



# Session I: Purpose, benefits, and costs of reserve accumulation

**XII BIS–CEMLA Roundtable: Reserve management and FX intervention**

# Intro

- Reserves as a policy tool is gaining relevance
  - Reserve accumulation, interventions are not new at all
  - Words v. deeds / Theory v. practice (stigma)
- Facing the facts
  - [See Carstens \(LSE Lecture, May 2019\)](#)
  - Is IT, flexible rates compatible with an reserve management for policy purposes?
  - What is a fx exchange intervention?
    - finalist, operative definitions
    - Blurred by market and operations developments
  - Convergence
    - Theory meets practice
    - Words match deeds

# Roadmap

- Three introductory presentations corresponding to the BIS background material for the meeting
- Main inputs
  - Wrap up of the literature, empirical evidence
  - Survey to EMEs Central banks on the issues of the meeting
    - Latin America and the Caribbean (14): AR = Argentina; BO = Bolivia; BR = Brazil; BS = Bahamas; CL = Chile; CO = Colombia; EC = Ecuador; GT = Guatemala; HT = Haiti; MX = Mexico; NI = Nicaragua; PE = Peru; SR = Suriname; UY = Uruguay.
    - Other EM (16): Algeria; Czech Republic; Hong Kong SAR; Hungary; Indonesia; Israel; India; Korea; Malaysia; Philippines; Poland; Russia; Saudi Arabia; Singapore; South Africa, Thailand; Turkey;
  - BIS Survey of reserve managers
  - Complement with LAC focus, data on additional countries
- Focus of the meeting

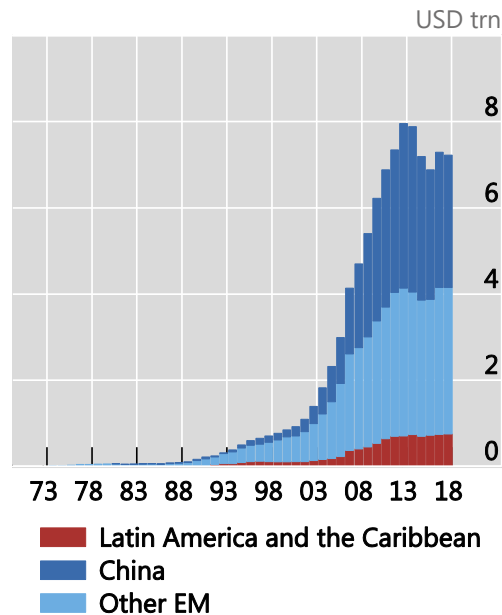
# Size of reserves

- Massive accumulation: from 5% to 30% of EMEs GDP
- Latin America falls well behind Asia and oil exporters

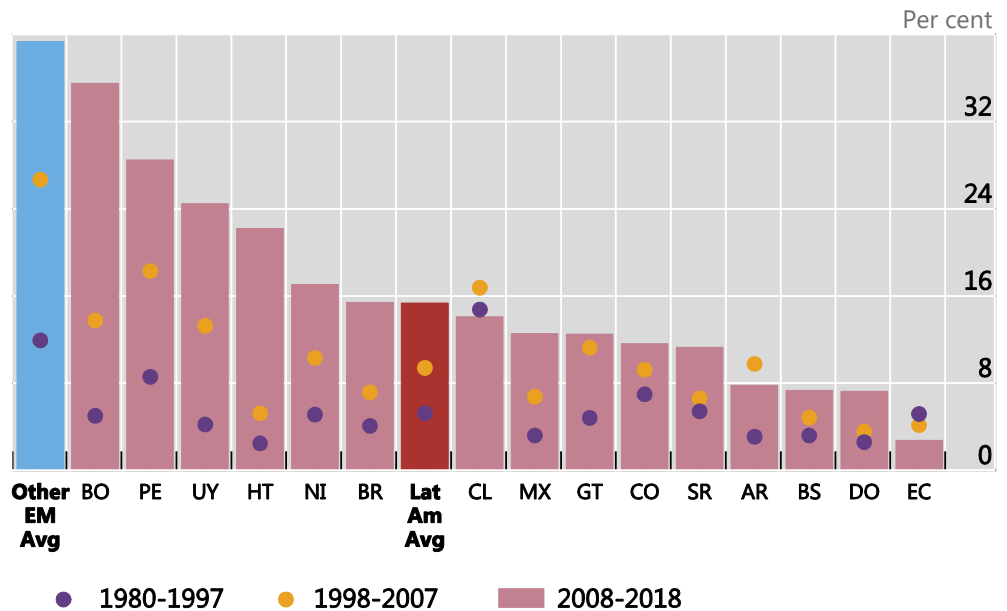
EMEs have accumulated large amounts of reserves<sup>1</sup>

Graph 1

Volume of reserves



Reserves relative to GDP



<sup>1</sup> AR = Argentina; BO = Bolivia; BR = Brazil; BS = Bahamas; CL = Chile; CN; CO = Colombia; DO = Dominican Republic; EC = Ecuador; GT = Guatemala; HT = Haiti; MX = Mexico; NI = Nicaragua; PE = Peru; SR = Suriname; UY = Uruguay.

Source: IMF.

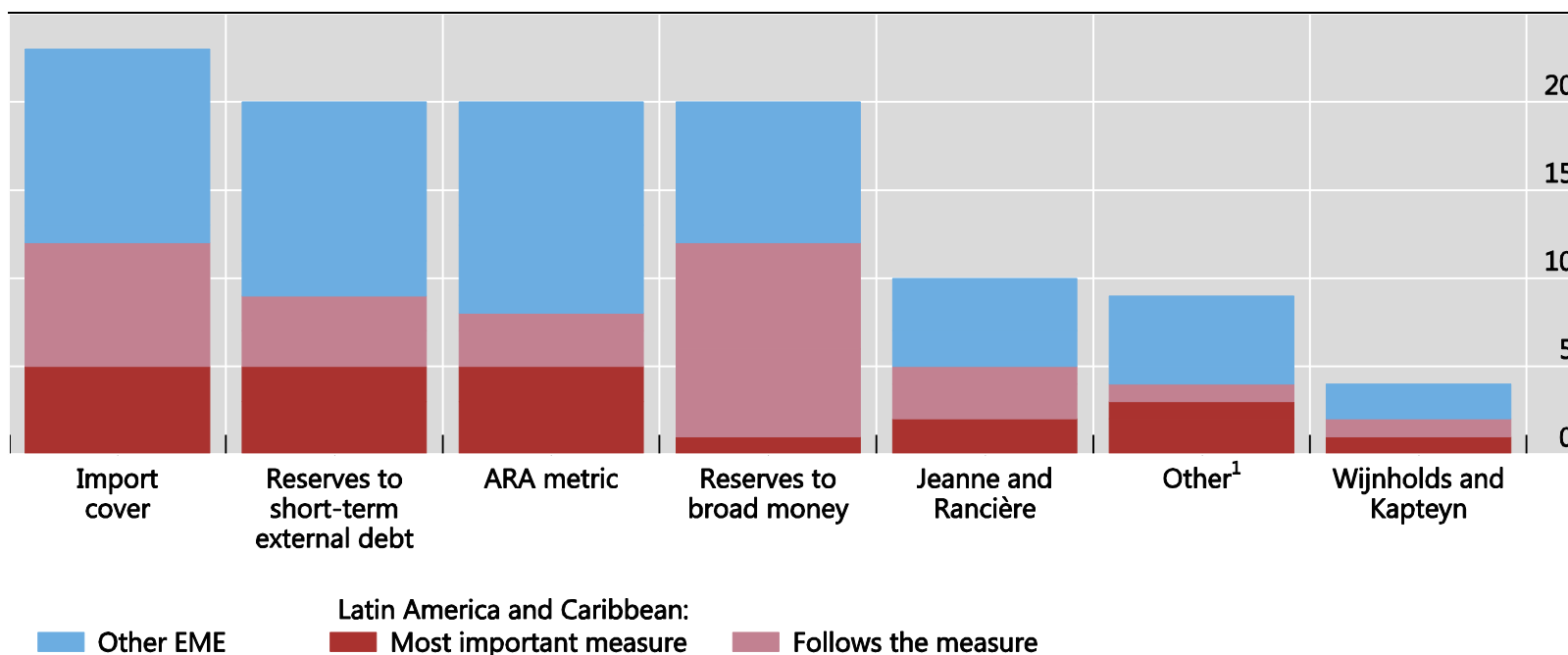
# Reserve adequacy. Precautionary motives

- How much to accumulate? Diverse metrics
- A certain bias towards import cover, broad money relevant in LAC, secondary

Central banks follow an array of reserve adequacy measures

Number of respondents that follow each measure

Graph 2



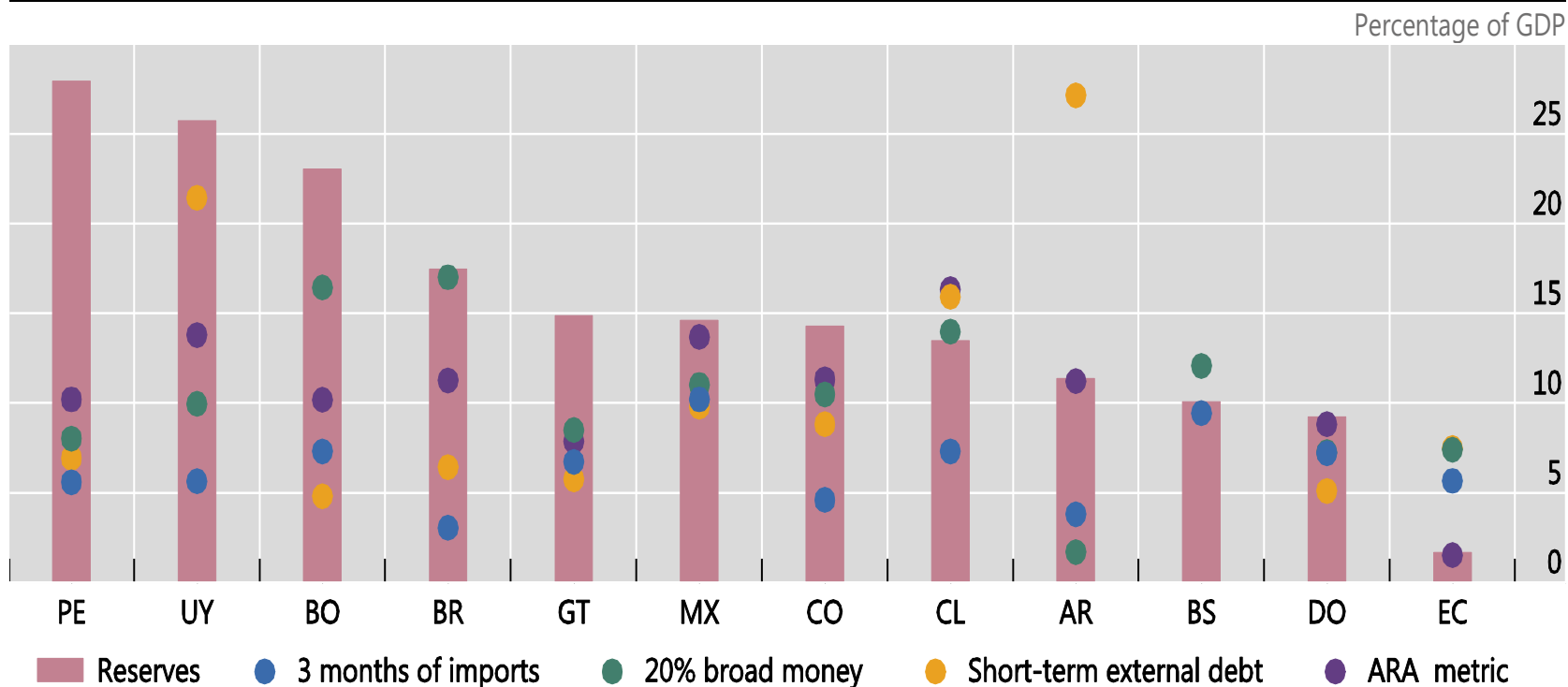
<sup>1</sup> In Colombia, reserves are required to cover at least the expected current account deficit plus external debt amortisations over the following year. Mexico applies the risk model of Ibarra et al (2011). Argentina use scenario analysis based on episodes of extreme capital outflows. Peru applies an extended Jeanne and Rancièrè (2011) model that takes into account financial dollarisation.

Source: BIS survey, 2018.

# Reserve adequacy. Precautionary motives

Reserves are in most cases higher than traditional benchmarks<sup>1</sup>

Graph 3



<sup>1</sup> Data from 2017. Data not available for: SR, HT and NI.

Source: IMF.

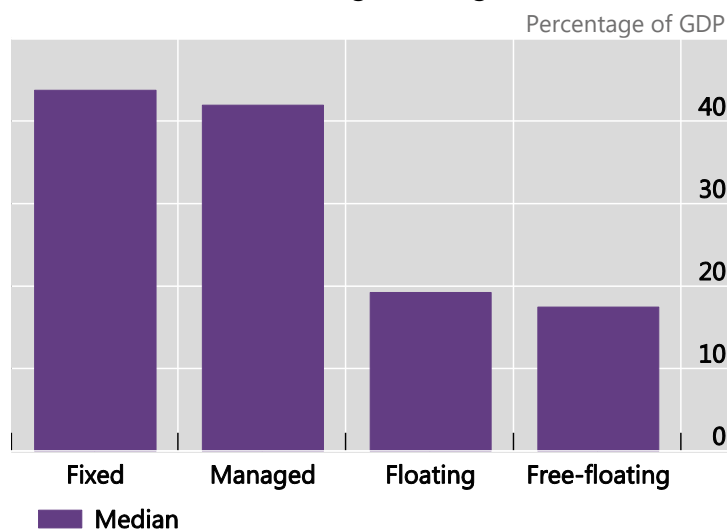
# Other factors determinign the level of reserves

- Exchange rate regimes
- Commodity dependence and ownership of primary resources
- Fire power for interventions in a vulnerable environment

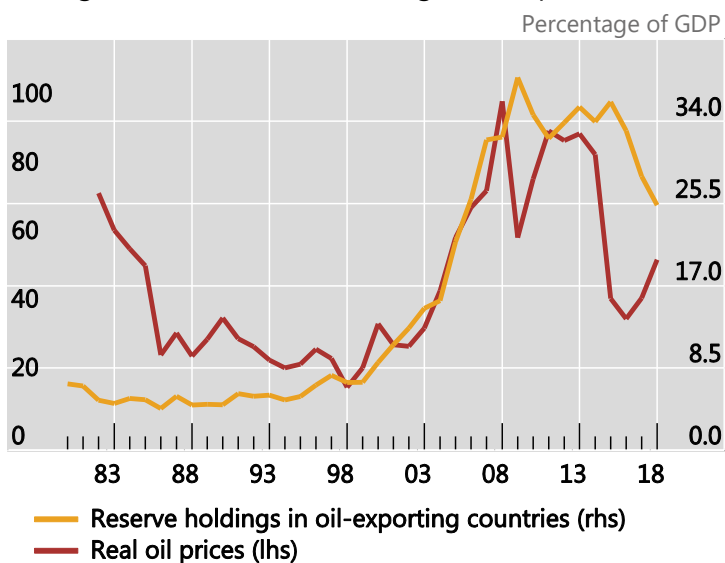
There are large differences in reserve holdings across FX regimes

Graph 4

Reserves reflect the exchange rate regime<sup>1</sup>



Changes in reserves reflect changes in oil prices<sup>2</sup>



<sup>1</sup> We use IMF definitions for the classification of exchange rate regimes. “Fixed” countries: BS, EC and HK. “Managed” countries: BO, CN, DO, DZ, MY, NI, SA and SG. “Floating” countries: AR, BR, CO, GT, HT, HU, ID, IL, IN, KR, PE, PH, SR, TH, TR, UY and ZA. “Free-floating” countries: CL, MX, PL and RU. <sup>2</sup> Algeria, Russia and Saudi Arabia are the major oil producers in the sample. Also included: Brazil, Colombia, Ecuador and Mexico. Sources: Federal Reserve Bank of St Louis; IMF; authors’ calculations.

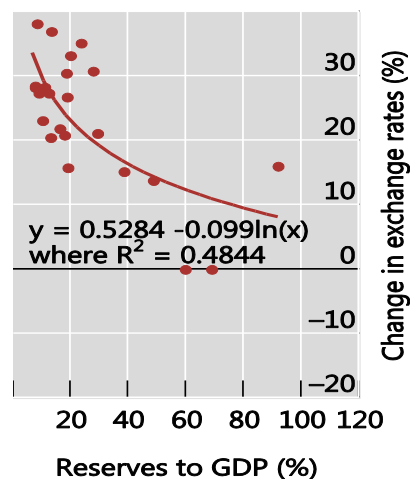
# Impact on stability

- Protection from major, global shocks....

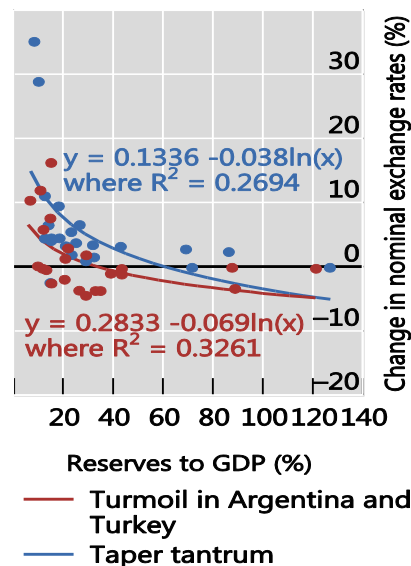
High reserve countries suffer less from major shocks<sup>1</sup>

Graph 5

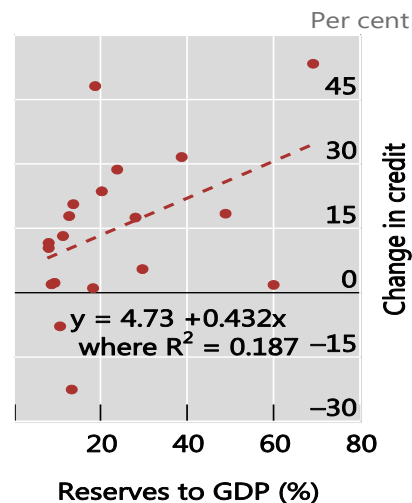
Nominal exchange rates: GFC<sup>2</sup>



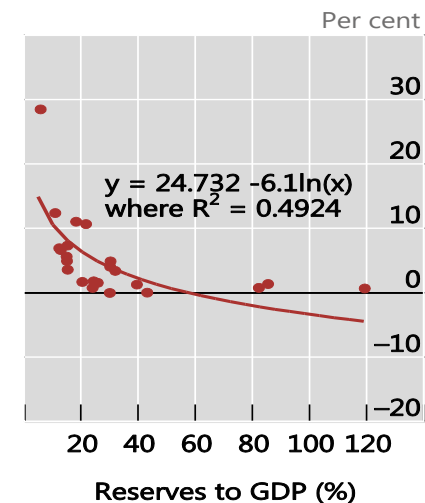
Nominal exchange rates: taper tantrum and turmoil in Argentina and Turkey<sup>3</sup>



Reserves in 2006 and changes in credit during the GFC<sup>4</sup>



Reserves and three-month borrowing costs<sup>5</sup>



<sup>1</sup> For some panels, due to data availability, only a subset of the countries presented in Graph 1 is used. A solid (or dashed) regression line refers to significance (or insignificance) at the 5% level. <sup>2</sup> Peak-to-through depreciation in nominal exchange rates between 2006 and 2009, and reserves levels in 2006 are used. <sup>3</sup> For the taper tantrum episode, exchange rate changes between the first and fourth quarters of 2013, and reserves levels in 2012 are used. For the turmoil in Argentina and Turkey, the exchange rate changes between the second and third quarters in 2018, and reserves levels in 2017 are used. <sup>4</sup> Changes in credit stocks relative to GDP from the first quarter of 2007 to the last quarter of 2009. <sup>5</sup> 2014–18 averages of three-month borrowing rates and reserves to GDP ratios are used.

Sources: IMF; Datastream; national data; BIS; BIS calculations; authors' calculations.



# Impact on stability

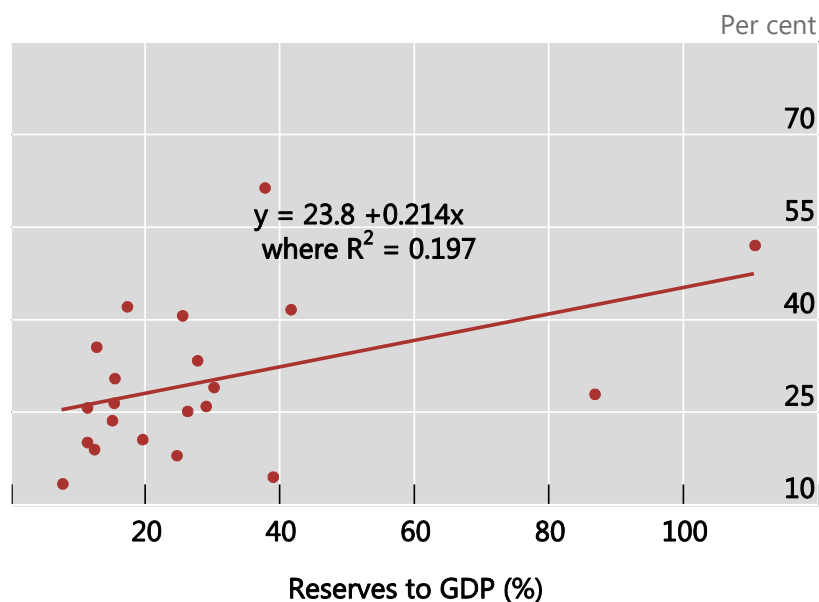
- ...but may foster risk taking (inverse causality?)
- Enhance capital inflows....although mitigate sudden stops

[\*Alberola et al, JIMF 2016\*](#)

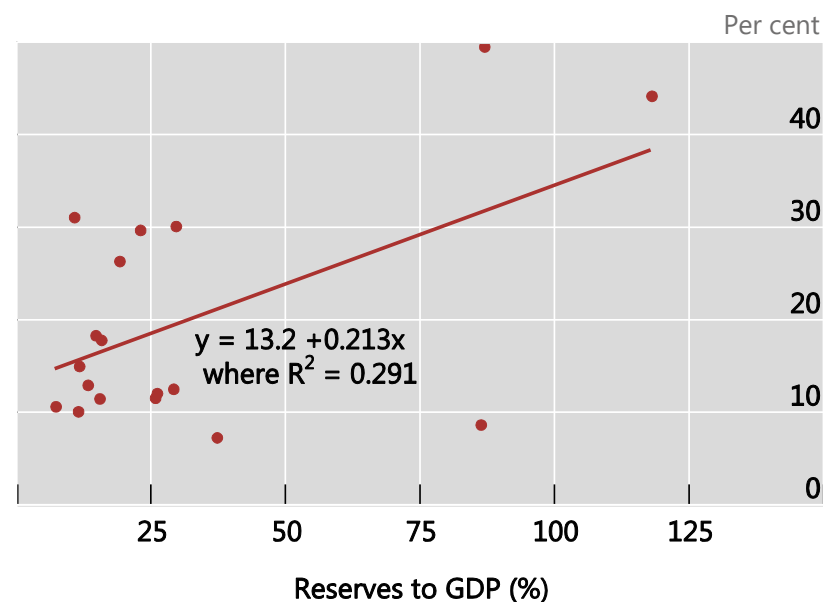
High reserve levels often accompany FX risk-taking

Graph 6

Share of short-term FX debt in total FX debt<sup>1, 2</sup>



Foreign currency-denominated bank loans to total bank loans<sup>1</sup>



<sup>1</sup> Most recent available data. <sup>2</sup> Sum of government and non-financial corporate FX-denominated debt.

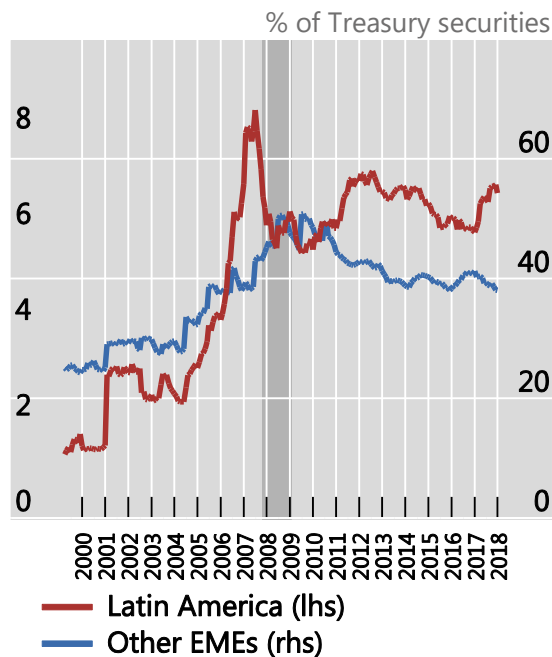
Sources: IMF; Datastream; JPMorgan Chase; national data; BIS calculations; authors' calculations.

# Impact on (global stability)

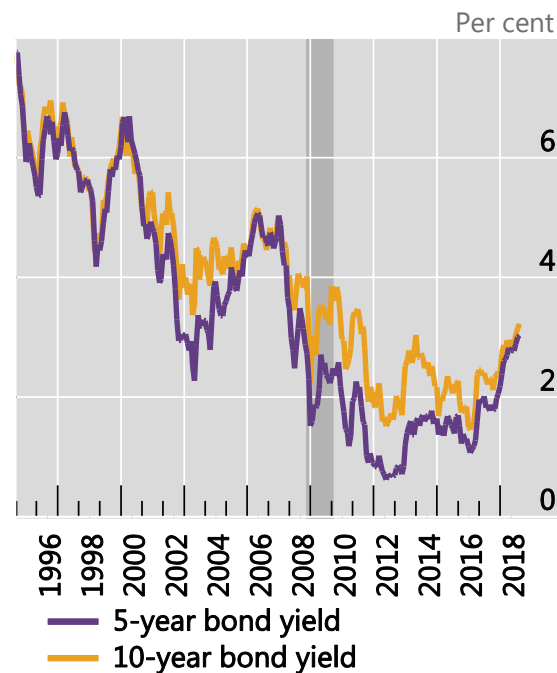
EME reserve accumulation and the pre-GFC boom in the United States

Graph 7

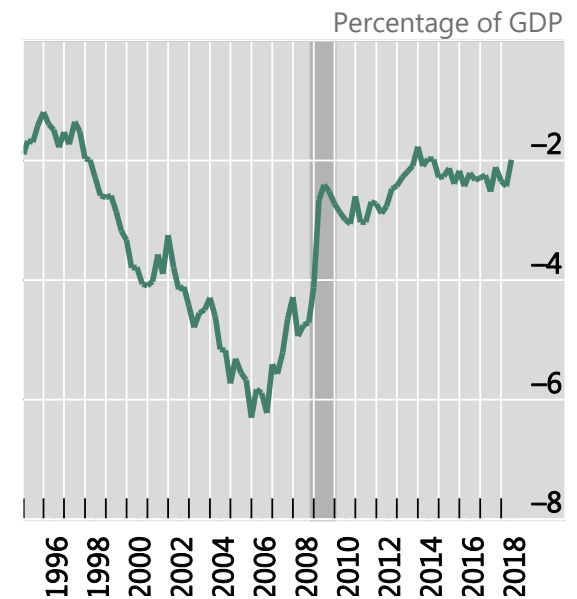
Holdings of Treasury securities by EMEs



US bond yields



Current account balance



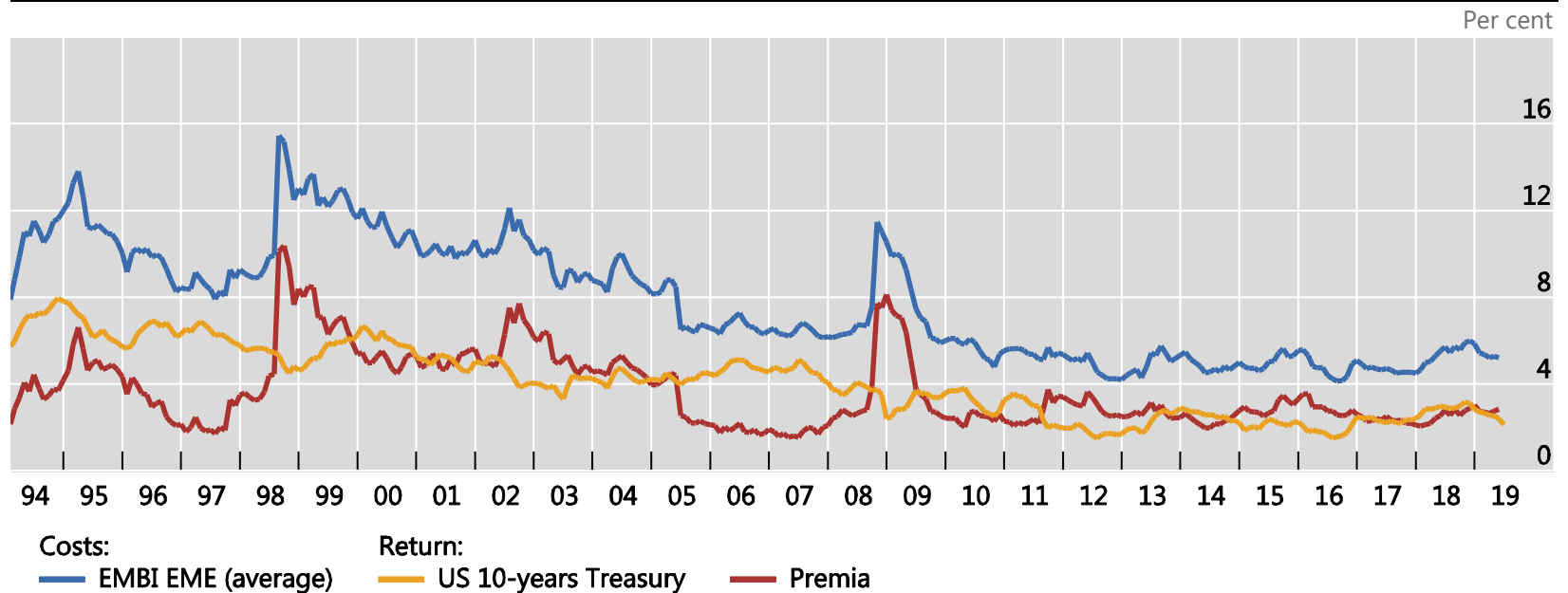
Sources: FED Z1 Flow of Funds; US Department of the Treasury; BIS; BIS calculations

# Costs and alternatives

- Reserve accumulation imply a cost given by the different between domestic and foreign rates
- Exchange rate gyrations affect balance sheet and capital gains/losses (both directions)...but political economy considerations

Returns on reserves has been lower than EME borrowing costs<sup>1</sup>

Graph 8



<sup>1</sup> Return on reserves is proxied by US 10-year Treasury rate. EME borrowing costs are approximated by the average of the EMBI across EMEs with available data.

Source: Bloomberg, JPMorgan Chase. BIS calculations; authors' calculations.

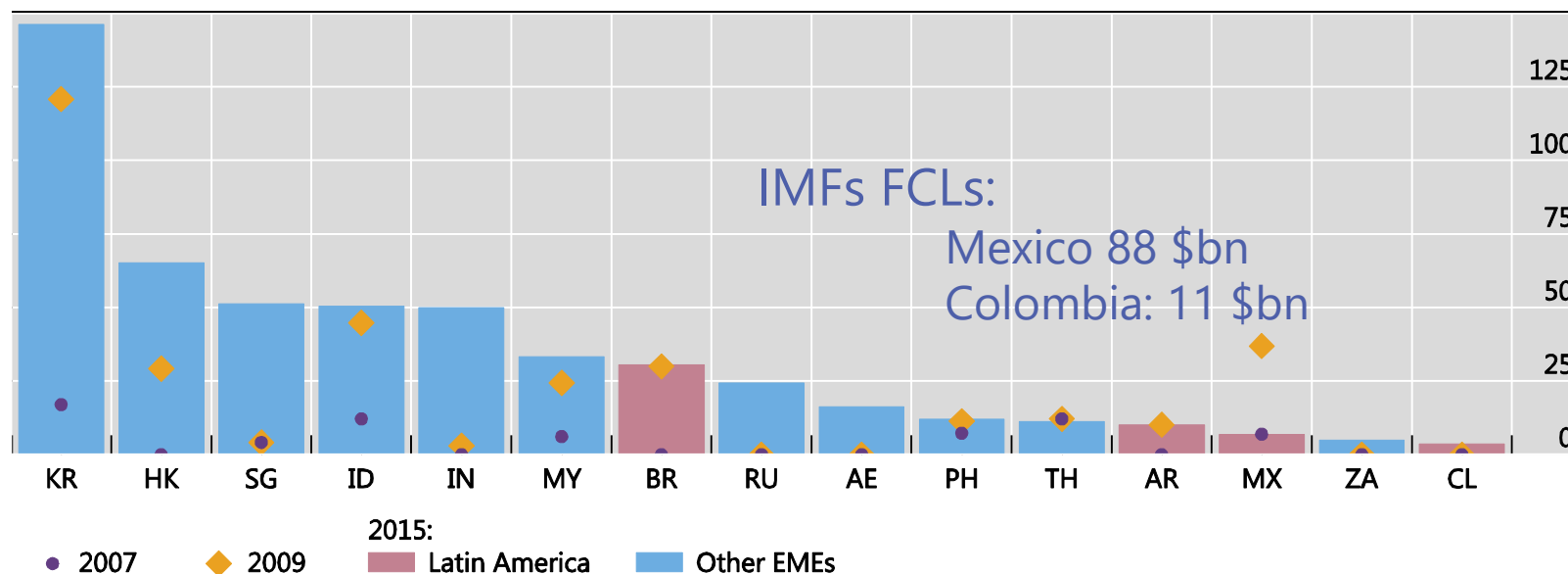
# Costs and alternatives

- Alternative intervention methods (derivatives)
- International:
  - CB swaps, regional initiatives, IMF Flexible Credit Lines

Swap lines have been growing

In billions of US dollars

Graph 9



The size of a country's swap line (from a borrower's perspective) is determined by the sum of all active swap line agreements active in a given year.

Source: Denbee et al (2016).