Outline

1 Greater Integration of EMs with Global Financial Markets

2 Recent Trends in Global Financial Markets and Spillovers to EMs

3 Final Remarks
Search for higher returns
In response to the 2008 financial crisis, central banks in AEs adopted an accommodative monetary policy, leading investors to a search for higher returns.

Advanced Economies
Reference Rates

Balance of Selected Central Banks
% of GDP

Source: Bloomberg.
Significant portfolio recomposition

As a result of the search for higher returns, the participation of non-resident investors in EMs assets increased.

Equity and Fixed Income Flows Dedicated to Emerging Economies
Millions of dollars

Non-residents’ Holdings of Government Bonds in Local Currency
% of total outstanding debt

Note: Average by region of the percentage of ownership of local bonds denominated in local currency by foreigners from the following countries: Mexico, Peru, Colombia, Brazil, Indonesia, Malaysia, Thailand, Poland, Turkey, Israel, Russia, Hungary, South Africa and South Korea (enters since December 2009).

Source: Finance ministries, central banks and other national authorities.
**Stronger integration of EMs with Global Financial Markets**

Additionally to the ample liquidity, financial markets have become deeper as result of technological advancement, bigger derivative markets and greater participation of non-traditional financial institutions.

**OTC Turnover By Instrument**

**Billions of US dollars, %**

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Options and other products</td>
<td>1,934</td>
<td>1,714</td>
<td>1,759</td>
<td>2,240</td>
<td>2,378</td>
<td>3,203</td>
</tr>
<tr>
<td>Foreign exchange swaps</td>
<td>631</td>
<td>1,069</td>
<td>1,489</td>
<td>2,047</td>
<td>1,652</td>
<td>1,987</td>
</tr>
<tr>
<td>Spot market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outright forwards</td>
<td>209</td>
<td>362</td>
<td>475</td>
<td>2,047</td>
<td>1,652</td>
<td>1,987</td>
</tr>
<tr>
<td>Total</td>
<td>6,590</td>
<td>6,270</td>
<td>6,962</td>
<td>7,126</td>
<td>7,095</td>
<td>7,187</td>
</tr>
</tbody>
</table>

1/ The category “other FX products” covers highly leveraged transactions and / or trades whose notional amount is variable and where a decomposition into individual plain vanilla components was impractical or impossible.

2/ Single currency interest rate contracts only.

3/ The solid line is defined as the share of transactions involving at least one external counterpart as percentage of the total market.

4/ The solid line is defined as the share of transactions between external counterparties as percentage of the total market.

**EMs have been strongly influenced by changes in global risk appetite and US interest rates.** The higher participation of international investors in emerging countries’ assets has increased their correlation, in particular, in episodes of high volatility.

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### Global Risk Aversion Index and EMBI

- **Global Risk Aversion Index**: The Citigroup Global Risk Aversion Index measures risk aversion across asset classes. It is an equally weighted index of developed and emerging economy sovereign spreads, US credit spreads, TED spread and implied FX, equity and swap volatility. The index is shown as standard deviations from the mean.

- **EMBI**: The EMBI (Emerging Market Bond Index) is a gauge of the cost of borrowing for emerging market countries.

### Emerging Economies Volatility and VIX Index

- **EM ETF Volatility Index**: The EM ETF volatility is the implied volatility of the EM ETF, the iShares MSCI Emerging Economies Index.

### Volatility of the S&P 500 Index

- **VIX Index**: The VIX (Volatility Index) measures market volatility and expectations for market volatility as conveyed by S&P 500 index option prices.

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1/ The Citigroup Global Risk Aversion Index measures risk aversion across asset classes. It is an equally weighted index of developed and emerging economy sovereign spreads, US credit spreads, TED spread and implied FX, equity and swap volatility. The index is shown as standard deviations from the mean. Source: Central Bank of Mexico with Citi and Bloomberg data.

2/ The EM ETF volatility is the implied volatility of the EM ETF, the iShares MSCI Emerging Economies Index. Source: Central Bank of Mexico with Citi and Bloomberg data.
Trade tensions have become a significant obstacle to global economic growth, with important effects on manufacturing production, investment and business confidence.

**World GDP Growth**

- **Annual % change**

1/ Figures for Q2 include estimations for some countries. The sample of countries used in the calculations accounts for 85.6% of world GDP measured by purchasing power parity.

Source: Prepared by Banco de México with data from Haver Analytics, J.P. Morgan and International Monetary Fund (IMF).

**Global Activity Indicators**

- **Annual % change, Index**

Note: Annual change is calculated to the 3 month moving average of the world trade volume index and the industrial production volume index, both base 2010. ISM Manufacturing PMI is based on the report on business new orders SA.

Source: CPB Netherlands, Bloomberg.
Weak economic growth and low inflationary pressures in advanced economies have been reflected in sharp declines in interest rates for all terms in these economies.

**Advanced Economies:**
**Government Bonds Interest Rates**

### 2-year Interest Rates
- **United States**
- **Japan**
- **Euro area**

### 10-year Interest Rates
- **United States**
- **Euro area**
- **Japan**

Source: Bloomberg.
Emerging economies have different degrees of exposure to terms of trade shocks and trade tensions depending on their export composition and degree of trade openness.

**Merchandise Exports By Main Product Group**

<table>
<thead>
<tr>
<th>Country</th>
<th>Others</th>
<th>Manufactures</th>
<th>Primary Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>15.3</td>
<td>85.1</td>
<td>0.6</td>
</tr>
<tr>
<td>Colombia</td>
<td>16.5</td>
<td>86.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Argentina</td>
<td>17.8</td>
<td>85.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Peru</td>
<td>18.1</td>
<td>83.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>19.4</td>
<td>85.5</td>
<td>0.1</td>
</tr>
<tr>
<td>South Africa</td>
<td>20.0</td>
<td>83.8</td>
<td>0.2</td>
</tr>
<tr>
<td>Canada</td>
<td>20.5</td>
<td>84.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Poland</td>
<td>21.1</td>
<td>85.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Turkey</td>
<td>22.5</td>
<td>86.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Philippines</td>
<td>23.8</td>
<td>85.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Mexico</td>
<td>24.4</td>
<td>84.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Hungary</td>
<td>25.1</td>
<td>85.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Korea</td>
<td>25.7</td>
<td>85.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Trade Openness**

<table>
<thead>
<tr>
<th>Country</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>155.3</td>
</tr>
<tr>
<td>Poland</td>
<td>85.1</td>
</tr>
<tr>
<td>Mexico</td>
<td>68.5</td>
</tr>
<tr>
<td>South Africa</td>
<td>51.6</td>
</tr>
<tr>
<td>Chile</td>
<td>49.4</td>
</tr>
<tr>
<td>Philippines</td>
<td>48.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>43.8</td>
</tr>
<tr>
<td>Peru</td>
<td>38.8</td>
</tr>
<tr>
<td>Colombia</td>
<td>28.0</td>
</tr>
<tr>
<td>Argentina</td>
<td>21.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>19.3</td>
</tr>
</tbody>
</table>

Source: World Trade Organization.

Note: Trade openness is gauged as exports plus imports between GDP. Source: Haver Analytics.
Uncertainty and volatility in global financial markets have had spillover effects on EMs. Periods of acute uncertainty and trade tensions have induced flight to quality episodes.

Accumulated Equity Flows to Emerging Economies
Billions of US dollars

Equity Markets in Advanced and Emerging Economies
Index Jan 2, 2018=100

Story Count for “TRADE WAR” and Emerging Economies Currency Index
Index, Number of news

Emerging economies currency index 1/

Story count “TRADE WAR”

Advanced economies 3/

Emerging economies 2/

Note: The graph presents the MSCI indices of developed and emerging economies (MSCI World Index and MSCI Emerging Economy Index). 1/ The MSCI of emerging economies includes Mexico, Brazil, Chile, China, Colombia, Peru, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, South Korea, Malaysia, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates. 2/ The MSCI of emerging economies includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Holland, New Zealand, Norway, Portugal, Singapore, Sweden, Switzerland, United Kingdom United and United States. Source: Bloomberg.

Source: EPFR.
Short and long-term interest rates in EMs have decreased, following the trend in AEs. EMs fixed income markets have attracted capital inflows leading to a reduction in interest rates.

Source: Citivelocity and Bloomberg.

Source: Bloomberg.

Source: EPFR.
Small Open Emerging Economies: The conduction of monetary policy in an uncertain environment.

*Given the stronger integration of EMs with global financial markets:*

- Global cyclical conditions and interest rates in advanced economies play a key role.

- Global and idiosyncratic risk factors could increase monetary policy tradeoffs. Thus, requiring a prudent approach.

- The monetary policy role of smoothing the business cycle in a small open emerging economy highly integrated into global financial markets faces additional challenges.
# Small Open Economy Model of an Emerging Market (EM)

## Blocks

<table>
<thead>
<tr>
<th>Block</th>
<th>Benchmark Equations</th>
<th>Extensions for an Open EM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IS Curve</td>
<td>$Xt^EM_t = \beta_1Xt^EM_{t-1} + \beta_2EtXt^EM_{t+1} - \beta_3R^EM_t - \beta_4E_t\Delta q_{t+1} + \beta_5Xnt^EM_{t-1} + \beta_6Xt^US_t + \varepsilon xnt_t$</td>
<td>$\varepsilon xnt_t = \omega_1e^OIl_t + \omega_2e^EMBI_t + \omega_3e^xt_t$</td>
</tr>
<tr>
<td>2 Phillips Curve</td>
<td>$\pi^EM_{C,t} = \rho_1\pi^EM_{C,t-1} + \rho_2E_t\pi^EM_{C,t+1} + \rho_3X^EM_t + \rho_4dep_t + \rho_5\Delta w_t + \epsilon^C_t$</td>
<td></td>
</tr>
<tr>
<td>3 Real Exchange Rate</td>
<td>$q_t = \lambda_1q_{t-1} + \lambda_2E_tq_{t+1} + \lambda_3(R^US_t - R^EM_t) + \lambda_4emb_i_{t-1} - \lambda_5E_tOil_{t+1} + \epsilon_t$</td>
<td></td>
</tr>
<tr>
<td>4 Monetary Policy Rule</td>
<td>$r^EM_t = \alpha_1r^EM_{t-1} + \alpha_2\pi^F_t + \alpha_3X^EM_t + \epsilon^EM_{rt}$</td>
<td></td>
</tr>
</tbody>
</table>

Where:  
- $Xt^EM$ is the tradable output gap.  
- $Xt^US$ is the U.S. tradable output gap.  
- $Xnt^EM$ is the non-tradable output gap.  
- $R^EM$ is the real interest rate.  
- $\pi^EM_{C,t}$ is the nominal exchange rate depreciation.  
- $\pi^EM_t = \pi^EM_t[x^C_t] = E_t \left[ \sum_{j=0}^{\infty} \delta^j \pi^EM_{t+j} \right]$ |  
- $\pi^F_t$ is the forward-looking inflation.  
- $\pi^EM_{rt}$ is the inflation rate.  
- $\epsilon^OIl_t$ is the shock to the oil price.  
- $\epsilon^EMBI_t$ is the shock to Emerging Market Bond Index.  
- $\epsilon^xt_t$ is the shock to the monetary policy rule.
U.S. Monetary Policy Shock

Real Exchange Rate: \( q_t = \lambda_1 q_{t-1} + \lambda_2 E_t q_{t+1} + \lambda_3 (R_t^{US} - R_t^{EM}) + \lambda_4 embi_{t-1} - \lambda_5 E_t Oil_{t+1} + \varepsilon_t \)

 Tradable IS Curve: \( X_t^{EM} = \beta_1 X_{t-1}^{EM} + \beta_2 E_t X_{t+1}^{EM} + \beta_3 X_{nt-1}^{EM} - \beta_4 R_t^{EM} - \beta_5 E_t \Delta q_{t+1} + \beta_6 X_t^{US} + \varepsilon x_t \)

1/ Deviations from the steady state. Periods in the x axis represents quarters.
Terms of Trade (ToT) Shock

**Real Exchange Rate:**\[ q_t = \lambda_1 q_{t-1} + \lambda_2 E_t q_{t+1} + \lambda_3 (R_t^{US} - R_t^{EM}) + \lambda_4 e_{mbi_{t-1}} - \lambda_5 E_t Oi_t + \epsilon_t \]

** Tradable IS Curve:** \[ X_t^{EM} = \beta_1 X_{t-1}^{EM} + \beta_2 E_t X_{t+1}^{EM} + \beta_3 X_{nt}^{EM} - \beta_4 R_t^{EM} - \beta_5 E_t \Delta q_{t+1} + \beta_6 X_t^{US} + \epsilon_{xt} \]

\[ \epsilon_{xt} = \omega_1 e_t^{oil} + \omega_2 e_t^{EMBI} + \omega_3 e_t^{xt} \]

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**Oil Price**
USD/barrel

**Nominal Exchange Rate Depreciation**
Percentage

**Output Gap**
Percentage of potential output

**Inflation**
Percentage

**EMBI**
In basis points

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1/ Deviations from the steady state. Periods in the x axis represents quarters.
Idiosyncratic Risk Shock

**Real Exchange Rate:**
\[ q_t = \lambda_1 q_{t-1} + \lambda_2 E_t q_{t+1} + \lambda_3 (R_{t}^{US} - R_{t}^{EM}) + \lambda_4 e_{t-1}^{EMBI} - \lambda_5 E_t \partial_t + \varepsilon_t \]

** Tradable IS Curve:**
\[ X_{t}^{EM} = \beta_1 X_{t-1}^{EM} + \beta_2 E_t X_{t+1}^{EM} + \beta_3 X_{t-1}^{EM} - \beta_4 R_{t}^{EM} - \beta_5 E_t \Delta q_{t+1} + \beta_6 X_{t}^{US} + \varepsilon_t \]

\[ ext_t = \omega_1 e_{t}^{OII} + \omega_2 e_{t}^{EMBI} + \omega_3 e_{t}^{EXT} \]

**Country Risk:**
\[ embi_{t} = \omega_1 e_{t-1}^{OII} + \omega_2 E_t e_{t+1}^{EMBI} - \omega_3 (X_{t}^{EM} - X_{t}^{US}) - \omega_4 (\Delta X_{t}^{EM} - \Delta X_{t}^{US}) - \omega_5 E_t \partial_t + \varepsilon_{t}^{EMBI} \]

1/ Deviations from the steady state. Periods in the x axis represents quarters.
Simultaneous Shocks

1/ Deviations from the steady state. Periods in the x axis represents quarters.
Outline

1 Greater Integration of EMs with Global Financial Markets

2 Recent Trends in Global Financial Markets and Spillovers to EMs

3 Final Remarks
Conclusions, Challenges and Opportunities

- EMs are more integrated to global financial markets. This entails challenges and opportunities.
  1. Open capital accounts can bring much needed resources for growth and development and help develop domestic financial markets, and with an international, deep, liquid and efficient FX market.
  2. Recipient economies need strong and resilient macroeconomic fundamentals.
  3. It is essential to bolster the resilience of the financial system to outflows: a stable domestic financial system and sound borrower balance sheets may help reduce both the likelihood and the impact of flow reversals.
  4. A floating exchange rate regime, deeper financial markets with a strong domestic investor improves markets dynamics in a volatile global risk appetite environment.
  5. With more integrated global financial markets, countercyclical monetary policy in emerging economies faces additional challenges.
  6. Transparent policy processes and clearly communicated strategies and actions can reduce the risk of market and capital flow volatility. Managing financial markets expectations has become even more critical.
  7. In the face of a polarized environment in both AEs and EMs, short-term policies have been adopted, putting pressure on multilateral and domestic institutions.
  8. Much needed structural reforms and adequate long-term policies have been absent in several of our countries, while escalating geopolitical and trade tensions have put additional pressure on central banks’ aggregate demand management responsibilities, increasing the challenges and trade-offs of monetary policy.