In particular, although the U.S. stock markets showed increases in the third quarter, in October these reversed, which reflected the changes in the expectations of the course of the Federal Reserve monetary policy, which, at that moment, pointed to a major tightening, as well as the less favorable outlook for the corporate profits during the subsequent quarters. Similarly, across other advanced economies, stock markets showed high volatility, in part caused by the greater uncertainty over the U.K. exit from the European Union, the budget situation in Italy and the financial situation of some European banks (Chart 13a). In addition, long-term interest rates in advanced economies increased during the quarter (Chart 13b). In particular, in the U.S., interest rates for all terms have increased. Although term premia have remained low during the third quarter, which contributed to the flattening of the yield curve, starting from October an increase in the long-term rates and the steepening of the mentioned curve were observed (Chart 13c). In sum, the financial conditions of the main advanced economies have tightened moderately.

Chart 12
International Financial Markets
a) Risk Appetite Index



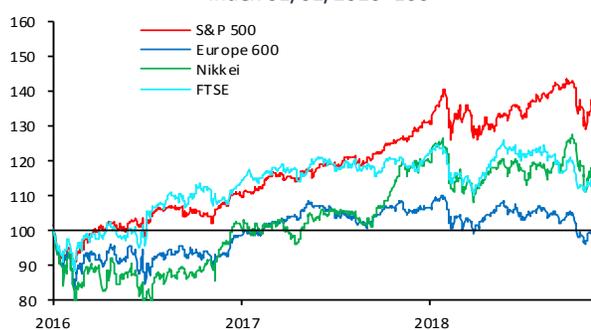
b) VIX and SKEW Indices ^{1/}
Index 01/01/2016=100



1/ The VIX index is a weighted indicator that measures implied volatility in the options' market for S&P 500. The SKEW index is an index that reflects the probability of extreme events in S&P 500.

Source: Banco de México with data from Credit Suisse and Bloomberg.

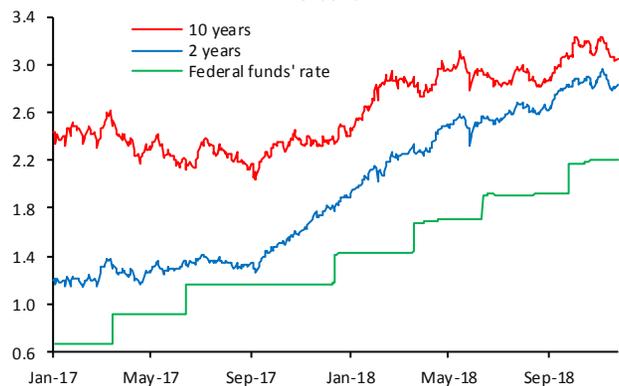
Chart 13
Financial Markets in Advanced Economies
a) Stock Markets
Index 01/01/2016=100



b) 10-year Bonds Yield
Percent

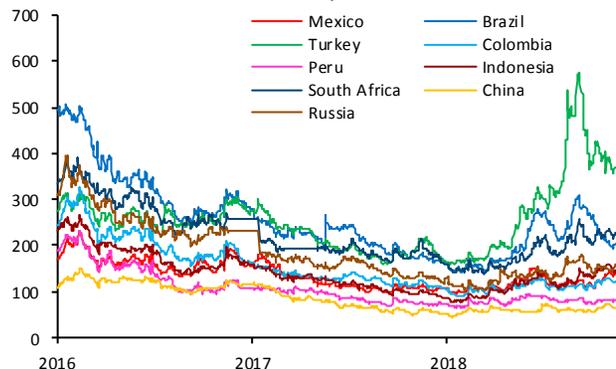


c) U.S.: Yield on Federal Funds and Treasury Bonds
Percent

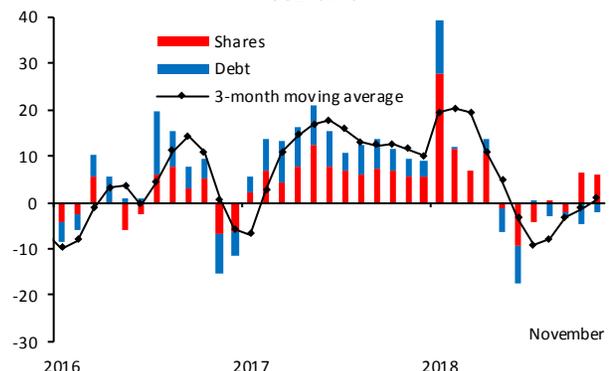


Source: Federal Reserve Bank of St. Louis (FRED); Bloomberg.

b) Risk by Credit Compliance 1/
In basis points



c) Monthly Flows of Funds to Emerging Economies 2/
USD billion



1/ Credit Default Swaps (CDS).

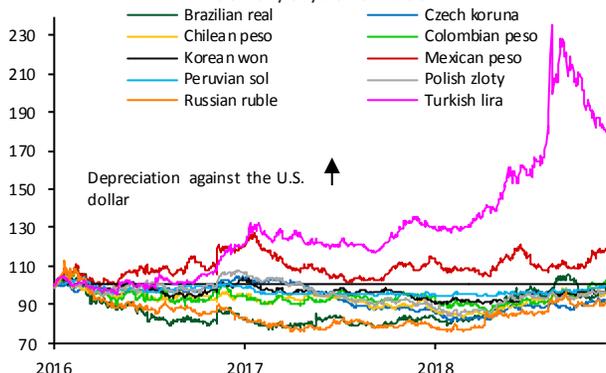
2/ The sample covers the funds used for the sale and purchase of emerging countries' shares and bonds, registered in advanced economies. The flows exclude the portfolio performance and exchange rate adjustments.

Source: Bloomberg, Emerging Portfolio Fund Research (EPFR).

On the other hand, emerging economies' asset prices performed negatively, and their capital inflows declines during the third quarter, albeit with differences in their financial markets' performance reflecting their specific macroeconomic fundamentals and idiosyncratic factors (Chart 14). Some of these economies experienced a strong deterioration in their financial conditions as a result of economic and political factors. For example Argentina, Brazil and Turkey showed a mild recovery in their asset prices and the appreciation of their currencies against the U.S. dollar. Despite the adjustment in the expectations of the upward trend of the interest rate set by the Federal Reserve, together with the prevailing environment of a lower risk appetite, no improvement in the financing conditions for the emerging economies is expected.

Chart 14
Financial Markets in Emerging Economies

a) Exchange Rate
Index 01/01/2016 = 100



2.1.5. Risks to World Economic Outlook

The world economic outlook is subject to uncertainty in both the short term and, to a greater degree, the medium term. Risks to global economic activity and to financial market stability have increased, in particular:

- i. A change in the economic and trade integration model. In particular, the implementation of protectionist measures could have severe repercussions on the economic activity and inflation in the economies involved. Furthermore, these steps could affect the global economic activity, by lowering the efficiency of resource allocation via their effects on the global value chains formation and productivity, by affecting trade and global investment, while at the same time weakening businesses' confidence

and causing higher volatility in financial markets. In this sense, although these risks have been attenuated in some regions, given the agreements reached by the U.S. and some of its trade partners, the bilateral tensions between China and the U.S. have intensified, while the possibility that the U.S. may impose duties to automotive imports at the global level persists.

- ii. A faster-than-anticipated deceleration of the U.S. economy, derived from tighter financial conditions, as a result, among other factors, of the fading of the fiscal stimuli and other elements that have negatively affected the growth outlook, such as the escalation of trade tensions at the global level. In this sense, some indicators such as the corporate revenues seem to be reaching their maximum levels, while some survey-derived indicators and those implicit in financial instruments point to a greater probability of recession.
- iii. A greater-than-expected slowdown of the Chinese economy, which could affect the dynamism of other economies, mainly in Asia. This could occur, among other reasons, because of the possible disruptions generated by a sudden adjustment in the country's financial system, or as a consequence of the U.S. implementation of new protectionist measures against China.
- iv. A greater tightening in international financial conditions, in light of a faster-than-estimated rate of adjustment in the main advanced economies' monetary conditions, given an unanticipated upturn in inflation, especially in the U.S. This could increase the risk of a lower world economic growth.
- v. A further deterioration of macroeconomic balances in certain emerging economies, in particular in those characterized by high levels of public or private indebtedness.
- vi. An escalation of political and geopolitical conflicts, which could affect economic agents' confidence. In particular, some of the risk factors are the deterioration of political relations between the U.S. and countries such as China and Iran, the emergence of authoritarian political systems, the possibility that the agreement on

the U.K. exit from the European Union will not be achieved and a deterioration in the relations between the Italian government and the European Union, among others.

Finally, in an environment in which the global economy is expected to continue expanding, one of the main remaining risks is that the authorities would favor policies that encourage short-term growth, jeopardizing the stability of international financial markets, or even would promote actions that could worsen the economies' fundamentals.

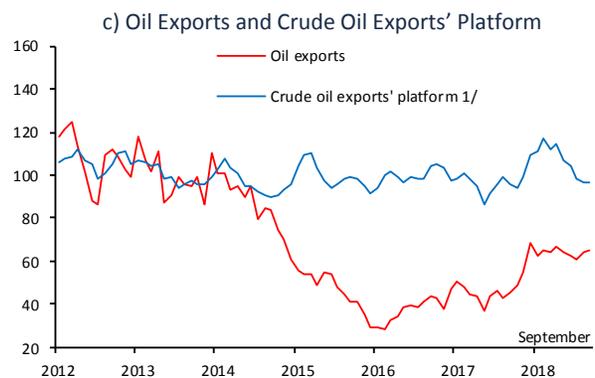
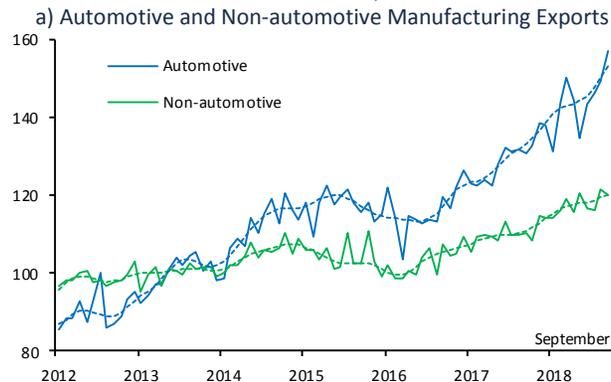
2.2. Evolution of the Mexican Economy

2.2.1. Economic Activity

In the third quarter of 2018, economic activity in Mexico rebounded, after having contracted during the April - June period. In particular, manufacturing exports grew at a higher rate vis-à-vis the loss of dynamism exhibited in the second quarter, while private consumption remained on a positive trend. In contrast, investment is anticipated to have contracted once more during the quarter, as a consequence of the negative evolution in both the construction sector and spending on machinery and equipment during the bimester July and August.

Delving deeper into the performance of the external demand, the favorable performance of the manufacturing exports in the third quarter of 2018 was the result of both the recovery of automotive exports and the fact that the non-automotive exports continued on a positive trend (Chart 15a). By destination of exports, those destined to the U.S. continued to expand, while exports to the rest of the world contracted for the second consecutive quarter, despite the important growth in September (Chart 15b). In turn, in the July – September period oil exports fell with respect to the previous quarter and persisted at low levels. This drop resulted from a lower crude oil export platform, even though the average price of the exported Mexican blend was higher than the level exhibited in the previous quarter (Chart 15c).

Chart 15
Exports in Mexico
Index 2013=100, s. a.

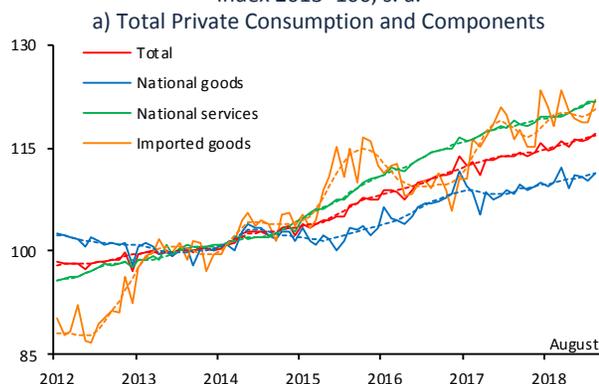


s. a. / Seasonally adjusted and trend series based on data in nominal dollars. The former is represented by a solid line, the latter by a dotted line.
1/ 3-month moving average of daily barrels of the seasonally adjusted series.
Source: Banco de México with data from *PMI Comercio Internacional*, S.A. de C.V. and SAT, SE, Banco de México, INEGI. Merchandise Trade Balance. SNIEG. Information of National Interest.

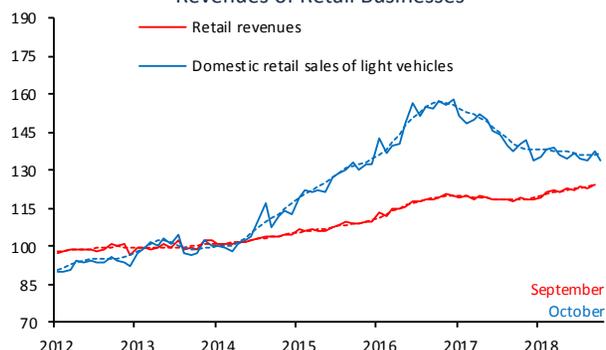
Regarding the evolution of domestic demand, in the July – August period private consumption continued to show a positive trend. Within it, consumption of domestic goods and services maintained an upward trajectory, while consumption of imported goods recovered slightly with respect to the slowdown observed in the second quarter of 2018 (Chart 16a).

- i. Regarding private consumption determinants, in the third quarter of 2018 the real wage bill contracted, after a significant rebound in the previous quarter. This decline reflected the decrease in real average wages, while the salaried employed population continued to expand (Chart 17a). In contrast, Mexican workers' remittances abroad kept exhibiting high dynamism (Chart 17b). Likewise, in October 2018 consumer confidence remained at particularly high levels, following the important increase that it showed in July (Chart 17c). Finally, consumer credit continued to display low growth, although at the margin it seems to have stopped its deceleration (see Section 2.2.3).
- ii. More timely consumption indicators, although of a smaller coverage, such as the revenues of retail businesses, continued exhibiting a favorable performance, which suggests that the positive trend of consumption prevailed until the end of the reference period. Meanwhile, light vehicle sales remained at levels similar to those that had been observed since the beginning of 2018, which contrasts with the notable negative trajectory that this indicator displayed throughout 2017 (Chart 16b).

Chart 16
Consumption Indicators
Index 2013=100, s. a.



b) Domestic Retail Sales of Light Vehicles and Revenues of Retail Businesses



s. a. / Seasonally adjusted and trend data. The former is represented by a solid line, the latter by a dotted line.

Source: a) Mexico's National Accounts System (SCNM), INEGI. b) Prepared by Banco de México with data from the Administrative Record of the Mexican Automotive Industry Association (AMIA) and the Monthly Survey of Commercial Establishments (EMEC), INEGI.

c) Consumer Confidence Balance of responses, s. a.



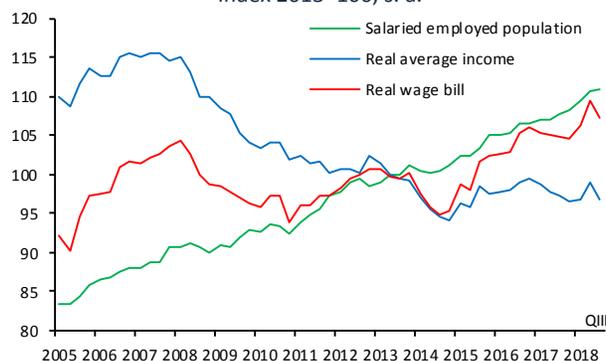
s. a. / Seasonally adjusted and trend series. The former is represented by a solid line, the latter by a dotted line.

1/ Prices as of the second half of July 2018.

Source: a) Prepared by Banco de México with data from the National Employment Survey (ENOE), INEGI. b) Banco de México and INEGI. c) National Consumer Confidence Survey (ENCO), INEGI and Banco de México.

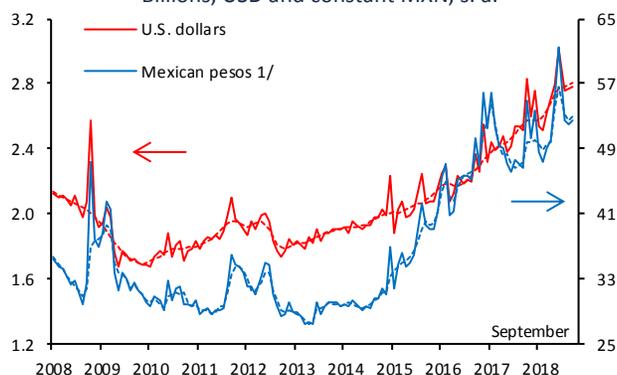
Chart 17
Determinants of Consumption

a) Total Real Wage Bill
Index 2013=100, s. a.



b) Remittances

Billions, USD and constant MXN, s. a.



Investment is anticipated to have contracted once more during the reference quarter, as a reflection of the unfavorable performance of spending on construction and investment in machinery and equipment in July – August (Chart 18a). Thus, the negative trend exhibited by this component of aggregate demand since April 2018 seems to be worsening.

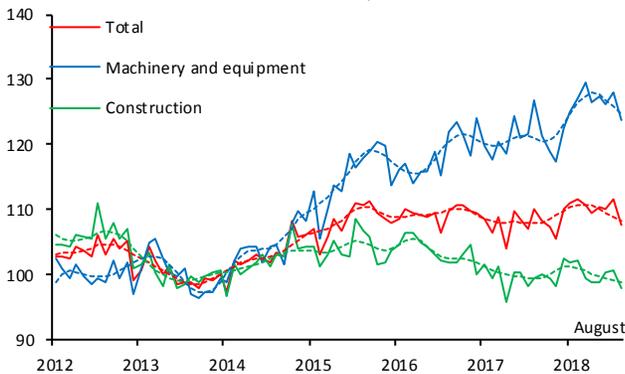
i. Within the spending on construction, the important contraction of the residential component in August 2018 reverted the rebound of this indicator that had been observed over the two previous months. Likewise, the performance of non-residential construction was weak and it remained at particularly low levels (Chart 18b). By contracting sector, private construction excluding housing maintained a weak performance, while housing construction stagnated. Throughout 2018, work hired by the public sector showed a negative trend, with a partial reversal in the improvement that had been observed over most of 2017 (Chart 18c).

ii. During the reference period, investment in domestic machinery and equipment showed a decreasing trajectory, although the imported component increased in the July-August period, it showed some loss of dynamism. The evolution of the latter item was related to the combination of growth in capital imports, which can be associated to the power generation sector and telecom sector, and the relative stagnation in the rest of capital imports (Chart 18d and Chart 18e).

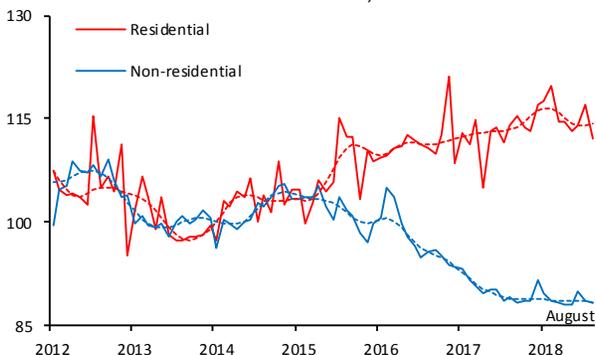
As stated in previous Quarterly Reports, investment in Mexico has been very weak for several years. Although the trade agreement achieved among Mexico, Canada and the U.S. largely mitigates one of the risk factors that have been negatively affecting this component of aggregate demand, obstacles to its ratification persist. In addition, it is key to address the underlying causes that have led to lower investment and low productivity levels in the economy, in order to eliminate the risk to the medium- and long-term growth associated with a lower capital accumulation and the inefficient use of productive resources. In this sense, there is a strong need to modify the incentive system of the economy to promote the activities that boost investment and the adoption of technologies, and to eliminate those features of the economy that could negatively affect those activities, such as insecurity, the lack of the rule of law and an inadequate institutional design (see Boxes 1 and 2).

Chart 18
Investment Indicators

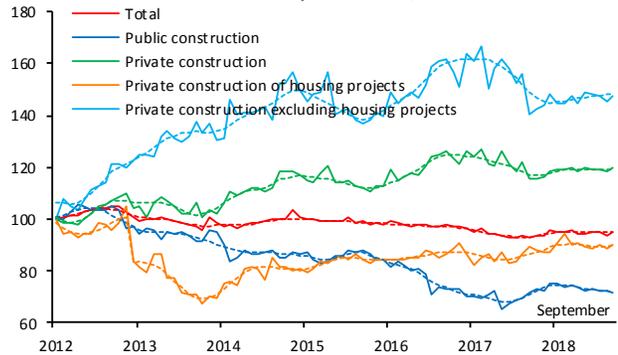
a) Investment and its Components
Index 2013=100, s. a.



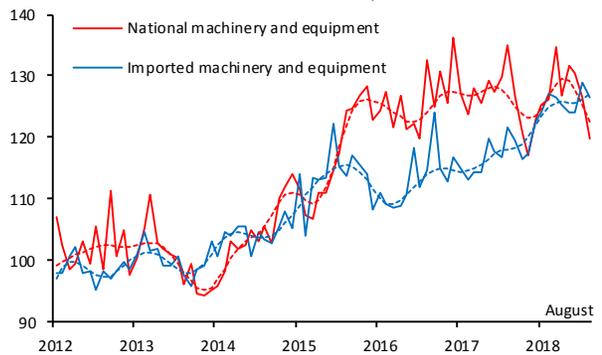
b) Investment in Residential and Non-residential Construction
Index 2013=100, s. a.



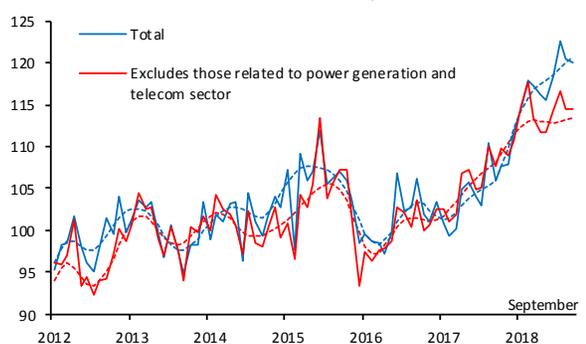
c) Real Value of Production in Construction by Contracting Institutional Sector
Index January 2012=100, s. a.



d) Gross Fixed Investment and National and Imported Equipment
Index 2013=100, s. a.



e) Imports of Capital Goods
Index 2013=100, s. a.



s. a. / Seasonally adjusted and trend data. The former is represented by a solid line, the latter by a dotted line.

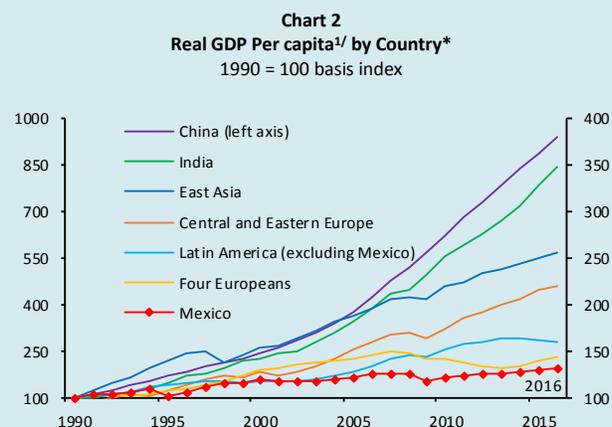
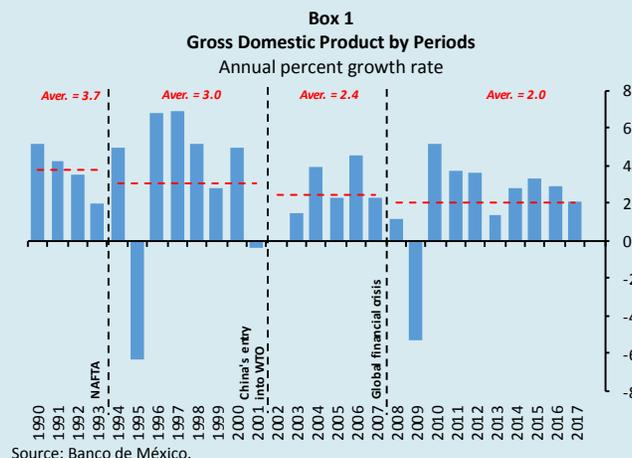
Source: a) and b) Mexico's National Accounts System (SCNM), INEGI. c) Prepared by Banco de México with data from ENEC, INEGI. Seasonally adjusted by Banco de México, except for the total. e) Prepared by Banco de México with data from SAT, SE, Banco de México, INEGI. Merchandise Trade Balance. SNIEG. Information of National Interest; and INEGI.

Box 1. Economic Growth and Productivity

1. Introduction

Between 1990 and 2017, the Mexican economy grew at an average annual rate of 2.6%, although its performance varied throughout said period (Chart 1). In particular, the liberalization process of the Mexican economy in the 1990s and the enactment of NAFTA in 1994 allowed for GDP to grow at an average rate of 3% over the subsequent years, even despite its decline in 1995. Subsequently, between 2002 and 2007, the GDP growth rate decreased to an average of 2.4%, in part, as a reflection of the deceleration of the U.S. economic activity and China's entry into the WTO, with the consequent impact on the Mexican exporting sector. Finally, the average annual growth of GDP in Mexico has further slowed down since the 2008-2009 Global Financial Crisis registering an average annual rate of 2.0% since then. Even if the estimated potential growth of an economy is subject to a high degree of uncertainty, different traditional methodologies suggest that in the case of Mexico it could be below 2.6%, and it could have been declining over time.¹ Thus, the performance of the Mexican economy has been notably slow, especially when compared to other world economies in terms of per capita GDP growth (Chart 2), and has been insufficient to address the challenges and needs of the Mexican population. As it will be shown below, this largely stemmed from an unsatisfactory performance of productivity.

This took place in a context in which the country implemented a series of reforms to liberalize international trade and foreign direct investment, to have an independent monetary policy, and to achieve fiscal discipline (Hanson (2010) and Kehoe (2010)). More recently, structural changes have been implemented to improve the microeconomic functioning of the economy. Although these reforms increased trade flows as a share of GDP and exposed different economic sectors to competition, in an environment of lower and more stable inflation rates, they did not translate into the expected benefits in terms of economic growth. Given this situation, the question regarding which factors prevented Mexico from achieving a faster growth rate needs to be addressed in order to identify the relevant measures that could fuel higher growth rates leading to a higher level of development and economic welfare in the future.



1/ Refers to real GDP per capita at constant 2011 prices and at purchasing power parity prices.

*"Latin America" includes Guatemala, Honduras, Panama, El Salvador, Argentina, Brazil, Chile, Colombia, Peru and Uruguay; "Central and Eastern Europe" includes the Czech Republic, Poland and Turkey; the "Four Europeans" refers to Greece, Portugal, Ireland and Spain; and the "East Asia" considers Hong Kong, South Korea, Malaysia, Singapore and Thailand. The relative weight of each country in the group is given by the share of their population size in this group of countries.

Source: Banco de México with data from World Bank.

The existing literature has identified a series of elements as possible growth-restricting factors in Mexico, many of which are associated with the lack of properly implemented public policies and an inadequate institutional design. In particular, Hanson (2010) discusses the limitations of the education system in generating greater human capital. In this respect, despite the progress made in the educational attainment of the population (which went up from 8.6 years in 2010 to 9.2 years in 2015, based on census data), these levels barely reach secondary school completion. In addition, in line with cross-country comparisons estimated by the World Bank based on standardized tests, Mexico displays a lag in the quality of education as compared to the international average. An incentive system, together with a more skilled labor force, which would allow to benefit from technological change, are

¹ The traditional methods include both univariate methods such as the Hodrick-Prescott filter or the Christiano-Fitzgerald filter- which extract the low-frequency component from the observed growth series, and, therefore, its average growth

rate over long terms is similar to that of the time series own growth rate-, and multivariate methods that consider additional determinants of production.

required to stimulate investment in activities that propitiate the innovation and development of said change. Chiquiar and Ramos-Francia (2009) argue that the low growth and low productivity of Mexico are linked to an institutional framework that encourages rigid structures in the markets, along with lack of competition in a number of sectors, and generates incentives to allocate resources toward unproductive activities rather than promoting investment, production and the adoption of better technologies (see also López Córdoba (2003)). Similarly, Levy (2018) identifies in the poor allocation of resources a fundamental barrier to a greater growth in Mexico (that is, too many small and unproductive firms, too much self-employment, and a low growth of the more productive firms, among others). All of these elements stem from the current institutional design with respect to the relationships between firms and workers, the taxation system and the enforcement of contracts. A weak rule of law and a lack of solid institutions that guarantee the enforcement of norms and laws have been recognized as key obstacles to economic growth in Mexico (Ríos and Wood (2018)). In this regard, Box 2 elaborates on the reasons why the lack of solid institutions, as well as public safety issues, can be elements that impede the creation of a more favorable environment for investment and economic growth. In addition, factors such as efficiency in the financial sector (Bergoeing et al. (2002, 2007)), labor market rigidities (Kambourov (2009), Calderón et al. (2007) and Kehoe and Ruhl (2010)), and suboptimal levels of investment in intangible capital during the life cycle of a firm (Hsieh and Klenow (2014)) have also been identified as obstacles to growth.

The impact of the barriers and limitations to growth are clearly reflected in the poor productivity performance in Mexico in the past decades. In what follows, we describe the evolution of the so-called total factor productivity since 1990 to illustrate the magnitude of the problem of low productivity that the

² Notably, the economic growth in Mexico since 1990 can be explained by both a greater capital and labor accumulation, and a greater usage of intermediate goods (energy, materials and services), rather than by a better use of inputs. In particular, the contribution of TFP to growth has been estimated to be negative, on average, during this period. That is, the growth of the country has been exclusively based on the accumulation of productive factors over the last decades, even if the efficiency of these factors has shown a decrease. Strikingly, the only period in which the TFP increased is associated with the implementation of NAFTA, and prior to China's entry into the WTO.

Examining the performance of productivity for the economy as a whole, Chart 3 shows that, following the stagnation during the 1990s, this performance has displayed a negative trend

country faces. We then argue that, despite a number of measures that Mexico could adopt to achieve greater productivity, the focus should be on correcting the incentives that generate a misallocation of productive resources in the economy.

2. Productivity and Economic Growth

At the aggregate level, total factor productivity (TFP) captures the ability of an economy to use its material and human resources to attain certain production levels. TFP growth represents the growth of production that is not explained by the growth of productive factors and can reflect aspects such as technological change, changes in the firm's management and organization, modifications in the resource allocation, and the institutional environment of an economy. In the long term, productivity growth is the most important driver of economic growth and living standards of a country. In particular, a higher productivity generates:

1. Lower production costs. Higher productivity levels allow to achieve a greater level of output while using less resources.
2. Higher wages. Efficiency gains allow firms to pay higher wages.
3. Lower prices. In a competitive environment, greater productivity leads to lower consumer prices.
4. Greater competitiveness in the global markets. Higher productivity reduces the unit costs and increases the competitiveness of domestic firms in global markets.
5. Greater investment. Efficiency gains encourage firms to increase their investment supporting long-term growth.

3. Growth Accounting in Mexico

Table 1 presents the growth accounting of the Mexican economy estimated by INEGI based on the KLEMS methodology.

starting from the 2000s. Considering broad sectors, of economic activity, an unfavorable performance can be observed in the services segment, similar to that presented by the economy as a whole, despite the primary sector registering a greater productivity level since 2005—which can be in part associated with the dynamism of agricultural exports in recent years—. The secondary sector showed an even more notable downward trend. Regarding the industrial sector, despite the downward trajectory of productivity in mining, the construction and manufacturing industry have also shown a negative evolution for several years (Chart 4).

² The KLEMS methodology decomposes the gross value of production—that is, the sum of the value-added and intermediate production costs—in the estimated contributions of five production factors: capital (K), labor (L), energy (E), materials (M) and services (S). Total factor productivity is obtained as the observed residual

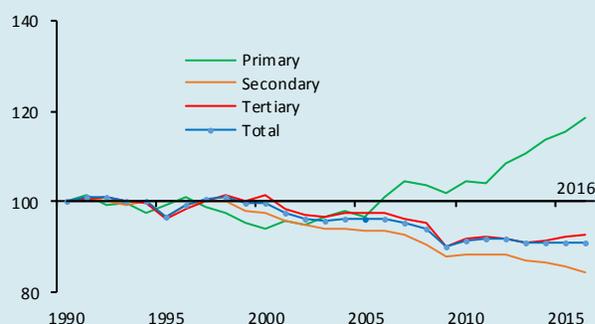
growth that is not accounted for by the growth of the KLEMS factors. More information on the KLEMS methodology can be found at INEGI: <http://www.inegi.org.mx/est/contenidos/proyectos/cn/ptf/default.aspx>.

Table 1
Total Factor Productivity and Contributions to Growth of the Value of Production
 Annual percent and percentage points growth rates ^{1/}

Average	Value of production	K	L	E	M	S	TFP
1991-1995	2.39	1.76	0.39	0.22	0.51	0.15	-0.64
1996-2000	6.16	1.45	0.67	0.24	2.53	0.63	0.64
2001-2006	1.37	1.22	0.31	0.06	0.32	0.19	-0.73
2006-2010	1.49	1.44	0.29	-0.09	0.54	0.27	-0.96
2011-2016	2.42	1.36	0.29	-0.20	0.72	0.40	-0.15
1991-2016	2.78	1.44	0.39	0.04	0.92	0.34	-0.35

^{1/} Total economy. 2013 base year.
 Source: Banco de México with data from INEGI Growth Accounting, KLEMS methodology.

Chart 3
Total Factor Productivity by Sector
 Index 1990 = 100

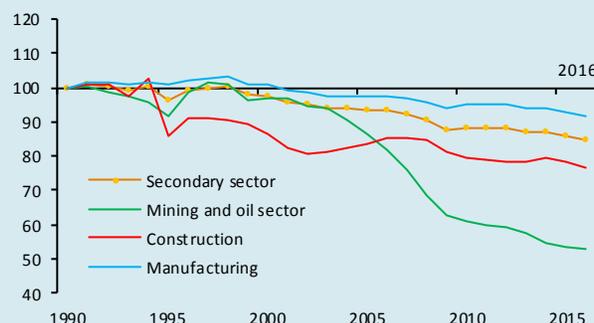


Source: Banco de México with data from INEGI Growth Accounting, KLEMS methodology.

At the firm level, Levy (2018) highlights the relation between productivity and size of firms for the case of Mexico. Within the set of firms with salaried workers, the largest ones tend to be the most productive. In particular, the author estimates that, on average, one peso of capital and labor in large and fully formal firms generates 80% more value than in very small, informal and illegal firms.³ Likewise, informal businesses are found to be generally less productive, even though productivity varies depending on size and formality and legality status. Given that most firms in Mexico are small and informal, the result is the conventional association between small size and low productivity. Levy’s analysis stresses the importance of understanding how heterogeneity among different types of firms affects the resource allocation and productivity at the aggregate level.

³ Levy defines fully formal and legal firms as those where all salaried workers are legally hired; informal and illegal firms as those in which all salaried workers are illegally hired; and informal and legal firms as those where all workers are not salaried. Levy also defines salaried workers as workers who have a relation of subordination with the company and receive salaries, while non-salaried workers

Chart 4
Total Factor Productivity by Secondary Sector and Subsectors
 Index 1990 = 100



Source: Banco de México with data from INEGI Growth Accounting, KLEMS methodology.

4. Importance of Efficient Resource Allocation

In addition to identifying the above-mentioned obstacles to growth, the academic literature offers valuable suggestions to the challenge of achieving higher productivity levels. One of the most prominent suggestions is related to the need to attain a more efficient resource allocation. In this context, Hsieh and Klenow (2009) estimate, based on the case of China and India, that substantial gains in TFP, between 30 and 50%, can be achieved when the productive resources are efficiently reallocated; that is, when resources are reallocated to firms with higher marginal productivity of capital and labor.

This result emphasizes the importance of incentivizing competition and maintaining a regulatory framework where the resources utilized by inefficient businesses can be freed and made available to more productive or new firms, that can use them more efficiently, thus increasing TFP and supporting economic growth. This is one of Levy’s (2018) theories for the case of Mexico. In connection with this, Caballero et al. (2008) argue that supporting “zombie” firms (those that, despite being inefficient, use resources, especially capital, and additionally accumulate unsustainable levels of debt) distorts market mechanisms and causes a crowding-out effect against healthy and more efficient firms. Therefore, avoiding incentives for this type of firms to survive in the market is a way to increase productivity.

In the specific case of Mexico, Levy (2018) suggests that strengthening the Mexican institutional environment, in particular in the dimensions of entrepreneur – worker relationships, taxation and market conditions, is key to correct the distortions in the distribution of individuals across different occupations and in the matching between firms and workers of different skills and educational levels. This would also affect the size of the sectors, the number, size and legal status

are self-employed individuals or individuals who are associated with the company, but are not in a relation of subordination, and receive payments in various forms, but not through a salary. Finally, a legal contract is one that complies with the obligations prescribed by the law, such as social security, among others.

(formal/informal) of the firms in each sector, promoting a better resource allocation among firms and workers and a greater productivity at the aggregate level. In particular, Busso et al. (2012) find that a poor resource allocation, especially toward the informal sector, lowers the country's TFP. Furthermore, it is necessary to address deeper factors that affect investment, production, and technology adoption decisions, such as the rule of law, public safety and the enforcement of property rights.

5. Final Remarks

There is no doubt that, to advance on the path to growth, Mexico should preserve the elements that have supported the economic activity during the last decades, such as macroeconomic stability, trade openness, and a number of reforms that have exposed different sectors of the economy to greater competition. Nonetheless, it is necessary for Mexico to complement these factors with additional measures necessary to achieve greater levels of productivity and ultimately higher rates of economic growth. In particular, there is a strong need to revise the institutional framework in two dimensions. First, institutions should be efficient in promoting a better allocation of productive resources and establishing adequate incentives that favor value creation over rent seeking. Second, institutions should establish clear and appropriate rules and impartially enforce their compliance. To do so, they should have the power and the autonomy to act as the counterweight to different public and private interests in accordance with their mandate. In sum, property rights and legal certainty should be strengthened to generate incentives for private efforts to be translated into a greater social welfare. Only then will it be possible to build an environment conducive to investment and productivity growth, that are key elements to achieve a greater growth of the Mexican economy in a sustainable and lasting way.

References

- Bergoeing, R., Kehoe P.J., Kehoe T.J. (2002). "A decade lost and found: Mexico and Chile in the 1980s". *Review of Economic Dynamics*, 5(1), 166-205.
- Bergoeing, R., Kehoe P.J., Kehoe T.J., Soto R. (2007). A decade lost and found: Mexico and Chile in the 1980s, in Kehoe T.J., Prescott, E.C. *Great Depressions of the Twentieth Century*. Federal Reserve Bank of Minneapolis, 217-256.
- Busso, M., Fazio, M.V. and Levy, S. (2012). "(In) formal and (Un) productive: The Productivity Costs of Excessive Informality in Mexico". IDB Working Paper Series No. IDB-WP-341.
- Caballero, R.J., Hoshi, T. and Kashyap, A.K. (2008). "Zombie lending and depressed restructuring in Japan". *American Economic Review*, 98(5), 1943-77.
- Calderón, C., Chong, A., and Leon, G. (2007). "Institutional enforcement, labor-market rigidities, and economic performance". *Emerging Markets Review*, 8(1), 38-49.
- Chiquiar, D., Ramos-Francia M. (2009). "Competitividad y Crecimiento en la Economía Mexicana". Banco de México Working Papers. 2009-11.
- Hanson, G.H., (2010). "Why isn't Mexico rich?" *Journal of Economic Literature*, 48(4), 987-1004.
- Hsieh, C.T. and Klenow, P.J. (2009). "Misallocation and manufacturing TFP in China and India". *The Quarterly Journal of Economics*, 24(4), 1403-1448.
- Hsieh, C.T., and Klenow, P.J. (2014). "The life cycle of plants in India and Mexico". *The Quarterly Journal of Economics*, 129(3), 1035-1084.
- Kambourov, G. (2009). "Labor Market Regulations and the Sectorial Reallocation of Workers: The Case of Trade Reforms". *Review of Economic Studies*, 76(4), 1312-58.
- Kehoe, T.J. and Ruhl, K.J. (2010). "Why have economic reforms in Mexico not generated growth?" *Journal of Economic Literature*, 48(4), 1005-27.
- Levy, Santiago (2018). *Esfuerzos Mal Recompensados: la Elusiva Búsqueda de la Prosperidad en México*. Banco Interamericano de Desarrollo.
- López-Córdova, E. (2003). "NAFTA and Manufacturing Productivity in Mexico". *Economía*, 4(1), 55-98.
- Ríos, V. and Wood, D. (2018). *The missing reform: Strengthening the Rule of Law in Mexico*. Wilson Center.

Box 2. Weakening of the Rule of Law and Insecurity as Obstacles to Economic Growth in Mexico

1. Introduction

Box 1 of this Quarterly Report describes a number of factors that different authors have identified as obstacles to growth in Mexico. Two of the factors that have been most frequently mentioned are the lack of solid institutions and the weakening of the rule of law. From a theoretical point of view, the hypothesis that institutions and the rule of law are relevant for growth are based on the studies that start with North (1981 and 1990). This author points out that institutions such as the rule of law, the protection of property rights, and contract enforcement are the basis of any exchange, and, therefore, reduce transaction costs and lead to greater economic growth. Siddiqui and Ahmed (2013) mention that institutions reduce the risk of doing business, promote innovation, and, consequently, induce greater economic growth. In addition, some studies suggest that the quality of institutions is the main source of differences in prosperity levels across countries (North and Thomas (1973) and Acemoglu et al. (2005)). Thus, it has been shown that the economies that make more efficient public investment decisions and that protect property rights to a greater extent observe greater income levels (Knack and Keefer (1995)).

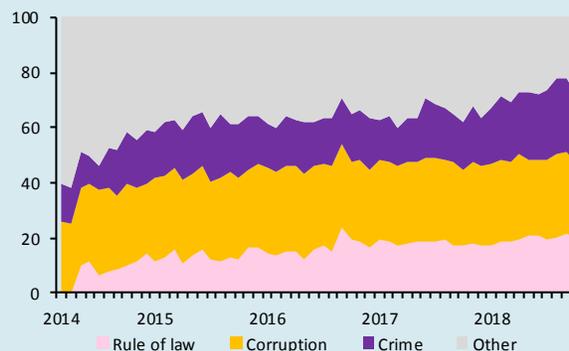
In this context, based on data from national surveys and international indicators, this Box shows how insecurity and the weakening of the institutional framework in Mexico are perceived as clear obstacles to economic growth in Mexico.

2. Obstacles to Economic Growth and Doing Business in Mexico

The Survey of Professional Forecasters conducted by Banco de México on a monthly basis collects the perceptions of the domestic and foreign private sector analysts on the potential obstacles to growth and doing business in Mexico. Since the question on the obstacles to growth was extended in May 2018 to include the lack of rule of law, impunity, and corruption as possible barriers to the country's development, these three options as a total have represented between 16 and 22% of the percentage of responses, placing governance as the main concern of the analysts participating in the Survey (this factor obtains between 45 and 48% of the responses).¹ In addition, for a broader period, this survey yields information on the analysts' perception regarding the factors that they consider negatively affect businesses in Mexico. Chart 1 shows that in accordance with the analysts the lack of rule of law, corruption and crime are among the main factors that hinder businesses in Mexico. In addition, these three obstacles have been gaining importance, since, as a total, their share grew from 51% of responses in May 2014 to 78% in August 2018. In

particular, over this period, the share corresponding to the rule of law increased from 10 to 20%, while that of crime went up from 14 to 27%.

Chart 1
Main Obstacles to Doing Business in Mexico
Total percentage of responses



Source: Survey of Professional Forecasters, Banco de México.

Note: The question of the survey: In your opinion, which are the main obstacles faced by entrepreneurs when doing business in Mexico? Specify up to three options. The rule of law was included in the Survey in May 2014. The category "Other" includes: labor regulation, supply of inadequate infrastructure, breach of contracts, taxes, limited facilities to innovate, lack of competition, bureaucracy, low level of workers' education and access to financing.

2.1 Weakening of the Institutions and the Rule of Law

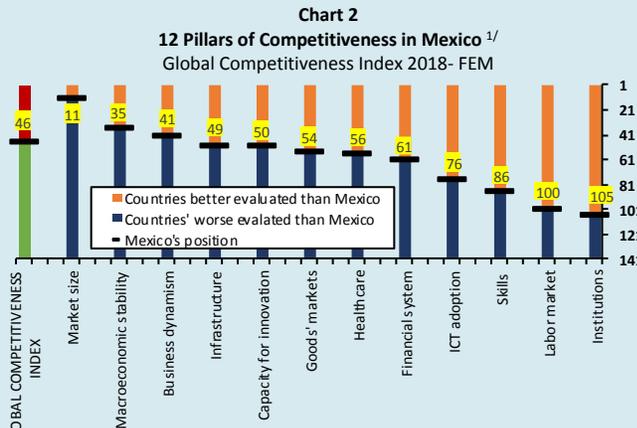
The Global Competitiveness Index (GCI) of the World Economic Forum (WEF) offers a comparison of the different elements that determine a country's competitiveness. In particular, it provides comparisons of the quality of institutions at an international level.² Within the GCI, the pillar "Institutions" gathers information on the rule of law, the administration of justice, and the insecurity levels that prevail in different countries around the world. Chart 2 shows that in the 2018 GCI edition, where Mexico was ranked position 46 out of a total of 140 countries, among the 12 pillars of competitiveness contemplated by the Forum, the "Institutions" pillar exhibited the worst performance as it occupied position 105. If we observe the different indicators that constitute the "Institutions" pillar, it stands out that in some areas Mexico is among the ten countries with the worst performance in the world. Indeed, in the 2018 edition of the GCI, out of 140 countries, Mexico was ranked position 130 in terms of the homicide rate, position 138 in terms of the level of trust in the police, and position 139 in terms of organized crime (Chart 3). In addition, the country also shows a poor performance on those topics related to the efficiency of the legal framework to solve controversies (position 115), the incidence of corruption (position 113), the independence of

¹ In addition to the three mentioned options, the item of governance includes the factors of domestic political uncertainty and problems of public insecurity.

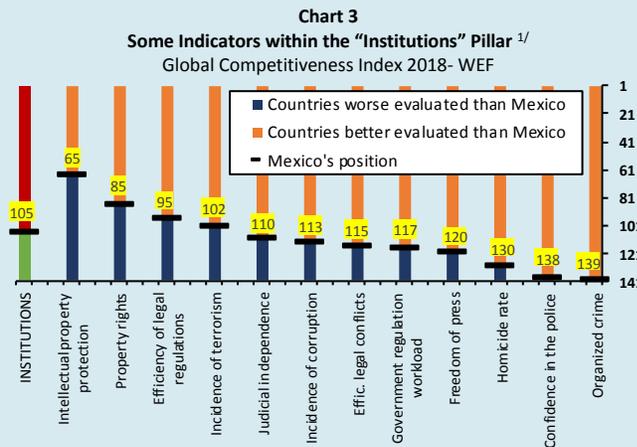
² The GCI is a general ranking that is calculated by weighing each country's score in a total of 12 pillars or important aspects of competitiveness. In turn, each one of these pillars contains different sentiment indicators and hard data. Although the sample, the

methodology and the GCI indicators have changed, which makes the intertemporal comparison of the index more complex, its observation over the years allows to obtain the information on the quality of the countries' institutions in different moments of time.

the judiciary system (position 110) and property rights (position 85).



^{1/} In its latest 2018 edition, the WEF renamed the index as GCI 4.0, since the methodology to incorporate aspects of the Fourth Industrial Revolution into the definition of competitiveness changed. Therefore, some pillars of the previous GCI editions were renamed.
Source: World Economic Forum, GCI 2018.



^{1/} The "Institutions" pillar is integrated by a total of 20 indicators, grouped in 7 subtopics: Safety, Social capital, System of checks and balances, Performance of the public sector, Transparency, Property rights and Corporate governance.
Source: World Economic Forum, GCI 2018.

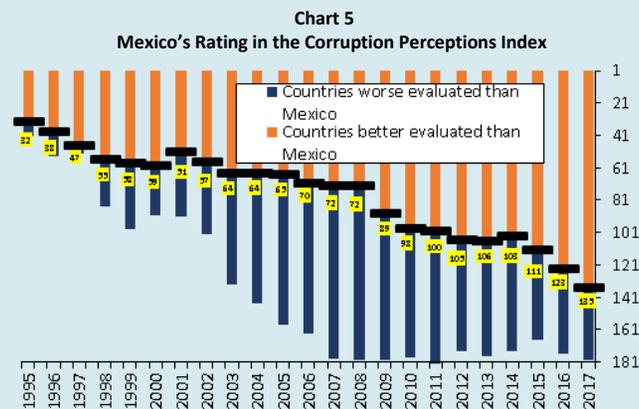
It is noteworthy that Mexico has not managed to move forward in its relative position regarding the performance of the "Competitiveness" pillar. Indeed, even though the global position of Mexico increased from 60 out of 133 countries in 2009 to 46 out of 140 countries nine years later, regarding the

pillar "Institutions", the country's performance has consistently remained behind position 100 (Chart 4).³



^{1/} In its latest edition, the WEF renamed the index as GCI 4.0, and identified it only with the year of its release.
Note: Blue and orange bars as a whole represent the size of the sample of countries during each year.
Source: World Economic Forum, GCI, Reports 2009 to 2018.

Delving into factors that affect the weakening of the rule of law in the country, the Corruption Perception Index (CPI), constructed by the organization Transparency International, provides further evidence on the dimension of corruption in Mexico.⁴ Mexico's rating in the CPI since over two decades ago has fluctuated at around 35 points (out of 100 possible points),⁵ so its position in the world ranking places Mexico among the countries with the worst perception of corruption (Chart 5).



Note: Blue and orange bars together represent the sample size of countries in each year.
Source: Transparency International, 1995-2017.

³ The WEF orders the countries that annually participate in the sample in descending order, taking into account their general score in the GCI ranking. Hence, each year the country that takes the first position is the one that exhibits the best performance in competitiveness. It should be emphasized that, due to the mentioned methodological changes, the positions are not directly comparable across time.

⁴ This index raises the opinions of experts' and entrepreneurs on the levels of corruption in the public sector of their country. For the 2017 edition of the CPI, 13 sources of information were used from 12 different institutions and 180 countries

were evaluated on a 0-100 scale, where 0 corresponds to the highest level of perceived corruption and 100 is the limit that would identify a given country as free of corruption. As with other tools that assess the relative performance of countries across time, the coverage and methodology of the CPI have changed, so the ratings obtained each year should not be directly compared.

⁵ From 1995 to 2011 the CPI scale was from 0 to 10. Mexico's ratings for those years are reinterpreted on a 0-100 scale to compare them with the 2012-2017 results.

2.2 Problems of Public Insecurity

Public insecurity is also perceived as one of the specific obstacles that impede Mexico's growth. Two surveys conducted by INEGI among entrepreneurs (ENVE) and households (ENVIPE) suggest that the perception of insecurity at the national level has been deteriorating.⁶ The ENVE reports that the share of economic units that consider that insecurity and crime are the biggest problem increased from 59% in 2012 to 63% in 2018, while the ENVIPE reports that the percentage of adults who consider that living in their state is unsafe has risen from 69% to 79% in the last seven years.

Regarding the level of trust in the authorities, the 2018 editions of ENVE and ENVIPE coincide in showing that the majority of the economic units and households consider that police organizations and law enforcement institutions are corrupt.⁷ In addition, ENVIPE emphasize that during 2017 93.2% of crimes were not reported or no preliminary enquiry or investigation file was opened, and that the main reason given by the victims for not reporting the crime was related to issues attributed to the authorities.⁸ In relation to the cost of insecurity for economic activity, ENVE estimates that the cost of crime for entrepreneurs amounted to almost MXN 156 billion in 2017 (0.86% of GDP). For the same year, ENVIPE estimates that for households the cost of crime was almost MXN 300 billion (1.65% of GDP).

The Monthly Survey of the Economic Situation of the Manufacturing Industry conducted by Banco de México suggests that at least 15% of accounting and finance managers of businesses in this sector believe that "public insecurity problems" are one of the main limiting factors for the growth of domestic economic activity. In the same vein, a similar share considers that "improving public safety" is a task or a policy that Mexican authorities should implement to promote greater investment levels (Chart 6).

Chart 6
Main Tasks, Structural Changes or Policies Implemented by Authorities to Propitiate Greater Investment Levels, and Factors Limiting the Growth of National Economic Activity
(% of opinion)



Source: Monthly Survey of the Economic Situation of the Manufacturing Industry, Banco de México.

5. Final Remarks

Although policies such as macroeconomic stability and reforms that improve the microeconomic functioning of the economy are necessary conditions for economic growth, they are not sufficient by themselves to achieve this target. In particular, deep policies should also be adopted to combat insecurity, to guarantee the respect for private property and to promote an environment of confidence and legal certainty. This, apart from having a direct impact on the population's well-being, will foster an environment of trust that is favorable to investment and growth. On the other hand, the weakening of the rule of law and public institutions could prevent the impulse to economic activity and investment derived from other government actions from being fully reflected in greater growth and well-being.

References

- Acemoglu, A., Johnson, S. and Robinson, J.A., (2005). Institutions as a fundamental cause of long-run growth. *Handbook of Economic Growth 1A*: 386-472.
- Knack, S. and Keefer, P. (1995). "Institutions and economic performance: Cross-country tests using alternative institutional measures". *Economics & Politics*, 7(3), 207-227.
- North, D.C. and Thomas, R.P. (1973). *The Rise of the Western World: A New Economic History*. Cambridge University Press.
- North, D.C., (1981). *Structure and Change in Economic history*. Norton.

⁶ The National Survey on Business Victimization (ENVE, for its acronym in Spanish) has been carried out among economic units on a bi-annual basis since 2012. The National Survey of Victimization and Perception of Public Security (ENVIPE, for its acronym in Spanish) has been conducted among households annually since 2011. Both perception surveys reflect the opinions collected during the year when they were conducted, while the victimization figures refer to the previous year. These surveys are available at the following links:

<http://www.beta.inegi.org.mx/proyectos/enchogares/regulares/enviipe/2018/>

<http://www.beta.inegi.org.mx/proyectos/encestablecimientos/especiales/enve/2018/>

⁷ ENVE and ENVIPE report similar shares of the perception of corruption across the different authorities of the country: 58% for the federal police, 65% for the state police; 67% for judges and public ministry; 69% for the municipal police and 77% for the traffic police.

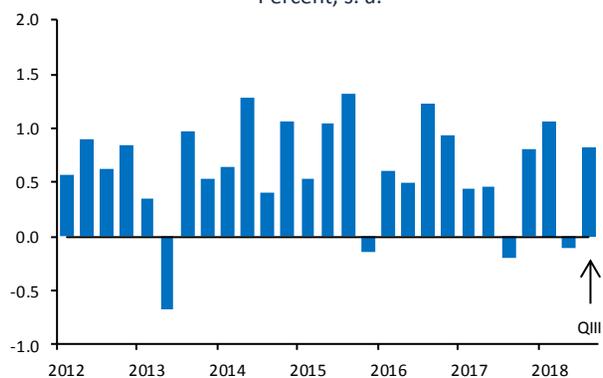
⁸ These are some of the reasons: loss of time, mistrust of authorities, lengthy and complex procedures, authorities' hostile attitude and fear to be extorted.

North, D.C., (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.

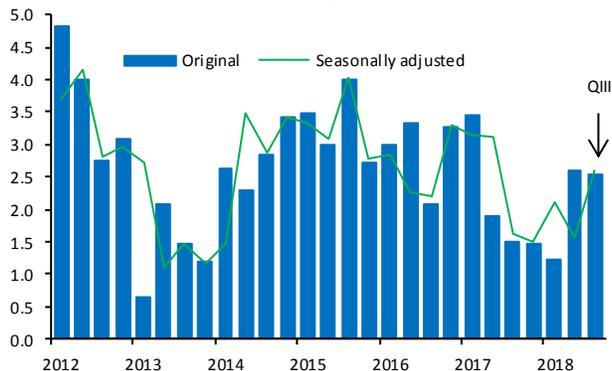
Siddiqui, A. and D., Massod Ahmed, Q. (2013). "The effect of institutions on economic growth: A global analysis on GMM dynamic panel estimation". *Structural Change and Economic Dynamics*, 24, 18-33.

In the third quarter of 2018, on the supply side, GDP in Mexico showed a seasonally adjusted quarterly growth rate of 0.83% (an annual growth of 2.5% with original data and 2.6% with seasonally adjusted data), after having observed variations of 1.07 and -0.10% in the first and the second quarters of 2018, respectively (Chart 19).

Chart 19
Gross Domestic Product
Quarterly Changes
Percent, s. a.



Annual Changes
Percent



s. a. / Seasonally adjusted series.

Source: Mexico's National Accounts System, INEGI.

The economic performance in the reported period reflected both the positive trajectory of the services component, and the recovery of the secondary activities after the contraction in the previous quarter, mainly due to a better evolution of the manufacturing sector. The primary activities partially reverted their fall in the second quarter of 2018 (Chart 20 and Chart 21a). Specifically:

i. Within industrial activity, during the third quarter of 2018 manufacturing continued on an upward trajectory, and even displayed a greater growth

rate by the end of the period. In particular, both the subsector of transportation equipment and the item of manufacturing excluding transportation showed a positive trend (Chart 21e). The favorable performance of the latter sector has been mainly contributed to by the subsectors of food industry, the manufacturing of computer, measuring and other equipment, components and electronic accessories; the manufacturing of electric power generation equipment and electric appliances and accessories; and the manufacturing of products based on nonmetallic minerals (Chart 21f). It should be noted that, generally, this dynamism is congruent with the positive performance of these subsectors' exports.

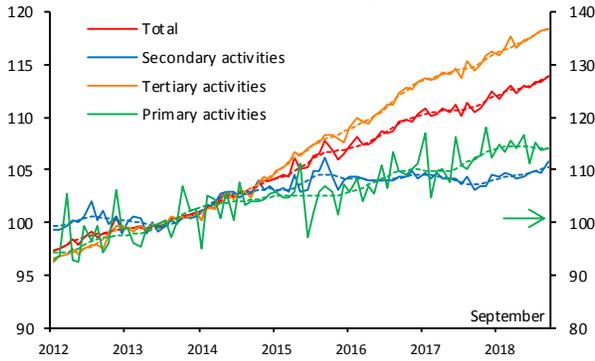
ii. The negative trend of construction, which had been observed since early 2018, continues. In particular, the unfavorable performance in the reference quarter mainly resulted from the contraction in the items of construction works, which contributes to the downward trajectory, as well as from the weakness of the item of civil engineering. In contrast, the component of specialized construction works followed a growing trend (Chart 21b).

iii. Mining maintained a negative trend mainly as a reflection of the lower extraction of oil and gas. In addition, metallic and nonmetallic ore mining continued on a negative trend, while the services related to this activity recovered, as a consequence of an improvement in drilling for the development of oil fields (Chart 21a, 21c and 21d).

iv. During the July – September period, services maintained their dynamism, mainly supported by the contributions of trade; of financial and real estate services; of professional, corporate and business support services; and transportation and mass media services (Chart 22).

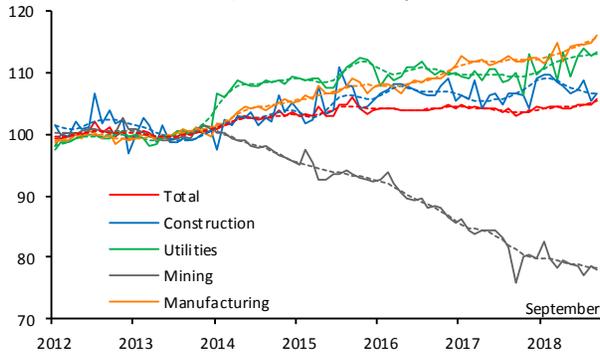
v. Likewise, primary activities presented a quarterly increase, after having fallen significantly during the second quarter. This occurred in a context in which, after having made some backward steps during most of the year, agricultural exports made progress in the reference period.

Chart 20
Global Economic Activity Indicator
Index 2013=100, s. a.

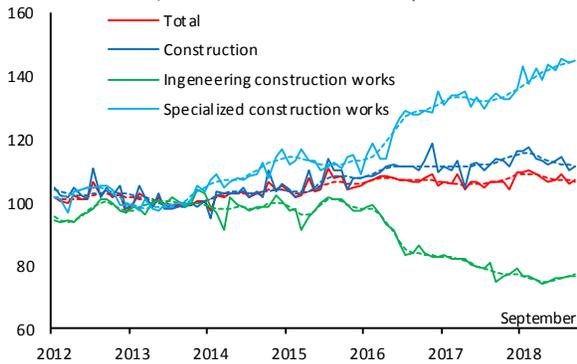


s. a. / Seasonally adjusted and trend data. The former is represented by a solid line, the latter by a dotted line.
Source: Mexico's National Accounts System (SCNM), INEGI.

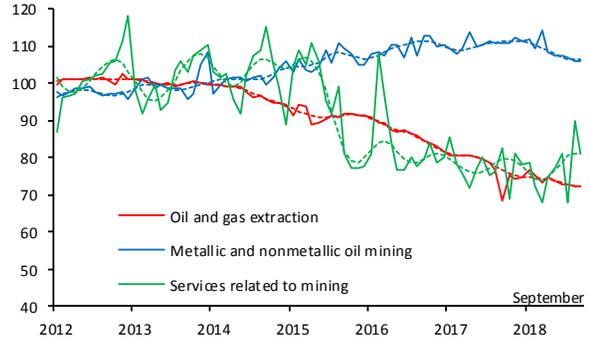
Chart 21
Production Indicators
Index 2013=100, s. a.



b) Construction Sector Components



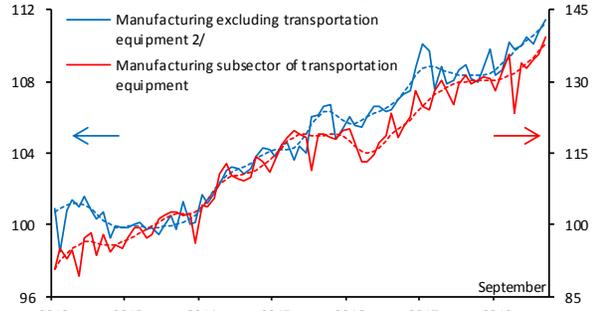
c) Mining Sector Components



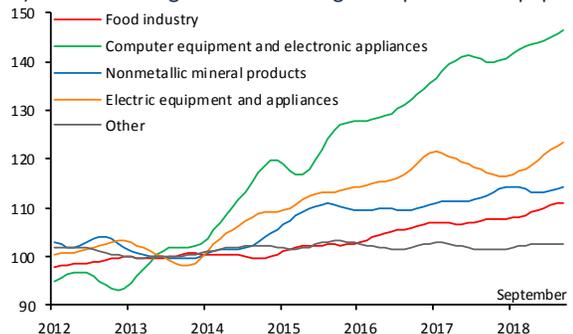
d) Oil Production Platform 1/
Thousands barrels a day, s. a.



e) Manufacturing Sector



f) Manufacturing Sector Excluding Transportation Equipment 3/



s. a. / Seasonally adjusted and trend data. The former is represented by a solid line, the latter by a dotted line.

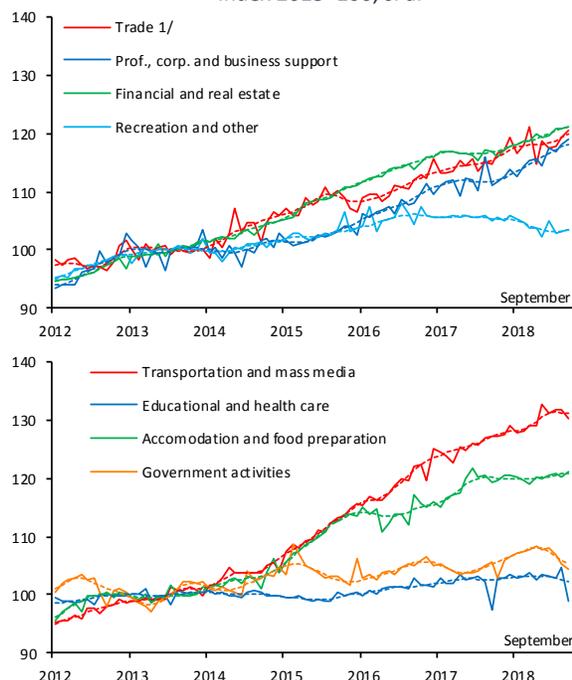
1/ Seasonally adjusted by Banco de México with data from PEMEX.

2/ Prepared and seasonally adjusted by Banco de México.

3/ Trend series.

Source: Monthly Industrial Activity Indicator, Mexico's National Accounts System (SCNM), INEGI and PEMEX.

Chart 22
IGAE of the Services Sector
 Index 2013=100, s. a.

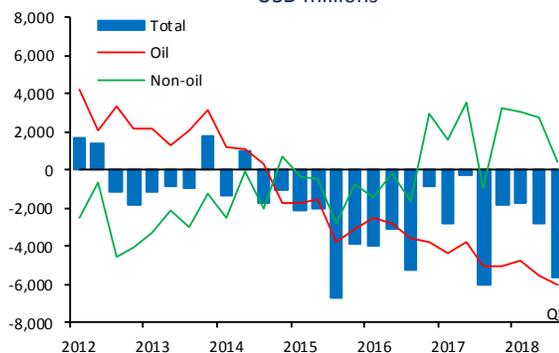


s. a. / Seasonally adjusted and trend series. The former is represented by a solid line, that latter by a dotted line.
 1/ Includes retail and wholesale trade.

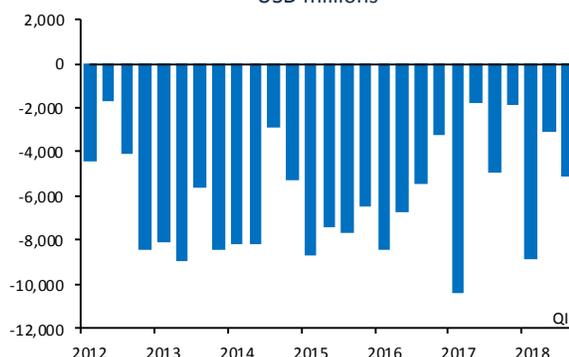
Source: Mexico's National Accounts System (SCNM), INEGI.

Regarding Mexico's external accounts, in the third quarter of 2018 the current account deficit marked 1.6% of GDP, the same level as that reported in July – September 2017 (Chart 23b and 23c). In particular, the current account in its annual comparison was the result of the combination of the increment in the deficit of the primary income balance, which was offset by a lower deficit of the balance of goods and services, and by a higher surplus of the secondary income account, the latter derived from income from remittances, which continued to display historically high levels. In turn, the decrease of the deficit of the merchandise trade balance relative to the same period of the previous year was due to the increase in the non-oil trade balance, which is consistent with the recovery of Mexican manufacturing exports, while the deficit in the oil balance kept expanding (Chart 23a).

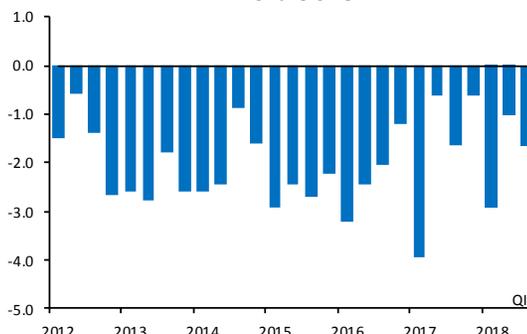
Chart 23
Trade Balance and Current Account
 a) Trade Balance
 USD millions



b) Current Account
 USD millions



c) Current Account
 Share of GDP



Source: a) SAT, SE, Banco de México, INEGI. Merchandise Trade Balance. SNIEG. Information of National Interest. b) and c) Banco de México.

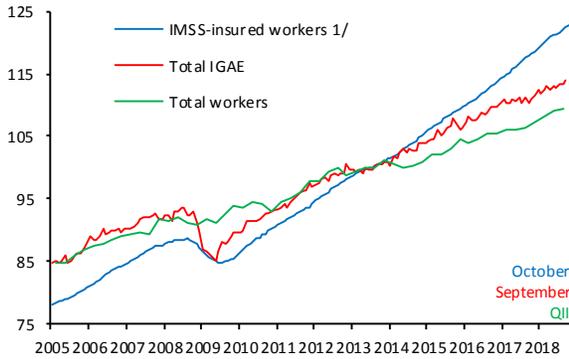
2.2.2. Labor Market

In the third quarter of 2018, slackness conditions in the labor market remained narrow. In particular, the number of IMSS-affiliated jobs maintained a positive trend, albeit characterized by a certain deceleration, while the labor participation rate lied at levels above those observed in late 2017 and in early 2018 (Chart 24a and Chart 24b). Both the national and the urban unemployment rates remained at low levels (Chart

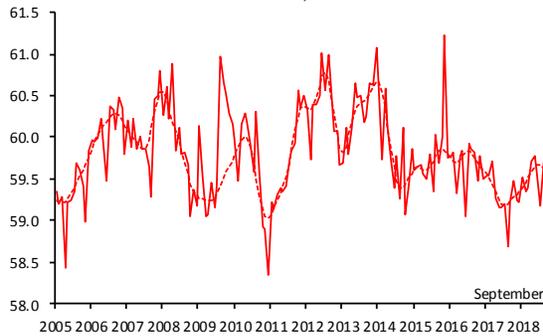
24c). Similarly, the point estimates of the unemployment gaps calculated based on the national unemployment rate and, in addition, the one that considers informal salaried workers remained negative (Chart 25). On the other hand, the labor informality rate maintained a negative trend, while the informal sector employment rate rebounded with respect to the previous quarter (Chart 24d).²

Chart 24
Labor Market Indicators

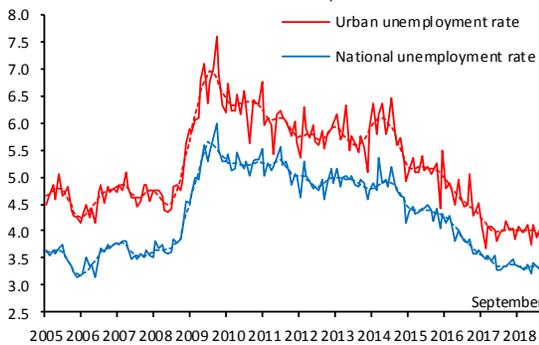
a) IMSS-insured Workers, Total IGAE and Working Population Index 2013=100, s. a.



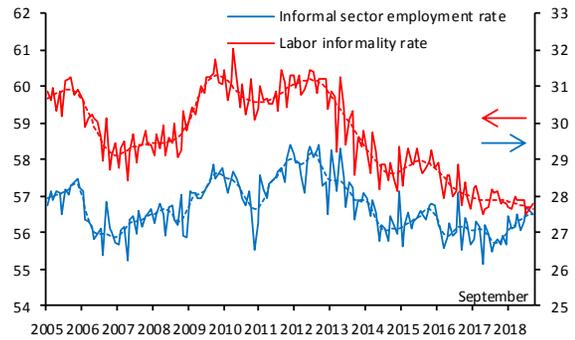
b) National Labor Participation Rate ^{2/}
Percent, s. a.



c) National and Urban Unemployment Rates
Percent, s. a.



d) Informal Sector Employment ^{3/}
and Labor Informality ^{4/}
Percent, s. a.



s. a. / Seasonally adjusted and trend data. The former is represented by a solid line, the latter by a dotted line.

1/ Permanent and temporary jobs in urban areas. Seasonal adjustment by Banco de México.

2/ Percentage of Economically Active Population (EAP) with respect to the population of 15 years and older.

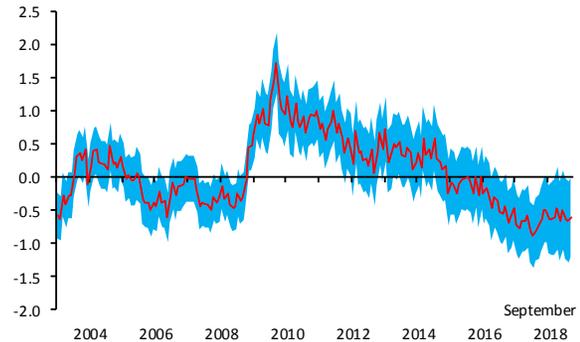
3/ It refers to individuals working in non-agricultural economic units, operating with no accounting records and using households' resources.

4/ It includes workers who, besides being employed in the informal sector, work without social security protection, and whose services are used by registered economic units, and workers self-employed in subsistence agriculture.

Source: Prepared by Banco de México with data from IMSS and INEGI (SCNM and ENOE).

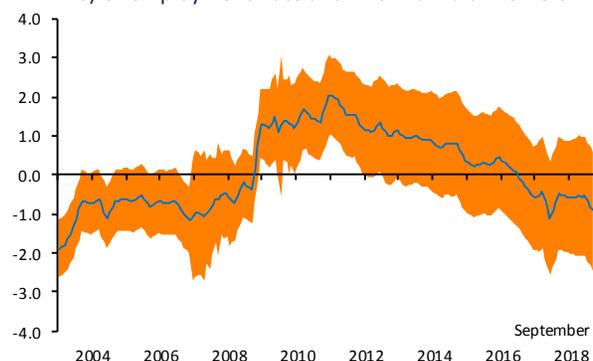
Chart 25
Estimate of the Unemployment Gap ^{1/}
Percent, s. a.

a) Unemployment Rate



² Currently, both the unemployment rates and the labor informality rate are measured based on the results from the National Employment Survey (ENOE), which started to be conducted in 2005.

b) Unemployment Rate and Informal Paid Workers



s. a. / Seasonally adjusted data.

1/ Shaded areas represent confidence intervals. An interval corresponds to two average standard deviations among all estimates.

Source: Prepared by Banco de México with data from INEGI (ENOE).

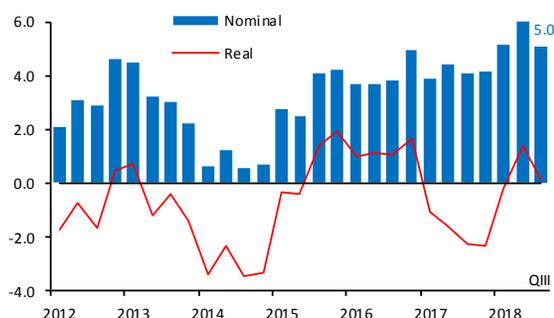
Wage indicators had a differentiated performance in the third quarter of 2018 (Chart 26). In particular, the average wage for the economy as a whole had an annual growth rate of 5.0%, which was lower than the 6.0% observed in the previous quarter, while the daily wage associated to IMSS-affiliated workers increased at an average annual rate of 5.9% during the reported period, which was higher than the 5.7% in the previous quarter. As a result of this and the evolution of inflation, the average wage of the economy (in real terms) as a whole remained at levels similar to those observed in the same quarter of the previous year, and the wage associated with IMSS-affiliated workers presented an increase in the same comparison, while both indicators decreased with respect to the previous quarter. Finally, the average adjustment of contractual wages negotiated by firms under federal jurisdiction in the period July – September 2018 was 6.0%, which was above the 4.5% observed in the same period of 2017.

During the third quarter of 2018, unit labor costs both in the economy as a whole and in the manufacturing industry in particular somewhat declined with respect to the previous quarter, mainly as a reflection of lower real average remunerations in the analyzed period (Chart 27).

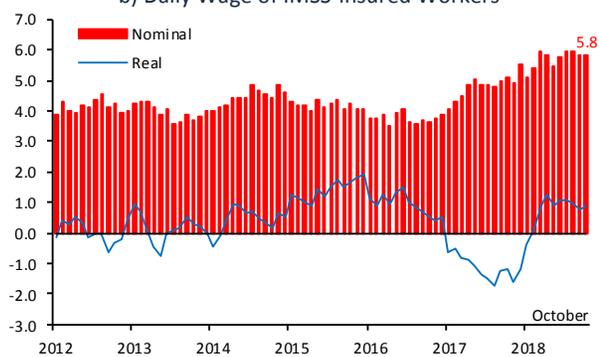
Chart 26
Wage Indicators

Annual change in percent

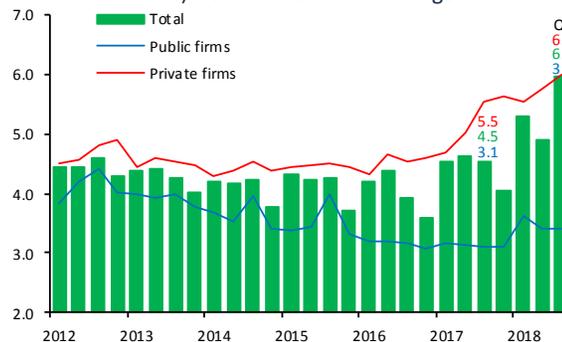
a) Average Wage of Salaried Workers according to the National Employment Survey ¹



b) Daily Wage of IMSS-insured Workers ^{2/}



c) Nominal Contractual Wage ^{3/}



1/ To calculate average nominal wages, the bottom 1 percent and the top 1 percent in the wage distribution were excluded. Individuals with zero reported income or those who did not report it are excluded.

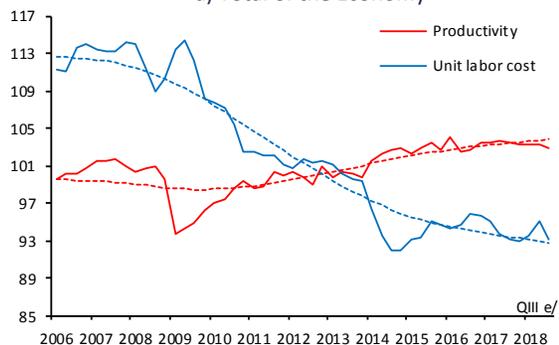
2/ During the third quarter of 2018, on average 20.2 million workers were registered at IMSS.

3/ The contractual wage increase is an average weighted by the number of involved workers. The number of workers in firms under federal jurisdiction that report their wage increases each year to the Secretary of Labor and Social Welfare (STPS) is approximately 2.3 million.

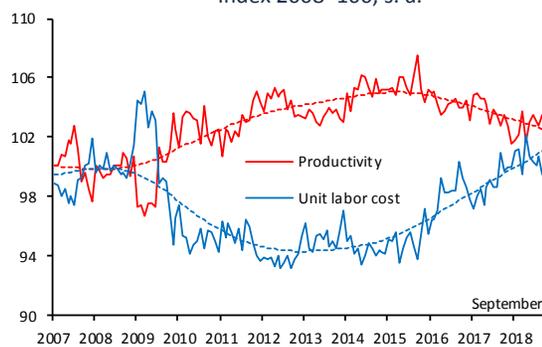
Source: Calculated by Banco de México with data from IMSS, STPS and INEGI (ENOE).

Chart 27
Productivity and Unit Labor Cost

Index 2013=100, s. a.
a) Total of the Economy ^{1/}



b) Manufactures ^{1/}
Index 2008=100, s. a.



s. a. / Seasonally adjusted and trend series. The former is represented with a solid line, the latter with a dotted line.

^{1/} Labor productivity based on hours worked.

e/ The figure of the third quarter of 2018 is Banco de México's estimate based on GDP data published by SCNM and ENOE by INEGI.

Source: Prepared by Banco de México with seasonally adjusted data from the Monthly Manufacturing Business Survey and the Monthly Indicator of Industrial Activity of Mexico's System of National Accounts. 2013 base series, INEGI.

2.2.3. Financing Conditions of the Economy ³

2.2.3.1. Total Funding of the Mexican Economy

In the third quarter of 2018, the sources of financial resources of the economy expanded at a relatively low rate, below the one observed in the first half of the year. In particular, its growth in real annual terms was 1.1% in the third quarter, which is lower than the rate observed in the previous quarter (2.7%) and equal to that exhibited at the end of 2017 (1.1%). As stressed in the previous Quarterly Reports, the moderation of the growth rates of the sources of financial resources has mainly reflected a greater restriction of financing from abroad faced by the Mexican economy since late 2014, as a consequence of a number of negative shocks, such as a drop in the terms of trade –mainly the ones related to the international prices of crude oil– and the uncertainty regarding the renegotiation of trade agreements with the U.S. and Canada, as well as the potential effects of the U.S. monetary policy normalization. Recently, the markets' concern over the policies that could be implemented by the new administration, as well as some legislative initiatives have generated an environment of greater uncertainty, which could have further accentuated the restriction. At the same time, this environment has affected private investment, which lowered the businesses' demand for foreign financing. Thus, as a whole, by the third quarter of 2018, flows of external resources accumulated over the last four quarters amounted to 0.8% of GDP, a figure that is lower than the average of 1.5% of GDP registered in the period 2015 – 2017, and well below the 4.2% of GDP registered in the period 2013 – 2014 (Table 1).

³ Unless otherwise stated, in this Section growth rates are expressed in real annual terms and are estimated based on balances adjusted for exchange rate and asset price variations.

Table 1
Total Funding of the Mexican Economy (Sources and Uses)

	2013	2014	2015	2016	2017	2018 Q3	2013	2014	2015	2016	2017	2018 Q3
	Annual flows as percentage of GDP						Real annual change in percent					
Total sources	10.0	9.7	5.8	7.4	7.9	6.1	6.1	5.5	3.5	3.9	1.1	1.1
Domestic sources (F1) ^{1/}	5.7	5.6	4.6	5.5	6.5	5.3	5.7	5.2	5.3	5.4	3.7	3.4
Monetary ^{2/}	3.8	3.2	2.7	3.6	4.2	3.2	6.0	4.2	4.7	5.7	3.8	3.1
Non-monetary ^{3/}	1.9	2.4	1.9	1.9	2.3	2.0	5.0	7.0	6.3	4.9	3.4	3.8
Foreign sources ^{4/}	4.2	4.1	1.2	1.9	1.3	0.8	6.9	6.0	0.7	1.5	-3.0	-2.8
Total uses	10.0	9.7	5.8	7.4	7.9	6.1	6.1	5.5	3.5	3.9	1.1	1.1
International reserves ^{5/}	1.0	1.3	-1.5	0.0	-0.4	0.0	1.1	2.3	-9.5	-3.5	-8.6	-4.5
Public sector financing	4.1	4.7	4.1	2.9	1.1	2.6	4.8	6.0	6.4	2.5	-4.1	0.9
Federal public sector	3.7	4.5	4.0	2.8	1.1	2.6	4.6	6.2	6.7	2.7	-4.1	1.3
States and municipalities	0.4	0.2	0.1	0.1	0.1	0.0	9.1	2.4	2.9	-0.6	-4.6	-5.2
Private sector financing ^{6/}	4.2	2.5	3.1	3.0	3.9	2.8	6.9	2.4	5.6	4.2	3.2	2.0
Domestic	2.5	1.7	3.0	3.0	3.3	3.0	5.4	2.2	9.0	7.4	4.5	5.2
External	1.7	0.8	0.1	0.0	0.6	-0.2	10.3	2.8	-1.5	-3.5	-0.6	-6.9
Other ^{7/}	0.7	1.2	0.1	1.6	3.2	0.6	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Note: Annual flows are expressed in % of average annual nominal GDP. The acronym "n.s." refers to non-significant data.

1/ It corresponds to the aggregate of domestic financial assets F1, composed by monetary domestic sources (see note 2 of this Table) and non-monetary domestic sources (see note 3 of this Table).

2/ It refers to financial instruments included in the monetary aggregate M3, which is composed of M2 plus federal government securities, Banco de México's securities (BREMS) and IPAB securities held by resident money-holding sectors. M2 is constituted by liquid instruments (banknotes and coins and deposit accounts payable on demand in banks and in savings and popular loan entities) and term instruments (deposits with a residual term of up to 5 years in banks, in savings and popular loan entities and credit unions; investment fund shares and repo and creditors from repo operations).

3/ They include housing and pension saving funds, private securities, other public securities and other bank liabilities (debt securities issued by banks with a residual term of over 5 years and subordinated obligations).

4/ It includes monetary instruments held by non-residents (i.e., MNR aggregate that is equivalent to the difference between M4 and M3) and other non-monetary sources held by the external sector (foreign financing to the federal government, public institutions and enterprises; commercial banks' foreign liabilities; foreign financing to the non-financial private sector; deposits by agencies, among others).

5/ As defined by Banco de México's Law.

6/ It refers to credit portfolio of financial intermediaries, the National Housing Fund (Infonavit) and the ISSSTE Housing Fund (Fovissste), as well as the issuance of domestic debt and external financing of businesses.

7/ It includes capital accounts and results and other assets and liabilities of commercial and development banks, non-bank financial intermediaries, the National Housing Fund (Infonavit) and Banco de México –including the securities issued by this Central Institute for the purposes of monetary regulation, especially those related to neutralizing the monetary impact by the operational surplus –. Similarly, it includes non-monetary liabilities from the Institute for the Protection of Bank Savings (IPAB), as well as the effect of the change in the valuation of public debt instruments, among other concepts.

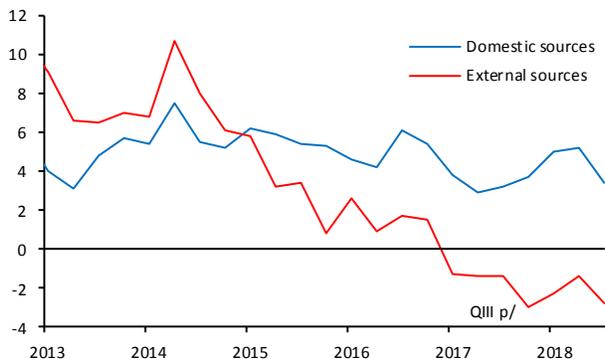
Source: Banco de México.

In this context, the implemented adjustments in the macroeconomic stance of Mexico have contributed to mitigate the effects of a greater restriction of external financing on the financing conditions to the private sector. On the one hand, a tighter monetary policy stance adopted since late 2015 has led to the intertemporal reallocation of spending and to higher private sector financial saving –mainly by households–. On the other hand, the lower absorption of financial sector by the public sector exhibited since 2016 has contributed to mitigate the impact on the availability of financing to the non-financial private sector (Chart 28).

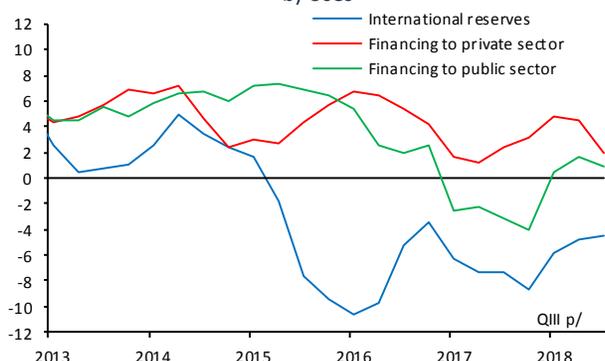
During the third quarter of 2018, domestic sources of financial resources –as measured by the aggregate of domestic financial assets F1– expanded at a real annual rate of 3.4% during the third quarter of 2018. This growth rate is lower than that registered during the first half of the year (5.1% on average), and similar to that displayed in late 2017 of 3.7% (Chart 29a). The slowdown of the domestic sources during the reference quarter would be to a greater degree

reflecting a lower holding of liquid instruments by non-financial private firms that could be channeling these resources to redeem liabilities. In contrast, households' financial saving have continued to expand at a relatively high rate, above all via longer-term instruments, given the higher opportunity cost of holding liquid instruments of low or zero yield, such as cash, which had a lower growth rate (Chart 29b). In this regard, Box 3 delves in the effect of the monetary policy actions on the demand for broad money, increasing the financial saving of the private sector in longer-term instruments and discouraging its holding of liquid instruments.

Chart 28
Total Funding of the Mexican Economy (Sources and Uses)
 Real annual change in percent
 a) Sources



b) Uses



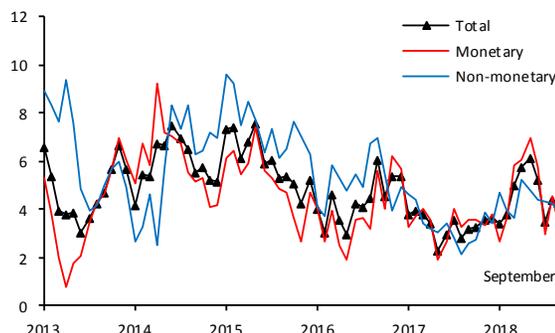
p/ Preliminary data.

Note: Each item's definitions are shown in Table 1.

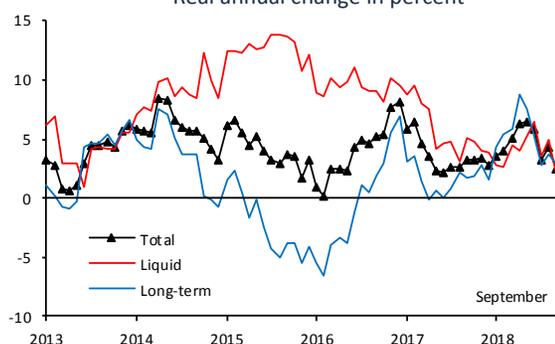
Source: Banco de México.

The external sources of resources contracted at a rate of 2.8% in real annual terms in the third quarter of 2018, a decrease that is greater than that observed in the first half of the year (-1.9% on average), and similar to the 3.0% contraction exhibited in late 2017. Within it, external financing to non-financial private firms declined during the reference quarter (the annual real change of -6.9%), while the investment in monetary instruments by non-residents had a negative annual real change (-3.7%), which reflects the aforesaid greater restriction of foreign financing currently faced by the Mexican economy (Chart 29c).

Chart 29
Sources of Financial Resources
 a) Domestic Sources (F1)
 Real annual change in percent

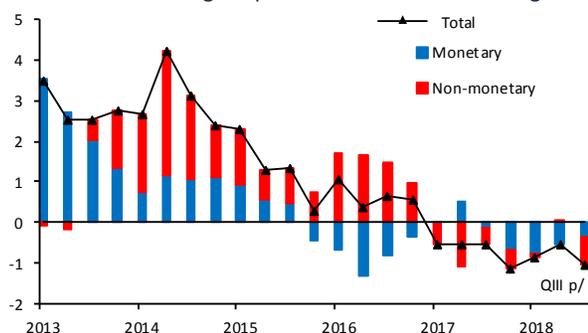


b) Monetary Aggregate M2
 Real annual change in percent



c) External Sources

Real annual change in percent and contribution to growth



p/ Preliminary data.

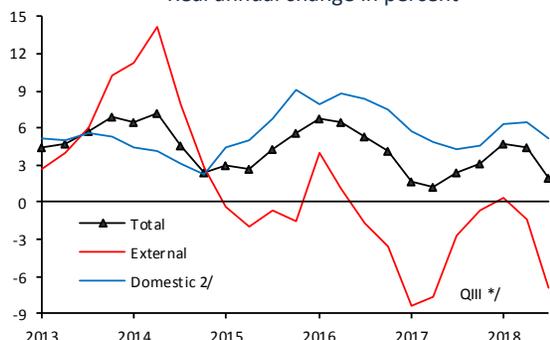
Note: Each item's definitions are shown in Table 1.

Source: Banco de México.

Regarding the use of financial resources of the economy, during the third quarter of 2018 financing to the public sector continued to expand at a relatively low rate, as compared to the period prior to 2016. In particular, its real annual change was 0.9% during the reference quarter, which is similar to the figure observed on average during the first half of 2018 and well below the high growth during 2014 and 2015 (1.1 and 6.2% on average, respectively). In turn, the balance of international reserves lied at USD

173.6 billion at the end of the third quarter, which is slightly above the figure of USD 172.8 billion observed at the end of 2017. As previously indicated, the low dynamism of international reserves is largely related to the fact that Pemex has not sold U.S. dollars to Banco de México since 2017, which in turn reflects the deterioration in the oil trade balance. On the other hand, total financing to the non-financial private sector decreased its growth rate with respect to the first half of the year. This financing expanded at a real annual rate of 2.0% in the reported quarter, a figure that is below the 4.8 and 4.5% observed during the first and second quarters of 2018, respectively (Chart 30). This is accounted for by the contraction of external financing to firms, in a context of greater restrictions in financing conditions in international markets, and a moderation in the growth of domestic financing. The following section yields more details on the evolution of financing to the public and private sectors.

Chart 30
Total Financing to Non-financial Private Sector
Real annual change in percent



*/ Data on external and total financing corresponding to the third quarter of 2018 are preliminary.

1/ These data are adjusted due to the withdrawal from and the incorporation of some financial intermediaries to the credit statistics. It includes commercial banks' credit, development banks' credit and credit from other non-bank financial intermediaries.

Source: Banco de México.

2.2.3.2. Financing of the Economy ⁴

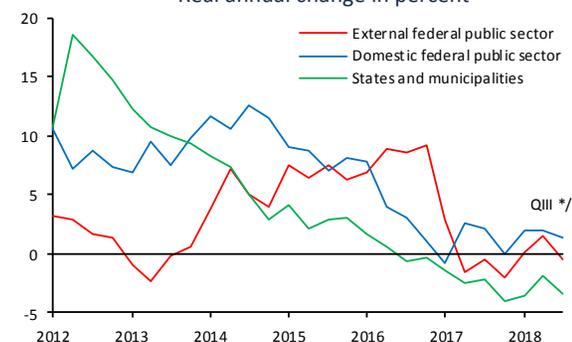
Starting from 2016, in a situation characterized by the weak growth of the external sources of financial

⁴ This section presents an in-depth analysis of the recent evolution of financing to public and private sectors, understood as gross financing received by these sectors from external and domestic financial intermediaries, as well as via the debt issuance. This financing measure allows to have a comparable indicator between the non-financial public and private sectors –businesses and households –.

⁵ The balance of gross financing to the public sector considers the Federal Government, public entities and enterprises, and states and municipalities. Unlike the Historical Balance of Public Sector Borrowing

resources of the economy, the growth rate of the gross financing to the federal public sector moderated significantly.⁵ This has contributed to mitigate pressures on the domestic loanable funds' markets and to facilitate the channeling of the financial resources to the private sector. Thus, in the third quarter of 2018, the gross domestic financing and the gross external financing to the federal public sector continued to display a low growth rate. Similarly, states and municipalities also lowered their use of financial resources (Chart 31).

Chart 31
Financing to Non-financial Public Sector
Real annual change in percent



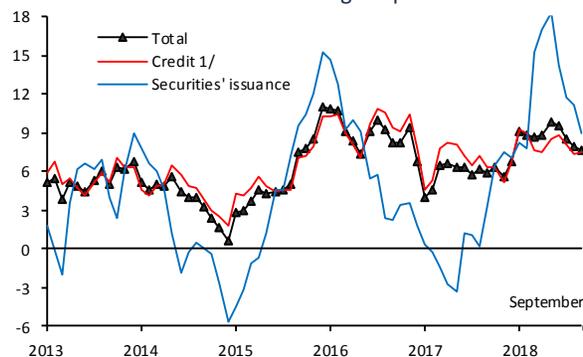
Source: Banco de México.

With respect to the domestic financing to the non-financial private sector in the third quarter of 2018, financing to firms expanded at a real annual rate of 7.7%, a figure below the 9.6% observed in the previous quarter. This moderation stemmed both from the lower emission of debt in the domestic market, and the decrease in the expansion rate of commercial banks' credit (Charts 32 and 33). This would reflect a lower demand for resources for precautionary reasons (the need for debt restructuring), as well as a lower need for working capital, while the use for investment in physical

Requirements (HBPSBR), which is a measure of net indebtedness and that in addition considers contingent liabilities-, this measure of financing does not consider its holdings of financial assets or liabilities of this sector, such as those corresponding to IPAB and Fonadin (National Infrastructure Fund), ISSSTE law bonds, Pemex and CFE pension bonds, among others.

assets remained at low levels (Chart 34 and 35).^{6,7} In addition, large firms have continued to substitute external liabilities with domestic ones, as a reflection of tighter financial conditions in the international markets.

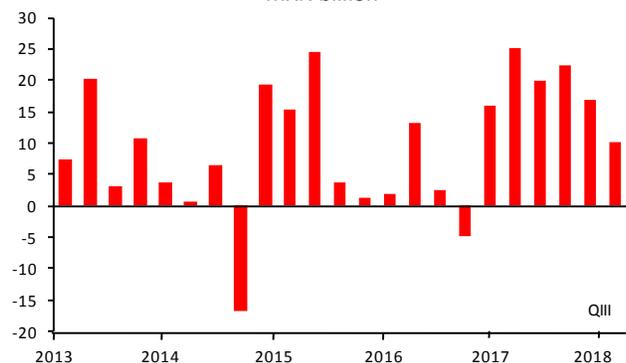
Chart 32
Domestic Financing to Non-financial Private Firms^{1/}
Real annual change in percent



1/ These data are adjusted due to the withdrawal from and the incorporation of some financial intermediaries to the credit statistics. It includes credit from commercial banks, development banks and other non-bank financial intermediaries.

Source: Banco de México.

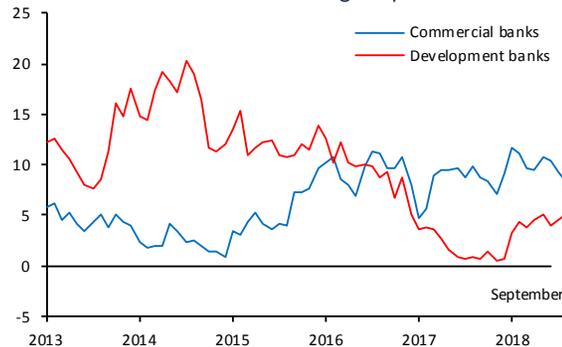
Chart 33
Net Placement of Medium-term Securities of Non-financial Private Firms^{1/}
MXN billion



1/ Placements excluding amortizations (maturities and prepayments) in the quarter.

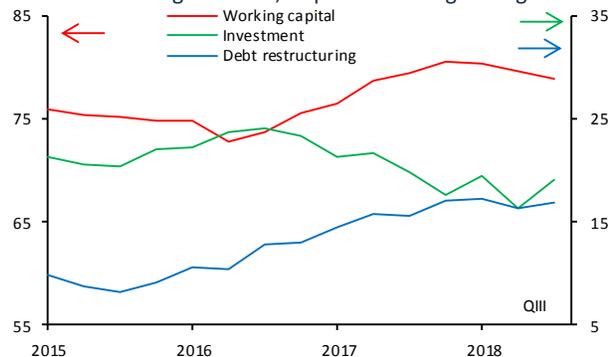
Source: Banco de México.

Chart 34
Performing Credit to Non-financial Private Firms
Real annual change in percent

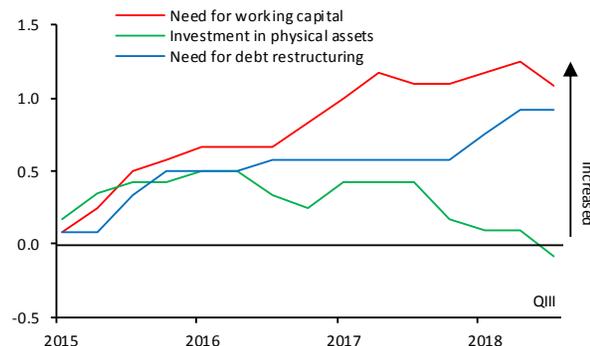


Source: Banco de México.

Chart 35
Use of Bank Credit by Large Businesses
a) Main Purpose of New Bank Credit according to Firms with over 100 Employees
Percentage of firms, 4-quarter moving average



b) Factors Related to Large Firms' Credit Demand according to Banks with Greater Participation in the Segment
Accumulated diffusion indices^{1/}



1/ For each quarter the diffusion index can take a value from -1 to 1, where the positive (negative) values denote increases (decreases) in the respective concept.

Source: The Credit Market Survey and the Survey on General Conditions and Standards in the Banking Credit Market, Banco de México.

⁶ For additional information, see the press release on the Quarterly Evolution of Financing to Firms during the quarter July – September 2018, available at the following link:

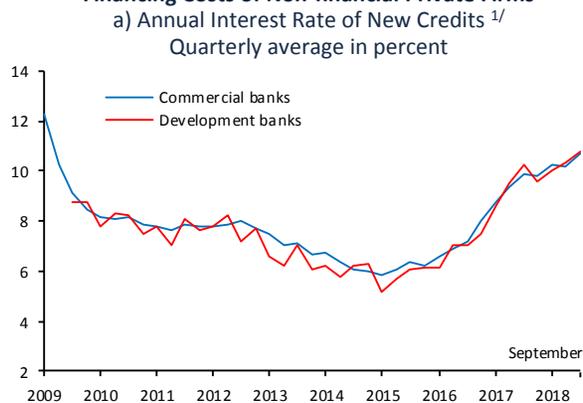
<http://www.banxico.org.mx/publicaciones-y-prensa/evolucion-trimestral-del-financiamiento-a-las-empr/evolucion-del-financiamiento-.html>

⁷ For additional information, consult the press release of the Survey on General Conditions and Standards in the Banking Credit Market during the quarter July – September 2018, available at the following link:

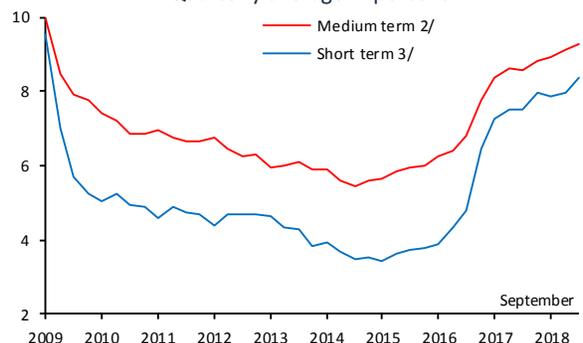
<http://www.banxico.org.mx/publicaciones-y-prensa/encuesta-sobre-condiciones-generales-y-estandares-condiciones-en-credito-bancar.html>

In this context, in the third quarter of 2018 the costs of financing to non-financial private firms remained above the levels registered in 2017, and increased as compared to the average of the previous quarter (Chart 36).

Chart 36
Financing Costs of Non-financial Private Firms



b) Annual Interest Rates of Private Securities
Quarterly average in percent



1/ Average rate weighted by the associated balance of performing credit for all terms.

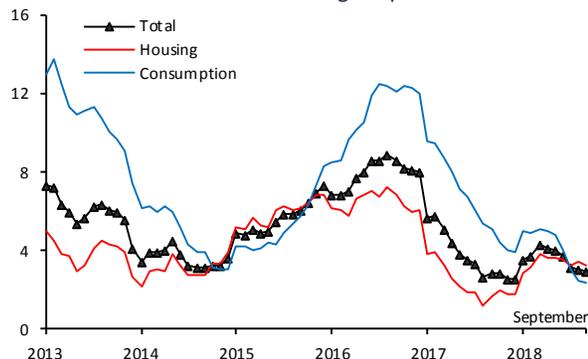
2/ Average weighted yield to maturity of debt issuances, with a term over 1 year, at the end of the month.

3/ Average weighted rate of private debt placements, with a term of up to 1 year, expressed in a 28-day curve. It only includes stock exchange certificates.

Source: Banco de México.

Credit to households had a lower dynamism, as it expanded at a rate of 2.9%, which is lower than the 3.7% observed in the previous quarter. This is mainly accounted for by the deceleration of consumer credit (Chart 37).

Chart 37
Total Credit to Households^{1/}
Real annual change in percent

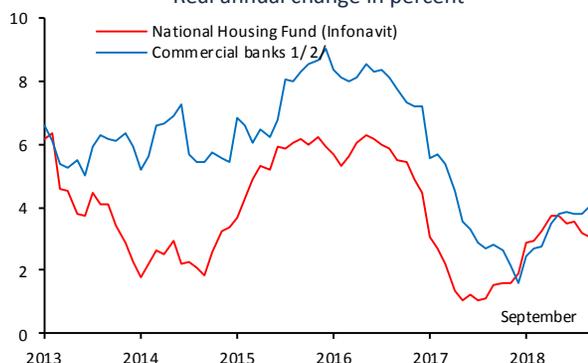


1/ These data are adjusted due to the withdrawal from and the incorporation of some financial intermediaries to the credit statistics.

Source: Banco de México.

Within it, in the third quarter of 2018, the mortgage portfolio of the National Housing Fund (Infonavit) expanded at a lower rate as compared to the previous quarter, while the mortgage portfolio of commercial banks had a greater growth (Chart 38). This is consistent with the recovery of demand for this type of credit, as indicated by the managers of banks with a greater participation in this segment in the Survey on General Conditions and Standards in the Banking Credit Market (EnBan) for the second consecutive quarter. In this respect, the interest rates of new commercial banks' credits for housing acquisition have remained practically unchanged since mid-2017 (Chart 38).

Chart 38
Performing Housing Credit
Real annual change in percent

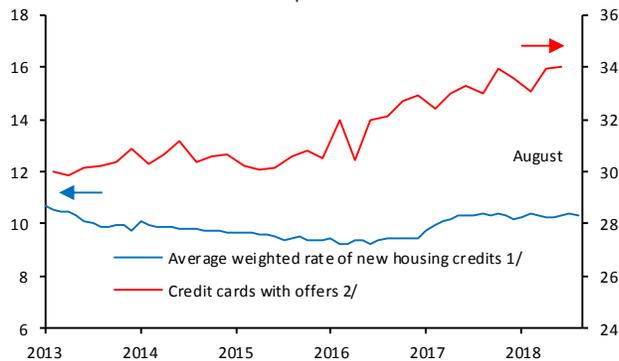


1/ These data are adjusted due to the withdrawal from and the incorporation of some financial intermediaries to the credit statistics.

2/ Figures are adjusted in order to avoid distortions by the transfer and the reclassification of direct credit portfolio, by the transfer from the UDIS trust portfolio to the commercial banks' balance sheet and by the reclassification of direct credit portfolio to ADES program.

Source: Banco de México.

Chart 39
Annual Interest Rate of Credit to Households
In percent



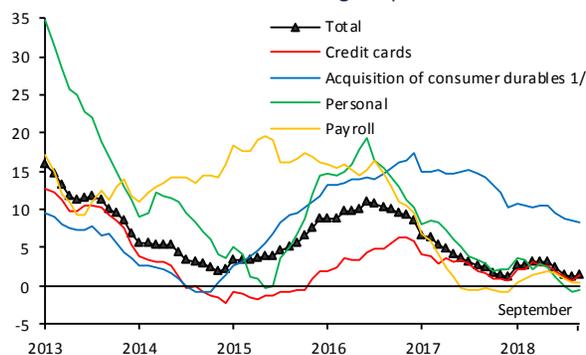
1/ The average rate weighted by the associated balance of performing credit. It includes credit for acquisition of new and used housing.

2/ The source is the credit cards-related data base. It refers to the average rate weighted by performing credit cards and the generalized use of non-revolving customers.

Source: Banco de México.

In contrast, commercial bank consumer credit had a lower real annual growth rate as compared to the second quarter of the year (Chart 40). However, in September the annual real change of this portfolio rebounded with respect to the previous month. This is mainly related to the greater growth in the segment of credit cards, while credit portfolios for the acquisition of consumer durables (ABCD) and payroll loans maintained their real annual growth rates. This was consistent with the EnBan results, which in the third quarter of the year reported that banks with a greater participation indicated a greater demand for credit in the segment of credit cards, and, to a lower degree, in payroll loans. Consumer credits' interest rates are at levels similar to those observed in 2017, except for those associated to credit cards, which have increased (Chart 39).

Chart 40
Performing Commercial Bank Consumer Credit
Real annual change in percent



1/ It includes auto loans and credit for acquisition of other movable properties.

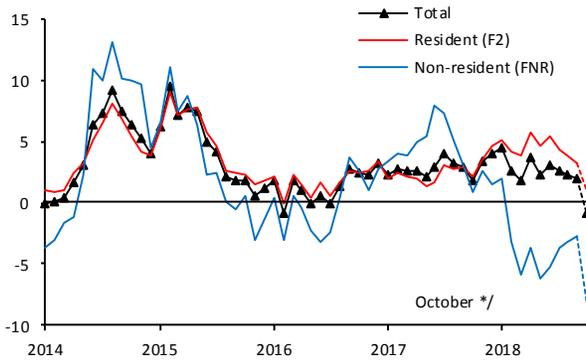
Source: Banco de México.

In sum, monetary and fiscal adjustments have contributed to mitigate the effects of the greater restriction of external financing faced by Mexico on the funding conditions for the private sector. However, given the possibility that tighter external financing conditions may persist in Mexico, it is key to preserve and to continue strengthening the macroeconomic framework of the country. In particular, it is essential to intensify efforts to consolidate public finances in a sustainable manner, in particular in the energy sector, and to propitiate an environment of greater certainty over the public policy actions that are to be implemented and that will lead to a greater potential growth of Mexico. Thus, this would help mitigate the restriction of external financing and channel more resources to the private sector for the productive investment in the country and for better funding conditions.

2.2.3.3. Domestic Financial Assets (F)

Domestic financial assets —measured by the aggregate F— moderated their growth rate during the third quarter of 2018 (Chart 41). In particular, in the said quarter the real annual change was 2.0%, as compared to the 3.1% at the end of the first half of 2018. Within it, during the reference quarter a lower growth rate of domestic financial assets held by residents was recorded —measured in the aggregate F2— with respect to the first half of the year, reflecting the above referred slowdown of the domestic sources of resources, and a lower holding of floating-rate securities by these agents. Meanwhile, non-resident holding continued to show negative growth rates.

Chart 41
Domestic Financial Assets (F)
 Real annual change in percent



Source: Banco de México. Preliminary data as of October 2018.

Finally, it is important to note that the shares issued by Mexican firms have decreased during the fourth quarter of the year and that there has been an increment in the fixed assets' yield curve, which would be reflected in a further deceleration of aggregate F.

Box 3. Monetary Policy and Demand for Broad Money

1. Introduction

Banco de México updated the methodology of the monetary aggregates' statistics in January 2018, which implies substantial improvements in the measurement of broad money in the country. The Quarterly Report October – December 2017 for the first time presented this information and some of the possible analytical uses of these statistics, specifically highlighting the relation between the new monetary aggregates and the economic activity and inflation at different frequencies.¹

In the first place, this Box presents a statistical analysis of the determinants of the broad monetary aggregate M2, in order to analyze its performance. In particular, a model of demand for broad money is estimated, expressed in a system of equations, which aim to describe the performance of each component of monetary aggregate M2; that is, the aggregate M1 –which contains liquid instruments– and M2-M1, where the monetary instruments with a term of up to five years are registered.² Based on the estimated model, the contribution of the determinants of the demand for broad money to the growth of said aggregates is calculated. This allows to illustrate how the cycle of increments in the monetary policy target rate observed starting in December 2015, by raising the opportunity cost of holding liquid instruments of low or zero yield, has contributed to decrease the growth rate of M1 growth, and has led to a greater dynamism of M2-M1 by providing incentives to increase demand for long-term monetary instruments.

Secondly, an estimate of broad money held by the three money-holding sectors that constitute M2 (households, non-financial private firms and other non-bank financial intermediaries (OIFNB, for its acronym in Spanish) is presented.³ This exercise is useful to quantify the degree of heterogeneity in the holdings of money by these different sectors, which yields information on the manner in which different money holders adjust their current and future portfolio and consumer decisions when facing macroeconomic shocks. The results show that the greater dynamism in the growth rate of the long-term component within M2 has largely been due to greater financial savings of households.

2. Model of Demand for Broad Money

In general terms, the economic theory postulates that the private sector's demand for money is essentially determined by two types of motives: (i) transactional motives, that are related to the need to use money to make payments or to purchase goods and services; and (ii) speculative motives, given that broad money is part of a portfolio of financial instruments that agents manage to obtain a desired risk-return combination. In addition, there are other factors that may be relevant to explain the demand for broad money, such as precautionary motives, which could be relevant insofar as households or businesses hold money to tackle unexpected fluctuations in wealth or in payments to be settled, or other possible more idiosyncratic determinants, such as the impact of a given public policy.

Based on these assumptions, a model of demand for money in Mexico for the monetary aggregate M2 was estimated, via a dynamic system of two equations—one for its more liquid component (M1) and the other for long-term instruments (M2-M1)—. This type of model allows to quantify the portfolio restructuring between them. The estimation was carried out using the methodology “general-to-specific” to select the optimal model. By using this methodology, a model with the following dynamic representation is obtained:⁴

$$(i) \quad m1_t = 0.73 m1_{t-1} - 0.48 m1_{t-2} - 0.30 (m2 - m1)_{t-1} + 0.39 GDP_{t-1} \\ (0.09) \quad (0.10) \quad (0.04) \quad (0.08) \\ + 0.34 GDP_{t-3} - 0.58 i28_t - 0.78 i28_{t-1} + 0.46 i28_{t-3} + \hat{B}Z_t + u_t \\ (0.07) \quad (0.28) \quad (0.31) \quad (0.16)$$

$$(ii) \quad (m2 - m1)_t = -0.38 m1_{t-1} - 0.50 m1_{t-2} + 0.56 (m2 - m1)_{t-1} \\ (0.18) \quad (0.20) \quad (0.09)$$

$$+ 0.62 GDP_{t-1} + 0.30 GDP_{t-3} - 1.39 i28_t + 0.72 i28_{t-1} + 0.50 i28_{t-3} + \hat{D}Z_t + v_t \\ (0.17) \quad (0.15) \quad (0.59) \quad (0.67) \quad (0.34)$$

Where:

$m1$ = Real balances of monetary aggregate M1 (logarithm).

$m2 - m1$ = Real balances of the long-term component M2-M1 (logarithm).

GDP = Real GDP of Mexico at 2013 prices (logarithm).

$i28$ = 28-day Cetes yield.

Z = A vector of variables that capture seasonal effects and other idiosyncratic determinants.⁵

¹ See Banco de México (2017). “Remarks on New Measurements of Monetary Aggregates and Domestic Financial Assets in Mexico”, Box 3 of the Quarterly Report October - December 2017, pp. 34-37.

² For a more complete description of instruments contained in each monetary aggregate, see the note “Redefinition of Monetary Aggregates and Measurement of Domestic Financial Aggregates” published in <http://www.banxico.org.mx/publicaciones-y-prensa/agregados-monetarios-y-actividad-financiera/agregados-monetarios-actividad.html>.

³ Includes brokerage firms, non-bank sofomes, insurance companies, general bonded warehouses and bonding companies.

⁴ Standard deviations are shown in parenthesis. The selection of the model was carried out using Autometrics algorithms. These algorithms select a model that meets the following desirable characteristics: their residuals satisfy the necessary assumptions to perform inferences (i.e. they do not present autocorrelation or

heteroscedasticity and behave in accordance with the Normal distribution); there is no information redundancy in the variables that are part of the chosen model; it has the best possible adjustment. F tests of each variable's significance in the system of equations reject the null hypothesis of no relevance. Prior to the estimation of the model, a Pesaran-Ship test was conducted to determine if there is a long-term relation between the variables. The hypothesis that this relation does not exist at the 95% confidence level is rejected.

⁵ Other relevant variables, such as remittances, are included to explain demand for money in Mexico. In addition, a more general vision of the estimated model included other variables that were not chosen by the methodology of general-to-specific. In particular, measures were contemplated, which would capture the balance effect of the portfolio between the domestic assets and foreign assets,

The model is useful to identify the determinants of demand for broad money. In addition, it allows to quantify the portfolio restructuring within M2 between its more liquid component (M1) and long-term instruments (M2-M1). This can be appreciated in the static representation of the model, which shows that, given the increases in M2-M1, M1 tends to decline, and vice versa:

$$m1_t = -0.40(m2 - m1)_t + 0.97PIB_t - 1.20i28_t + \hat{B}Z_t + u_t$$

$$(m2 - m1)_t = -2.00m1_t + 2.09PIB_t - 0.39i28_t + \hat{D}Z_t + v_t$$

Finally, based on this system, it is possible to obtain an estimate of long-term demands for money, which in this case are given by:

$$m1_t = 0.66 GDP_t - 5.13 i28_t + \hat{\gamma}Z_t + \varepsilon_t$$

(0.04) (3.50)

$$(m2 - m1)_t = 0.78 GDP_t + 9.85 i28_t + \hat{\kappa}Z_t + \xi_t$$

(0.09) (8.21)

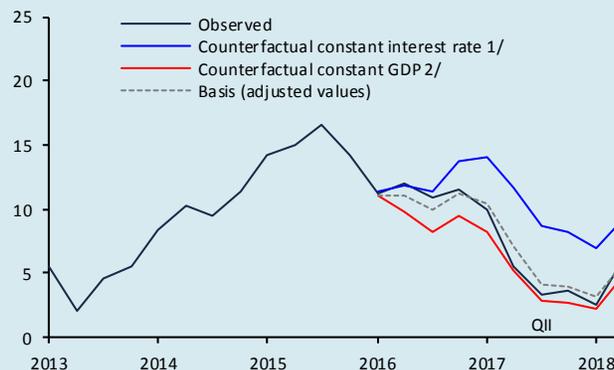
The estimate shows that

- ✓ The coefficients associated to the variable that captures the demand for money related to transactions (GDP) are positive, as postulated in the literature. This indicates that if the economic activity and the amount of transactions in the economy increase, the demand for both M1 and M2-M1 tends to go up. In addition, income elasticities associated to this variable are within a range similar to that found in other studies of demand for broad money in other countries.⁶
- ✓ The coefficient of the variable that approximates the long-term asset yield (i28) has a negative sign in the M1 equation, which reflects the opportunity cost of maintaining assets with zero or very low yield. On the other hand, the sign of said variable is positive in the M2-M1 equation, which is consistent with the fact that demand for these assets increases when its yield increase. Thus, when the interest rate goes up, there is a change in the structure of the asset portfolio, decreasing the most liquid ones and increasing the ones with the long-term yield.

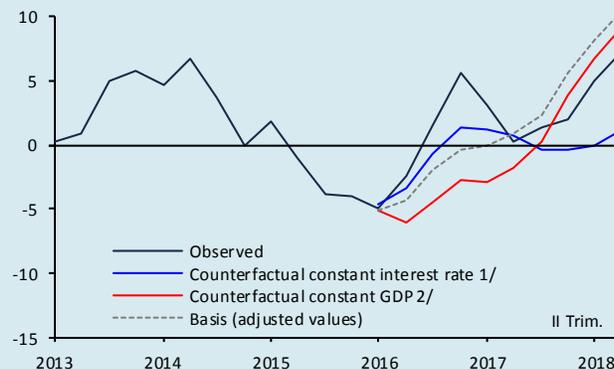
Based on the dynamic representation of the model, an exercise was carried out, which quantifies the effect of the recent economic activity and short-term interest rates on the dynamics of the different components of broad money in Mexico. In particular, M1 and M2-M1 trajectories were estimated for different scenarios: (i) a base scenario in which the observed GDP evolution and the short-term interest rate (measured by 28-day Cetes) are used to illustrate the goodness of fit of the model; (ii) a counterfactual scenario in which the short-term interest rate is assumed to remain constant as of the first quarter of 2016, to evaluate the effect of the upward cycle in interest rates onto these aggregates; and (iii) a counterfactual scenario in which GDP is assumed to have

stagnated starting from the first quarter of 2016 (i.e. 0% real growth).

Chart 1
Counterfactual Exercises
a) Monetary Aggregate M1
Real annual change



b) Long-term Monetary Instruments (M2-M1)
Real annual change



Source: Banco de México.

1/ It is assumed that the interest rate of 28-day Cetes remains constant starting from the first quarter of 2016.

2/ Real GDP is assumed to grow at 0% starting from the first quarter of 2016.

The results of the exercise are presented in Chart 1, where, in addition, the estimated trajectories are contrasted with those observed for each component of the aggregate. This allows to verify that the model adequately represents the observed dynamics.

Finally, based on equations (i) and (ii), the contributions of each determinant of the demand for broad money to the growth of M2 components were estimated (Chart 2).

The following results are notable in these exercises:

- ✓ The GDP growth between the first quarter of 2016 until 2018 positively affected both the evolution of M1 and M2-M1 (Charts 1 and 2).

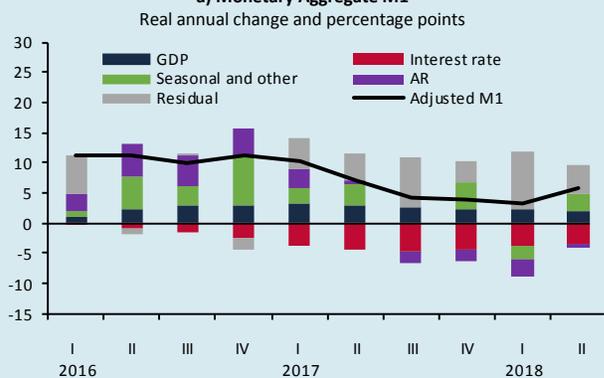
⁶ Papademos et al. (2010) present the summary of 23 research papers with models of the demand for broad money in the Eurozone. The coefficients' range for the scale variable is from 1.00 to 1.84 percent, with the mean and median of 1.25. Knell and Stix (2005) present a meta-analysis of the empirical results for the income

elasticity using 381 studies of demand for money for the OECD countries. The found income elasticities lie in the ranges between 0.3 and 2, and are of a greater magnitude for broad aggregates.

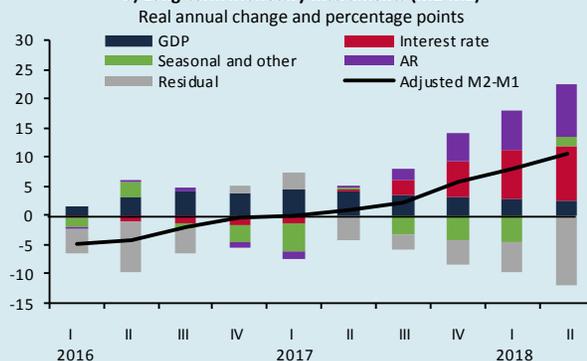
✓ The increment in short-term interest rates negatively affected M1 (Chart 1a and 2a). Intuitively, this is due to the fact that, when increasing the yield of long-term instruments, the opportunity cost to maintain money in cash or instruments with zero yield goes up, and hence the demand decreases. In contrast, the increment in the long-term asset yield, induced by higher reference rates, positively affected the private sector holdings of instruments in M2-M1 (Chart 1b and 2b).

The results are consistent with the recent evolution of these aggregates. Indeed, the monetary policy stance that has been implemented since late 2015 has contributed to the intertemporal reallocation of spending and a higher financial saving of the private sector. As shown in the next section of this Box, this has been reflected mainly in households' demand for broad money.

Chart 2
Monetary Aggregates and Contribution of their Determinants to Growth
a) Monetary Aggregate M1



b) Long-term Monetary Instruments (M2-M1)



Source: Banco de México.

Note: AR refers to the autoregressive component of the model. Seasonal and other refers to the vector of variables Z.

3. Monetary Aggregates by Holder

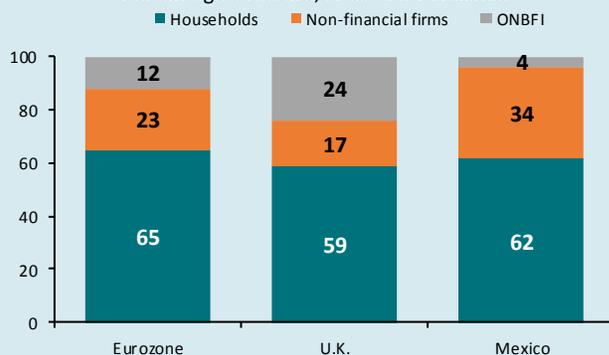
Although the determinants of the demand for money presented in the previous section are common to the whole private sector, the relevance of each of them can be different for households and for firms, due to the discrepancies in their preferences to hold different types of monetary assets. Thus, to deepen the understanding of the recent dynamics of M2 and its components, this Section presents the estimates of these aggregates' holdings by the money-holding sectors in Mexico, that is, households, non-financial private firms and other non-bank financial intermediaries (OIFNB). In particular, the time series have been calculated at a monthly frequency for the period from December 2000 to September 2018, which were denominated as Households M2, non-financial firms' M2 and ONBFI M2. In the same way, the series corresponding to M1 and M2-M1 were estimated for each holder.⁷

The results show that households are the main asset holders within M2. This finding is similar to what has been observed in other countries' statistics, such as in England or the Eurozone, which find that households hold approximately two thirds of broad money (Chart 3). Based on data from September 2018, the share M2 that is held by households was 62%, while a 34% were held by non-financial private firms in Mexico. Finally, other non-bank financial intermediaries held 4% of these instruments.

⁷ Among the different M2 components, the instruments issued by banks are the only ones that have the directly available sectorization of the counterparties required to prepare these statistics, obtained based on their regulatory reports. The sectorization in the holding of the rest of instruments is estimated based on other

sources with different limitations, and, in the case of banknotes and coins, just like in other countries, a fixed share is applied to the distribution of this instrument. Insofar as better sources of information are available, the estimate will become more precise.

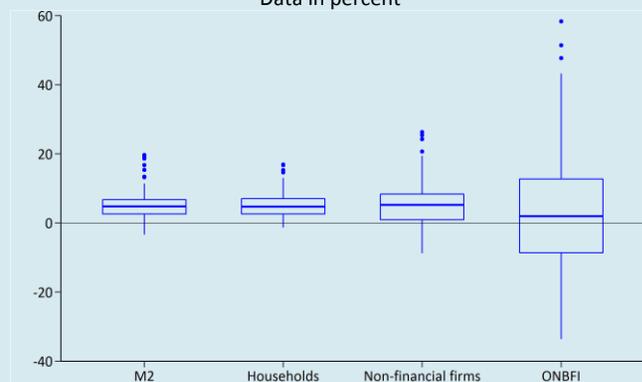
Chart 3
International Comparison of Broad Money by Holder
Percentage structure, latest data available



Note: Data for the Eurozone and the U.K. correspond to the fourth quarter of 2017. Data for Mexico correspond to the third quarter of 2018.
Source: European Central Bank, Bank of England and Banco de México.

On the other hand, it is relevant to note that Households M2 shows a lower volatility than non-financial firms' M2 and OIFNB M2. The box plot in Chart 4 illustrates said point. In particular, the standard deviation of the real annual change of Households M2 in the analyzed period amounts to approximately half of non-financial firms' M2 (3.29 and 5.79, respectively), while the standard deviation for OIFNB M2 is higher (16.59). Once again, these results are consistent with those obtained for other countries and point to the heterogeneity in the demand for money in these different sectors.⁷

Chart 4
Box Plot of Real Annual Changes of M2 by Holder
Data in percent



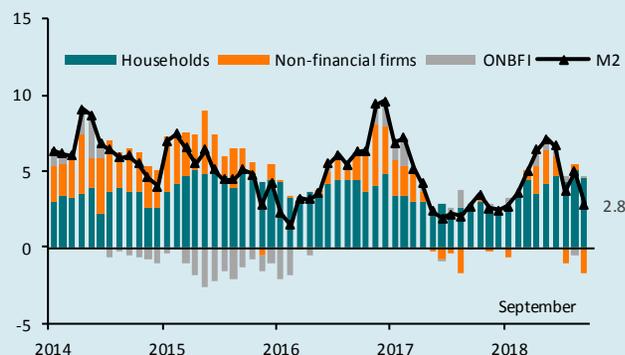
Source: Banco de México.

With respect to M2 dynamics across time, it stands out that its holding tends to be related to the households' holding of monetary instruments, due to their high relative weight (Chart 5a). However, the evolution of non-financial firms' M2 significantly contributes to explain the short-term volatility of the aggregate. For example, it can be concluded that the lower growth rate of M2 observed in 2015 is largely accounted for by a lower contribution to growth of OIFNB M2 and non-financial firms' M2.

⁷ See, for example, ECB Monthly Bulletin (2006): "Sectoral money holding: determinants and recent developments", August 2006.

Indeed, regarding the recent evolution of M2, it is estimated that the deceleration in this aggregate's growth rate during the last quarter has principally reflected a lower holding of monetary instruments by non-financial private firms, while the households' holding has been growing with dynamism (Chart 5b). In particular, as of September Households M2 had an annual real growth of 7.8%, which is above the average observed over the last five years (6.5%). In contrast, non-financial firms' M2 presented growth of -4.8%, which is below the average displayed in the same period (3.9%).

Chart 5
Monetary Aggregate M2 by Holder
a) Real annual change in percent and contributions to growth



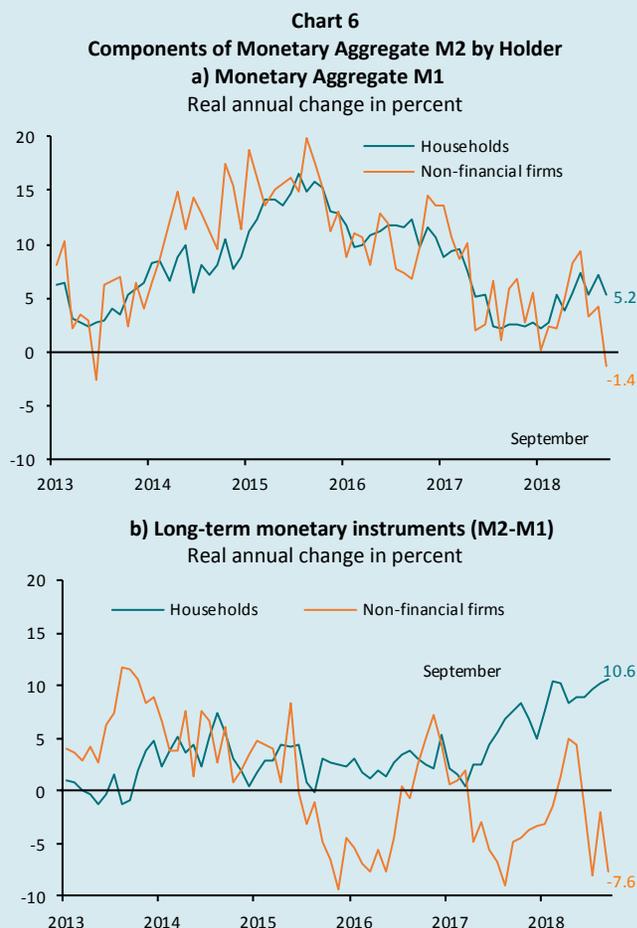
b) Real annual change in percent



Source: Banco de México.

In this respect, the data of M2 by holder shows that the described dynamics mainly reflect the fact that long-term monetary instruments (included in M2-M1) have had a heterogeneous performance over the recent months: on the one hand, the growth rate of Households M2-M1 has increased since 2017, reaching its highest level in recent years, which responded to the incentives given by a greater relative yield of these instruments. In contrast, non-financial firms' M2-M1 has exhibited high volatility during the period (Chart 6b). On the other hand, the holding of more liquid instruments (included in M1) held by both households and businesses has slowed down since late 2015, which coincided with the growth in the opportunity cost of maintaining cash and deposits on demand

induced by the cycle of increases in domestic interest rates. This slowdown has been temporarily interrupted in the first half of 2018, in part due to the cyclical effects associated to the electoral period (Chart 6a).



Source: Banco de México.

4. Final Remarks

The models of demand for broad money enrich the monetary analysis conducted by Banco de México. This Box used this tool to estimate the effect of changes in the relative yields of domestic financial assets on demand for money in the private sector. Thus, it was established that increases in the target for the Overnight Interbank Interest Rate, which have been implemented since late 2015, in addition to contributing to the anchoring of inflation expectations in a medium- and long-term horizon, have induced an increment in the private sector holdings of long-term monetary instruments and have discouraged holdings of zero or low-yield instruments. This has been reflected above all in the increment in households' financial saving, as shown in the estimate of the monetary aggregate M2 by holder. Thus, the monetary policy, by encouraging domestic financial saving, has contributed to mitigate the effects of the greater restriction of foreign financing that have been faced by the Mexican economy.

5. References

European Central Bank (2006), "Sectoral money holding: determinants and recent developments", Monthly Bulletin, August, Frankfurt am Main.

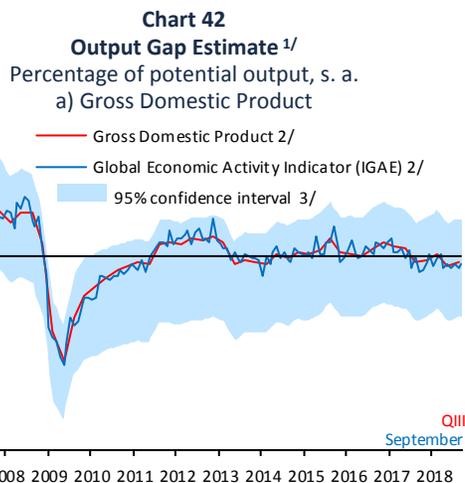
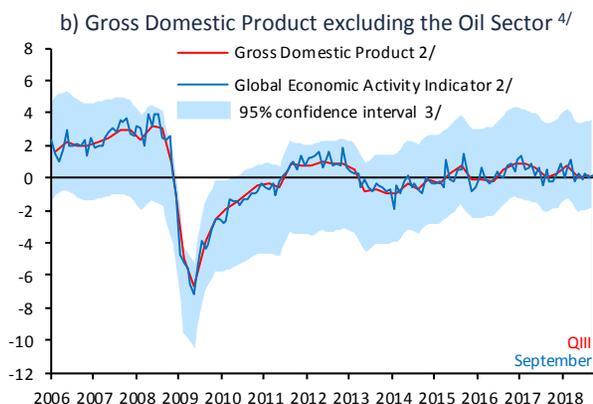
Knell, M., Stix, H. (2005), "The income elasticity of money demand: a meta-analysis of empirical results", Journal of Economic Surveys, 19(3), pp. 513-533.

Papademos, L., Stark, J. (Eds.). (2010), "Enhancing monetary analysis", Frankfurt am Main: European Central Bank.

Ramos-Francia, M., Noriega, A.E. y Rodríguez Pérez, C.A. (2015), "Uso de agregados monetarios como indicadores de la evolución futura de los precios al consumidor: Crecimiento monetario y meta de inflación", Banco de México, Documento de Investigación 2015-14.

2.2.4. Slackness Conditions of the Economy

As for the economy’s cyclical position, slackness conditions are estimated to have tightened slightly as compared to the previous quarter, although they are at less tight levels than those at the beginning of the year (Chart 42 and Chart 43). In particular, after the estimated total output gap and the estimated output gap excluding the oil sector exhibited lower levels in the second quarter of 2018, which was congruent with the contraction of the economic activity reported in that period, in the third quarter there was a slight tightening in light of the GDP expansion in the reference quarter. Meanwhile, based on August information, by groups of slackness indicators, the index related to the labor market presented levels similar to those observed during the previous months, while that related to consumption had a certain tightening, and that associated to demand conditions in the loanable funds market showed a relaxation (Chart 44).⁸



b) Gross Domestic Product excluding the Oil Sector ^{4/}

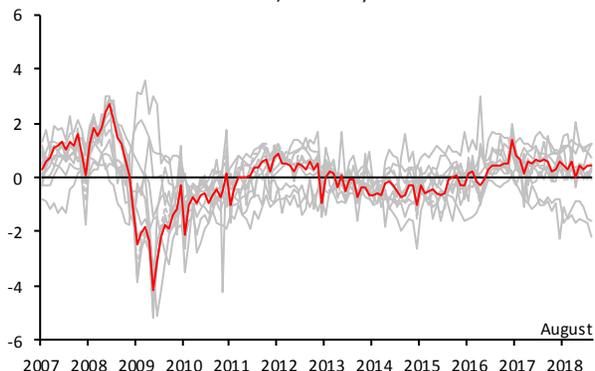
— Gross Domestic Product 2/
— Global Economic Activity Indicator 2/
95% confidence interval 3/

s. a. / Prepared with seasonally adjusted data.
1/ Estimated using the Hodrick-Prescott (HP) filter with tail correction; see Banco de México Inflation Report, April- June 2009, p.69.
2/ GDP figures as of the third quarter of 2018, IGAE figures as of September 2018.
3/ Confidence interval of the output gap calculated with an unobserved components’ method.
4/ GDP excluding oil and gas extraction, excluding mining-related services and those derived from oil and carbon.
Source: Prepared by Banco de México with data from INEG and own data.

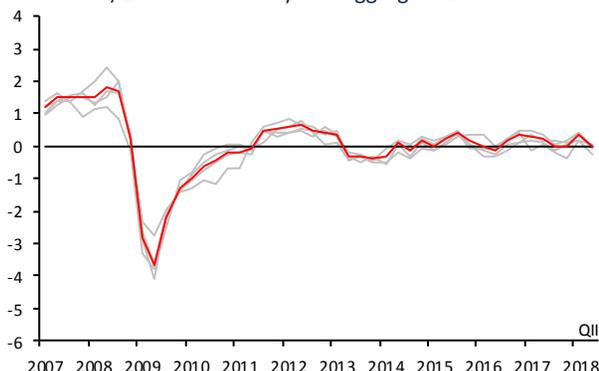
Chart 43
First Principal Component by Frequency of Indicators ^{1/}
In percent
a) Quarterly

⁸ See Banco de México (2017). “Slack Indicators to Identify Inflation Pressures”, in Box 4 of Banco de México’s Quarterly Report October - December 2017, pp. 47-49.

b) Monthly



c) Economic Activity and Aggregate Demand



1/ The constructed indices are based on the MCS methodology; see Box 4 of the Quarterly Report October – December 2017. Monthly and quarterly slack indices are based on the first principal component of the sets comprising 11 and 12 indicators, respectively. The first component represents 50 and 57% of the joint variation of monthly and quarterly indicators, respectively. Grey lines correspond to individual slack indicators used in the principal components analysis.

Source: Estimated with data from INEGI and Banco de México.

d) Demand Conditions in the Loanable Funds Market

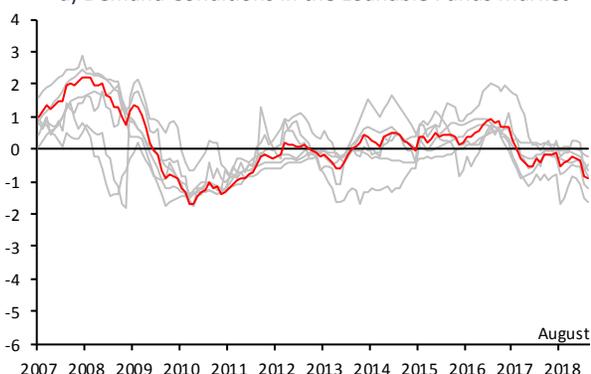
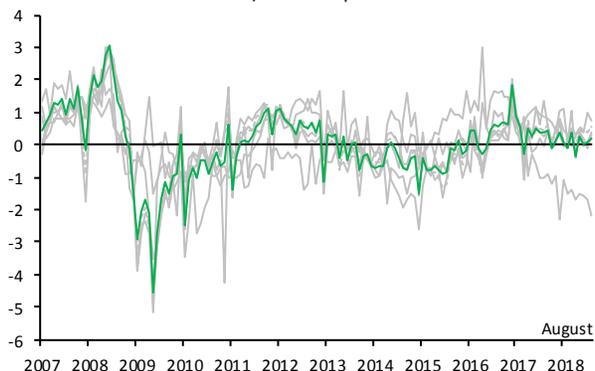
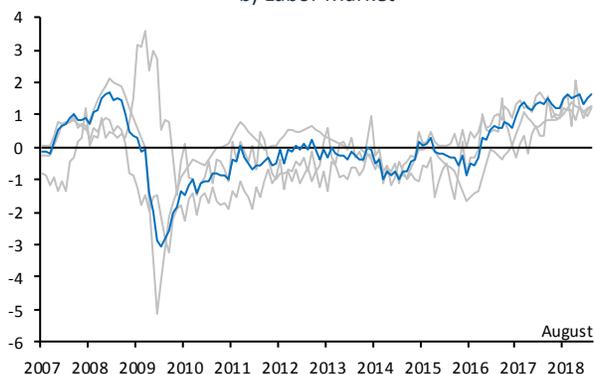


Chart 44
First Principal Component by Group of Indicators ^{1/}

In percent
a) Consumption



b) Labor Market



1/ The constructed indices are based on the MCS methodology; see Box 4 of the Quarterly Report October – December 2017. The slack indices related to consumption, labor market, economic activity and financial conditions are based on the first principal component of sets comprising 6, 3, 4, and 6 indicators, respectively. The first principal component represents 62, 50, 96 and 57% of the joint variation of the indicators of consumption, labor market, economic activity and financial conditions in the same order. The indices are based on monthly indicators, except for economic activity and aggregate demand, which use quarterly indicators. Grey lines correspond to individual slack indicators used in the principal component analysis.

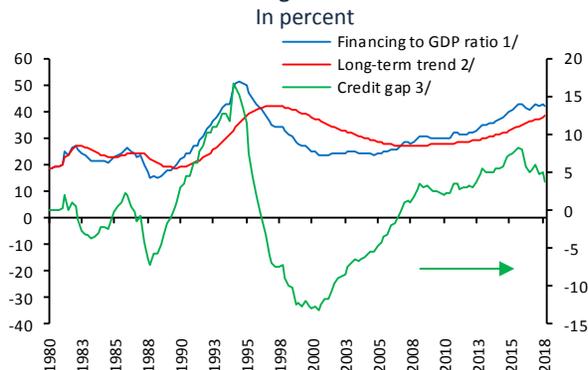
Source: Prepared by Banco de México with data from INEGI and own data.

2.2.5. Stability of the Financial System

2.2.5.1. Aggregate Financing

In the described economic environment, total financing to the non-financial private sector as a percentage of GDP maintained a slightly downward trend during the third quarter of the year, although it persists at levels above its long-term trend (Chart 45). It is noteworthy that, although this deviation has been used to identify periods in which rapid credit growth might imply a vulnerability in the financial system, this indicator could have some limitations. Hence, it is also important to consider other elements, such as the quality of the portfolio, lending standards and other conditions on the supply and demand of credit.

Chart 45
Ratio of Credit to Non-financial Private Sector to GDP and Long-term Trend

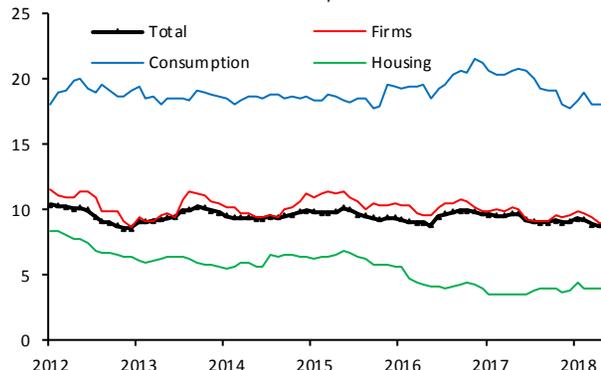


1/ The data of September 2018 are preliminary.
 2/ The long-term trend is estimated using the one-sided Hodrick-Prescott filter with a smoothing parameter equal to 400,000, with data as of the first quarter of 1980.
 3/ The credit gap is calculated as the difference of the financing-to-GDP ratio of its long-term trend. This indicator is a standard international reference established by the Basel Committee on Banking Supervision (BCBS) to identify a credit growth that could be excessive. BCBS suggests that the countries should consider this indicator along with others that, given their features, would be relevant to decide on the activation and the amount of the countercyclical capital buffer requirement.
 Source: Prepared by Banco de México with data from INEGI and own data.

2.2.5.2. Credit Risk

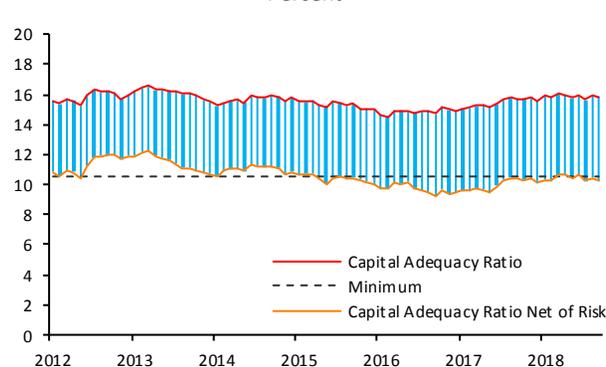
The credit risk of commercial banks, as measured with the Conditional Value at Risk (CVaR), remained stable during the quarter as a share of credit portfolio (Chart 46). Capital Adequacy Ratio⁹ has increased during the last months and is at levels close to the regulatory minimum, a situation that reflects banks' capacity to absorb possible losses (Chart 47).

Chart 46
Annual Conditional Value at Risk at 99.9% by Type of Loan



Source: Banco de México.

Chart 47
Capital Adequacy Ratio^{1/}



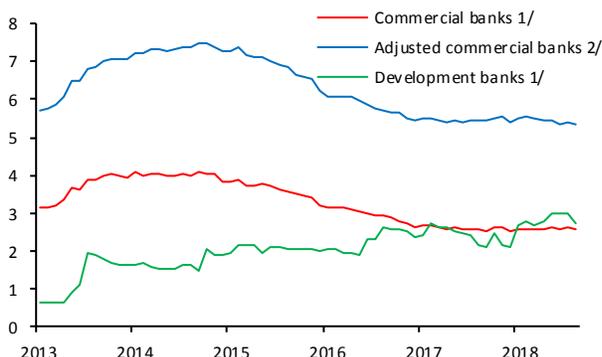
1/ Estimated by reducing the CVaR both of net capital and risk-weighted assets. This indicator assumes that the credit portfolio has losses of an amount equivalent to CVaR, and which are directly assumed by banks, reflecting the capital loss without affecting their reserves, and this portfolio is weighted at 100% to determine the capital requirement.
 Source: Banco de México.

⁹ Estimated by reducing the CVaR both of net capital and risk-weighted assets. This indicator assumes that the credit portfolio has losses of an amount equivalent to CVaR, and which are directly assumed by banks,

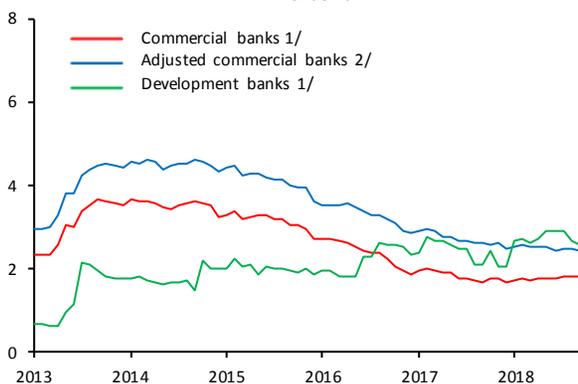
reflecting the capital loss without affecting their reserves, and this portfolio is weighted at 100% to determine the capital requirement.

The adjusted delinquency rate of the companies' portfolio increased by 0.2 bp, from 2.347 to 2.349%. In contrast, the adjusted delinquency of the housing credit decreased 8.8 bp, from 3.52 to 3.43%, just like the consumer portfolio, which declined by 11.8 bp, from 13.35 to 13.24%, mainly in the segments of cards and personal credits (Chart 48).

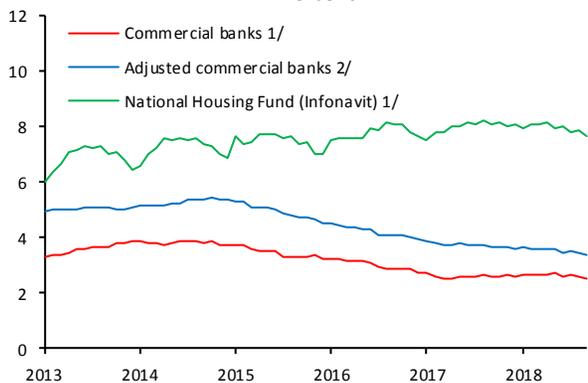
Chart 48
Delinquency Rates of Credit to Non-financial Private Sector
 a) Total
 Percent



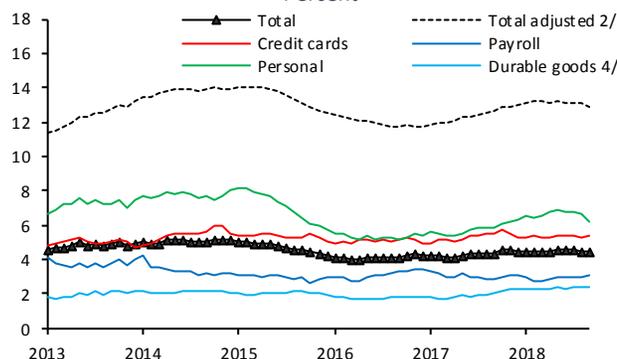
b) Firms
 Percent



c) Housing
 Percent



d) Consumption ^{1/ 3/}
 Percent



1/ The delinquency rate is defined as the stock of non-performing loans divided by the stock of total loans.

2/ The adjusted delinquency rate is defined as the non-performing portfolio plus debt write-offs accumulated over the last 12 months divided by the total portfolio plus debt write-offs accumulated over the last 12 months.

3/ Includes Sofomes ER subsidiaries of bank institutions and financial groups.

4/ Includes auto loans and credit for acquisition of other movable properties.
 Source: Banco de México.

2.2.5.3. Market Risk

The appreciation of the Mexican peso in late June persisted during most of the third quarter, in part, due to an orderly electoral process. However, since mid-August and during the first weeks of September, volatility in the Mexican foreign exchange market heightened, due to investors' uncertainty related to external factors, such as the expectations of increases in the U.S. rates and the prevailing situation in some emerging economies. Although during the second half of September and in early October the Mexican peso appreciated again, supported by the new trade agreement among Mexico, the U.S. and Canada, starting from the second half of October the uncertainty associated to the referred external factors, and that derived from the domestic ones, such as Pemex investment plans and the reformulation of large infrastructure projects, among others, have generated a depreciation, as well as higher volatility of the Mexican peso. These factors also affected domestic interest rates, which displayed widespread increases, especially medium- and long-term interest rates.

In this environment, banks' market risk, which to a great extent depends on the volatility levels of the market variables, had a greater variability during the year, using the Conditional Value at Risk (CVaR) as a risk indicator. In particular, CVaR increased from a level of 4.49% of net capital in June to 4.59% in September (Chart 49).

Chart 49
Conditional Value at Risk at 99.9% for Banks' Market Risk
 Percent of net capital

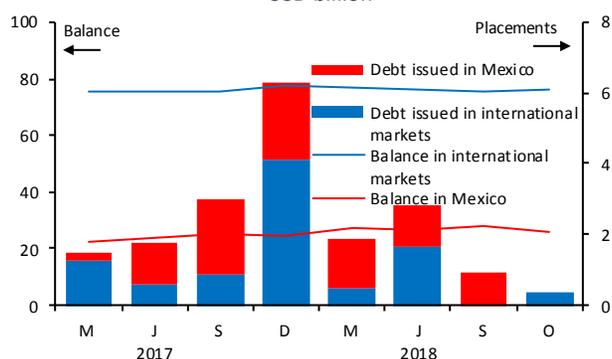


Source: Banco de México.

2.2.5.4. Non-financial Private Firms Listed in the Mexican Stock Exchange and other Issuers

As regards the non-financial private firms' debt issuances in intentional markets, it stands out that during the third quarter of the year there were no issuances (Chart 50). Despite this, in late October a non-listed manufacturing firm with a high credit rating issued a bond in order to refinance another with maturity in 2019. Thus, the outstanding net external debt for these firms has remained practically unchanged.

Chart 50
Quarterly Gross Issuances of Long-term Debt by Non-financial Private Firms
 USD billion



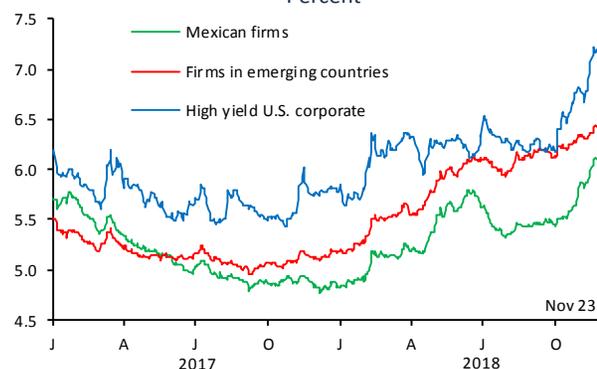
Source: Indeval and Bloomberg.

This can be due to the external financing conditions that have become tighter, as observed since 2015. It should be pointed out that the largest part of external financing to the non-financial private firms has been

received by the listed firms, which have had more diverse sources of financing with respect to the rest.

Recently, both domestic and external factors that have generated greater uncertainty in the financial markets have led to a lower risk appetite among international investors. This lower risk appetite has already been reflected in higher financing costs for Mexican firms recently, although they are still lower as compared to other emerging economies (Chart 51).

Chart 51
Bond Yields of Mexican and Emerging Countries' Firms issued in International Markets and Debt of High Yield U.S. Businesses
 Percent

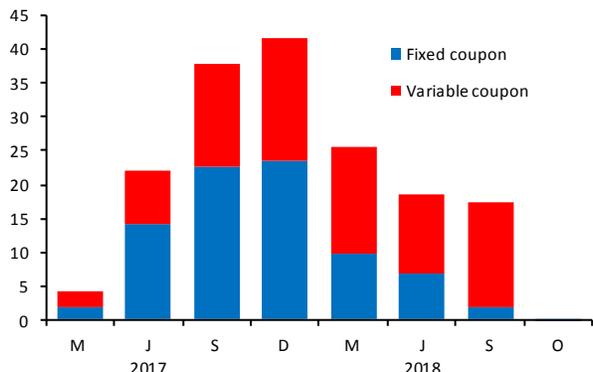


Source: Bloomberg and ICE-BofAML.

Meanwhile, the listed firms have increased their long-term issuances in domestic markets and have done so with an increase in variable rate issuances compared to that observed in the same period of 2017 (Chart 52). Similarly, the share of variable rate credit received by larger firms has increased from 79.21% in June to 79.80% in September 2018.¹⁰

¹⁰ Large firms as those with the approved credit line of over MXN 10 million.

Chart 52
Quarterly Gross Issuances of Long-term Debt issued in Mexico
by Non-financial Private Firms
 MXN billion

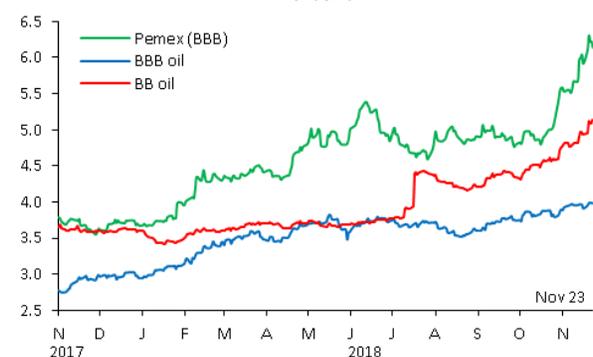


Source: Indeval and Bloomberg.

Greater uncertainty in the financial markets has caused some businesses that expected to issue capital in local markets via Initial Public Offerings (IPO) to cancel or to postpone their plans.

Just like non-financial firms, Pemex has faced higher costs of financing in other currencies over the last months. These costs have reached greater levels than those paid by firms that have a lower credit rating (Chart 53).

Chart 53
Yield of Debt Issued by Pemex in International Markets and of
Debt of Oil Companies with BB and BBB Ratings 1/
 Percent

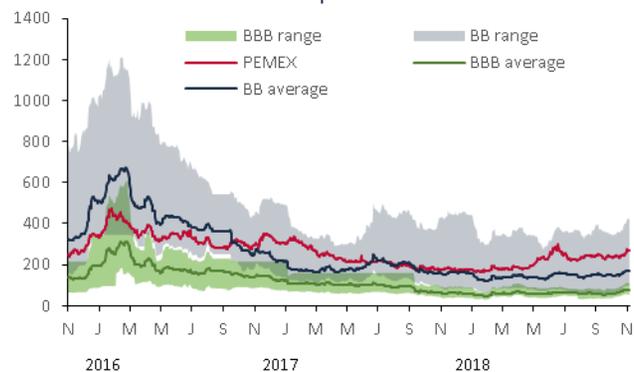


1/ The global credit rating of Pemex granted by S&P, Moodys and Fitch is BBB+, BBB- and BBB+, while the individual rating of the firm (unsupported) granted by the same rating agencies is BB-, B- and B-, respectively. The averages by rating consider seven oil companies in the BBB category (Andeavor, Apache, Canadian Natural Resources, Eni, Halliburton, Repsol and Valero Energy) and six in the BB category (Anadarko, Devon Energy, Encana, Hess, Nabors, and Petrobras).

Source: Bloomberg.

In addition to the external factors that have translated into a lower risk appetite in the global markets, domestic factors also affected the perception of business risk in the last weeks. In particular, after the rating agency Fitch downgraded to negative the credit rating outlook at the global scale on October 19, the credit default swap (CDS) has risen to even higher levels as compared to other oil companies with similar or lower ratings (Chart 54).

Chart 54
Credit Default Swap measured by 5-year CDS of the Debt
Issued by Pemex and Oil Companies with BB and BBB ratings 1/
 Basis points



1/ Seven oil companies were considered in the BBB category (Andeavor, Apache, Canadian Natural Resources, Eni, Halliburton, Repsol and Valero Energy) and six in the BB category (Anadarko, Devon Energy, Encana, Hess, Nabors, and Petrobras). To construct the average by rating, a simple average of CDS was taken across the oil companies at each credit rating level.
 Source: Indeval and Bloomberg.

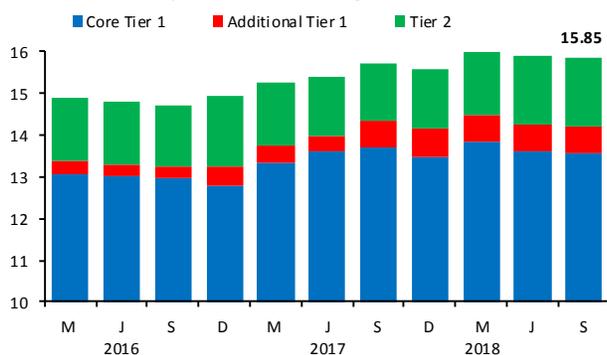
2.2.5.5. Commercial Banks

Commercial banks remain in a position of strength to face risks. The capital adequacy ratio (CAR)¹¹ continues high with respect to the one observed in previous months (15.85% in September), and practically unchanged with respect to the end of the second quarter (15.92%). In addition, commercial banks display a robust capital regulation in terms of the absorption of losses, as most of it is constituted by the core TIER1 capital (85.6% in September) (Chart 55).

¹¹ The capital adequacy ratio is estimated by dividing the net capital by the risk-weighted assets. According to the capitalization rules, the quotient of this division should be at least 10.5 percent. The net capital

is the regulatory capital that includes the Tier 1 capital and the Tier 2 capital. The Tier 1, in turn, consists, in part, of Common Equity Tier 1 capital and Additional Tier 1 capital.

Chart 55
Evolution of Regulatory Capital Requirement
 In percent of risk-weighted assets



Source: Banco de México.

It is noteworthy that the 2018 Financial System Report has been released recently.¹² This report presents an analysis of stress scenarios for the financial system, which considers extreme events associated to the risk faced by the system. In particular, three scenarios have been analyzed: first, a scenario of greater trade barriers, which would be consistent with an unfavorable outcome of the trade agreement negotiations among Mexico, the U.S. and Canada; secondly, a scenario of volatility and capital outflows, which could be defined by a downgraded sovereign rating, in which Mexico would lose its investment grade; and, finally, a scenario of economic deceleration which would affect the credit growth and would raise the delinquency of the credit portfolio. The results of this analysis show that the banking system is characterized by solid conditions to face negative shocks, even if they were extreme.

Despite this, the effects of these adverse scenarios can be more severe or further escalate due to a number of vulnerabilities. Therefore, when confronting the first deterioration signs, measures should be taken to prevent their propagation, and, at the same time, to strengthen the fundamental elements for stability and confidence.

¹² See [Reporte Sobre el Sistema Financiero 2018](#).

3. Recent Evolution of Inflation

3.1. Inflation

Annual headline inflation increased from 4.57 to 4.91% between the second and the third quarters of 2018. This evolution reflected both the increment in the non-core component in the third quarter, which has persisted at high levels for a long time, and the resistance of core inflation to continue declining. Non-core inflation went up from 7.28 to 8.78% between the second and the third quarters. This performance was due to higher growth rates of energy prices, in particular, gasoline and LP gas, which were affected by the evolution of their international references expressed in Mexican pesos. Gasoline prices were also affected by the decrease in their fiscal stimuli.

As regards core inflation, despite the environment of relative stability of the exchange rate over most of the analyzed period and despite less tight cyclical conditions as compared to the beginning of the year, in the reference quarter it declined marginally, in part, due to the indirect effects of the increments in fuel prices on the production costs of some of their components. Similarly, the annual prices changes of

some elements of the core subindex displayed a growing trajectory, as was the case of the segment of services other than education and housing. In this context, a number of factors, in addition to the referred indirect effects, also contributed to the persistence of core inflation at high levels. In this way, this indicator stopped declining and remained practically constant over the recent months, at levels above the target. In particular, annual core inflation registered average levels of 3.67 and 3.64% in the reference quarters.

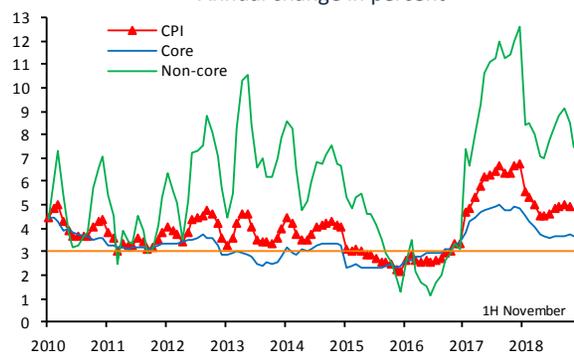
However, in October and in the first half of November, annual headline inflation decreased to a level of 4.56%. This is largely attributed to the decline in annual non-core inflation, which registered 7.46% in the first half of November. The decline of the annual non-core inflation mainly stemmed from the decreases in some energy prices, such as LP gas, as well as lower increases in gasoline prices and in electricity tariffs as compared to the same period of 2017. Annual core inflation remained at levels very similar to those observed during the previous two quarters, and marked 3.63% in the first half of November (Table 2 and Chart 56).

Table 2
Consumer Price Index, Main Components and Trimmed Mean Indicators
 Annual change in percent

	2017		2018			
	III	IV	I	II	III	1H November
CPI	6.48	6.59	5.31	4.57	4.91	4.56
Core	4.91	4.85	4.29	3.67	3.64	3.63
Merchandise	6.37	6.11	5.20	4.10	3.95	3.87
Food, beverages and tobacco	7.29	6.80	5.93	4.71	4.62	4.84
Non-food merchandise	5.60	5.53	4.58	3.59	3.38	3.04
Services	3.68	3.77	3.50	3.30	3.35	3.39
Housing	2.61	2.66	2.57	2.58	2.60	2.61
Education (tuitions)	4.56	4.74	4.79	4.82	4.83	4.69
Other services	4.53	4.63	4.07	3.58	3.84	4.02
Non-core	11.51	12.00	8.32	7.28	8.78	7.46
Agricultural	12.07	8.99	9.39	3.40	1.37	2.93
Fruit and vegetables	21.80	15.59	14.93	0.57	-0.56	2.29
Livestock	6.50	5.06	6.25	5.10	2.40	2.92
Energy and government-authorized prices	11.14	13.92	7.70	9.71	13.68	10.58
Energy	13.68	17.03	8.00	12.18	18.60	13.69
Government-authorized prices	6.82	8.20	7.08	5.12	4.60	3.38
Trimmed Mean Indicator ^{1/}						
CPI	4.61	4.68	4.22	3.87	4.16	4.15
Core	4.52	4.50	4.01	3.55	3.57	3.67

1/ Prepared by Banco de México with data from INEGI.
 Source: Banco de México and INEGI.

Chart 56
Consumer Price Index
Annual change in percent



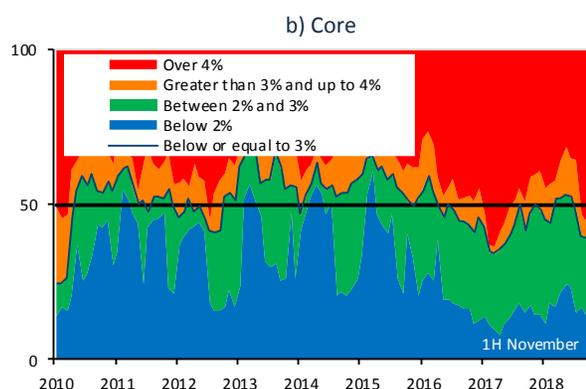
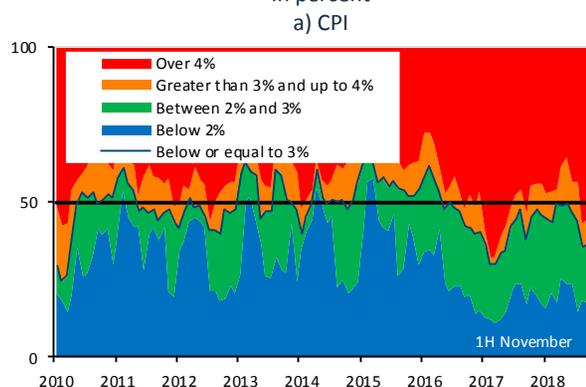
Source: Banco de México and INEGI.

In order to analyze both the headline and core inflation trends and their performance at the margin, some indicators that yield relevant information are presented below.

In the first place, the proportion of headline and core CPI baskets, which presents monthly price changes (seasonally adjusted and annualized) grouped into different intervals, is analyzed. To do so, the items that are part of these baskets are grouped into four different categories: i) items with a price change below 2%; ii) between 2 and 3%; iii) greater than 3% and up to 4%; and iv) over 4%. Additionally, the percentage of baskets in two more categories is shown: the one with monthly prices changes smaller or equal to 3%, and the one with monthly price changes over 3% (Chart 57).

This analysis shows that the percentage of both headline and core basket (with price increments less than 3%) decreased in the third quarter (blue and green areas, Chart 57). In particular, the share of the basket of the headline index with monthly annualized changes lower or equal to 3% (area below the blue line) was 49% in the second quarter, 38% in the third one, and marked 44% in the first half of November. For the core index basket, in the respective quarters shares were 53 and 42%, and marked 45% in the first half of November.

Chart 57
Percentage of CPI Basket according to Intervals of Monthly
Annualized Increment, s. a. ^{1/}
In percent



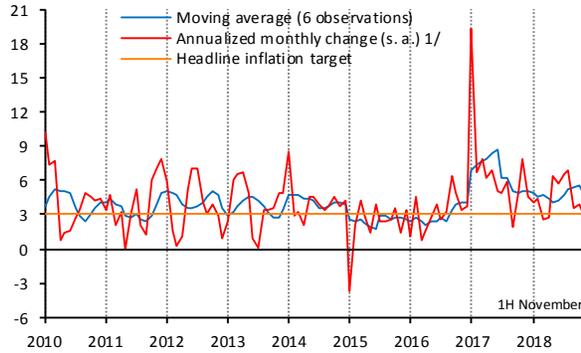
s. a. / Seasonally adjusted data.

1/ 3-month moving average.

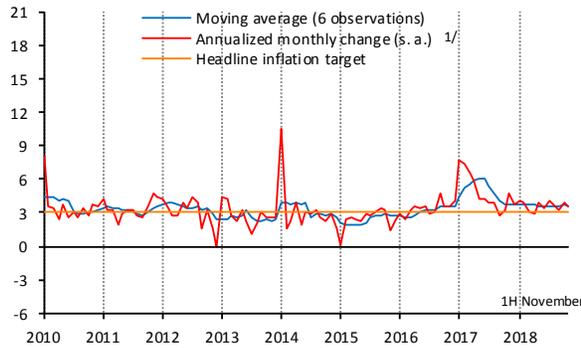
Source: Banco de México and INEGI.

Regarding the evolution of monthly (seasonally adjusted and annualized) changes, it is noteworthy that those of headline inflation increased in the third quarter, which was related to higher energy prices, although these changes declined at the margin. Likewise, the moving average of six observations of the headline inflation monthly changes is starting to exhibit an incipient downward trend. In regard to the core subindex, both its monthly changes and its trend measure (the moving average of six observations) have maintained levels above 3%. Within this component, the monthly changes of the subindex of merchandise prices increased during the reference quarter, although the most recent records of these monthly changes have declined. With respect to the subindex of services prices, its monthly changes (seasonally adjusted and annualized) were close to 3.5% (Chart 58).

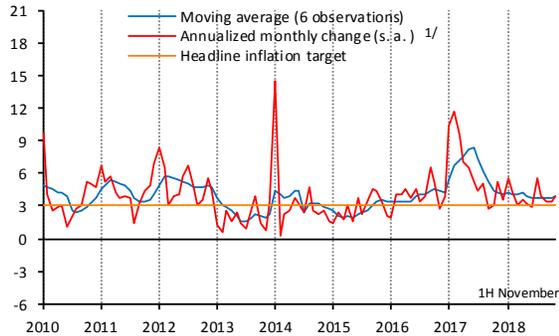
Chart 58
Annualized Seasonally Adjusted Monthly Change and Trend
 In percent
 a) CPI



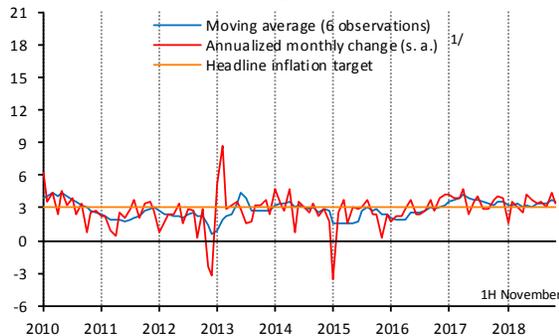
b) Core



c) Merchandise



d) Services



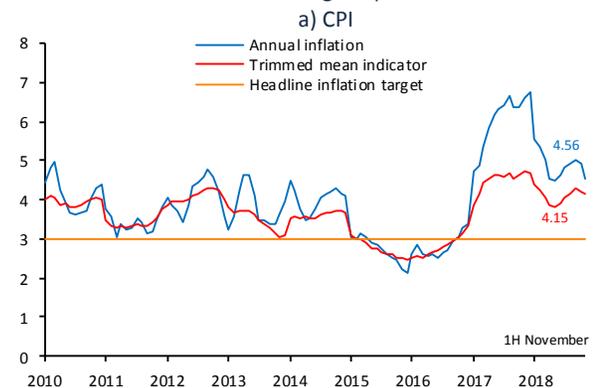
s. a. / Seasonally adjusted figures.

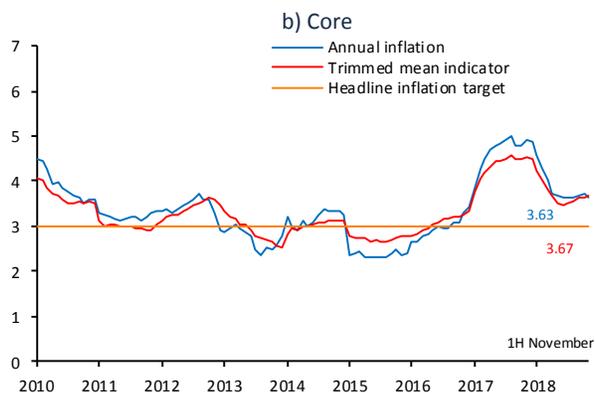
1/ For the last observation, the annualized biweekly change is used.

Source: Seasonal adjustment prepared by Banco de México with own data and data from INEGI.

The Trimmed Mean Indicator for annual headline inflation remains below the level observed in headline inflation, which indicates that the current headline inflation level stems from especially high price changes in certain goods and services. Thus, if these extreme price changes were excluded, the inflation level would be lower than that observed. Between the second and the third quarters of 2018, the Trimmed Mean Indicator for annual headline inflation was 3.87 and 4.16%, while in the first half of November it was 4.15%. These figures are compared with annual inflation observed in this period, and which presented levels of 4.57, 4.91 and 4.56%, respectively. The difference between the Trimmed Mean Indicator for annual core inflation and the observed data has been declining, which shows that the extreme price changes in this component have had a lower impact. Specifically, the Trimmed Mean Indicator for annual core inflation lied at 3.55% in the second quarter, 3.57% in the third one, and 3.67% in the first half of November (Chart 59 and Table 2).

Chart 59
Price Indices and Trimmed Mean Indicators^{1/}
 Annual change in percent





1/ The Trimmed Mean Indicator excludes the contribution of extreme variations in the prices of some generic items to the inflation of a price index. To eliminate the effect of these changes, the following is done: i) monthly seasonally adjusted changes of the generic items of the price index are arranged from the smallest to the largest value; ii) generic items with the largest and the smallest variation are excluded, considering in each distribution tail up to 10 percent of the price index basket, respectively; and iii) using the remaining generic items, which by construction lie closer to the center of the distribution, the Trimmed Mean Indicator is calculated.

Source: Prepared by Banco de México with own data and data from INEGI.

3.1.1. Core Inflation

As mentioned above, in the third quarter of 2018, the pace of decrease of annual core inflation was limited by the indirect effects generated by higher energy prices onto the production costs of some of its components. Similarly, some segments of the core index, such as that of services other than education and housing, presented a growing trajectory in their annual price changes. Thus, in addition to the indicated indirect effects, different factors that have led to a growing trajectory in the inflation of services, such as the evolution of the exchange rate, the absence of slack in the economy and the evolution of real wages, could also be contributing to the persistence of core inflation (see Box 4).

Within the core component, the following was observed:

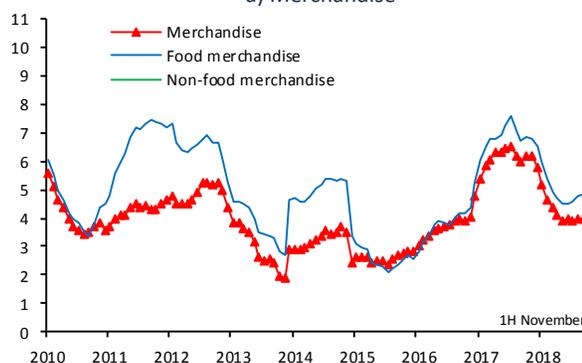
- i. The annual average change of the merchandise price subindex declined from 4.10 to 3.95% between the second and the third quarter of 2018. This performance was due to smaller increments in the prices of both food and non-food merchandise. In the said quarters, the average annual change of food merchandise shifted from 4.71 to 4.62%, while that of non-food merchandise declined from 3.59 to 3.38%. In the first half of November, the annual change of the merchandise price subindex decreased to 3.87%. This stemmed from the downward trend in the

annual change rate of non-food merchandise price, which marked 3.04% in the first half of November. In contrast, it stands out that since July the growth rate of food merchandise prices has accelerated, in part, reflecting the referred indirect effects. Thus, in the first half of November, the annual change of food merchandise prices attained 4.84% (Chart 60a and 61).

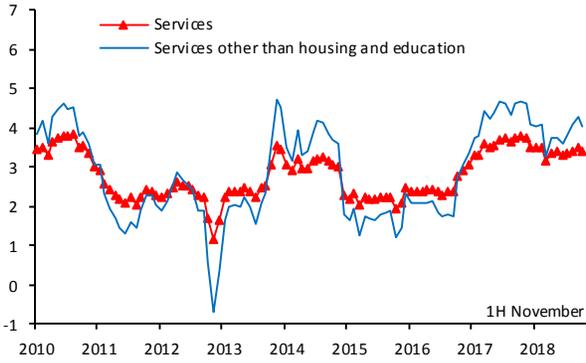
- ii. The average annual change of the subindex of services prices went up from 3.30 to 3.35% between the second and the third quarters, and in the first half of November marked 3.39%. This result is accounted for by the evolution of the growth rate of the price subindex of services other than education and housing, which exhibited higher levels than the inflation target and a growing trend during the reference period, which, as mentioned, has made it more difficult to lower core inflation. Indeed, the segment of services other than education and housing shifted from an average annual change of 3.58 to 3.84% in the referred quarters, and marked 4.02% in the first half of November (Chart 60b and 61). Specifically, the price dynamics of some generic items of this group, some of which are food services, tourism and passenger transport services, were in part affected by higher energy prices. Nonetheless, during the first half of November, both the annual change of the subindex of services prices and that of the segment of services other than education and housing decreased as compared to the previous month.

Chart 60
Core Price Index

Annual change in percent
a) Merchandise



b) Services

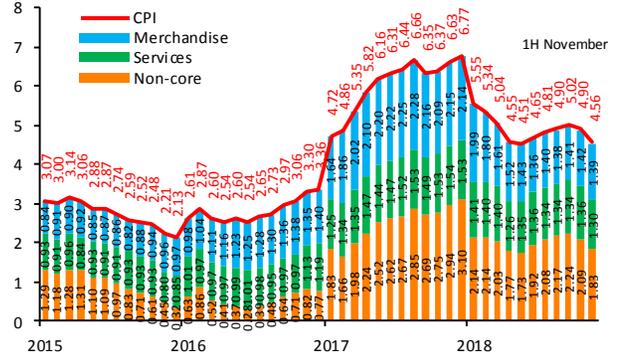


Source: Banco de México and INEGI.

Fundamental core inflation observed certain increments over the last months, although it has persisted at levels below those of core inflation. In particular, the annual growth rate of fundamental core inflation went up from 3.43 to 3.46% between the second and the third quarters of 2018, and marked 3.53% in the first half of November (Chart 62).

Chart 61

Consumer Price Index
Annual contribution in percentage points 1/

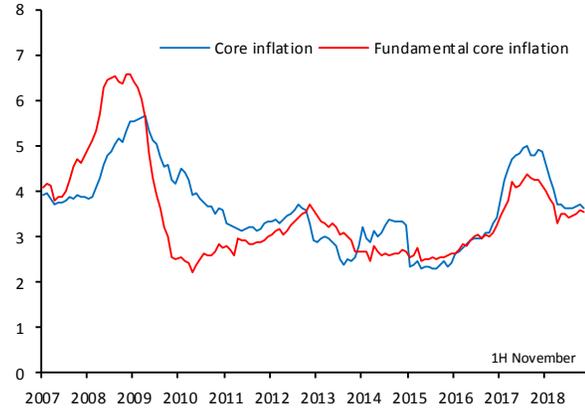


1/ In some cases, the sum of respective components can exhibit some discrepancies due to rounding.

Source: Prepared by Banco de México with data from INEGI.

Chart 62

Core Inflation and Fundamental Core Inflation
Annual change in percent



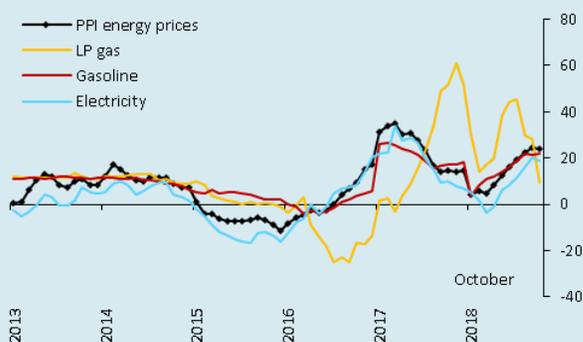
Source: Banco de México and INEGI.

Box 4. Indirect Effects of Energy Price Increments on Core Inflation

1. Introduction

In the third quarter of 2018, energy prices observed high growth rates. This largely explains the rebound in annual headline inflation throughout the third quarter, as, in addition to directly affecting the evolution of the non-core component, these increases indirectly affected the prices of some generic items of the core component. In particular, the higher prices of gasoline and LP gas were the ones that affected this dynamics the most. These price increases are in part accounted for by the evolution of the respective international references expressed in Mexican pesos, together with the decrease in the fiscal stimuli in the case of gasoline (Chart 1). Thus, in the third quarter, the segment of energy products of the Producer Price Index showed an average annual change of 21.9%.¹ In particular, the prices of gasoline and LP gas of the PPI had an average annual growth of 20.8 and 33.7%, respectively.

Chart 1
Producer Price Index of Energy Prices
 Annual change in percent



Source: Banco de México based on INEGI.

Given the influence of the indirect impact of higher energy prices on the resistance of core inflation to decline, this Box presents the estimation of said indirect effects on the goods and services' prices of core inflation. In addition, intensive and non-intensive in energy products generic items are identified, in order to illustrate the differences in the inflation dynamics of both groups.

2. Indirect Effects of Energy Prices on Core Inflation

To estimate the indirect effects of energy prices on core inflation, generic items with a statistically significant response to changes in the energy prices were identified. In particular, the following regression was estimated for all generic items of the core price subindex for the period January 2007 to October 2018:²

$$\pi_t^i = \alpha_i + \sum_{j=1}^{n_1} \beta_j^i \pi_{t-j}^i + \sum_{j=0}^{n_2} \gamma_j^i \Delta_1 TC_{t-j} + \sum_{j=0}^{n_3} \delta_j^i \Delta_1 Ener_{t-j} + \sum_{j=0}^{n_4} \tau_j^i W_{t-j} + \sum_{j=0}^{n_5} \vartheta_j^i \Delta_1 PComm_{t-j} + \varepsilon_t$$

where:

- π_t^i is the monthly change of the price index of generic item i that is part of the core basket in period t ,
- $\Delta_1 TC_t$ is the monthly change of the MXN/USD exchange rate in period t ,
- $\Delta_1 Ener_t$ is the monthly change of the PPI energy price index in period t ,
- W_t is the monthly change of the IMSS quotation base salary in period t , and
- $\Delta_1 PComm_t$ is the monthly change of the commodities price index in period t .

Based on the referred equation, long-term coefficients associated to the monthly change of energy prices for any generic item i , and the statistical significance associated to them were obtained. Based on generic items k for which the long-term coefficient turned out to be significant, the indirect effects of energy prices on core inflation are defined as follows:

$$Indirect\ effects_t = \sum_{k \in S} w_k \sum_{j=0}^{n_3} \delta_j^k \Delta_1 Ener_{t-j}$$

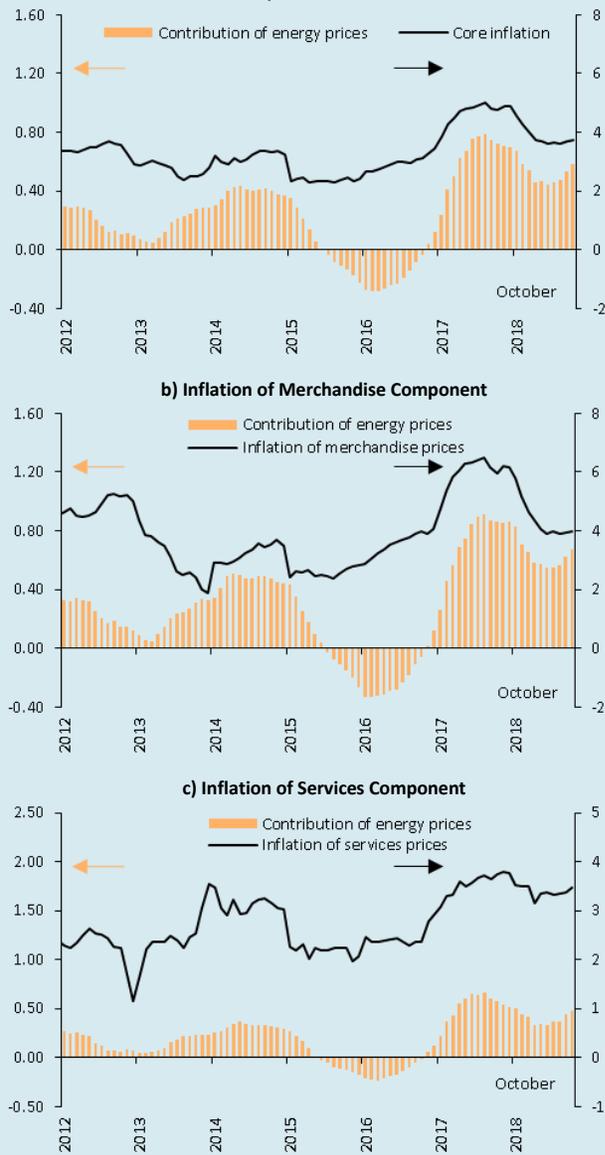
Where w_k is the relative importance of generic item k in the core basket, or rather, in the segment of merchandise or services, as the case may be.

Chart 2 shows the estimated indirect effects on annual core inflation and its components, the price subindices of merchandise and services. It is observed that the indirect effects of energy prices have been greater since the liberalization of gasoline and LP gas prices, which took place in early 2017. Furthermore, over the recent months, these have contributed to the lower convergence of core inflation. This reflects the higher costs faced by merchandise and services' suppliers, which stemmed from the higher energy prices throughout 2018. The aforementioned contributed to limit the decrease of core inflation since the beginning of the second quarter.

¹ In this Box, the price index corresponding to the PPI Energy Products is constructed based on High Voltage Industrial Electricity, Medium Voltage Industrial Electricity, Gasoline, Diesel, Liquid Gas, and Natural Gas.

² Fixed seasonal effects were included. The number of lags of explicative variables was determined using the phasing-out methodology, which consists in including regressors iteratively in accordance with the specific criterion, in this case the level of statistical significance.

Chart 2
Indirect Effects of Energy Prices on Core Inflation
 Data in percent



Source: Estimated with data from Banco de México and INEGI.

3. Core Inflation Intensive in Energy Prices

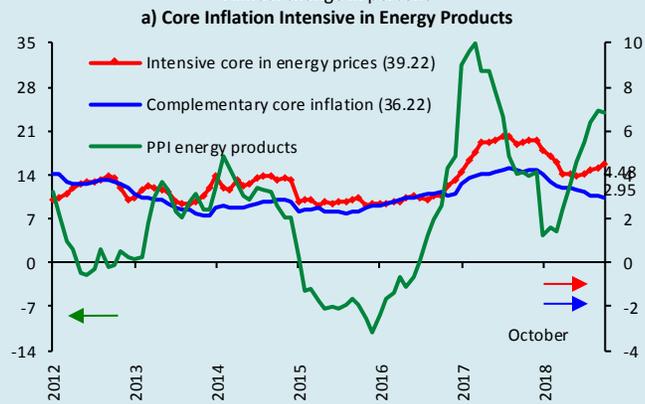
Based on the generic items that have a statistically significant response to changes of energy prices, a special index was constructed, which will be referred to as Core Inflation Intensive in Energy Prices, with the respective openings for the merchandise and services subindices.

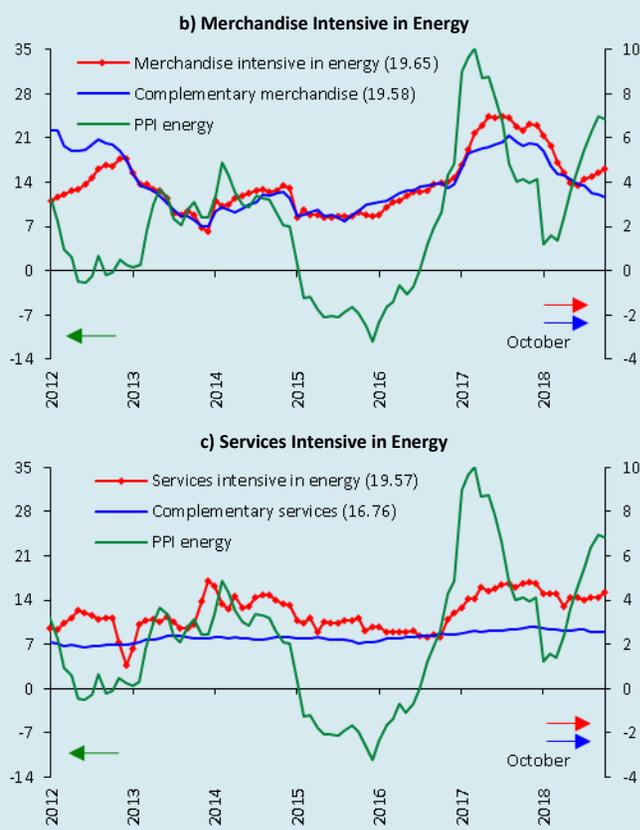
As shown in Chart 3, since late 2016, the price index of the core basket intensive in energy prices has presented higher inflation levels compared to those of the complementary basket. In early 2017 this difference broadened, which derived from the liberalization of energy prices that year, and which affected goods' and services' prices via production costs, which translated into higher inflation levels in the price subindices of merchandise and services.

Furthermore, although core inflation intensive in energy prices and complementary inflation presented progressive reductions in their annual inflation levels in the period from January to April 2018, in the case of the former, this trend was reversed in May 2018. This seems to be, in part, due to the lagged reaction of the subindices intensive in energy products, both that of merchandise and that of services, to the increments in energy prices that have been observed since early 2018.

As regards the dynamics of the annual change of the complementary core subindex, it follows a decreasing trend. In particular, in October 2018, complementary core inflation and inflation of its merchandise and services components were 2.95, 3.32 and 2.56 percent, respectively.

Chart 3
Core Inflation Intensive in Energy Products
 Annual change in percent



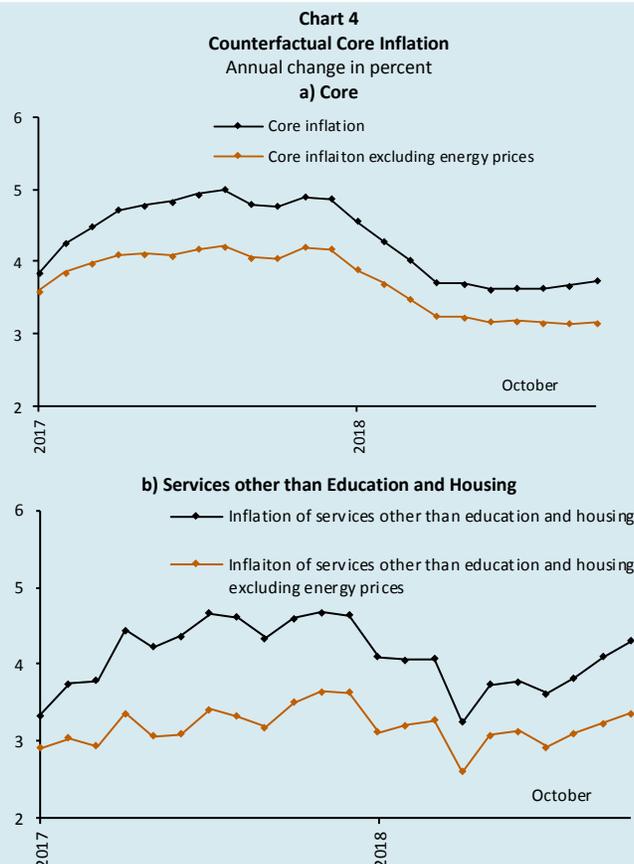


Source: Estimated with data from Banco de México and INEGI. The relative importance of the CPI basket is shown in parenthesis.

4. Counterfactual Core Inflation

This section presents a counterfactual exercise that consists in subtracting the estimated indirect effects of the energy prices from annual core inflation. This same counterfactual exercise was applied to the segment of services other than education and housing, given that their growth rates have recently presented an upward trend.

The results obtained in Section 2, shown via a counterfactual exercise, allow to appreciate two results (Chart 4a): first, although annual core inflation increased during 2017, these increments would have been lower than observed if there had not been increases in energy prices. Furthermore, the initial acceleration of core inflation would have been lower. Second, the increase in annual core inflation in recent months is associated, in part, to increments in energy prices, although these do not explain the stabilization in the rate of its decline.

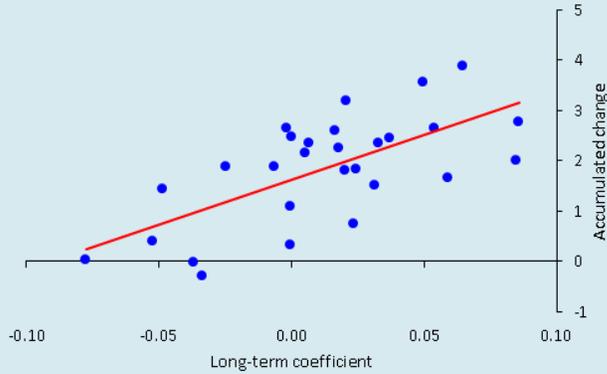


Source: Estimated with data from Banco de México and INEGI.

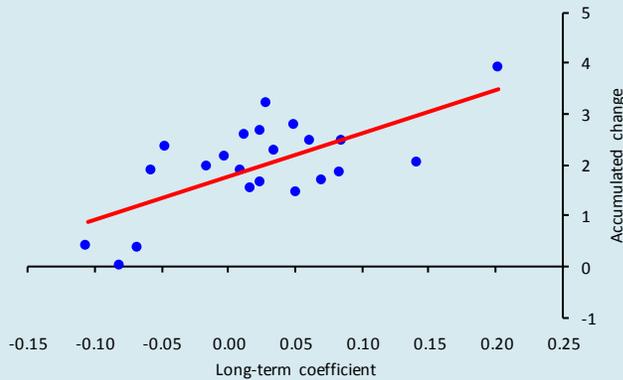
In the case of the segment of services other than education and housing, it is observed that the annual change of their prices rebounded in May 2018, and more notably from August onwards. In this sense, although part of these increments and the core inflation resistance to decline in recent months are explained by the indirect effects derived from higher energy prices, other factors have also affected this dynamic. In particular, Chart 4b shows that, even if the referred indirect effects are excluded from the annual change of the subindex of services other than education and housing, it still presents an upward trend.

In line with the above, scatter plots of the accumulated seasonally adjusted change from April to October 2018 of the generic items that make up the segment of the services other than education and housing are shown, along with the long-term coefficients associated with energy prices, the exchange rate and wages (Chart 5). The purpose of that is to identify the potential relations of other explanatory variables with the increase in the prices of the segment of services other than education and housing, which, as seen above, do not seem to respond only to the increases in energy prices. This analysis shows that, in addition to the possible effect of energy prices, the segment in question could also be reflecting the increments associated to wages and to the exchange rate evolution.

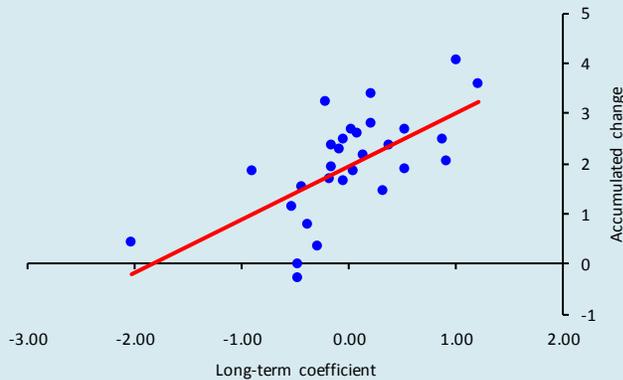
Chart 5
Scatter Plot
 Data in percent
a) Energy



b) Exchange Rate



c) Wages



Source: Estimated with data from Banco de México and INEGI.

5. Final Remarks

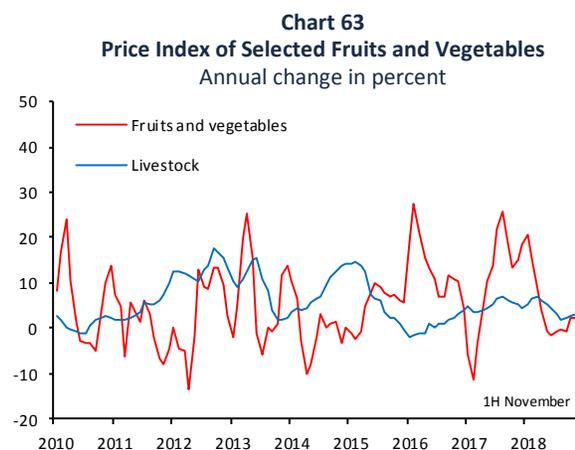
The estimates in this Box show evidence of the indirect effects of higher energy prices on core inflation. Likewise, Core Inflation Intensive in Energy Products seems to suggest that the pace of annual core inflation decline is associated, in part, to increments in the price indices of goods and services that closely respond to price changes in energy products, which have further increased during this year.

The counterfactual exercises show that the indirect effects of the increments in energy prices quantified in this Box, in part, explain the increments of core inflation observed during 2017. Regarding its dynamics in 2018, it is observed that increments in energy prices have been a factor that has limited its pace of decrease. Finally, when analyzing the evolution of the annual change of the prices of services other than education and housing, which has caused an upward adjustment in core inflation in recent months, it was found that, although part of this growth is associated to the recent energy price increments, other variables, such as the exchange rate and wage growth, have also affected its recent dynamics.

3.1.2. Non-core Inflation

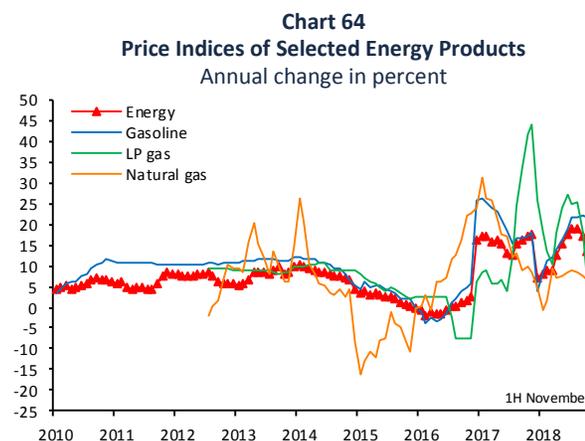
The components of annual non-core inflation have performed in the following manner:

- i. In the third quarter of 2018, the annual change of the subindex of agricultural products' prices continued on a downward trend. Thus, between the second and the third quarters, the average annual change of agricultural products' prices went down from 3.40 to 1.37%, highlighting price drops in some fruits and vegetables, as well as lower price increases of livestock products. In the first half of November, the subindex of agricultural products' prices had an annual change of 2.93%, as a result of the higher prices of some vegetables and some livestock products (Chart 63).



- ii. The average annual change of the price subindex of energy products and government authorized prices went up from 9.71 to 13.68% between the second and the third quarters. This is accounted for by higher annual growth rates in the item of energy products, which lied at an average of 12.18% in the second quarter and reached 18.60% in the third one. This mainly derived from higher prices of gasoline and LP gas (Chart 64). During the reference quarter, most of the annual change of the energy price subindex stemmed from the increments in the prices of these two fuels (Chart 65). As a reference, in the average annual headline inflation of 4.91% in the third quarter, 1.70 percentage points were due to the direct impact of increments in the prices of gasoline and LP gas.

Subsequently, in the first half of November, the subindex of energy prices and government authorized prices displayed an annual change of 10.58%. The decrease of this subindex' annual change and, consequently, of the non-core component during the first half of November mainly stemmed from lower LP gas prices and smaller increments in gasoline prices and electricity tariffs, with respect to those observed in the same period of the previous year.



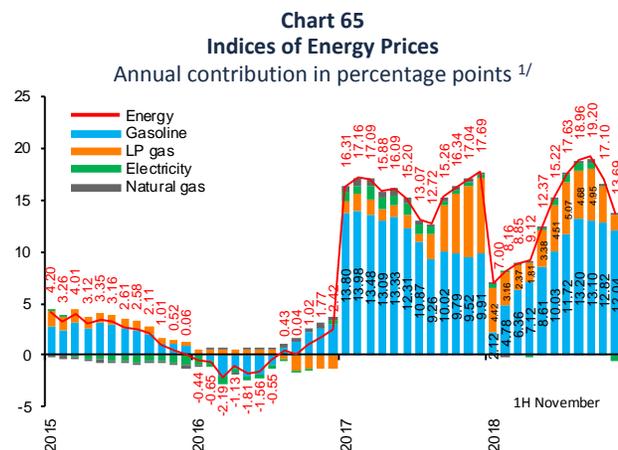
In relation to the above, the following should be mentioned:

- Between the second and the third quarters of 2018, the average annual change of gasoline prices went up from 14.17 to 20.89%, and further to 21.64% in the first half of November. As mentioned above, higher gasoline prices have been an important factor in the rebound in headline inflation in the reference quarter. These increases stem from a number of factors, some of which are the evolution of these fuels' international references expressed in Mexican pesos, which have presented increments. Likewise, gasoline prices have been affected by a decrease in the fiscal stimuli applied to their prices, while the gradual adjustment in their price determination has led to a greater persistence in their increases.
- Increments in the LP gas price affected headline inflation. Thus, the average annual change of this fuel's price went up from 17.45 to 25.86%

between the second and the third quarters. More recently, the annual price change of this fuel has plunged to 7.22% in the first half of November. The performance of this energy price to a large extent reflects the evolution of its international references expressed in Mexican pesos.

- The average annual change of the natural gas price was 8.0% in the second quarter and 8.60% in the third one, and marked 6.67% in the first half of November. The natural gas prices are determined in accordance with its international reference.
- Ordinary electricity tariffs decreased by 2% in early 2016, and since then they have remained unchanged. The dynamics of high consumption domestic tariffs (DAC) respond to the cost of fuel required to generate electric power. In July, August and September, their monthly changes were 2.3, 0.7 and -3.5%, while in October it was 1.2% and in the first half of November it was 3.0%.

Since the energy price liberalization that took place in early 2017, non-core inflation went up considerably and, therefore, its impact on headline inflation increased. Consequent on the evolution of the international references of energy prices and the performance of the exchange rate, the growth rate of these goods' prices persisted at high levels for a long time. This has caused direct and indirect effects that have also contributed to maintain headline and core inflation levels above their targets. In the future, an environment of uncertainty and volatility, not only of the international references and the exchange rate, but also of agricultural products' prices can continue to imply significant challenges to the inflation trajectory towards its target.

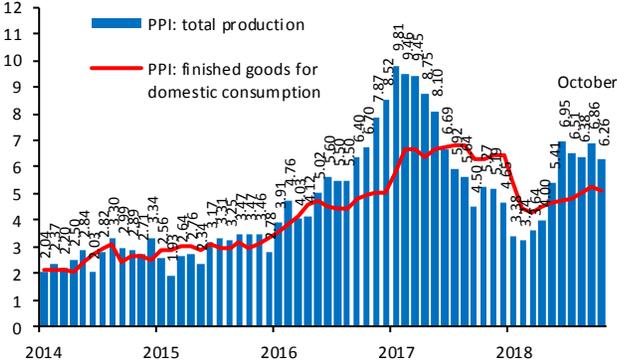


1/ In some cases, the sum of respective components can exhibit some discrepancies due to rounding.
Source: Own estimate with data from INEGI.

3.2. Producer Price Index

The average annual change of the Producer Price Index (PPI) of total production, excluding oil increased from 5.45% in the second quarter of 2018 to 6.59% in the third one, and marked 6.26% in October. Within this indicator, the average annual growth rate of the component of finished merchandise and services went up from 4.97 to 5.77% in the last quarters, and decreased to 5.30% in October. The average annual growth rate of the subindex of merchandise and services for exports rose from 5.37 to 6.37% over the said quarters, and reached 4.29% in October. Meanwhile, the subindex of intermediate goods and services exhibited an increase in its average annual growth rate from 6.55 to 8.44% between the second and the third quarters, and observed the latter level in October as well. It should be mentioned that the subindex of finished goods' producer prices for domestic consumption has the most predictive power on the evolution of consumer merchandise prices, included in the core subindex. The average annual growth rate of this subindex increased between the mentioned quarters from 4.64 to 5.04%, while in October it marked 5.10% (Chart 66).

Chart 66
Producer Price Index 1/
Annual change in percent



1/ Total Producer Price Index, excluding oil.
Source: Banco de México and INEGI.

4. Monetary Policy and Inflation Determinants

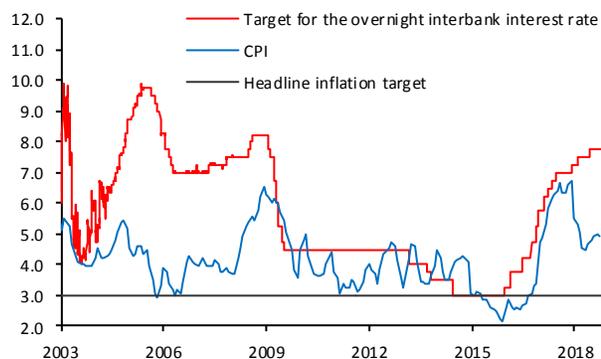
To make decisions regarding the monetary policy conduct, the Governing Board of Banco de México closely follows the inflation evolution vis-à-vis its expected trajectory, considering the horizon in which the monetary policy operates, as well as the available information of all inflation determinants and its medium- and long-term expectations, including the balance of risks to them. In the same vein, the Board considers that if, for a number of reasons, uncertainty faced by the economy increases considerably, it is necessary that the monetary policy responds with a higher degree of prudence. Thus, the convergence of inflation towards its target is favored and the anchoring of medium- and long-term inflation expectations is strengthened.

It is important to emphasize that when conducting monetary policy, Banco de México considers at all times its scope and limitations. In particular, it recognizes that, as shown by the economic analysis and the empirical evidence, it is not possible to permanently affect the economic activity through monetary policy actions. Therefore, the best way Banco de México can contribute to strengthen the productive activity is by focusing on attaining an environment of low and stable inflation (see Box 5).

In its meetings of August and October 2018, the Governing Board of Banco de México maintained the target for the Overnight Interbank Interest Rate at a level of 7.75%. In these decisions, the Governing Board stressed the temporary character of shocks that had affected inflation and emphasized that the expected trend for the core component was downward. However, the Board highlighted the risks and uncertainty associated with this scenario. Subsequently, considering that the balance of risks to inflation continued showing an important upward bias and that it deteriorated significantly in both the short and medium terms, the Governing Board decided to increase the target for the Overnight Interbank Interest Rate by 25 basis points to 8.00% in its November meeting (Chart 67). In the press release of this last decision, it noted that non-core inflation

remains at high levels and the core component displays a resistance to decline. In addition, the Board highlighted that inflation faces considerable challenges associated to a possible adoption of policies that may affect the price formation process in a structural sense. In particular, Banco de México acknowledges that monetary policy has been conducted in an environment of high uncertainty, which has become more complex. In addition to the risks to inflation that have been described in detail in several communication channels of Banco de México, other risks of a structural nature have emerged. These could be derived from the policies and deeply affect the inflation dynamics. Among them is the possibility of actions that could contribute to a greater persistence of inflation, by affecting the price formation process, associated to changes in the determination of wages and other inputs (see Box 6). In this context, Banco de México noted that, considering the challenges that have been faced to consolidate a low and stable inflation, in the future it will take the necessary actions, specifically, maintaining or strengthening the current monetary policy stance, so that headline inflation converges to Banco de México's target within monetary policy's period of influence.

Chart 67
Target for the Overnight Interbank Interest Rate
and Headline Inflation ^{1/}
Annual percent



^{1/} The overnight interbank interest rate is shown until January 20, 2008. The latest inflation figure corresponds to October.

Source: Banco de México and INEGI.

Box 5. Monetary Policy and Economic Activity

1. Introduction

In order to show the scope and limits of the monetary policy in terms of its effect on economic activity and employment, this Box describes the evolution of the economic theory and the empirical evidence regarding the analysis of the interaction between the monetary policy, inflation and unemployment. It is shown that the economic analysis of the last five decades conclusively indicates that the monetary policy has no permanent effects on the economic activity and that its best contribution to economic growth lies in procuring an environment of price stability that is favorable for the development of productive activities.

2. Phillips Curve, Inflation and Unemployment

In the 1960s, it was believed that the monetary policy could be used to boost economic activity permanently. This idea emerged based on the evidence regarding the inverse relation between inflation and unemployment, documented by Phillips (1958) for the U.K. This encouraged the idea that unemployment could be reduced permanently if a higher inflation was accepted. However, in the 60's simultaneous increases in inflation and in unemployment were registered in several countries. That is, the unemployment levels, that were related to low inflations in the 1960s, coincided with high inflations during the next decade.

In this context, Phelps (1967) and Friedman (1968) have suggested that the inverse relation between inflation and unemployment only exists in the short term and as a consequence of unanticipated inflation, and once the contracts are readjusted, considering higher-than-expected prices, this relation disappears. To illustrate this, consider a situation in which the wage, rents and some input prices are fixed due to the existence of fixed-term contracts. A greater aggregate demand as a result the unexpected monetary stimulus will contribute to unanticipated price increases, propitiating the greater-than-expected profit margins of the businesses, and, as a consequence, incentives to increase the production. However, over a longer term, once contracts expire, the economic agents review them considering the higher prices as a result of the monetary expansion, and the incentive to produce more fades. Thus, an expansionary monetary policy would only generate a temporary increase in the economic activity.

The Phelps-Friedman theoretical framework also implies that the relation between the unanticipated inflation and unemployment is not stable, as it depends on inflation expected by economic agents. Insofar as the monetary authorities continue with expansionary policies and the private business agents adjust their inflation expectations upwards, increasingly higher inflation would be required to surprise them and temporarily affect the economic activity. Thus, the authorities' intent to promote economic growth using the

monetary policy leads to a fast increase in inflation and fails to achieve its goal to permanently increase the output.

3. Rational Expectations and Monetary Policy

Lucas (1976) and Sargent and Wallace (1976) showed that, if a central bank tries to explore the relation between inflation and unemployment systematically, said relation can disappear even in the short term. Prior to these authors' research, it was common to assume that economic agents had adaptive expectations and forecasted inflation based on the past inflation. In this context, if the monetary authorities generate increasingly high inflations, the inflation expected by business agents will always be lower than observed. That is, business agents systematically underestimate inflation. Both Lucas, and Sargent and Wallace question the assumption of adaptive expectations, as the private economic agents can notice that certain events, such as the implementation of expansionary monetary policies, can raise inflation.

These authors introduced the hypothesis of rational expectations to the monetary policy analysis. According to this hypothesis, when forming expectations, the economic agents optimally use all available information. Economic agents may make mistakes in their forecasts, but these are not systematic. Therefore, the central banks cannot exploit the agents' forecasting errors to decrease the unemployment. If monetary expansions are systematic, the agents will start to update their contracts more frequently and to protect themselves from possible future price increases. Therefore, the final result will be a higher inflation without a favorable increase in economic activity. Thus, the supposed trade-off between inflation and unemployment can disappear even in the short term.

In sum, according to the economic theory, it is impossible to increase the potential output of the economy via systematically expansive monetary policies.

4. Stabilization of Economic Activity

Although the monetary policy cannot permanently affect production and employment, it could be argued that, in principle, it could be used to moderate economic activity fluctuations over time. It is relevant to distinguish between demand shocks and supply shocks. As regards the former, starting from a position in which inflation is at its target and the economic activity is at its potential level, a lower aggregate demand would tend to push inflation to decline below its target and the observed output to be lower than the potential output. Under these circumstances, there would be no trade-off between stabilizing inflation or the economic activity, and, consequently, the monetary policy response would point to relaxation.

In the case of supply shocks, they tend to cause inflation and output to move in opposite directions. For example, given a negative supply shock, inflation would be positioned above its

target while the economic activity would decrease below its potential level. In this scenario, there would be a trade-off between stabilizing inflation or the economic activity. In a context of anchored inflation expectations, the supply shocks can only have transitory effects on inflation. Under these circumstances, the central banks do not generally restrict the monetary policy. In this way, they prevent the economic activity from being further affected.

It should be noted that, in the case of permanent shocks on the potential growth of the economy, the monetary policy stance should be modified to contribute to the adjustment of the aggregate demand expansion to the new potential growth of the economy.

In addition, it is important to make some general considerations on the adoption of the countercyclical monetary policy. It should be noted that the possibility of implementing a policy of this type largely depends on the general public's belief in the Central Bank's commitment to preserving the currency's purchasing power, and, consequently, on the inflation expectations being well-anchored (Woodford, 2007). Thus, if inflation expectations are not well-anchored and the Central Bank implements an expansionary monetary policy, the economic agents can think that the monetary authority is showing a complacent attitude towards inflation and, consequently, they can adjust their inflation expectations upwards. This would propitiate the upward trend in the medium- and long-term interest rates, caused by higher inflation expectations, as well as a higher inflationary risk premium. In this way, "de-anchoring" of inflation expectations makes the stabilization of the economic activity difficult through countercyclical monetary policy (Mishkin, 2008).

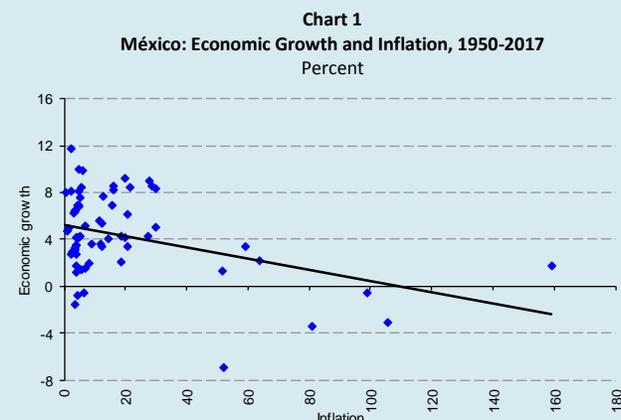
Considering the above, for a countercyclical monetary policy to be effective it is indispensable that the monetary authority has fully consolidated an environment of price stability and that longer-term inflation expectations are firmly anchored to the inflation target. The above is crucial to prevent the monetary policy easing from propitiating a loss of confidence in the Central Bank's commitment to maintain the stability of the currency's purchasing power. It is key for the economic agents to perceive that the monetary easing is transitory and that it will reverse once the economy emerges from recession.

5. Empirical Evidence

Different empirical works have confirmed that a monetary expansion does not permanently increase the output. McCandless and Weber (1995), based on data from 110 countries, found a correlation close to one between the average inflation and the average growth rate of money supply, which is a monetary policy instrument that was commonly used in the period 1960-1990, but no relation between inflation and the output growth rate was found. Using autoregressive vectors and data from the U.S., King and Watson (1992) found evidence that a permanent increase in

inflation is not associated with a permanent shift of the output. Subsequently, Weber (1994) obtained the same result for the G7 countries and Bullard and Keating (1995), with a sample of 16 countries, found that in most cases, Mexico included, the long-term output response to a permanent inflation increase is not statistically different from zero.

In the case of Mexico, along with a number of other economies, in the past, expansive monetary policies were implemented. Which, despite having an effect on the output in some cases, this turned out to be transitory. Ultimately, these policies only led to episodes of high inflation, in which even the economic activity contracted, due to distortions generated by high and variable inflation. That is, the evidence derived from the Mexican experience in the past, which is described below, suggests that during high inflation episodes not only greater growth was not induced, but that, on the contrary, high inflation and the concomitant instability contributed to a negative performance of the economic activity. Indeed, Chart 1 suggests that in the case of Mexico there is not a positive relation between inflation and economic growth, but rather the relationship seems to be negative.



Source: Statistics from the IMF; Banco de México and INEGI.

Among many channels through which inflation can negatively affect the economic activity and the welfare, the following can be mentioned: the inefficient resource allocation, lower investment levels, a process of financial disintermediation, as well as a greater inequality in the distribution of income and wealth.

Inflation and Economic Activity

One of the most relevant negative effects of inflation is the uncertainty regarding the future evolution of prices, which, in accordance with the empirical evidence, increases insofar as the inflation level goes up (Evans and Wachtel 1993, Golob 1993, 1994). This is significant, given that the prices of different goods and services summarize the information required to make decisions. As a consequence, high and variable inflation distorts the information transmitted by prices and propitiates incorrect decisions made by households and businesses. In addition, a greater uncertainty over the future evolution of inflation also makes the economic agents' long-term planning

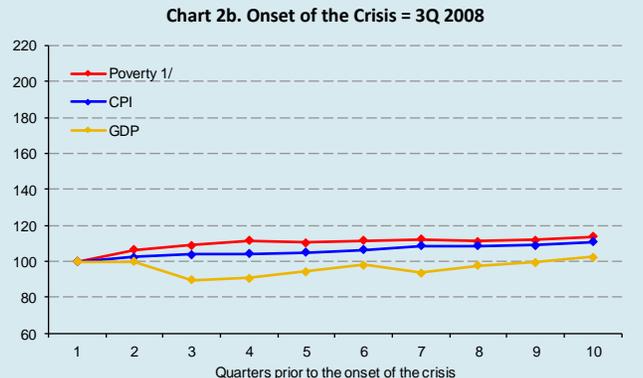
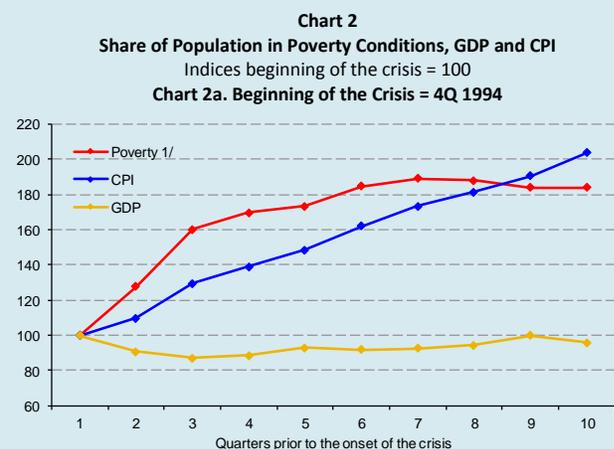
more complex, which negatively affects investment in physical and human capital, and, therefore, economic growth.

One of the sectors that is significantly affected by high inflation is the financial sector, which allows the savers' resources to be channeled to more profitable purposes in the economy. When inflation is high and unstable, the yield of savings' instruments cannot offset the prices increases. Therefore, the economic agents prefer to channel their resources to other purposes, such as the acquisition of durables and real estate, or rather to the international financial system. This financial disintermediation decreases the supply of funds that could be destined to productive investment, which, ultimately, negatively affects economic growth and employment.

A number of empirical studies, such as Bruno and Easterly (1995) and Judson and Orphanides (1996), among others, have established a negative relation between high inflations and economic growth.

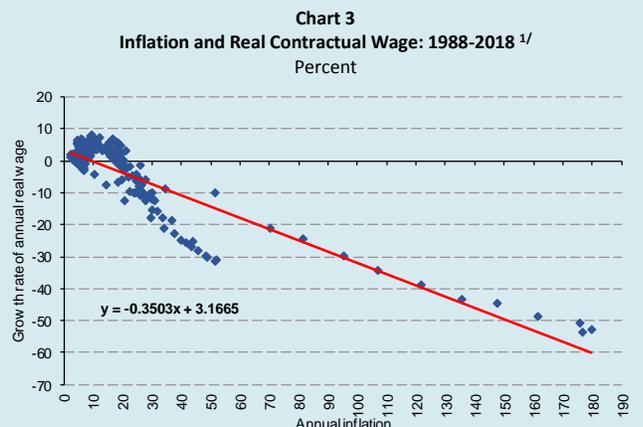
Inflation, Inequality and Poverty

One clear effect of inflation is the loss of the purchasing power of currency. In this sense, inflation can be seen as a tax on the monetary balances. The individuals who hold relatively more cash end up paying a higher share of tax. Generally, the lower-income segments of the population lack the access to the financial system, and therefore they are forced to keep a greater share of their wealth in cash. In this context, inflation is a regressive tax, given that in an inflationary situation, the wealth of the lower-income population deteriorates to a greater degree than that of the higher-income population, which generates greater inequality and poverty. To illustrate this point, Chart 2 shows that during the 1994 financial crisis inflation in Mexico increased more than during the 2008 international financial crisis. As a consequence, the poverty increased to a greater degree during 1994.



1/ Refers to the share of the population with the labor income below the food poverty line as defined by CONEVAL indexed to the indicated date.
Source: Alacarz 2018, prepared with data from Banco de México, CONEVAL and INEGI.

On the other hand, workers who receive the wages that are subject to labor contracts are also affected by unanticipated inflation increases. Workers are interested in the real wage, that is the purchasing power of nominal wages they perceive. Hence, when negotiating wage contracts they take into account the inflation expected for the period when the contract expires. In this way, inflation levels higher than expected by economic agents at the moment of signing the contract negatively affects them, as they end up receiving a lower-than-expected real wage. Chart 3 shows that in the case of Mexico a higher inflation is associated to a greater drop in real wages.



1/ Figure for 2018 refers to the data as of September.
Source: Banco de México, INEGI and the Ministry of Labor.

In sum, in an inflationary environment the distribution of income tends to deteriorate. A number of empirical papers have confirmed the negative impact of high inflation onto the distribution of income. Romer and Romer (1998) find in an international study that inflation has a regressive effect in the long term.

6. Final Remarks

The theory and international experience have shown that the monetary policy cannot permanently increase the economic activity and employment. Otherwise, there would be no economies with a low level of development, as they would

have solved this problem using the expansionary monetary policy. When the economic activity is systematically fueled via an expansionary monetary policy inflation rises without positively affecting the economic growth.

In this context, it can be said that the best contribution of the monetary policy to foster the sustained economic growth is via price stability. An environment of low and stable inflation reduces distortions generates of conditions to improve the productive capacity of the economy via the investment in physical and human capital. However, price stability is a necessary, but not sufficient condition for a sustained growth. This is due to the fact that the economic growth depends on the availability of productive factors (the physical and human capital), the efficiency with which these factors are used, as well as the technological progress and an institutional framework that generates adequate incentives for value creation and prevents rent seeking.

References

- Alcaraz, C. (2018), "Effects of Inflation on Poverty on México", Mimeo.
- Bullard, J. and J. Keating (1995), "The Long-Run Relationship between Inflation and Output in Postwar Economies", *Journal of Monetary Economics*, 36.
- Bruno, M.I and W. Easterly, (1995), "Inflation Crises and Long-Run Growth", NBER 5209.
- Evans, M. and P. Wachtel (1993), "Inflation Regimes and the Sources of Inflation Rate and Inflation Uncertainty", *Journal of Money, Credit and Banking*, 25, Agosto.
- Friedman, M. (1968), "The Role of Monetary Policy", *The American Economic Review*, 58(1).
- Golob, J. (1993), "Inflation, Inflation Uncertainty, and Relative Price Variability: a Survey", Working paper 93-15, Federal Reserve Bank of Kansas City.
- Golob, J. (1994), "Does Inflation Uncertainty Increase with Inflation?", *Economic Review*, Federal Reserve Bank of Kansas City.
- King, R. and M. Watson (1992), "Testing Long-Run Neutrality", NBER 4156.
- Judson, R. and A. Orphanides, (1996), "Inflation, Volatility and Growth", Finance and Economic Discussion Paper No. 96-19, Board of Governors of the Federal Reserve System.
- Lucas, R. (1976), "Econometric Policy Evaluation: A Critique", *Journal of Monetary Economics*, 1, Supplementary Series.
- McCandless G. and W. Weber (1995), "Some Monetary Facts", *Federal Reserve Bank of Minneapolis Quarterly Review*, 19(3).
- Mishkin, F.c (2008), "Does Stabilizing Inflation Contribute to Stabilizing Economic Activity?", Working paper 13970, NBER.
- Phelps, E. (1967), "Phillips Curves, Expectations of Inflation and Optimal Unemployment over Time", *Economica*, 34.
- Romer, C. and D. Romer (1998), "Monetary Policy and the Well-Being of the Poor", *The Federal Reserve Bank of Kansas City Symposium, Income Inequality: Issues and Policy Options*.
- Sargent, T. and N. Wallace (1976), "Rational Expectations and the Theory of Economic Policy", *Journal of Monetary Economics*, 2(2).
- Weber, A., (1994), "Testing Long-run Neutrality: Empirical Evidence for G-7 Countries with Special Emphasis on Germany", *Carnegie-Rochester Conference Series on Public Policy*, 41.
- Woodford, M., "The Case for Forecast Targeting as a Monetary policy Strategy", *Journal of Economic Perspectives*, 21(4).

Box 6. Considerations on Wage Indexation and its Effects on the Economy

1. Introduction

This box presents the possible effects on the economy of the adoption of formal mechanisms of nominal wage indexation to the observed inflation. First, the conceptual framework to analyze these effects is briefly outlined. In particular, the manner in which these mechanisms could lower the economy's capacity to absorb real shocks, and how they could contribute to increase the persistence of inflation is reported. Subsequently, the experience of Mexico is revised using wage indexation schemes during the 1980s, as well as the case of Brazil. In this respect, for the case of Mexico econometric exercises are carried out indicating how the responses of core inflation and wage revisions to shocks on prices and wages have changed. The period of 1984 to 1988, during which mechanisms of wage indexation on the observed inflation prevailed, is compared in these exercises with the subsequent periods, when these schemes were no longer used.

2. Conceptual Framework

Workers' nominal wages are periodically adjusted as a result of the negotiation process between employees and employers, where different factors are considered, such as productivity gains and increases in the cost of living. Thus, in these processes it is common to consider the evolution of inflation, either observed or expected. This does not necessarily imply that rigid formulas, which would mechanically link wage adjustments to inflation will be established, but rather that the negotiations would be carried out considering the particular circumstances of each sector, the economic conditions and the nature of the labor relations.

However, in various countries and periods, rigid indexation schemes have been introduced, in which wage adjustments are determined by a certain formula that includes the observed inflation. As indicated in this Section, these schemes negatively affect the economy. On the one hand, introducing rigidity in the real wages makes it more difficult for the economy to adjust efficiently to the negative shocks, exacerbating the impact on employment and the economic activity. On the other hand, it generates a wage-price spiral, which propitiates a greater persistence of inflation. It should be noted that it is not necessary that all wages in the economy should be directly subject to this indexation scheme to observe these effects. These can occur in case some wage indicator that is used as a reference in the wage negotiations, such as the minimum wage, is indexed to the observed inflation.

Below, we list a number of negative impacts on the economy caused by the mechanisms of wage indexation to the observed inflation. First, to illustrate the manner in which these mechanisms reduce the economy's capacity to adjust to different shocks, consider the case of an economy that faces a decline in exchange terms. This shock implies that the value of goods and services produced and exported by this economy decreases as compared to the value of imported goods. Under

these conditions, the economy would tend to decrease its spending and production, which would imply a depreciation of the real exchange rate and, to cushion the impact on employment, a decrease in real wages. However, if there were the mechanisms of wage indexation to the observed inflation, this would introduce rigidity in the real wages. Consequently, the adjustment of the economy would take place via a greater unemployment, which would aggravate the drop in the economic activity.

Secondly, to show the impact on the dynamics of inflation, consider the case of a supply shock, such as an increment in the prices of agricultural goods or higher energy prices. In this scenario, inflation tends to increase temporarily. However, insofar as the nominal wages are indexed to the observed inflation, these would increase more than they would in the other case. This would generate widespread pressures on prices, which in turn would pressure the wages, and so on. That is, they would tend to raise not only the prices of goods and services affected by the shock in relative prices, but also other prices. Thus, the wage-price spiral extends the effects of the shock beyond the initial impact. In addition to the above, these wage increments, when not backed by increments in productivity, in addition to generating upward pressures onto prices, could cause considerable efficiency losses in the economic activity. On the other hand, if productivity gains of a higher magnitude than the observed inflation are observed, rigid indexation mechanisms would impede this greater productivity from being fully reflected in the workers' real wages.

It is noteworthy that, in a context in which medium- and long-term inflation expectations are anchored at a level congruent with price stability, the described effects could mitigate if the wage revisions were indexed to the expected inflation rather than to the observed one. Thus, supply shocks will continue to have a temporary effect on inflation.

3. Experience of Brazil

A number of Latin American countries have resorted on different occasions to the mechanisms of wage indexation to the observed inflation. Among them is the case of Brazil, where this type of schemes were implemented in late 1970s and more recently starting in 2008. These cases are particularly interesting, given that the formulas of wage indexation implied that the adjustments in the nominal wages should be at least equal to the observed inflation, which tends to amplify the described effects.

Regarding the first episode, in November 1979, the government of Brazil adopted a system of semi-annual wage indexation, which substituted the previous practices of annual wage negotiations. The new legislation covered all wages of the private sector and established that the wages had to be determined via collective negotiations by economic sector, considering the inflation observed during the previous six

months plus productivity gains. The main motivation for this legislation was to prevent the decline of the workers' real wage in an environment of high inflation, which was the result, among other factors, of higher international crude oil prices in the 1970s.

According to Macedo (1983), the indexation mechanism implemented in that country propitiated nominal wages to increase even above the level of past inflation. As a result of this and other factors, such as a greater credit expansion, inflation accelerated and attained three-digit levels. In addition, Simonsen (1983) argued that the mechanism implied downward rigidity of the real wages, which made it more difficult for the economy to adjust to shocks. The above, in the light of the beginning external debt crisis, contributed to amplify the negative impact on employment and the economic activity.

A recent case of the wage indexation was observed in the same country starting from mid-2008, when the nominal minimum wage started to be adjusted each year in accordance with a formula that included the inflation rate of the previous year, plus the average growth rate of GDP over the two years prior to the wage increase.

In addition, different social benefits, such as the unemployment insurance and government pensions, among others, remained indexed to the minimum wages. As a consequence, their increase also implied important fiscal pressures. Higher domestic inflation and the appreciation of the nominal exchange rate associated to the capital inflows to the economy of Brazil translated into a continuous appreciation of the real exchange rate, which caused the accumulation of important imbalances, such as: a) an unbalanced growth, given that between 2011 and 2015 the industrial sector had an average annual growth of -0.6%, while the services sector grew at an average annual rate of 1.5%; b) the distortion of the relative prices, given that the inflation of non-tradables exceeded the inflation of tradable for several consecutive years; and c) a deterioration of the current account (OECD, 2018). In this case in particular, the wage indexation not only was a factor that contributed to important increases in inflation, but it also contributed to the accumulation of imbalances in this economy, which translated into severe economic and financial difficulties.

1. Experience of Mexico

Below we describe the experience of Mexico using the wage indexation schemes that prevailed in the 1980s. It also includes econometric exercises that show the impact of these mechanisms on the inflation dynamics.

In the 1980s, the Mexican authorities faced numerous economic challenges. The economy of the country went

through an environment of high inflation and the stagnation of the economic activity, given the pressure derived from servicing the external debt and the need to cover it via the depreciation of the real exchange rate. Thus, in late 1987, annual headline inflation approached approximately 160%. Some of the adjustment strategies implemented before 1987 to address this complex economic situation included the policies that, in fact, aggravated inflation.¹ In particular, the adoption of measures, such as the indexation of different prices and salaries to the observed inflation caused the inflation to have a strong inertial component. That is, the past price increases were translated to the wage adjustments, which, in turn, were passed through onto prices again, creating an inflationary spiral. In addition to the above, these mechanisms of wage indexation, while introducing rigidity in the real wages, could also have amplified the impact on production and employment. In this way, they would have contributed both to a higher inflation and to a weakening of both the economic activity and employment.

Due to the high inflation levels in late 1987, in December 1987 the so-called Economic Solidarity Pact (ESP) was launched. One of the measures adopted by the ESP to control inflation was to stop using the existing strategy of wage indexation to the past inflation.² The goal was to decrease the inertial component of inflation. As can be seen in Chart 1, based on the implementation of the measures contemplated in the ESP, inflation showed a decreasing trend.

Chart 1
Evolution of General Minimum Wage and Headline Inflation
Annual percent change



Source: Banco de México, INEGI and CONASAMI.

Below, we present evidence of the interaction between contractual wage revisions and core inflation in Mexico for a period covering the last 35 years, which includes the described period during which wage indexation mechanisms were used.

In particular, a time-varying parameters vector autoregressive model and stochastic volatility is estimated, such that

$$X_t = C_t + A_{1,t} X_{t-1} + A_{2,t} X_{t-2} + \varepsilon_t, \quad (1)$$

from March, monthly revisions would be made based on the expected inflation of the basic basket. In March, a 3% increase in minimum and contractual wages was authorized, and this level remained unchanged until December 1988.

¹ A detailed description of the external debt crisis in Mexico, as well as the indexation practices can be consulted in Cárdenas (2015) and INAP (2015).

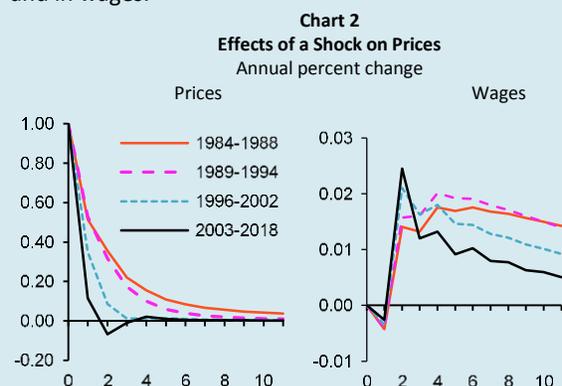
² Specifically: 1) a 15% increment in minimum and contractual wages in December 1987, 2) the minimum wages increased only 20% in January 1988, and 3) starting

where X_t contains measures of MXN/USD nominal exchange rate, contractual wage revisions and the monthly core inflation. The sample spans from February 1984 to August 2018. The exchange rate is included in the model, considering the high correlation between this variable and inflation in the 1980s and 1990s.

It is relevant to note that the estimation period includes different economic systems. For example, prior to December 1994, there was no free-floating exchange rate and the monetary policy was to sustain the exchange rate target. Starting in 1995, a flexible exchange rate system was adopted, while the monetary policy's goal was to control inflation, formally adopting the inflation targeting regime as of 2001. In the same vein, the sample contains the effects of the previously described ESP, which was implemented in late 1987. This pact had an important effect on the practices of wage indexation and the price-setting carried out in Mexico until then.

The model in equation (1) is designed to be estimated in different economic systems, given that a set of parameters for each period t is calculated in the sample. However, the disadvantage of this flexibility is that the model can contain only a limited number of variables and lags. The model is estimated using Bayesian methods.

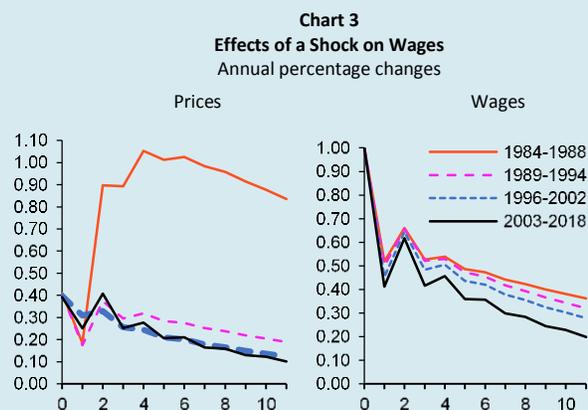
Charts 2 and 3 show the responses of core inflation and wage revisions to the two types of macroeconomic shocks. These responses correspond to the deviations from each variable' trend level during the analyzed period. Four periods are considered: 1984-1988, the period prior to the ESP application; 1989-1994, in which core inflation for the first time converged to one digit since the beginning of its measurement in 1982; 1996-2002, the period of transition of the inflation dynamics towards a seasonal process; and from 2003, the year in which the inflation target settled at 3%, onwards. The responses are normalized to a shock of one percentage point both in prices and in wages.



Note: Prepared by Banco de México with data from the Ministry of Labor, INEGI and own data. X axis corresponds to months after the shocks. Y axis are percentage points.

Chart 2 shows the effects of an unexpected increase in prices. In this case, in the period 1984-1988, it took core inflation and wage revisions two months to return to their level of trend. Among other factors, this could be associated to the wage indexation prevailing in the said period. In contrast, over the

subsequent periods, the persistence of the referred variables dropped notably, as their dynamics were faster.



Note: Prepared by Banco de México with data from the Ministry of Labor, INEGI and own data. X axis corresponds to months after the shocks. Y axis are percentage points.

Chart 3 shows the effects of an unexpected increment in the nominal wage. The results suggest that both prices and wages behave in a similar manner in most periods, with an exception of that corresponding to 1984-1988. In this period, the growth rate of prices accelerated starting from the third month after the shock on wages, which could be in part associated with the mechanisms of wage indexation prevailing in this period and the subsequent modifications by ESP.

Table 1 shows the correlations calculated with model (1) between the wage revisions and core inflation with past inflation.

The high persistence of inflation and the important feedback between wages and prices in the period 1984 – 1988 are noteworthy as compared to the period starting from 2003 onwards. This is a symptom of the presence of a considerable wage-price spiral in the 1980s, which was to a certain degree affected by the policy of wage indexation to the past inflation.

Table 1. Correlations Derived from the VAR Model

Period	Correlations	
	Inflation and past inflation (persistence)	Wage revision and past inflation (feedback)
1984-1988	70%	47%
1989-1994	66%	28%
1996-2002	51%	30%
2003-onwards	31%	28%

1. Conclusions

This box outlines the potential negative effects of a wage indexation based on the observed inflation of the economy. In the case of Mexico, using a series of econometric exercises, it was shown that in the 1980s, when wage indexation mechanisms prevailed, a greater correlation between wage revisions and inflation was present, along with a greater persistence of inflation.

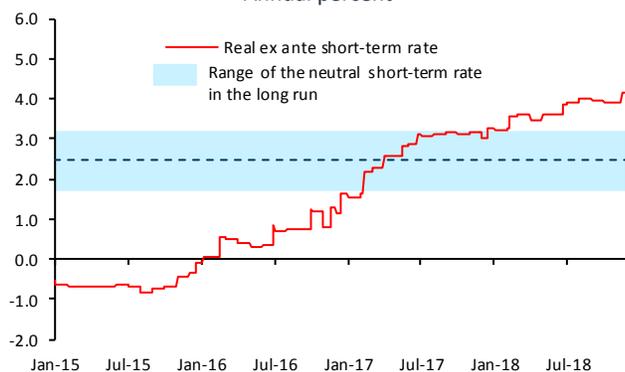
In this context, considering the negative impact on the economy generated by the wage indexation to the observed inflation, the establishment of mechanisms of this type could jeopardize the progress towards an environment of low and stable inflation that has been achieved during the last 15 years in Mexico. In particular, it would negatively affect the dynamics of inflation, making the task of the Central Bank's to preserve the Mexican peso purchasing power more difficult. Similarly, it would limit the flexibility of the economy as a whole to adjust to the shocks derived from the complex environment, such as the current one, which would be translated to stronger impacts on the economic activity and employment.

References

- Cárdenas Enrique (2015), "El largo curso de la economía mexicana. De 1780 a nuestros días", México, Fondo de Cultura Económica, 909 pp.
- Carrillo, J.A., Peersman, G., Wauters, J., (2017) "Endogenous Wage Indexation and Aggregate Shocks", BIS Working Paper 620.
- Instituto Nacional de Administración Pública A.C. (2015). "Los Avances del México Contemporáneo 1955-2015", Tomo I, Primera Edición, Cámara de Diputados, México.
- Macedo, R., (1983). "Wage Indexation and Inflation: The Recent Brazilian Experience." In *Inflation, Debt, and Indexation*, ed. Rudiger Dornbusch and Mario Henrique Simonsen, Cambridge, MA: MIT Press.
- OECD (2018), "Economic Surveys Brazil".
- Pedersen, M. (2011) "Propagation of Shocks to Food and Energy Prices: an International Comparison," Working Papers Central Bank of Chile 648, Central Bank of Chile.
- Simonsen, M. (1983). "Indexation: Current Theory and the Brazilian Experience," In *Inflation, Debt, and Indexation*, ed. Rudiger Dornbusch and Mario Henrique Simonsen, Cambridge, MA: MIT Press.

Considering the monetary policy actions described above, and the evolution of 12-month inflation expectations, the ex-ante real interest rate increased to 4.2% (Chart 68). In this respect, it should be noted that the estimated range for the short-term neutral rate in the long term in real terms is between 1.7 and 3.2%, with a median at 2.5%.¹³ It should be stressed that, if the complex environment faced by inflation persists or even worsens, it would be needed to maintain higher interest rates throughout the business cycle.

Chart 68
Short-term Real Ex-ante Rate and Estimated Range for the Short-term Neutral Real Rate in the Long Term ^{1/}
Annual percent



^{1/} The short-term ex ante real rate is calculated as the difference between the target for the overnight interbank interest rate and the mean of inflation expectations for the next 12 months, derived from Banco de México's Survey. The dotted line corresponds to the mid-point of the range.
Source: Banco de México.

Considering the horizon in which monetary policy operates, the actions taken during the reported period were influenced by: i) the performance of inflation vis-à-vis its expected trajectory; ii) the evolution of medium- and long-term inflation expectations; and, iii) the performance of the main inflation determinants.

In regard to the evolution of inflation vis-à-vis its projections, it stands out that headline inflation was affected by increases in the non-core component, associated, as described above, with the greater-

than-expected increments of energy prices, which have been registered since June. As a result, this component remained at high levels for a long term. Similarly, the evolution of core inflation, which has shown a decreasing trend, as anticipated, was also affected by the shocks in the referred relative prices, via their indirect effects on the production costs. This, along with other above listed factors, contributed to a high degree of resistance to decline exhibited by this subindex at the margin. In this context, the convergence rate of headline inflation to its target was affected.

As regards inflation expectations, as a result of higher-than-anticipated increments in energy prices, starting from June the inflation data generally lied above the analysts' expectations, the median for the end of 2018 went up from 4.0 to 4.6% between the surveys of June and October 2018. In contrast, the median for the core component persisted around 3.6% in the same surveys, while the implicit expectation for the non-core component increased from 5.3 to 7.8% (Chart 69).¹⁴ With respect to inflation expectations for the end of 2019, it stands out that both medians for headline inflation and its core component also presented an upward adjustment, although of a lower magnitude, from 3.6 to 3.7% and from 3.4 to 3.45%, respectively, between the referred surveys, while the implicit expectation for the non-core component went up from 4.1 to 4.5% (Chart 70).¹⁵ Finally, over the same time period the medians of inflation expectations for the medium and long terms remained stable at 3.50%. Although the latter continued stable, it should be stressed that they lie above the permanent 3% target (Chart 71).¹⁶ Going forward, Banco de México must ensure that, given the complex outlook for inflation, medium- and long-term inflation expectations are not adversely affected.

In the same way, the break-even inflation implicit in market instruments (the difference between long-

¹³ For a description of the estimation of the short-term neutral interest rate, see Box "Considerations on the Evolution of the Neutral Interest Rate in Mexico" in the Quarterly Report July – September 2016. Starting from the Quarterly Report January – March 2018, the estimation was updated to include data up to December 2017.

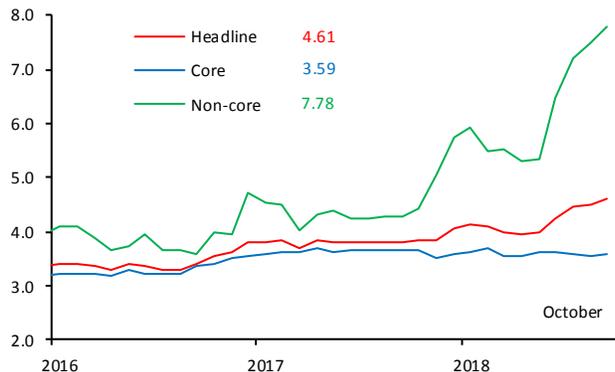
¹⁴ The median of headline inflation expectation for the end of 2018, based on the Citibanamex survey, increased from 4.00 to 4.55% between the surveys of June 20, 2018 and November 20, 2018.

¹⁵ The median of headline inflation expectation for the end of 2019, based on the Citibanamex survey, increased from 3.60 to 3.90% between the surveys of June 20, 2018 and November 20, 2018.

¹⁶ Regarding the median of long-term inflation expectations, based on the Citibanamex survey (for the next 3-8 years), it maintained around 3.5% between the surveys of June 20, 2018 and November 20, 2018.

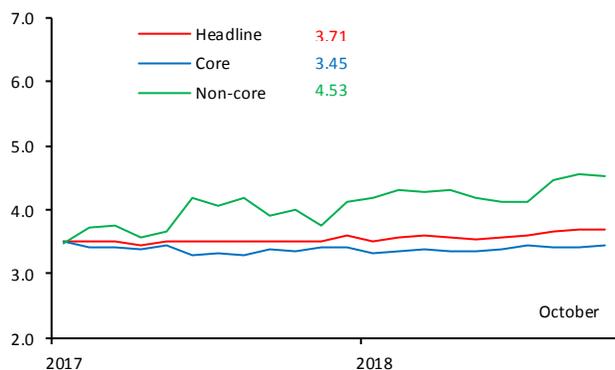
term nominal and real interest rates) increased significantly between June and October (Chart 72). Regarding the estimated components, long-term expectations (average 1 to 10 years) remained around 3.5% (Chart 73), while the estimate of the inflation risk premium grew considerably during the reference period (Chart 74).¹⁷

Chart 69
Medians of Headline, Core and Non-core Inflation Expectations as of End of 2018
Percent



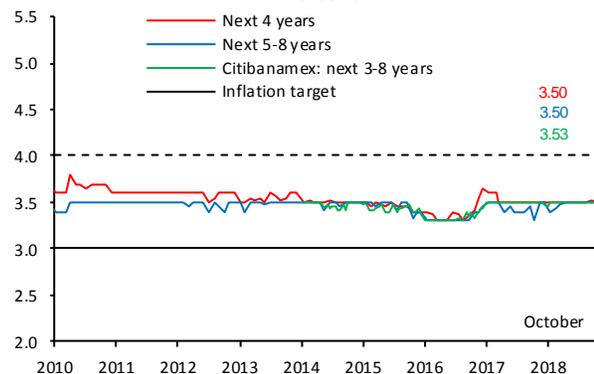
Source: Banco de México's survey.

Chart 70
Average Headline, Core and Non-core Inflation Expectations as of End of 2019
Percent



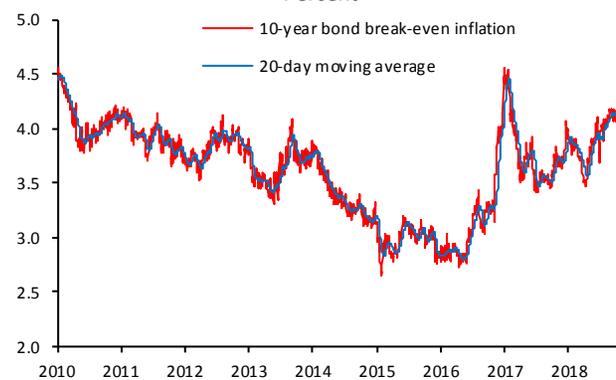
Source: Banco de México's survey.

Chart 71
Medians of Headline Inflation Expectations for Different Terms
Percent



Source: Banco de México's Survey and Citibanamex survey.

Chart 72
Break-even Inflation and Inflation Risk Implicit in Bonds
Percent



Source: Estimated by Banco de México with data from Valmer and Bloomberg.

¹⁷ For a description of the estimation of long-term inflation expectations, see Box "Decomposition of the Break-even Inflation" in the Quarterly Report October – December 2013. Starting from the Quarterly Report

October – December 2017, the estimation includes data up to November 2017.

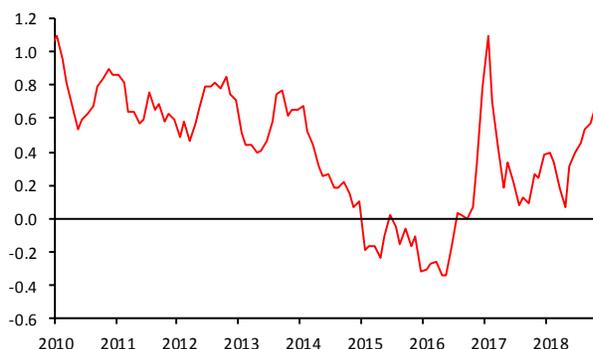
Chart 73
Estimate of Annual Inflation Expectations
Implicit in Market Instruments ^{1/}
 Percent



^{1/} The inflation expectation is calculated based on a similar model using data from Bloomberg, PIP and Valmer, based on Aguilar, Elizondo and Roldán (2016).

Source: Estimated by Banco de México with data from Bloomberg, Valmer and PIP.

Chart 74
10-year Inflation Risk Premium ^{1/}
 Percent



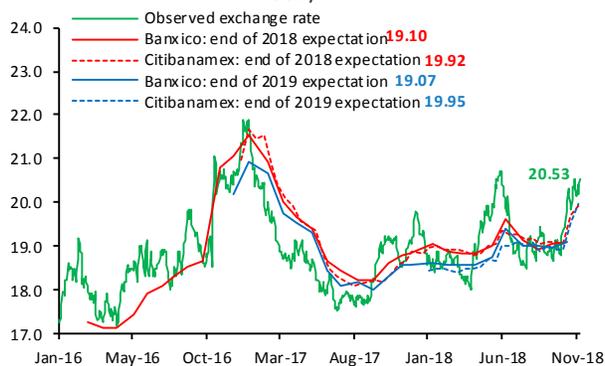
^{1/} The inflation risk premium is estimated based on an affine model using data from Bloomberg, PIP and Valmer, based on Aguilar, Elizondo and Roldán (2016).

Source: Estimated by Banco de México with data from Bloomberg, Valmer and PIP.

Regarding the inflation determinants, in particular the evolution of the exchange rate, three episodes can be distinguished. First, from the end of June to early August, the volatility of the Mexican peso decreased and it appreciated 7.4% as it shifted from approximately USD/MXN 19.92 to 18.45. Some of the factors that contributed to this performance are: i) the effects of Banco de México's monetary policy actions; ii) the perception of an improvement in the outlook of the negotiations of the trade deal with Canada and the U.S.; iii) the lesser uncertainty after the presidential elections in Mexico; and, iv) at that moment, a widespread weakening of the U.S. dollar. Subsequently, the volatility of the Mexican peso increased, and from mid-August to mid-October the

peso fluctuated in a range from USD/MXN 18.50 to 19.40. The above took place in an international environment in which emerging economies' currencies were subject to pressures, largely due to: a) financial difficulties in economies like Turkey and Argentina; b) stronger trade disputes between China and the United States; and c) the possibility that the Federal Reserve will raise the federal funds rate at a faster pace in light of an unexpected upturn in inflation, which generated increments in interest rates for all terms in the U.S. As for this development, it stands out that the Mexican peso showed more resilience as compared to other emerging economies' currencies, which stemmed, among other factors, from the progress in the North American trade negotiations, which led to the announcement of a new trade deal in the region. Finally, since mid-October, the Mexican peso was negatively affected and its volatility increased once more, mainly due to idiosyncratic factors related to the business plan to be adopted by Pemex, the announcement regarding the intended cancellation of the Mexico City New Airport Project and its repercussions of this and other actions on public finances and, in general, the market concerns regarding the incoming administration's policies and some legislative initiatives. This led several rating agencies to decrease the sovereign risk credit outlook of Mexico and Pemex from stable to negative (see Box 7). The exchange rate depreciated sharply by approximately 8.4% between the third week of October and end-November, locating at about USD/MXN 20.50 (Chart 75 and Chart 76). It should be stressed that uncertainty persists concerning the policies to be implemented by the incoming administration as well as their implications, in particular, regarding different details that could affect investors' confidence and the country's economic performance. Therefore, it is impossible to rule out new episodes in which the Mexican peso can experience additional pressures towards greater depreciation and in which domestic financial markets exhibit high volatility (Chart 77).

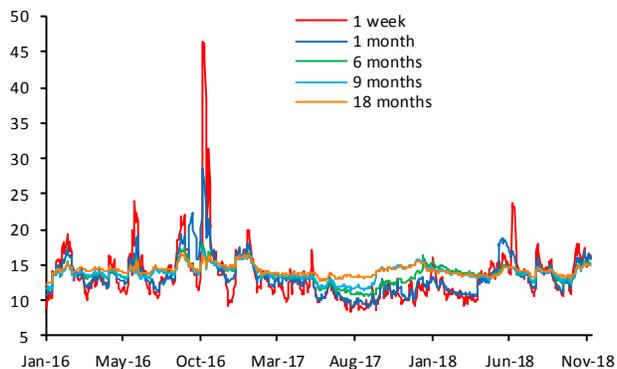
Chart 75
Nominal Exchange Rate ^{1/}
USD/MXN



1/ The observed rate is the daily FIX exchange rate. Expectations correspond to the average of the October survey by Banco de México and the Citibanamex survey of November 20, 2018.

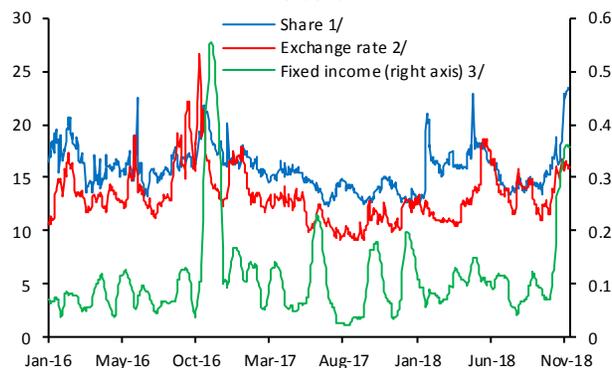
Source: Banco de México and Citibanamex.

Chart 76
Volatility Implied in Exchange Rate Options
Percent



Source: Bloomberg.

Chart 77
Volatility in Mexican Financial Markets
Percent



1/ Refers to the volatility index of S&P of the Mexican Stock Exchange.

2/ Refers to volatility implied in one-month options of the Mexican peso.

3/ Refers to a standard deviation of a 30-day moving window of 10-year interest rates in Mexico.

Source: Bloomberg and *Proveedor Integral de Precios (PiP)*.

With respect to the cyclical position of the economy, slack conditions in the economy are estimated to have tightened slightly with respect to the previous quarter, although they persist at less tight levels than at the beginning of the year. Similarly, the output gap is at levels close to zero.

As regards the monetary policy stance of Mexico relative to that of the U.S., as mentioned above, the Federal Reserve has been acting in line with its forecast that their monetary policy normalization process, including the program of reducing its balance sheet that began in October 2017, will continue in a gradual manner. It is noteworthy that starting from the second week of November, given the moderation of inflation and the deceleration of the rest of the main economic variables in the U.S., an expectation of a more gradual monetary policy normalization than previously expected, has been generated. Still, the risk of inflationary surprises, leading to an acceleration of the said normalization process persists.

Box 7. Recent Changes in the Credit Outlook for Mexico and Pemex

1. Introduction

During the third week of October and the first one of November, the rating agencies Fitch Ratings (Fitch) and HR Ratings (HR) revised the credit rating outlook at the global scale from stable to negative for the Federal Government and Pemex. In addition to these actions, the agencies Standard & Poor's (S&P) and Moody's, although they have not adjusted the credit rating outlook of the Federal Government and Pemex, they issued opinions on the factors that could generate a change in this rating outlook. The concerns mentioned by the rating agencies had negative repercussions on the domestic financial markets, in a context of persisting elements of uncertainty regarding the public policy agenda of the new administration.

This box presents the record of revisions and comments recently issued by the major credit rating agencies regarding the sovereign debt of Mexico and Pemex.

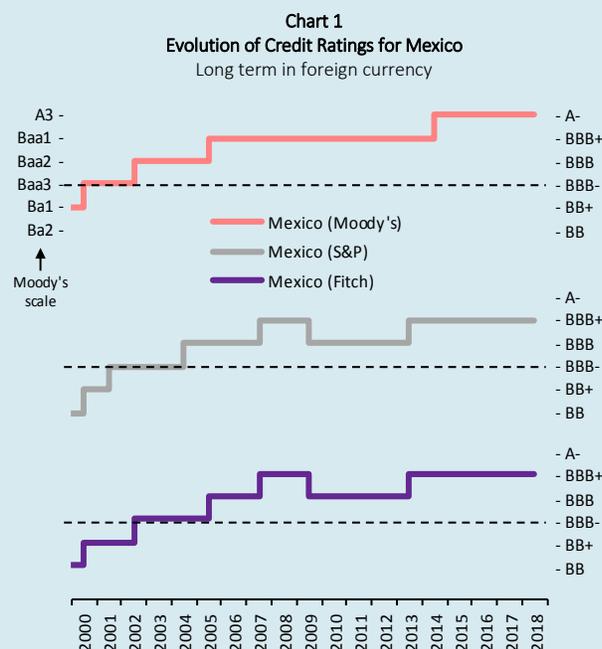
In the second section, a reference is made to a prior period in which the outlook for the sovereign rating had deteriorated, and the actions that contributed to its correction are listed. In the third section, the credit outlook revisions are documented, both to the Federal Government and Pemex, by Fitch and HR, and the opinions issued by Moody's and S&P regarding the factors that could affect the sovereign credit rating or that of Pemex in the future. Finally, and considering the above, some challenges and the policy actions are mentioned, which would have to be addressed by the Federal Government and Pemex in a manner in which, among others, they would contribute to maintain a solid public finance framework and a climate of certainty that generates higher productive investment in the country. This would lead not only to a better credit rating, but to a greater potential growth of the economy.

2. Historical Performance

As mentioned in other Banco de México's publications (see Box 1 of the Financial System Report, October 2018), credit ratings are a key element in the investors' decision-making process. In particular, sovereign risk ratings affect, on the one hand, the financing conditions of the country and, on the other, act as a reference for the rest of issuers in the economy.

It should be kept in mind that between 2000 and 2002, the rating agencies Fitch, Moody's and S&P assigned to Mexico the investment grade to the sovereign debt, principally based on the good management of public finances, the resilience of the balance of payments, a better position of external liquidity, a flexible exchange rate policy, a better coordination between the monetary and fiscal policies, and better debt indicators

(Chart 1).¹ After that, Mexico had access to better financing conditions.



Note: Dotted lines determine the investment grade in the scale of each rating agency. Moody's rating scale (to the left) was homologated with the scales used by S&P and Fitch (to the right) to facilitate comparison.

Source: Moody's, S&P and Fitch.

In the same way, the rating agencies also issue an opinion on the outlook (positive, stable or negative) of the current rating of the evaluated agents. In particular, this outlook could suggest the future adjustment of the rating if certain events take place. In this sense, the experience of Mexico between 2016 and 2017 is noteworthy. In 2016, the agencies revised the sovereign rating outlook for Mexico from stable to negative, mainly stressing the following: i) a lower-than-expected growth; ii) external shocks that would make the fiscal consolidation efforts more difficult; iii) the growth of public debt and challenges to achieve its stabilization; and iv) the prevailing uncertainty over the NAFTA renegotiations.² Nonetheless, the Federal Government implemented a fiscal adjustment which led to the primary surplus in 2017, and the reduction of the public debt as a share of GDP in the same year. This, in addition to a more favorable expectation of the NAFTA negotiations allowed to reverse the deterioration of the credit

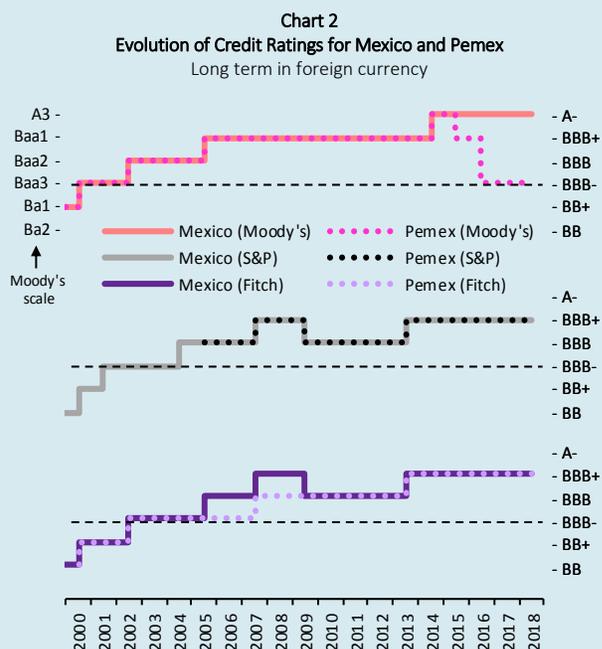
¹ See "Comment: Mexico. Investment Grade", Fitch Ratings as of January 22, 2002; "Rating Action: Moody's Upgrades Mexico's Rating to 'Baa3 with Stable Outlook'", Moody's as of March 7, 2000 <http://fox.presidencia.gob.mx/actividades/discursos/?contenido=2514>.

² See "Commentary: Fitch Revises Outlook for Mexico to Negative; Affirms IDRs at 'BBB+', Fitch Ratings as of December 9, 2016; "Rating Action: Moody's Changes

Mexico's Outlook to Negative from Stable; Affirms A3 Rating", Moody's as of March 31, 2016; "S&P Global Ratings downgrades the outlook of sovereign ratings at the global scale of Mexico from stable to negative; confirms ratings", Standard & Poor's as of August 23, 2016 and "Analysis: United Mexican States. Sovereign Debt", HR Ratings as of December 22, 2016.

rating outlook in the short term.³

In the case of Pemex, it stands out that generally the performance of its long-term credit rating in foreign currency and its outlook closely follows the evolution of the sovereign rating (Chart 2). This direct relation between the solvency profile of the productive enterprise of the State and the Federal Government, above all, is due to the support of the latter granted to Pemex, given its strategic role in the economy and the generation of public revenues.⁴ Likewise, another component relevant for the rating agencies is the firm's credit quality.⁵



Note: Dotted lines determine the investment grade in the scale of each rating agency. Moody's rating scale was homologated with the scales used by S&P y Fitch to facilitate comparison.
Source: Moody's, S&P and Fitch.

It stands out that Pemex credit rating given by Moody's has diverged from the sovereign one since 2015, mainly due to the expected deterioration in Pemex credit indicators, due to the important fall in crude oil prices starting in 2014, a strong fiscal burden for the company, and an expectation of a lower crude oil production.⁶ In fact, Pemex rating assigned by Moody's is at

its minimum level of investment grade. Therefore, going forward, deteriorations in the said factors or in the rating of the Federal Government could affect the company's rating.

3. The Current Juncture

In the second half of October and the first days of November 2018, two rating agencies revised the credit rating outlook at the global scale from stable to negative, both of the Federal Government and Pemex. In addition, other rating agencies, although they did not update the outlook or their own rating, they issued opinions regarding some of the factors that could affect the sovereign rating or Pemex rating in the future.

Regarding the sovereign debt, Fitch and HR affirmed the long-term rating in foreign currency for Mexico, although both of them revised the outlook for this rating from stable to negative. Fitch underlined the deterioration in the balance of risks of Mexico's credit profile associated to the uncertainty of the public policies under the new administration and to growing risks in Pemex liabilities.⁷ On the other hand, HR based its position mainly on the deterioration in the perception of investment and the risk of the country in the wake of the cancellation of the Mexico City's New International Airport.⁸ It is also noteworthy that both rating agencies revised the outlook for Pemex debt from stable to negative. While Fitch stressed the deterioration in the credit profile of the company and the uncertainty regarding Pemex business model, HR noted that the adjustment was related to the revision of the outlook for Mexico's debt several days before, given the support of the Federal Government to the company.⁹

Meanwhile, Moody's and S&P did not update the rating outlook. However, S&P commented that its analysis of Mexico's sovereign debt would consider the impact of the events associated to the construction of the Mexico City's New International Airport.¹⁰ In addition, Moody's expressed that if crude oil exports were eliminated, it could affect both Pemex and the sovereign credit rating. In the same vein, this rating agency also cautioned that subordinating the Energy Regulatory Commission and the National Hydrocarbons Commission to the Ministry of Energy could affect these

³ See "Comment: Fitch adjusts the outlook for Mexico to stable, affirms ratings at 'BBB+', Fitch Ratings as of August 3, 2017; "Rating Action: Moody's Changes Outlook on Mexico's Ratings to Stable from Negative; A3 Ratings Affirmed", Moody's as of April 11, 2018; "Press release: S&P Global Ratings reviews the outlook of the sovereign ratings at the global level of Mexico from negative to stable; confirms ratings", Standard & Poor's as of July 18, 2017; and, "Analysis: United Mexican States. Sovereign Debt", HR Ratings as of August 10, 2017.
⁴ It should be noted that in accordance with Article 106, Section V, of the Pemex Law, the constitutive obligations of the public debt of Pemex and its productive subsidiary companies are not obligations guaranteed by the Mexican state.
⁵ See "Rating Action: Moody's confirms national scale ratings and global scale ratings of Pemex at Aa3.mx/Baa3; upgrades the outlook to stable", Moody's April 12, 2018; "Rating Action: Fitch Affirms PEMEX's IDRs at BBB+ and National Rating at AAA (mex); Outlook Revised to Negative", Fitch Ratings as of October 19, 2018; and "Mexican states with a global scale rating", HR Ratings as of November 6, 2018.

⁶ See "Rating Action: Moody's confirms Aaa.mx ratings for Mexico and MX-1 for PEMEX; downgrades the outlook to negative", Moody's as of November 24, 2015; "Rating Action: Moody's lowers PEMEX ratings to Baa3/Aa3.mx; negative outlook", Moody's as of March 31, 2016 and "Rating Action: Moody's confirms national and global scale ratings of Pemex at Aa3.mx/Baa3; upgrades the outlook to stable", Moody's as of April 12, 2018.
⁷ See "Fitch Affirms Mexico at BBB+; Revises Outlook to Negative", Fitch Ratings as of October 31, 2018.
⁸ See "Analysis: Mexico: Sovereign Debt", HR Ratings as of October 30, 2018.
⁹ See "Rating Action: Fitch Affirms PEMEX's IDRs at BBB+ and National Rating at AAA (mex); Outlook Revised to Negative", Fitch Ratings as of October 19, 2018 and "Mexican states with the global scale rating", HR Ratings as of November 6, 2018.
¹⁰ See "Bulletin: Mexico's sovereign ratings incorporate the new expectation of the continuous pragmatism in the policies", Standard & Poor's as of October 31, 2018.

Commissions' transparency and impartiality and potentially weaken the institutional framework of the country.¹¹

In sum, even though only Fitch and HR took steps to revise the outlook of debt ratings both of Mexico and Pemex, the four rating agencies indicated the factors that could contribute to modify the credit rating of Mexico and of Pemex in the future. In the case of the sovereign one, some of the factors listed by the rating agencies that could jeopardize Mexico's credit rating were: i) actions that weaken the institutional framework; ii) changes in the policy framework that generate uncertainty and affect investment and economic activity; and iii) deviations from the trajectory of the fiscal consolidation due to greater commitments of expenditure.¹²

With respect to Pemex, among the factors mentioned by the rating agencies that could affect its credit rating are: i) changes in the course of the company's business model towards oil refining; ii) the oil sector's inability to stabilize the crude oil production and to correct its capital structure; and iii) future deterioration in the outlook or in the rating of the sovereign.¹³

As it happened in the past, the Federal Government can contribute to making the risks indicated by the rating agencies have a lower occurrence probability via a commitment to a prudent fiscal performance, as well as the implementation of the policies that strengthen the institutional framework and generate certainty in the global community of investors. For instance, during 2017 in recognition of the monetary and fiscal policies conduct, emphasizing the Federal Government's commitment to reach a primary surplus that year and to maintain it over the next years, along with the progress in the implementation of the structural reforms, such as the energy and telecom reforms, some rating agencies revised the outlook of the Mexican sovereign debt rating from negative to stable once again. In particular, the fiscal policy contributed to the public spending cuts in 2015 and 2016, highlighting the adjustment of Pemex spending, mainly in the revision of its investment program to channel the resources to more profitable projects. In the same vein, the liberalization of gasoline prices reduced the vulnerabilities of public finances.

4. Final Remarks

Recently, the major rating agencies have released documents relative to the credit profile of the Federal Government and Pemex, in which they highlight the most pressing risks that, according to their analysis, could affect credit ratings of the sovereign and of the productive enterprise of the State. It is important to point out that the agencies constantly give opinions on these issuing bodies. On previous occasions, when

the agencies issued unfavorable opinions or revise the outlook or the credit rating, measures were taken to mitigate the risks to both the Federal Government and Pemex solvency profile. The challenge of the next federal administration will be to make decisions that imply the strengthening of the institutional framework of the county and that generate certainty to all participants of the Mexican economy. In this sense, the rating agencies will monitor the implementation of these measures. The nearest signal that will be carefully reviewed will come from the 2019 Economic Package presented by the Federal Government in December 2018, where it will be important for the fiscal policy to persevere in the sustainable consolidation of public finances. Likewise, it is important to subsequently send clear signals through the public policy actions that will be implemented over the next years, so that they are conducive to an environment of higher certainty for investment, in order to generate a greater potential growth of the economy.

¹¹ See "Announcement: New Mexican Government's Plan to Eliminate Oil Exports Raises Cash Flow and Foreign Exchange Risks", Moody's as of October 18, 2018 and Moody's Latin America (@MoodyLatAm) on October 23, at 15:48 and 15:17 Mexican time on Twitter.

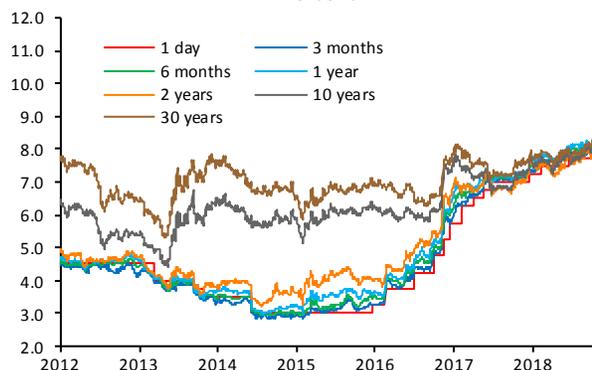
¹² See "Rating Action: Moody's Changes Outlook for Mexico's Rating to Stable from Negative; A3 Ratings Affirmed", Moody's as of April 11, 2018; "Fitch Affirms Mexico at BBB+; Revises Outlook to Negative", Fitch Ratings as of October 31, 2018; "Bulletin: Mexico's sovereign ratings incorporate the new expectation of the

continuous pragmatism in the policies", Standard & Poor's as of October 31, 2018; and "Analysis: Mexico's Sovereign Debt", HR Ratings as of October 30, 2018.

¹³ See "Announcement: New Mexican Government's Plan to Eliminate Oil Exports Raises Cash Flow and Foreign Exchange Risks", Moody's as of October 18, 2018, "Rating Action: Fitch Affirms PEMEX's IDRs at BBB+ and National Rating at AAA (mex); Outlook Revised to Negative", Fitch Ratings as of October 19, 2018 and "Mexican states with a global scale rating", HR Ratings as of November 6, 2018.

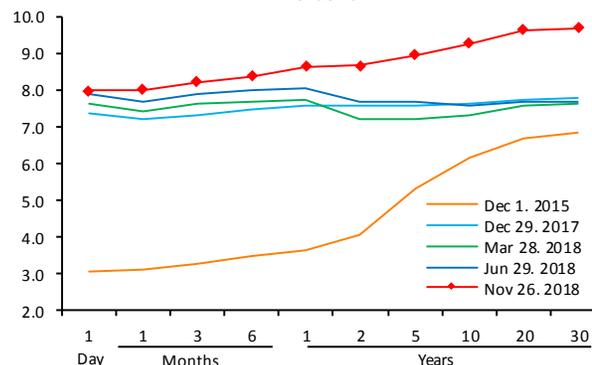
As for the evolution of interest rates in Mexico, two episodes can be distinguished during the reference period. First, between the end of June and mid-October interest rates registered moderate increments in instruments with terms of one year and above, in line with the important increments observed in external interest rates, while short-term ones remained unchanged. In particular, the rates for 3-month terms remained at 7.9%, while 2- and 10-year rates grew from 7.7 to 7.9% and from 7.7 to 8.1%, respectively. Thus, the slope of the yield curve (defined as the difference between 10-year and 3-month interest rates) increased by around 40 basis points in this period. Subsequently, starting from the second half of October, interest rates have registered widespread and sizeable increases, especially medium- and long-term ones. This development was affected by the aforementioned idiosyncratic factors, and, as a result, the referred increments were above those observed in other emerging economies. Thus, 3-month, 2-year and 10-year interest rates increased by 30, 70 and 100 basis points, from 7.9 to 8.2%, from 7.9 to 8.6% and from 8.1 to 9.1%, respectively (Charts 78 and 79). This evolution caused the slope of the yield curve to further steepen by around 70 basis points during this time period. Meanwhile, the slope of the yield curve measured based on longer-term instruments (30-year – 3-year) displayed a steepening of a lower magnitude (Chart 80). Nonetheless, the former remains at lower levels as compared to other countries (Chart 81).

Chart 78
Government Bond Interest Rates in Mexico
Percent



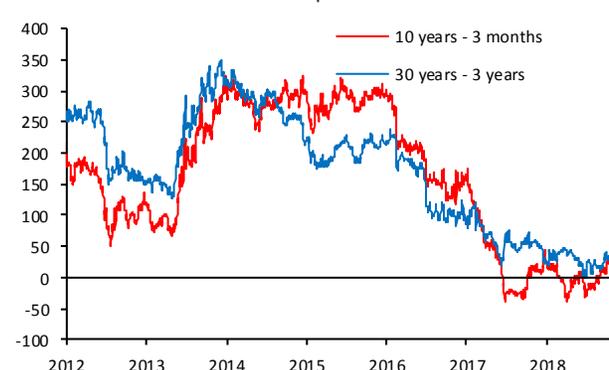
Source: Proveedor Integral de Precios (PiP).

Chart 79
Yield Curve in Mexico
Percent



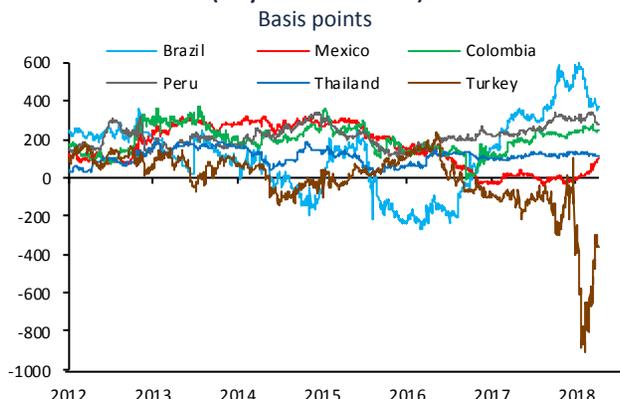
Source: Proveedor Integral de Precios (PiP).

Chart 80
Slope of the Yield Curve
Basis points



Source: Proveedor Integral de Precios (PiP).

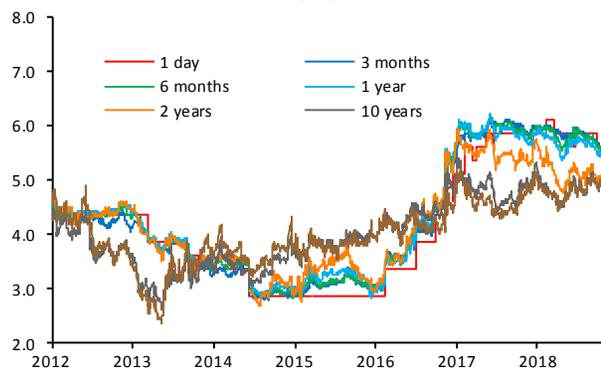
Chart 81
Slope of the Yield Curve in Different Countries
(10 years – 3 months)



Source: Bloomberg.

In line with the above described developments, and given increases of a higher magnitude in the short-term interest rates in the U.S. as compared to Mexico during the period from end-June to mid-October, spreads between Mexican and U.S. interest rates for these terms declined slightly during this period. Meanwhile, medium- and long-term interest rates fluctuated in a range between 4.75 and 5.25%. In particular, the spreads of 3-month and 2-year spreads decreased by 40 and 10 basis points, respectively, while the spreads of 10-year interest rates went up by 20 basis points. Subsequently, starting from the second half of October, spreads for all terms increased, as a result of higher interest rates in Mexico. In particular, the spreads of 3-month, 2-year and 10-year interest rates increased by 20, 70 and 110 basis points, respectively (Charts 82 and 83). It is noteworthy that these indicators remain at high levels as compared to what was observed over the last 10 years. In this regard, it should be noted that the implemented monetary policy actions have contributed to increase short-term interest rate spreads between the two countries and prevented long-term spreads from widening further (Chart 84). It is notable, however, that the spreads between Mexican and U.S. interest rates have increased recently, reflecting the large increase in the different risk premia that investors demand for holding domestic assets (Chart 85).

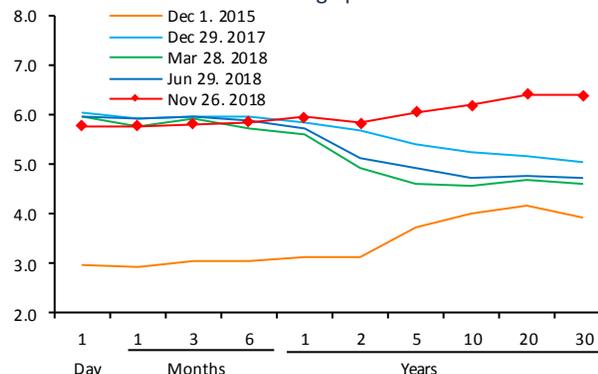
Chart 82
Spreads between Mexican and U.S. Interest Rates ^{1/}
Percent



^{1/} For the U.S. target rate, the average of the interval considered by the Federal Reserve is considered.

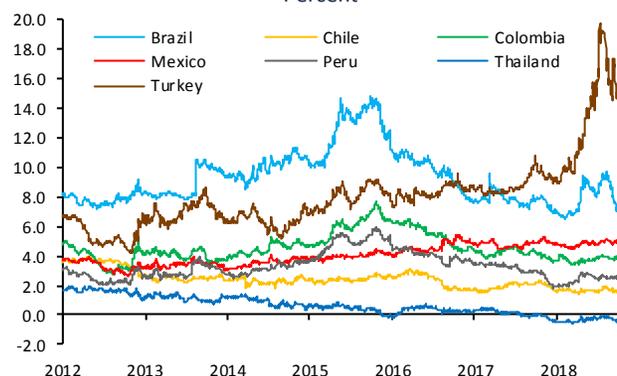
Source: Proveedor Integral de Precios (PiP) and U.S. Department of the Treasury.

Chart 83
Curve of Spreads between Mexican and U.S. Interest Rates
Percentage points



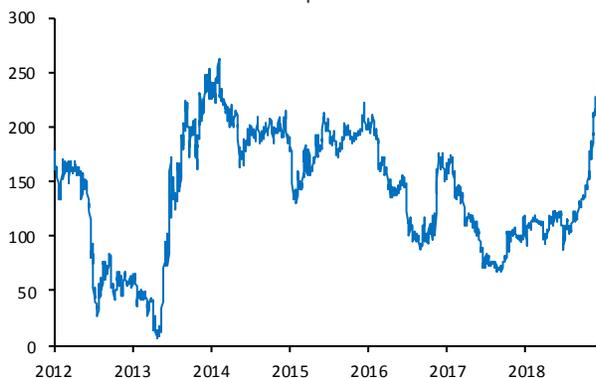
Source: Proveedor Integral de Precios (PiP) and U.S. Department of the Treasury.

Chart 84
Spreads between U.S. 10-year Interest Rates
and those of Other Countries
Percent



Source: Bloomberg, Proveedor Integral de Precios (PiP) and U.S. Department of the Treasury.

Chart 85
Term Premium in Mexico ^{1/}
 Basis points

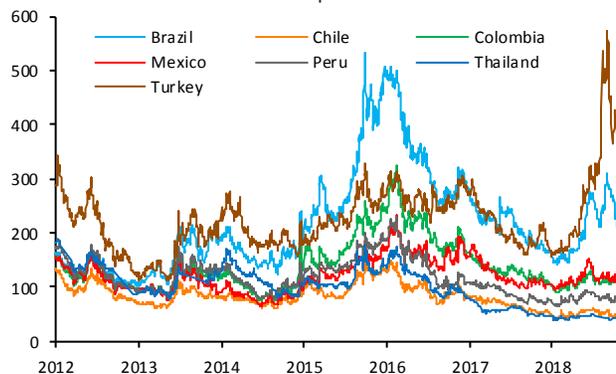


^{1/} To estimate the term premium, first the average expectation of the short-term interest rate implicit in the long-term rate is estimated (zero-coupon 10-year bond rate), using a similar model. Subsequently, based on that estimation, the term premium is calculated as the residual between the long-term rate and the said expectation. The latter is measured considering a continuous compound interest.

Source: Estimated by Banco de México with data from Valmer, *Proveedor Integral de Precios (PIP)* and Bloomberg.

Finally, between late June and mid-July, market indicators that measure domestic sovereign credit risk decreased significantly, and remained so until the first half of October. In contrast, there was a significant deterioration during the same period in said indicators in some emerging economies, in particular in Argentina and Turkey, which was associated to the adverse events in these countries' financial markets (Chart 86). However, starting from the second half of October, and derived from idiosyncratic factors mentioned above, in the case of Mexico these indicators increased strongly.

Chart 86
Market Indicators that Measure the Domestic Sovereign Credit Risk ^{1/}
 Basis points



^{1/} This refers to 5-year Credit Default Swaps.

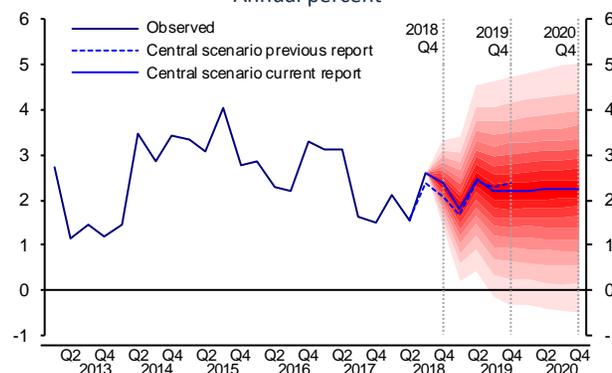
Source: Bloomberg.

In conclusion, the Mexican economy faces medium- and long-term risks that could affect the macroeconomic conditions of the country, its growth capacity and the price formation process in the economy. In this sense, it is important to highlight that, if the economy faces a scenario that calls for an adjustment of the real exchange rate, as well as higher medium- and long-term interest rates, Banco de México will contribute so that the necessary adjustments in the economy take place in an orderly manner, seeking to avoid second round effects on the price formation process. In the same vein, in addition to continue implementing a prudent monetary policy, it is relevant to encourage the adoption of measures propitiating greater productivity, an environment of confidence and certainty for investment and to sustainably consolidate the public finances, strengthening transparency and accountability of public policies.

5. Forecasts and Balance of Risks

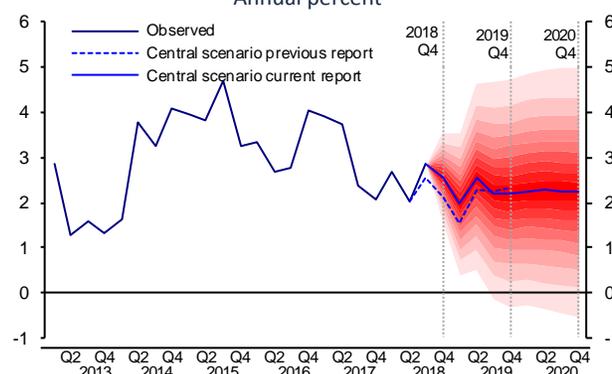
GDP growth: Forecasts for economic growth in Mexico in 2018 have been revised from an interval of between 2.0 and 2.6% in the previous Report to one of between 2.0 and 2.4%, while for 2019 they have been adjusted from an interval of between 1.8 and 2.8% to one between 1.7 and 2.7%, in both cases reflecting the availability of more information (Chart 87 and Chart 88). For 2020, GDP is expected to grow between 2.0 and 3.0%, which corresponds to the inertial baseline scenario consistent with the potential growth that Mexico has exhibited for several years. In this sense, forecasts for 2019 and 2020 do not consider the impact that the materialization of certain risks described below could have on economic growth. Such forecasts also assume the commitment of the authorities in charge of economic policy to preserve a solid macroeconomic framework in general and sustainable public finances in particular.¹⁸ There is a high degree of uncertainty regarding this outlook, given that the Mexican economy is expected to continue facing a complex environment throughout the forecast horizon. Specifically, although the agreement achieved with the U.S. and Canada regarding the trade relationship in the region has, to a great extent, reduced one of the risk factors to the Mexican economy, there are obstacles for its ratification, in an environment of a possible escalation in global trade disputes and, to a lesser extent, the risk of tighter global financial conditions persisting. Additionally, domestic elements of uncertainty prevail regarding different aspects of the economic policy to be implemented by the incoming administration and their effects on economic activity and the country's ability to generate an environment of confidence and certainty that is conducive to investment.

Chart 87
Fan Chart: GDP Growth, s. a.
Annual percent



Source: INEGI and Banco de México.

Chart 88
Fan Chart: GDP Growth Excluding Oil Sector, s. a.
Annual percent



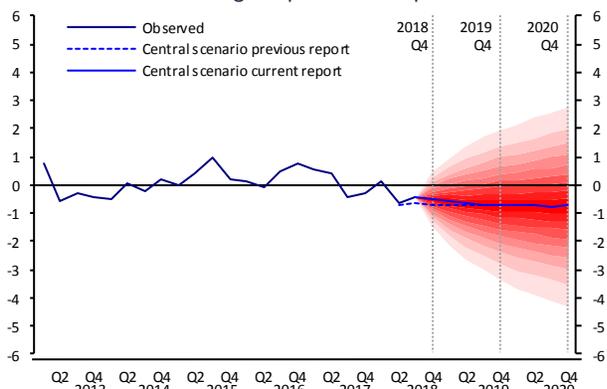
Source: INEGI and Banco de México.

Regarding the economy's cyclical position, slack conditions, measured using the output gap and other general indicators, are estimated to maintain a certain degree of easing throughout the forecast horizon (Chart 89, Chart 90 and Chart 91).

¹⁸ In addition, based on the consensus among business analysts surveyed by Blue Chip in November 2018, the U.S. industrial production is expected to grow 3.7 and 2.7% in 2018 and 2019, just like reported in

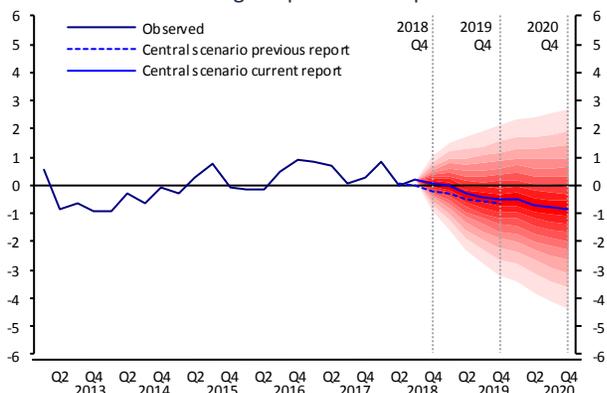
the previous Report. For 2020, in line with the October 2018 survey, this indicator is expected to grow 1.8%.

Chart 89
Fan Chart: Output Gap Estimate, s. a.
 Percentage of potential output



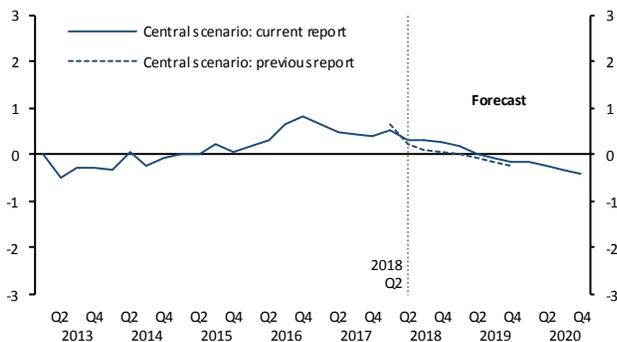
s. a. / Seasonally adjusted data.
 Source: Banco de México.

Chart 90
Fan Chart: Output Gap Estimate Excluding Oil Sector, s. a.
 Percentage of potential output



s. a. / Seasonally adjusted data.
 Source: Banco de México.

Chart 91
Quarterly Slack Indicator



Notes:

- i) The estimated performance of this indicator is consistent with the GDP forecasts excluding the oil sector.
- ii) A fan chart for the quarterly slack index cannot be calculated, given the manner in which its forecast was estimated.

Source: Banco de México.

Employment: The forecasts for the number of IMSS-insured jobs for 2018 have been revised from an interval of between 670 and 770 thousand jobs in the previous Report to between 670 and 740 thousand jobs in this Report, while an interval of between 670 and 770 thousand jobs is still expected for 2019. For 2020, an interval of between 690 and 790 thousand jobs is anticipated.

Current Account: For 2018, the deficits of the trade balance and the current account are expected to amount to US\$ 13.5 and 22.6 billion, respectively (1.1 and 1.9% of GDP), which are below the projections of the previous Report of US\$ 13.4 and 23.7 billion, respectively (1.1 and 1.9% of GDP, in the same order). For 2019, the deficits of the trade balance and the current account are anticipated to be US\$ 14.1 and 28.8 billion, respectively (1.1 and 2.3% of GDP, in the same order), which compare to US\$ 14.1 and 27.9 billion, respectively (1.1 and 2.1% of GDP), of the previous Report. For 2020, the trade balance and current account deficits are foreseen to amount to US\$ 15.1 and 31.5 billion, respectively (1.1 and 2.3% of GDP, in the same order).

Given the continued uncertainty surrounding the Mexican economy, the balance of risks for growth from a cyclical perspective continues biased towards the downside, and is considered to have deteriorated at the margin. In particular, as previously mentioned, despite the trade agreements among Mexico, Canada and the U.S., there are still risks to the ratification. Likewise, other uncertainty factors persist, especially domestic ones, which could negatively affect economic activity in Mexico.

Some of the forecast horizon's downward risks are:

- i. That the environment of uncertainty that has been affecting investment persists, or even deteriorates, and as a consequence different businesses postpone or cancel their investment plans in Mexico, or that Mexican consumers cut down on spending as a preemptive measure.
- ii. That the ratification and implementation of the trade treaty with the U.S. and Canada is delayed, and the environment of uncertainty that has been affecting investment continues.
- iii. That the escalation of protectionist measures at the global level negatively affects global growth,

investment and trade, to the detriment of economic activity in Mexico, even if some productive sectors could to a certain degree benefit from trade diversion.

- iv. That bouts of volatility in international financial markets are observed, due to, among other factors, inflationary surprises in the U.S. that would lead to higher-than-anticipated interest rate increments in that country, as well as to a possible contagion from other emerging economies, or from geopolitical events that could reduce the sources of financing.
- v. That the execution of public spending is delayed given the challenges to implement the public policy agenda associated with the start of an incoming administration.

Some of the forecast horizon's upward risks to growth are:

- i. That the recent announcements of the trade agreement with the U.S. and Canada lead to a notable recovery in investment.
- ii. That the greater-than-anticipated dynamism of U.S. industrial production favors Mexican exports.
- iii. That a greater-than-expected public spending is observed.

In addition to the above risks, the Mexican economy is facing others that, in case of materializing, could not only affect its cyclical growth, but also negatively impact its potential growth in the medium and long terms. Some of these risks are:

- i. That public policy decisions generate greater market concerns, along with a sustained loss of confidence in Mexico as an investment destination that could extend or even aggravate the weakness that investment has been

displaying for several years, with the consequent negative effects on the country's productive capacity and on the pace of adoption of new technologies.

- ii. That the structural measures aimed at boosting Mexico's productivity are weakened or fail to be implemented.
- iii. That the adopted protectionist measures, or the implementation of new ones, negatively impact the participation of certain economies (including Mexico) in global value chains.
- iv. That the competitiveness of the Mexican economy is affected by a number of external and domestic factors, such as corporate tax cuts in the U.S.
- v. That public safety issues, corruption, impunity and the lack of rule of law intensify, with their consequent negative impact on investment and economic activity.

5.1. Inflation Outlook

Inflation: Regarding the outlook for inflation, in the absence of monetary policy actions, different factors have contributed to delay the convergence of inflation to its target, with respect to the previous Report. Some of these factors are the already observed increases in energy prices, and their indirect effects on core inflation, combined with higher increments than those expected in the services' prices rate of change. As mentioned above, considering these factors, monetary policy was adjusted in November to maintain the convergence of headline inflation to the target in the same horizon as in the previous Report, although over the next quarters headline and core inflation are expected to remain above the previous estimations.

Table 3
Headline and Core Inflation Expectations
 Annual change in percent

	2018		2019				2020		
	III	IV	I	II	III	IV	I	II	III
CPI									
Current report	4.9 *	4.7	4.4	4.4	3.8	3.4	3.3	3.1	3.0
Previous report	4.8	4.2	3.8	3.6	3.2	3.3	3.2	3.1	
Core									
Current report	3.6 *	3.7	3.6	3.6	3.4	3.1	3.0	2.9	2.7
Previous report	3.6	3.5	3.3	3.2	3.0	2.9	3.0	2.9	

*/ Observed data.

Source: Banco de México and INEGI.

Annual headline inflation is, thus, forecast to approach the 3% target in 2019 and remain close to that target during the first half of 2020. The trajectory of annual core inflation was also adjusted upwards for the following months, although, given the monetary policy actions, during the first half of 2020 it is anticipated to attain the same level as that in the previous Report (Table 3).

These forecasts are subject to considerable risks. Some of them are:

- i. That the Mexican peso remains under pressure due to an environment of higher external interest rates and other external and domestic factors.
- ii. That pressures on energy prices or price increases in agricultural products persist.
- iii. That there is an escalation of protectionist and compensatory measures worldwide.
- iv. That there is a deterioration in public finances.
- v. Given the observed shocks and the inflation levels, there is a risk of second-round effects affecting the price formation process.
- vi. That wage negotiations are not consistent with productivity gains.

In addition to the above, there are other risks of a structural nature that could be caused by the implementation of policies that lead to major changes in the economy or in the price formation process. In this regard, the following are noteworthy:

- i. That the potential growth of the economy declines, given the possibility of a greater weakness of investment and lack of productivity growth.
- ii. That a structural weakness of public finances is observed.

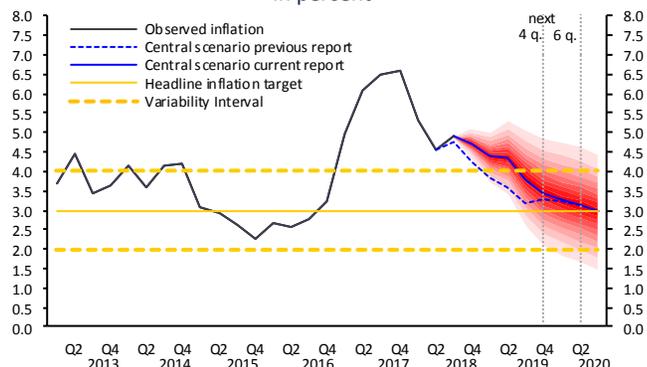
- iii. That medium- and long-term inflation expectations are revised upwards, in response to a greater persistence of inflation, by affecting the price formation process, associated to changes in the determination of wages and other inputs.
- iv. That conditions of access to external financing are affected to a larger extent.
- v. Given the materialization of the above risks, that the real exchange rate shows an increasing tendency to depreciate.

Considering the above, the balance of risks vis-à-vis the anticipated trajectory of inflation has deteriorated significantly and is biased strongly to the upside. This takes place in an environment of high uncertainty.

To guide its monetary policy actions, the Governing Board follows closely the development of inflation vis-à-vis its anticipated trajectory, taking into account the monetary policy stance adopted and the time frame in which monetary policy operates, as well as available information on all inflation determinants and medium- and long-term inflation expectations, including the balance of risks to such factors. Monetary policy must also respond prudently if for any reason the uncertainty faced by the Mexican economy increases considerably. In the current environment of uncertainty, the Governing Board will follow closely the potential pass-through of exchange rate fluctuations to prices, the monetary policy stance relative to that of the U.S. under an adverse external environment, and the conditions of slack in the Mexican economy. The Board will take the necessary actions, specifically, maintaining or possibly strengthening the current monetary policy stance, so that headline inflation converges to Banco de México's target within monetary policy's period of

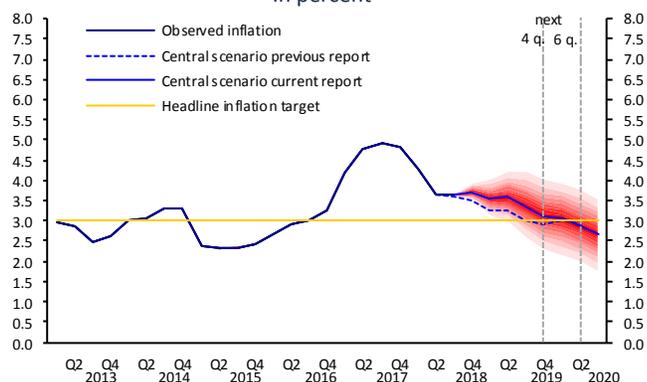
influence. Similarly, if the complex environment faced by inflation persists or even worsens, higher interest rates would need to be maintained throughout the business cycle.

Chart 92
Fan Chart: Annual Headline Inflation ^{1/}
In percent



^{1/} Quarterly average of annual headline inflation. The next four and six quarters are indicated, using as a reference the fourth quarter of 2018; that is, the fourth and the second quarters of 2019 and 2020, respectively, time intervals over which monetary policy transmission channels fully operate.
Source: Banco de México and INEGI.

Chart 93
Fan Chart: Annual Core Inflation ^{1/}
In percent



^{1/} Quarterly average of annual core inflation. The next four and six quarters are indicated, using as a reference the fourth quarter of 2018; that is, the fourth and the second quarters of 2019 and 2020, respectively, time intervals over which monetary policy transmission channels fully operate.
Source: Banco de México and INEGI.

Although the agreement reached on the renegotiation of the North American trade relationship implies the modernization of certain sectors, while also imposing greater frictions in

others, there is no doubt that, despite the persisting obstacles to ratify it, after its announcement the uncertainty related to one of the factors that had been negatively affecting investment in Mexico has decreased. In particular, the fact that the region's economic integration is maintained –and, looking forward, deepens further– should lead to a recovery of investment in Mexico, fueled by projects that had been postponed due to the uncertainty surrounding the trade policy and new business opportunities. However, progress in trade-related matters might not be sufficient to increase, or even maintain, the necessary confidence to trigger greater levels of investment and growth in Mexico if the economy's fundamentals are not shielded and the obstacles that have prevented the country from attaining a higher potential growth are not addressed. It is therefore necessary to maintain and strengthen a macroeconomic framework that prioritizes fiscal discipline and price stability, reinforcing the transparency and accountability of public policies. Structural and institutional problems that discourage investment and hinder productivity growth must also be corrected, keeping in mind that the only way to generate better-paid jobs is through higher productivity. Indeed, conditions of increased competition among the different sectors of the economy should be fostered, and incentives that favor value creation rather than rent extraction should be generated. Similarly, investment in infrastructure is needed, as it allows the country to strengthen its domestic market and to further exploit the country's export vocation. As mentioned in previous Quarterly Reports, adequate policies should be implemented in areas other than the economy to fight public insecurity and corruption, to guarantee full respect for private property, to encourage an environment of certainty for investment and for the rule of law to prevail. This would help to generate an environment more conducive to investment and to the adoption of new technologies, leading to greater growth and welfare.

Annex 1 Calendar of Monetary Policy Decision Press Releases (Monetary Policy Statements), Minutes of the Governing Board's Meetings regarding Monetary Policy Decisions, Quarterly Reports and Financial System Reports in 2019

Calendar for 2019				
	Monetary Policy Statements ^{1/}	Minutes of the Governing Board's Meetings regarding Monetary Policy Decisions ^{2/}	Quarterly Reports ^{3/}	Financial System Reports ^{4/}
January				
February	7	21	27	
March	28			
April		11		
May	16	30	29	
June	27			12
July		11		
August	15	29	28	
September	26			
October		10		
November	14	28	27	
December	19 ^{5/}			4

1/ The Monetary Policy Statements will be released on eight dates in 2019. However, as in previous years, should there be extraordinary events that may require the central bank's intervention, Banco de México reserves its right to modify its monetary policy stance at dates different from those previously scheduled. The Monetary Policy Statements will continue to be released on Thursdays, at 1:00 PM (13:00) CST just as in 2018.

2/ The Minutes of the Governing Board's Monetary Policy Decision Meeting will also be released on Thursdays, two weeks after the corresponding Monetary Policy Statement is published.

3/ The Quarterly Report to be published on February 27, 2019 corresponds to the fourth quarter of 2018; the one to be released on May 29, 2019, to the first quarter of 2019; the one to be released on August 28, 2018, to the second quarter of 2019, and finally the one to be presented on November 27, 2018, to the third quarter of 2019.

4/ Starting from this Quarterly Report, the calendar will include the release dates of the Financial System Report.

5/ The Minutes of the Governing Board's Monetary Policy Decision Meeting of December will be released on Thursday, January 2, 2020.

Annex 2 Banco de México's Publications in the Quarter July - September 2018

1. Publications

1.1. Quarterly Reports

29/08/2018 | Quarterly Report, April - June 2018

1.2. Regional Economic Report

13/09/2018 | Regional Economic Report, April - June 2018

2. Working papers

06/07/2018	2018-10 Measurement of Economic Activity in the Main Beach Tourist Areas in Mexico through the Nightlights Photographed from Space
20/08/2018	2018-11 Logging Concessions, Certification & Protected Areas in the Peruvian Amazon: Forest Impacts from Combinations of Development Rights & Land-use Restrictions
20/08/2018	2018-12 The Value of Being Socially Responsible. A Primal-Dual Approach
20/08/2018	2018-13 Against All Odds: Job Search during the Great Recession
22/08/2018	2018-14 Finance and Employment Formalization: Evidence from Mexico's ENIGH, 2000-2016
24/08/2018	2018-15 On the Role of Financial Aid in a Default Episode
24/08/2018	2018-16 TIE-28 Swaps as Risk-Adjusted Forecasts of Monetary Policy in Mexico
03/09/2018	2018-17 Adjustment of the Regional Indicator of Income in Retail Trade

3. Speeches and presentation by Governing Board members

3.1. Speeches

09/07/2018	"Monetary policy amidst NAFTA negotiations and other sources of uncertainty", Javier Guzmán, Deputy Governor of Banco de México
27/08/2018	"Introduction of 500 peso banknote in the new family of Mexican banknotes", Alejandro Díaz de León, Governor of Banco de México
19/09/2018	"Evolution and Outlook of the Mexican Economy", Alejandro Díaz de León, Governor of Banco de México

3.2. Presentations

11/07/2018	"Macroeconomic Situation of Mexico and the Outlook from Banco de México's Perspective", Alejandro Díaz de León, Governor of Banco de México
17/08/2018	"Evolution and Outlook of the Mexican Economy", Alejandro Díaz de León, Governor of Banco de México
13/09/2018	"Evolution and Outlook of the Mexican Economy", Alejandro Díaz de León, Governor of Banco de México
28/09/2018	"Evolution and Outlook of the Mexican Economy", Alejandro Díaz de León, Governor of Banco de México

4. Press Releases

4.1. Monetary Policy

4.1.1. Announcements of Monetary Policy Decisions

02/08/2018	Target for the Overnight Interbank Interest Rate remains unchanged at 7.75 percent
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4.1.2. Minutes of the meeting of Banco de México's Governing Board on the occasion of the monetary policy decision

05/07/2018	Minutes of the meeting of Banco de México's Governing Board on the occasion of the monetary policy decision announced on June 21, 2018
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16/08/2018	Minutes of the meeting of Banco de México's Governing Board on the occasion of the monetary policy decision announced on August 2, 2018
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4.2. Banco de México

4.2.1. Weekly balance statement

10/07/2018	Banco de México's balance statement of the week as of July 6, 2018
17/07/2018	Banco de México's balance statement of the week as of July 13, 2018
24/07/2018	Banco de México's balance statement of the week as of July 20, 2018
31/07/2018	Banco de México's balance statement of the week as of August 3, 2018
07/08/2018	Banco de México's balance statement of the week as of August 10, 2018
14/08/2018	Banco de México's balance statement of the week as of August 17, 2018
21/08/2018	Banco de México's balance statement of the week as of August 24, 2018
28/08/2018	Banco de México's balance statement of the week as of August 31, 2018
04/09/2018	Banco de México's balance statement of the week as of September 7, 2018
11/09/2018	Banco de México's balance statement of the week as of September 14, 2018
18/09/2018	Banco de México's balance statement of the week as of September 21, 2018
25/09/2018	Banco de México's balance statement of the week as of September 28, 2018

4.2.2. Weekly information of the Consolidated Account Statement

10/07/2018	Weekly information as of July 6, 2018
17/07/2018	Weekly information as of July 13, 2018
24/07/2018	Weekly information as of July 20, 2018
31/07/2018	Weekly information as of July 27, 2018
14/08/2018	Weekly information as of August 10, 2018
07/08/2018	Weekly information as of August 3, 2018
21/08/2018	Weekly information as of August 17, 2018
28/08/2018	Weekly information as of August 24, 2018
04/09/2018	Weekly information as of August 31, 2018

11/09/2018	Weekly information as of September 7, 2018
18/09/2018	Weekly information as of September 14, 2018
25/09/2018	Weekly information as of September 21, 2018

4.2.3. Monthly consolidated balance statement and balance sheet

26/07/2018	Financial statements: June 2018
21/08/2018	July 31, 2018
24/09/2018	August 31, 2018

4.3. Financial Sector

4.3.1. Monetary aggregates and financial activity

31/07/2018	Monetary aggregates and financial activity in June 2018
31/08/2018	Monetary aggregates and financial activity in July 2018
28/09/2018	Monetary aggregates and financial activity in August 2018

4.4. External sector

4.4.1. Balance of payments

24/08/2018	Balance of payments in the second quarter of 2018
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4.4.2. Revised information of foreign trade

09/07/2018	May 2018
09/08/2018	June 2018
10/09/2018	July 2018

4.5. Survey results

4.5.1. Quarterly evolution of financing to firms

22/08/2018	Quarterly evolution of financing to firms during the quarter April - June 2018
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4.5.2. National survey on consumer confidence

05/07/2018	Consumer confidence index: June 2018
03/08/2018	Consumer confidence index: July 2018
05/09/2018	Consumer confidence index: August 2018

4.5.3. Surveys among private sector specialists

02/07/2018	Survey among private sector specialists: June 2018
01/08/2018	Survey among private sector specialists: July 2018
03/09/2018	Survey among private sector specialists: August 2018

4.5.4. Survey on General Conditions and Standards in the Banking Credit market (EnBan)

13/08/2018	Survey on General Conditions and Standards in the Banking Credit Market during the quarter April – June 2018
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4.5.5. Business opinion indicators

02/07/2018	Manufacturing orders' index: June 2018
01/08/2018	Manufacturing orders' index: July 2018
03/09/2018	Manufacturing orders' index: August 2018

4.6. Miscellaneous

06/07/2018	The financial authorities request to strengthen security and surveillance schemes
13/07/2018	Second period of public consultation on the regulation of payroll loans
27/07/2018	New requirements to SPEI participants to strengthen the policies and control in fund transfers
15/08/2018	Public consultation on the draft of Banco de México's regulations: the regulation applicable to institutions of electronic funds transfers
20/08/2018	New Banco de México web page
29/08/2018	Second period of public consultation on the rules to operate the credit institutions' debit and credit cards and regulated SOFOMEs that maintain patrimonial links with credit institutions
03/09/2018	Second Call of <i>Enlaces Universitarios Banxico</i> , aimed at students enrolled at higher education institutions in México
10/09/2018	A joint notice to the users of statistics on international travelers
20/09/2018	Financial System Stability Council updates its balance of risks
20/09/2018	Financial System Stability Council updates its balance of risks

4.7. Circulars issued by Banco de México

26/07/2018	Payment systems administered by Banco de México
26/07/2018	Interbank Electronic Payment System (SPEI)
26/07/2018	Domestic USD Transfer System (SPID)
26/07/2018	Bank operations
27/07/2018	Auctions to place government securities and IPAB securities
26/07/2018	Transactions of credit institutions and the National Financing Boards of Agricultural, Rural, Forestry and Fisheries Development
26/07/2018	Credit cards
27/07/2018	Payment systems administered by Banco de México
27/07/2018	Interbank Electronic Payment System (SPEI)
27/08/2018	Bank operations
10/09/2018	Operations of institutions of electronic funds transfers
21/09/2018	Bank operations



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