Monetary Policy Challenges
Alejandro Díaz de León, Governor, Banco de México*

HSBC 7th Annual Mexico CEO/CFO Roundtable
February 13, 2019

*/ The opinions/points of view expressed in this document are responsibility of the author and do not necessarily represent the institutional view of Banco de México or its Governing Board.
Outline

1 External Conditions

2 Current Situation of the Mexican Economy

3 Monetary Policy

4 Forecasts and Final Remarks
Available indicators suggest that during Q4 2018 the world economy decelerated, as evidenced by the lower dynamism in most advanced and some emerging economies.

**World Economy**

**GDP Growth**
Annualized quarterly % change, s. a.

**Volume of World Trade and Global Manufacturing PMI: New Export Orders**
Annual % change of 3-month moving average, s. a. and diffusion indices

**Consumer and Business Confidence**
Standard deviations from historical average, s. a.

---

**Note**: The sample of countries used for this calculation represents 84.9% of world GDP measured by purchasing power parity. Source: Prepared by Banco de México with Haver Analytics and IMF information.

---

**Source**: Markit, CPB Netherlands and Institute of Shipping Economics and Logistics.

---

**Source**: European Commission and Markit.
In this context, slack in advanced economies has been decreasing.

### Advanced Economies

**Unemployment Gap**
- **Percentage points**

**Wages**
- **Annual % change, s. a.**

**Source:** Prepared by Banco de México with data from CBO, OECD, Economic Outlook, November 2017 and National Statistical Agencies.

**Note:** Wage indicators in the U.S., Eurozone, U.K. and Japan correspond to average hourly remunerations, compensation per employee, weekly average remunerations and average monetary remunerations, respectively.

**Source:** BLS, BCE, Bloomberg and ONS.
This environment of lower dynamism of economic activity, together with the fall in oil prices, contributed to ease inflationary pressures in the main economies.

Advanced Economies

**Headline Inflation**
Annual % change

**Core Inflation**
Annual % change

**Headline Inflation Expectations for 2019**
Annual % change

1/ U.S. figures correspond to the implicit price deflator for personal consumption expenditures. Source: National Statistical Agencies.

2/ U.S. figures correspond to the implicit price deflator for personal consumption expenditures.

3/ For Japan excludes energy and fresh food and the direct effect of the consumption tax increase. Source: National Statistical Agencies.

4/ Figures correspond to the Consumer Price Index (CPI). Source: Consensus Forecasts.
The Federal Reserve has modified significantly its message, stating that it will be patient in making future adjustments to the target range for the federal funds rate.

**Monetary Policy Challenges**

**Rate Increases Implicit in Federal Funds Futures for 2019 and 2020**

**Basis points**

**United States**

**Reference Rate, Implicit Trajectory in Federal Funds Futures, Federal Reserve Projections and Forecasts of Brokerage Firms**

**Source**: Bloomberg, Federal Reserve, and Banco de México’s survey conducted January 22nd 2019 on the following brokerage firms: Barclays, Bank of America, Bank of Montreal, Citi, Credit Agricole, Credit Suisse, Goldman Sachs, JP Morgan, Nomura, RBC, RBS, Toronto Dominion, UBS, Mizuho, Scotiabank, Wells Fargo, Daiwa, Morgan Stanley, HSBC.

**Note**: The implicit increases for 2019 are calculated by subtracting the rate for the futures for January 2020 minus the one for January 2019. For 2020, the figure is calculated by subtracting the futures for January 2021 minus the ones for January 2020.
In this context, although the main central banks are anticipated to continue adjusting to a more neutral monetary policy stance, a more gradual pace of monetary policy normalization is expected.

Advanced Economies

**Expected Monetary Policy Rates Implicit in OIS Curve**

<table>
<thead>
<tr>
<th>Country</th>
<th>Implied Target Rate in OIS Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Reserve</td>
<td>End of 2019: 2.375%</td>
</tr>
<tr>
<td>Bank of Canada</td>
<td>End of 2019: 1.75%</td>
</tr>
<tr>
<td>Bank of England</td>
<td>End of 2019: 0.75%</td>
</tr>
<tr>
<td>Bank of Japan</td>
<td>End of 2019: -0.29%</td>
</tr>
<tr>
<td>European Central Bank</td>
<td>End of 2019: -0.24%</td>
</tr>
</tbody>
</table>

**Prospective Distribution of the Reference Rate at the end of 2019 Implicit in Options**

<table>
<thead>
<tr>
<th>Country</th>
<th>Mode Date: Interest Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Jun 29, 2018: 2.87%</td>
</tr>
<tr>
<td></td>
<td>Nov 14, 2018: 3.05%</td>
</tr>
<tr>
<td></td>
<td>Feb 12, 2019: 2.46%</td>
</tr>
<tr>
<td>Canada</td>
<td>Jun 29, 2018: 2.18%</td>
</tr>
<tr>
<td></td>
<td>Nov 14, 2018: 1.89%</td>
</tr>
<tr>
<td></td>
<td>Feb 12, 2019: 1.89%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Jun 29, 2018: 0.89%</td>
</tr>
<tr>
<td></td>
<td>Nov 14, 2018: -0.24%</td>
</tr>
<tr>
<td></td>
<td>Feb 7, 2019: -0.35%</td>
</tr>
<tr>
<td>Eurozone</td>
<td>Jun 29, 2018: -0.40%</td>
</tr>
</tbody>
</table>

1/ OIS: Fixed-for-floating swap where the fixed interest rate is the reference rate.
* Data for the observed federal funds rate corresponds to the average between the lower and upper bounds of the range.
2/ The implicit distribution of the reference rate is obtained from the changes in interest rates implicit in options over the 3-month futures (LIBOR in the U.S. and United Kingdom, EURIBOR in the Eurozone and bankers acceptance in Canada). The spread between the reference rate and the 3-month rate is assumed to remain constant. The implicit distribution in options is calculated using the Breeden-Litzenberger method. Source: Bloomberg.
In light of the divergence in economic performance across economies, interest rates in the U.S. have remained above those registered in other advanced economies, and the U.S. dollar has strengthened. However, this trend has moderated recently, due partly to concerns about the possibility of weaker growth in the U.S.

Note: G7 rate was constructed using 2-year and 10-year government bond rates from the G7 countries excluding the United States and weighted by nominal GDP. Source: Bloomberg.

G7: Government Bond Interest Rates

2-year rate

10-year rate

United States

G7 excluding United States

February

-0.5%

0.0%

0.5%

1.0%

1.5%

2.0%

2.5%

3.0%

3.5%

4.0%

4.5%


DXY

Trade Weighted Index (TWI)

US dollar appreciation

February

US dollar Indices: DXY ¹/ and Trade Weighted Index ²/

Index Dec-31-2015 = 100

¹/ DXY index estimated by Intercontinental Exchange (ICE) based on the weighted geometric mean of the dollar’s value compared with a basket of 6 other major currencies: EUR: 57.6%, JPY: 13.6%, GBP: 11.9%, CAD: 9.1%, SEK: 4.2% and CHF: 3.6%. Base=100. ²/ Trade-weighted Index of the Federal Reserve; main trade partners: China (21.3%), Eurozone (16.38%), Canada (12.7%), Mexico (11.9%), Japan (6.9%), South Korea (3.9%), United Kingdom (3.35%). Source: Bloomberg.

Monetary Policy Challenges
The intensification of certain risks for the global economy, such as trade tensions, led to bouts of volatility in financial markets. This environment has moderated recently due to the expectation of fewer increases in U.S. interest rates.

Global Risk Appetite Index

Advanced Economies: Stock Market and Volatility
Index Jan-03-2017=100, %

United States: Selected Spreads of Treasury Bonds Interest Rate Curves
%}

1/ Based on ETF iShares MSCI World quoted in U.S. dollars. It includes the stock markets of 11 advanced economies: Canada, United States, Japan, France, Germany, Australia, Hong Kong, Netherlands, Spain, Switzerland and United Kingdom.

2/ Refers to the CBOE Volatility Index (VIX), which tracks implied volatility in S&P 500 options. Source: Bloomberg.

Note: Blue shaded areas represent recession periods established by the NBER. Source: Federal Reserve Bank of St. Louis (FRED).

Monetary Policy Challenges
Under these conditions, financial markets in emerging economies have exhibited a more favorable performance.

### Emerging Economies: Financial Assets Performance

#### % and basis points

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Currencies</th>
<th>Equity markets</th>
<th>Interest rates 2Y</th>
<th>Interest rates 10Y</th>
<th>CDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America</td>
<td>Mexico</td>
<td>-5.20%</td>
<td>4.07%</td>
<td>9</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>3.75%</td>
<td>12.68%</td>
<td>6.87%</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>-0.55%</td>
<td>-3.14%</td>
<td>20</td>
<td>-104</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>-4.36%</td>
<td>-7.01%</td>
<td>1.66%</td>
<td>4.89%</td>
<td>-5</td>
<td>-10</td>
</tr>
<tr>
<td>Argentina</td>
<td>-3.70%</td>
<td>2.03%</td>
<td>0.71%</td>
<td>26.09%</td>
<td>-40</td>
<td>-145</td>
</tr>
<tr>
<td>Russia</td>
<td>1.13%</td>
<td>0.57%</td>
<td>1.36%</td>
<td>7.38%</td>
<td>-48</td>
<td>-27</td>
</tr>
<tr>
<td>Poland</td>
<td>-2.01%</td>
<td>-3.35%</td>
<td>-1.25%</td>
<td>4.04%</td>
<td>-8</td>
<td>-1</td>
</tr>
<tr>
<td>Turkey</td>
<td>17.86%</td>
<td>-2.98%</td>
<td>2.22%</td>
<td>15.34%</td>
<td>-253</td>
<td>-277</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>-2.30%</td>
<td>-4.20%</td>
<td>-0.49%</td>
<td>2.87%</td>
<td>-26</td>
<td>-45</td>
</tr>
<tr>
<td>Hungary</td>
<td>-1.27%</td>
<td>6.56%</td>
<td>1.44%</td>
<td>2.05%</td>
<td>-8</td>
<td>-42</td>
</tr>
<tr>
<td>South Korea</td>
<td>-1.67%</td>
<td>-10.84%</td>
<td>0.66%</td>
<td>5.76%</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Malaysia</td>
<td>-1.71%</td>
<td>-9.78%</td>
<td>2.43%</td>
<td>2.79%</td>
<td>-6</td>
<td>-12</td>
</tr>
<tr>
<td>India</td>
<td>-0.79%</td>
<td>-6.15%</td>
<td>1.24%</td>
<td>-0.32%</td>
<td>-9</td>
<td>-21</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.92%</td>
<td>-4.27%</td>
<td>1.68%</td>
<td>6.51%</td>
<td>-18</td>
<td>-28</td>
</tr>
<tr>
<td>Thailand</td>
<td>-0.17%</td>
<td>-6.98%</td>
<td>4.41%</td>
<td>2.56%</td>
<td>2</td>
<td>-5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.02%</td>
<td>1.18%</td>
<td>3.50%</td>
<td>5.53%</td>
<td>-24</td>
<td>-15</td>
</tr>
<tr>
<td>Africa</td>
<td>1.99%</td>
<td>-12.12%</td>
<td>4.36%</td>
<td>4.65%</td>
<td>-29</td>
<td>-36</td>
</tr>
</tbody>
</table>

**Note:** Interest rates correspond to interest rate swaps for 2-year/10-year maturities. In the case of Argentina, considering low liquidity and in order to reflect the performance of the fixed income market adequately, rates in US dollars are used.

Source: Bloomberg.
Outline

1. External Conditions
2. Current Situation of the Mexican Economy
3. Monetary Policy
4. Forecasts and Final Remarks
The Mexican economy has faced a complex environment and adverse shocks since the end of 2014:

✓ **Tighter external financing** — requires a lower current account deficit.
  - Fall in **oil prices** — end of 2014.
  - The oil production platform has continued to decline.
  - The **oil trade balance trend** reverted.
  - A significant **non-oil trade balance adjustment was required**.
  - Uncertainty regarding the future of the **USMCA**.
  - The beginning of **monetary policy normalization in advanced economies**, mainly in the United States.

✓ **Macroeconomic adjustment**.
  - **Real exchange rate** depreciation.
  - Monetary policy focused on avoiding **adverse effects on the price formation process** and on **inflation expectations**.
  - Lower **absorption** of resources by the **public sector**.
In this environment, the Mexican economy has been subject to a strong reduction in external financing, which has been partially offset by an increase in domestic financing and a lower absorption of resources by the public sector.

**Sources and Uses of Financial Resources**

### Annual flows as % of GDP

<table>
<thead>
<tr>
<th>Sources</th>
<th>Total</th>
<th>External</th>
<th>Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>10.0</td>
<td>4.2</td>
<td>5.8</td>
</tr>
<tr>
<td>2014</td>
<td>9.7</td>
<td>4.1</td>
<td>5.6</td>
</tr>
<tr>
<td>2015</td>
<td>5.8</td>
<td>4.6</td>
<td>1.2</td>
</tr>
<tr>
<td>2016</td>
<td>7.4</td>
<td>1.9</td>
<td>5.5</td>
</tr>
<tr>
<td>2017</td>
<td>7.9</td>
<td>1.3</td>
<td>6.5</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>6.1</td>
<td>0.8</td>
<td>5.3</td>
</tr>
</tbody>
</table>

### Uses

<table>
<thead>
<tr>
<th>Total</th>
<th>Other concepts</th>
<th>Public sector financing</th>
<th>Private sector financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>10.0</td>
<td>4.2</td>
<td>2.5</td>
</tr>
<tr>
<td>2014</td>
<td>9.7</td>
<td>4.1</td>
<td>2.5</td>
</tr>
<tr>
<td>2015</td>
<td>5.8</td>
<td>4.1</td>
<td>3.1</td>
</tr>
<tr>
<td>2016</td>
<td>7.4</td>
<td>1.53</td>
<td>3.0</td>
</tr>
<tr>
<td>2017</td>
<td>7.9</td>
<td>2.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>6.1</td>
<td>2.6</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Note: Figures expressed in percent of annual GDP nominal average. Data adjusted due to exchange rate variations and asset prices.

1/ Corresponds to domestic financial assets (aggregate F1), composed of monetary and non-monetary domestic sources.

2/ Includes monetary instruments held by non-residents (equivalent to the difference between M4 and M3) and other non-monetary external sources (external debt of the Federal Government and public agencies and companies, commercial banks’ external liabilities, external financing to the non-financial private sector, and the funds raised by agencies, among others).

3/ Includes domestic reserves, capital accounts, and earnings and other assets and liabilities of commercial and development banks, of non-bank financial intermediaries, of the National Housing Agency (Infonavit) and Banco de México —including the securities issued by the central bank for monetary regulation purposes, especially those related to sterilizing the monetary impact of the operational surplus. It includes non-monetary liabilities from the Institute for the Protection of Bank Savings (IPAB) as well as the effect of the valuation changes of public debt instruments, among other concepts.

Source: Banco de México.

**Financing to the Non-financial Private Sector**

### Real annual % change

<table>
<thead>
<tr>
<th>Total</th>
<th>Domestic</th>
<th>Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>-9</td>
<td>-12</td>
</tr>
<tr>
<td>2014</td>
<td>-6</td>
<td>-9</td>
</tr>
<tr>
<td>2015</td>
<td>-3</td>
<td>-11</td>
</tr>
<tr>
<td>2016</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2017</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Q3 2018</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: Data adjusted due to the change in composition of the set of financial intermediaries considered in the credit statistics. Credit from commercial and development banks as well as other non-bank financial intermediaries, is included.

Source: Banco de México.
The medium-term trend of external accounts has reverted: the non-oil trade balance is in surplus and the oil trade balance is in deficit.
During Q4 2018, Mexico’s economic activity decelerated significantly as compared to Q3 and this pattern could continue at the beginning of 2019.
Private consumption continues on a positive trend, supported by the favorable performance of the real wage bill as well as by the positive trend of remittances.

### Monthly Indicator of Private Consumption
Index 2013=100, s. a.
- **Services**
- **Imported goods**
- **Domestic goods**

### Consumer Confidence Indicator and Total Real Wage Bill
Diffusion index and index 2013=100, s. a.
- **Consumer Confidence Indicator**
- **Real wage bill**

### Workers’ Remittances
USD and constant billion pesos, s. a.
- **US dollars**
- **Mexican pesos**
  - 1/ Prices as of the second half of July 2018.

**Source:** Banco de México and INEGI.
Investment has continued to exhibit a marked weakness as a result of a decline in the machinery and equipment component and a contraction in construction.

**Investment and Components**

Index 2013=100, s. a.

- Domestic machinery and equipment
- Imported machinery and equipment
- Total
- Construction

**Right Time to Invest**

Indicators w/ reference level of 50 points, s. a.

1/ Refers to question "Considering the current situation of the country and of your firm vis-a-vis one year ago, do you believe it is the right time to invest?"

Source: INEGI.

**Real Value of Construction Output by Contracting Institutional Sector**

Index Jan-2012=100, s. a.

- Private excl. residential housing
- Private
- Total
- Residential housing
- Public

s. a. / Seasonally adjusted data.

1/ Seasonally adjusted by Banco de México, except for the total. Source: Prepared by Banco de México with data from ENEC, INEGI.
The economy’s slack conditions loosened towards the end of 2018 and the early part of this year.

**Output Gap**  
\% of potential output, s. a.

---

### Total

**Gross Domestic Product**

**IGAE**

**Confidence interval at 95%**

---

### Excluding Oil Sector

**Gross Domestic Product**

**IGAE**

**Confidence interval at 95%**

---

s. a. / Estimated 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.74.

2/ Excluding oil and gas extraction, services related to mining and the manufacture of oil and coal products.

3/ Calculated with the fourth quarter 2018 GDP INEGI flash estimate.

4/ Confidence interval of the output gap calculated with an unobserved components method.

Source: Estimated by Banco de México with data from INEGI and Banco de México.
Slack conditions in the labor market remained tight. It is important that wage revisions are consistent with productivity gains.

**Labor Market Gap**

Percentage points, s. a.

**Unemployment Rate**

December

**Unemployment Rate and Informal Salaried Workers**

September

**Average Wage of Salaried Workers according to National Employment Survey (ENOE)**

Annual % change

Q3 2018

---

1/ Shadows represent confidence bands. The interval corresponds to two average standard deviations among all estimates.

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

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

Source: Calculated by Banco de México with data from INEGI.
Headline inflation fell from 4.72% in November 2018 to 4.37% in January 2019, mainly due to a reduction in non-core inflation, as core inflation continued to exhibit a resistance to decline.
Core inflation showed a resistance to decline due partly to the indirect effects of higher energy prices as well as to structural factors. The decline in non-core inflation mirrored the lower increases in energy and in livestock product prices. These results were partially offset by greater increases in fruit and vegetable prices.
Despite the significant depreciation of the peso in recent years, the exchange rate pass-through to prices remains at low levels, reflecting a better functioning of the economy’s nominal system.
Given the shocks that have significantly affected inflation and considering the adverse balance of risks for inflation, the Governing Board has adjusted the target for the overnight interbank interest rate to 8.25%. In February, the Board decided to leave the reference rate unchanged at that level.

Source: Banco de México and INEGI.
Headline inflation expectations for 2019 and 2020 deteriorated significantly in December and exhibited some improvement in January. Headline inflation expectations for the medium and long terms continue to be above the 3% target, at around 3.50%. As for information drawn from market instruments, medium- and long-term inflationary risk premia decreased, but still remain at high levels.

### Inflation Expectations for the End of 2019 and 2020

**Median, %**

- **Headline**
- **Core**

**2019**

**2020**

### Long-term Inflation Expectations

**Median, %**

- **Headline**
- **Core**

**Next 4 years**

**Next 5-8 years**

### Break-even Inflation and Inflation Risk Implicit in Bonds

**%**

- **10-year bond break-even inflation**
- **20-day moving average**

**Source:** Banco de México’s Survey (monthly periodicity).

**Source:** Banco de México’s Survey (monthly periodicity) and Citibanamex Survey (biweekly periodicity).

**Source:** Valmer and PiP.
In a context of a lower appetite for risk as well as high external and internal uncertainty, a robust monetary policy has contributed to promote an orderly adjustment of the economy.
Outline

1. External Conditions
2. Current Situation of the Mexican Economy
3. Monetary Policy
4. Forecasts and Final Remarks
Headline and core inflation are foreseen to approach the 3% target throughout 2019, converging to Banco de México’s target within the time frame in which monetary policy operates.

Fan Charts

Annual Headline Inflation 1/

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>QR Jul-Sep 2018</td>
<td>4.9*</td>
<td>4.7</td>
<td>4.4</td>
</tr>
<tr>
<td>QR Apr-Jun 2018</td>
<td>4.8</td>
<td>4.2</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Observed inflation

Central scenario Apr.-Jun. 2018

Central scenario Jul.-Sep. 2018

Headline inflation target

1/ Quarterly average of annual inflation. The next four and six quarters are indicated as of the fourth quarter of 2018, that is, the fourth and second quarter of 2019 and 2020 respectively, periods in which the monetary policy transmission channels fully operate. */Observed.

Source: Banco de México and INEGI.
Final Remarks

- The current environment continues to pose significant risks in the medium and long terms that could affect the country’s macroeconomic conditions, its potential growth, and the economy’s price formation process.

- In this regard, it is particularly important that, in addition to following a prudent and firm monetary policy, measures to foster an environment of confidence and certainty for investment and higher productivity are adopted, and public finances are consolidated sustainably.

- Strengthening the rule of law and tackling corruption are equally imperative.