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CENTRO DE ESTUDIOS MONETARIOS LATINOAMERICANOS

XV Meeting of Monetary Policy Managers

CEMLA and Banco Central de la República Dominicana
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Centro de Estudios Monetarios Latinoamericanos, CEMLA

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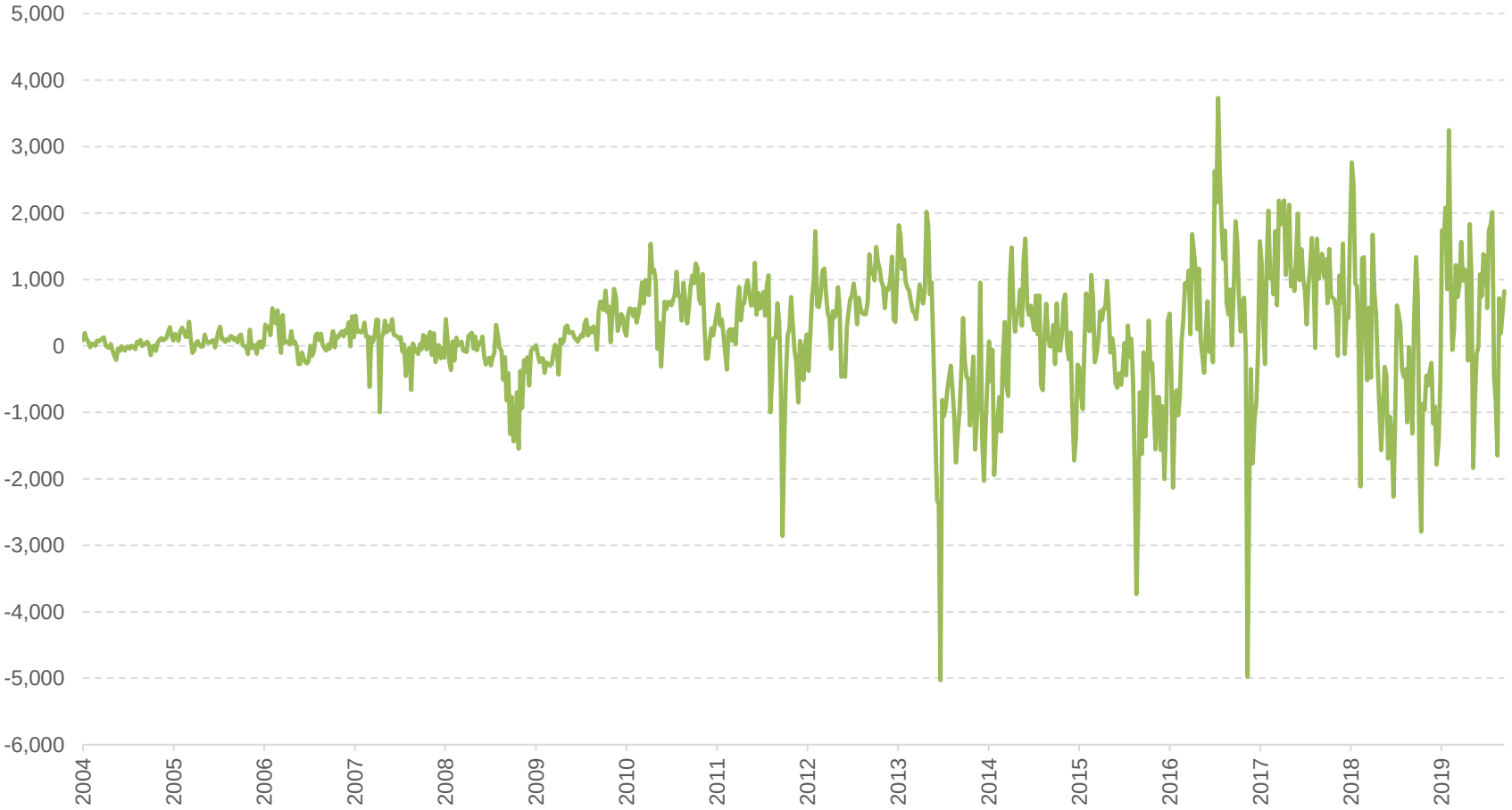
Session II

The GFCs´ Aftermath, UMPs, and Capital Inflows

Introduction

1. **The Global Financial Crisis (GFC) had profound ramifications** not only in terms of economic welfare, but also for economics and economic policy.
2. The **main Advanced Economies** (AEs) responded with various policies (liquidity provision, private asset purchases), which were **underpinned with a high degree of monetary accommodation**. Shortly after, monetary policy turned to **unconventional monetary policies (UMP) (forward guidance, public asset purchases)**, as the FED faced the **zero-lower bound**. The degree of monetary accommodation was **unprecedented** (and still is).
3. **Emerging Market Economies (EMEs)** fared well during and after the GFC, and mostly benefitted from AEs' policy responses. However, **AEs' UMPs had significant implications,** as they led to notable **rises in the level and volatility of capital inflows**.

EMEs' Bond Flows



Notes: Weekly data. In million of USD. Total weekly fixed income inflows. **Source:** EPFR Global. **Countries:** Argentina, Brazil, Chile, China, Colombia, Czech Rep., Hungary, Indonesia, Malaysia, Mexico, Philippines, Poland, Romania, Russia, S. Africa, S. Korea, Thailand, and Turkey.

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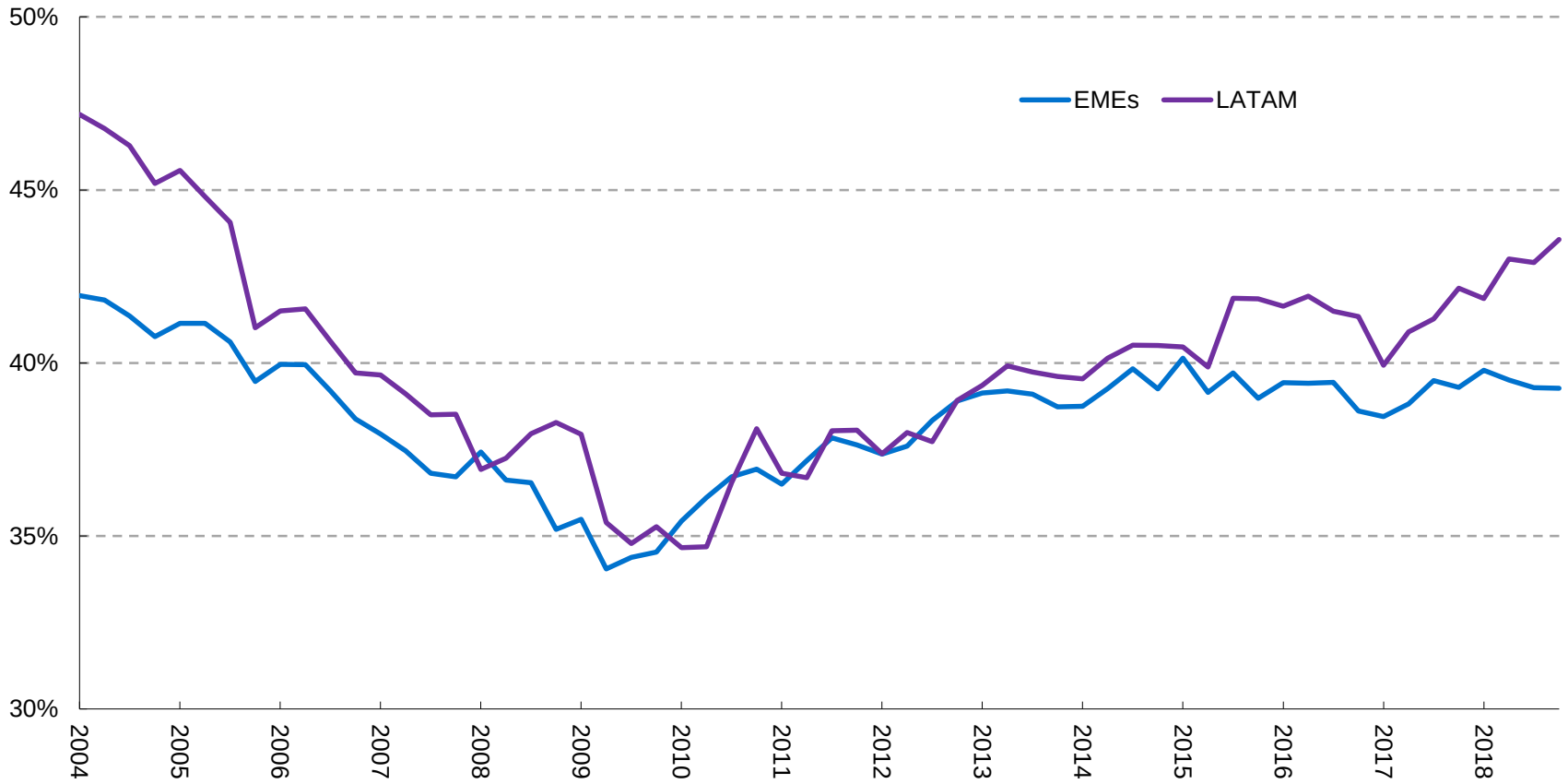
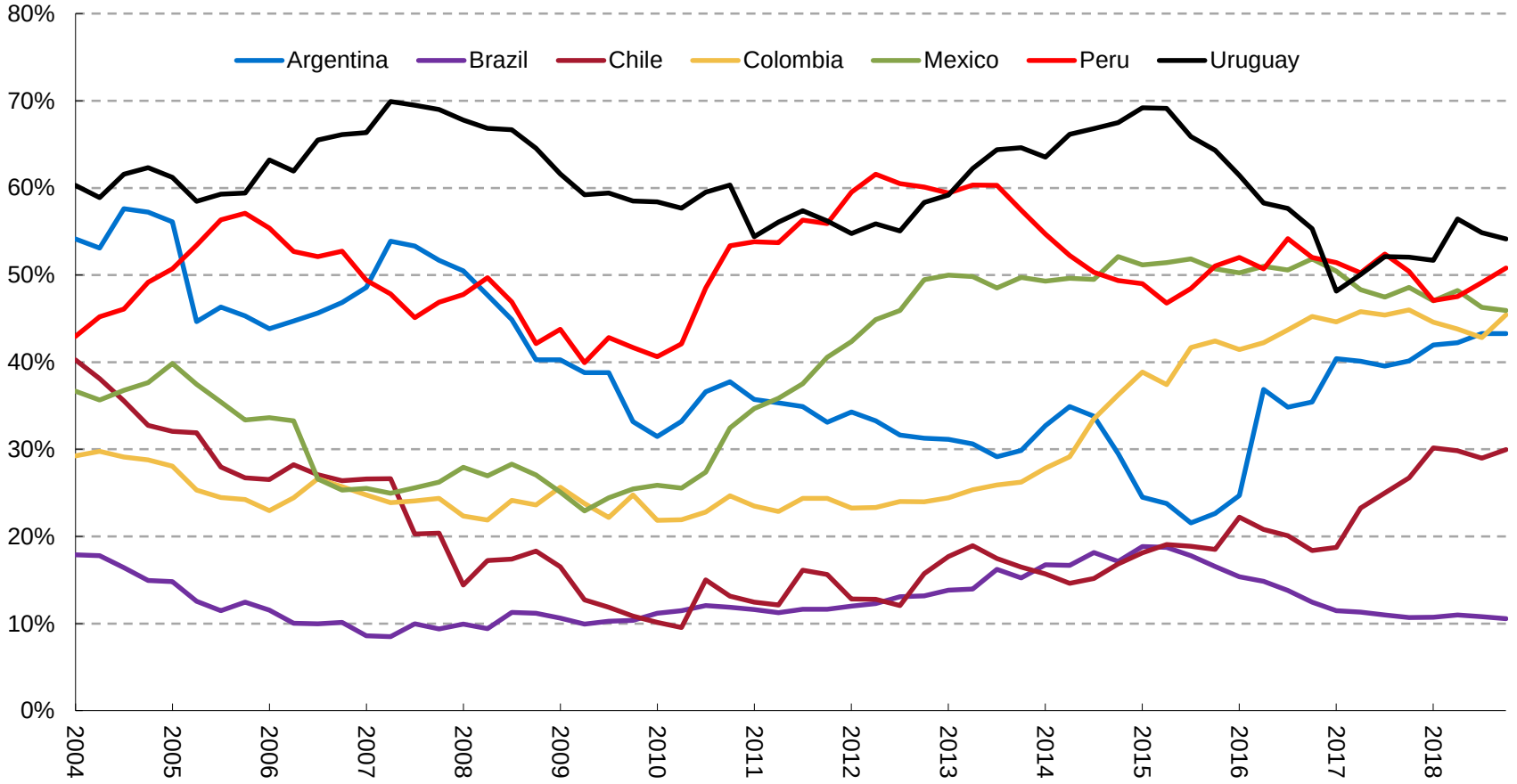
Foreign Holdings of EMEs´ Government Debt Securities (average % of total)



Notes: Quarterly averages. LATAM includes: Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. EMEs includes: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Uruguay. See the appendix for details. **Source:** Sovereign investor base estimates by Arslanalp and Tsuda (2014).

Foreign Holdings of LATAM EMEs Government Debt Securities (% of total)



Notes: Quarterly data. See the appendix for details.
Source: Sovereign investor base estimates by Arslanalp and Tsuda (2014).

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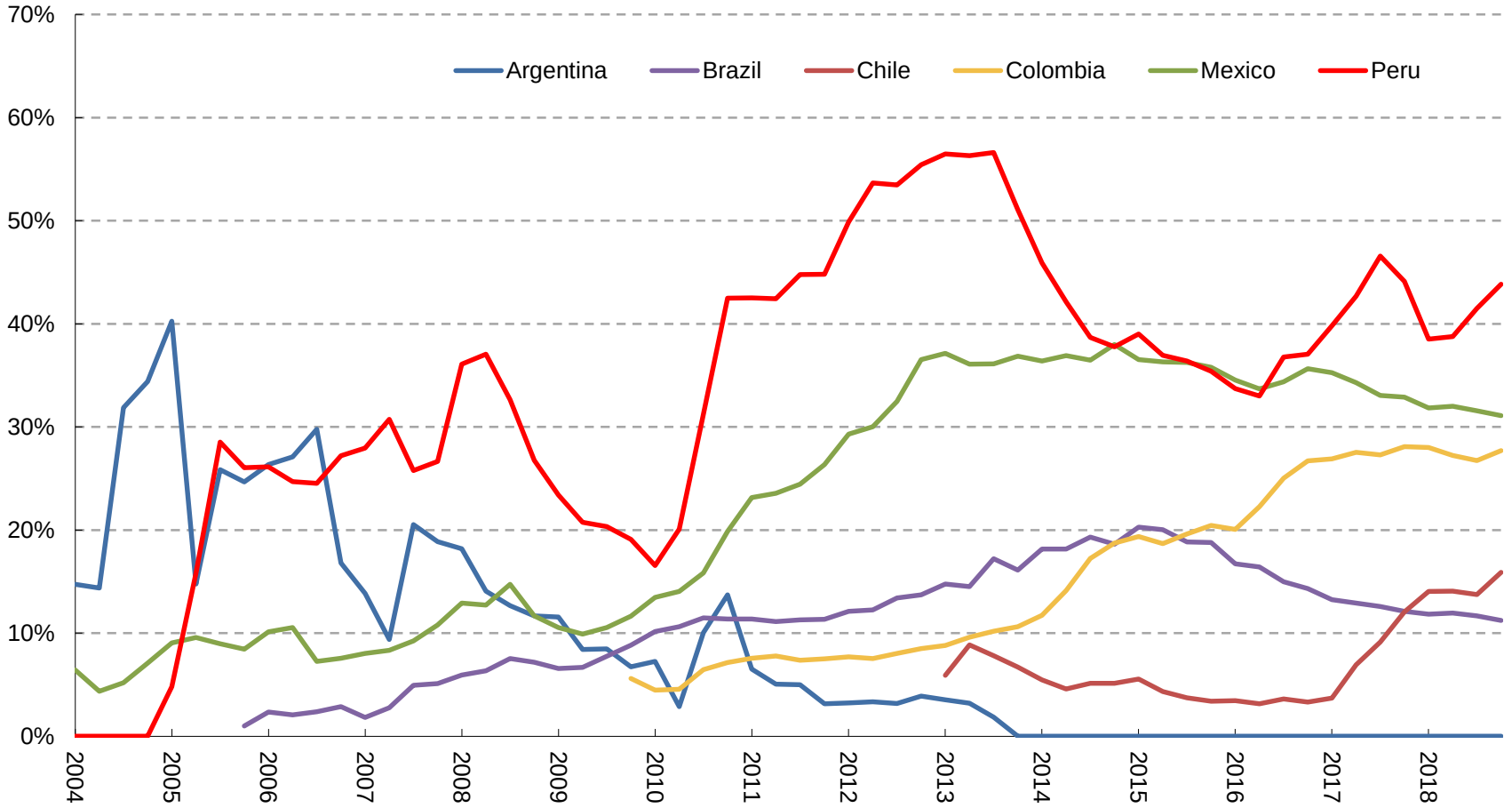
Foreign Holdings of LATAM EMEs Central Government Debt Securities **Denominated in Local Currency** (% of total)



Notes: Quarterly data. See the appendix for details.
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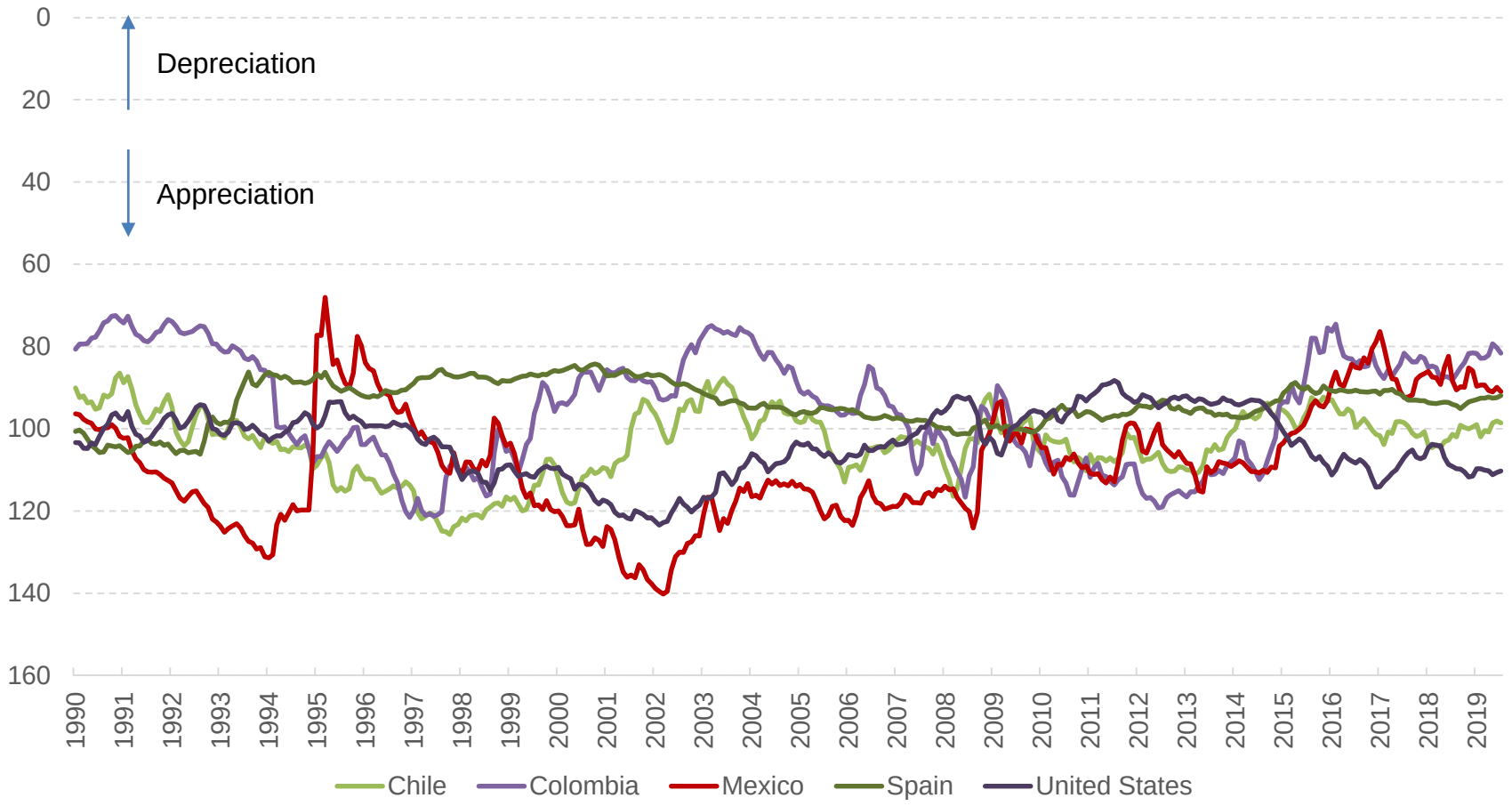
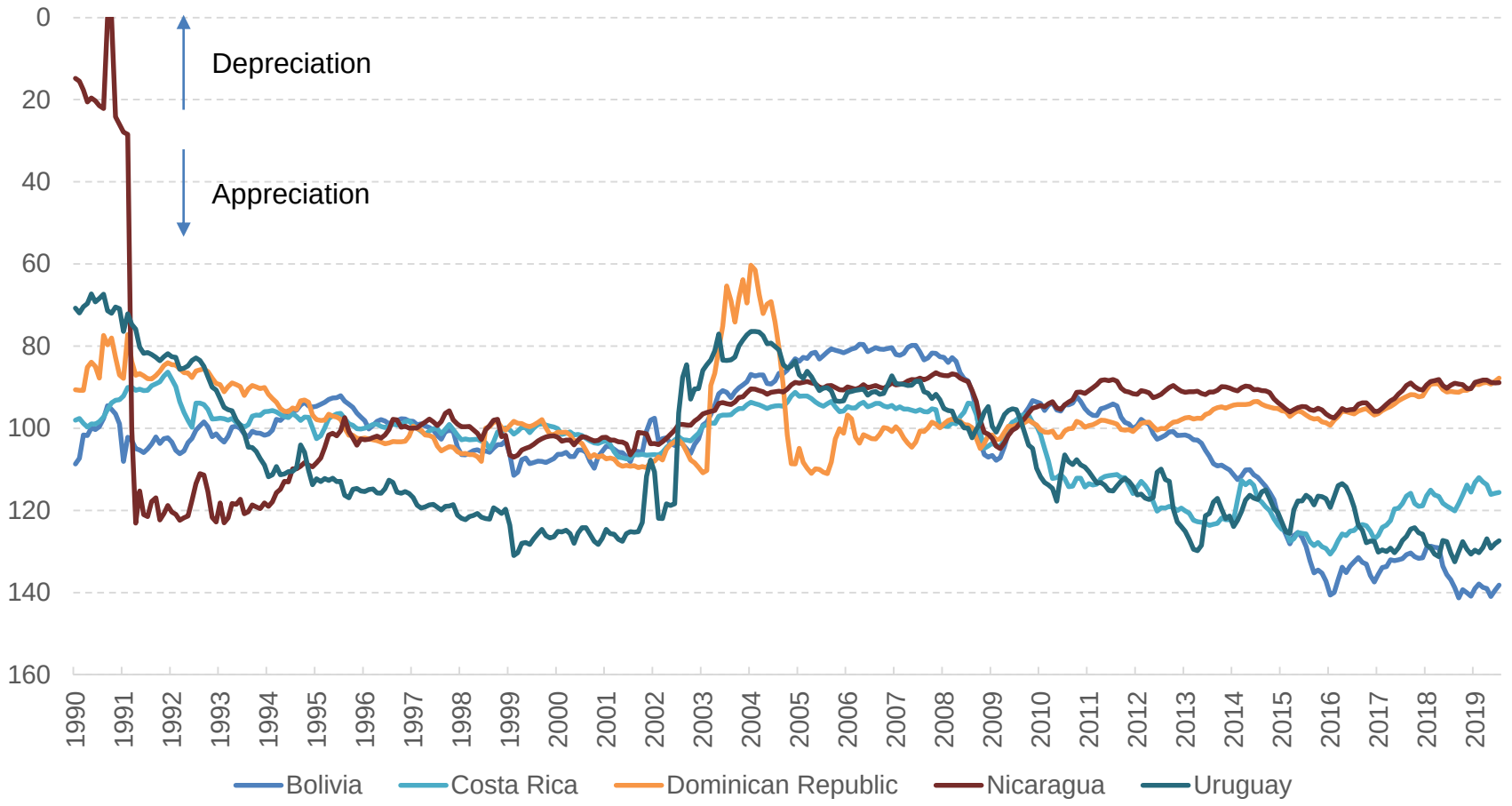
Real Effective Exchange Rate



Notes: Real Effective Exchange Rate, Consumer Price Index. 2009 = 100.
Source: International Financial Statistics (IFS)

Real Effective Exchange Rate



Notes: Real Effective Exchange Rate, Consumer Price Index. 2009 = 100.
Source: International Financial Statistics (IFS)

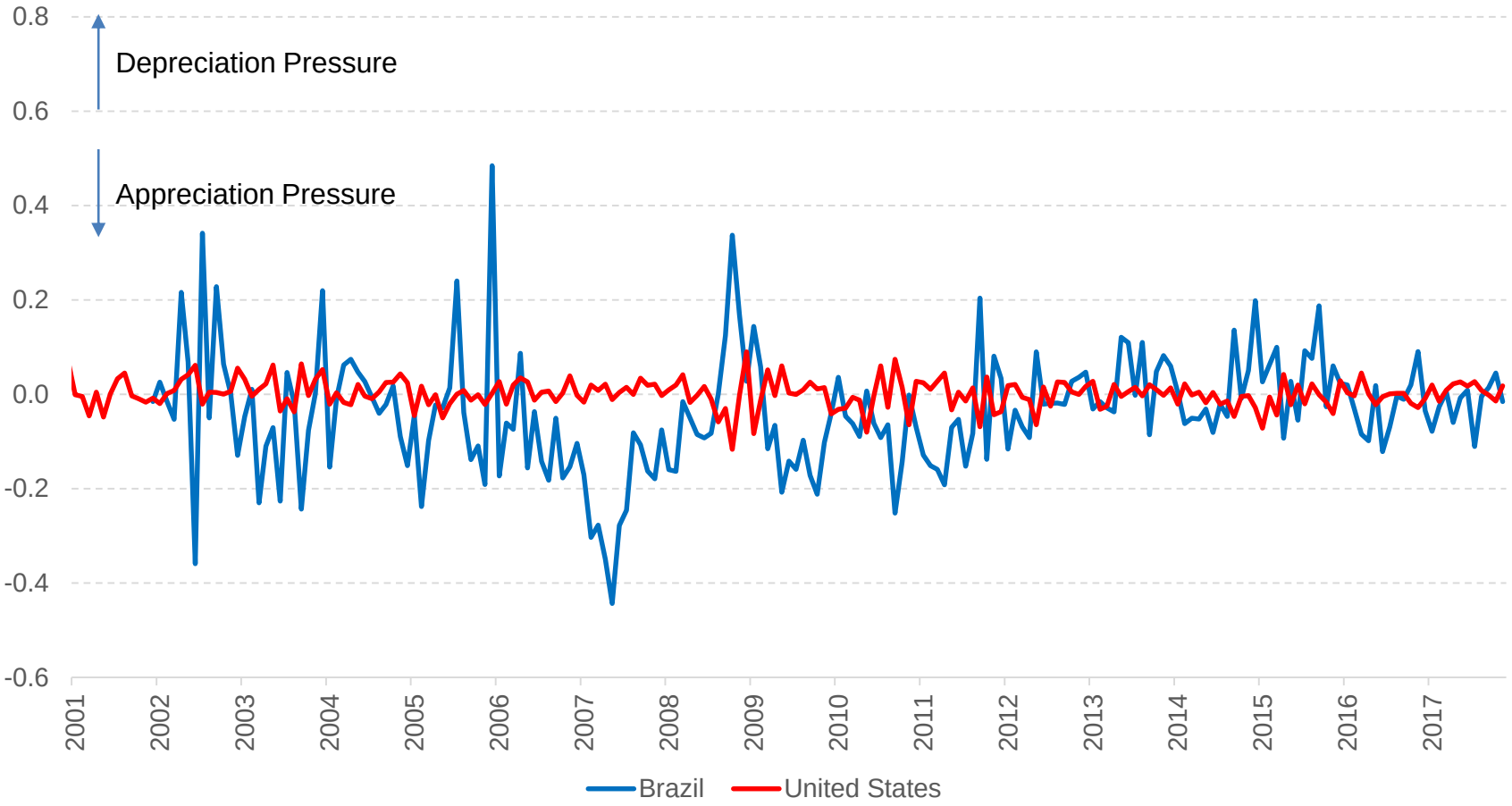
Unconventional Monetary Policies I

4. UMPs brought about **notable reactions and enquiries** from policy makers, scholars and international financial institutions.
5. With notable **capital inflows**, EMEs policy makers faced **tough choices**: An EME with **a floating exchange rate** likely observed large **RER appreciation pressures and a perceived loss in competitiveness (also, recipient countries tended to increase their dollar denominated debt significantly)**. On the other hand, **an EME with a fixed ER, would 'import' the AEs' monetary accommodation,** which could be a problem if inflation was above its objective.
6. Did capital inflows really represent a **Tsunami**? Could they lead to **currency wars**? Was it plainly just too much?
    - *Capital Flows Management? (IMF 2012);*
    - *Capital Controls' effectiveness? (Magud et al. 2018);*
    - *Capital Deflection (Forbes et al. 2016).*

Exchange Market Pressure (EMP) Index

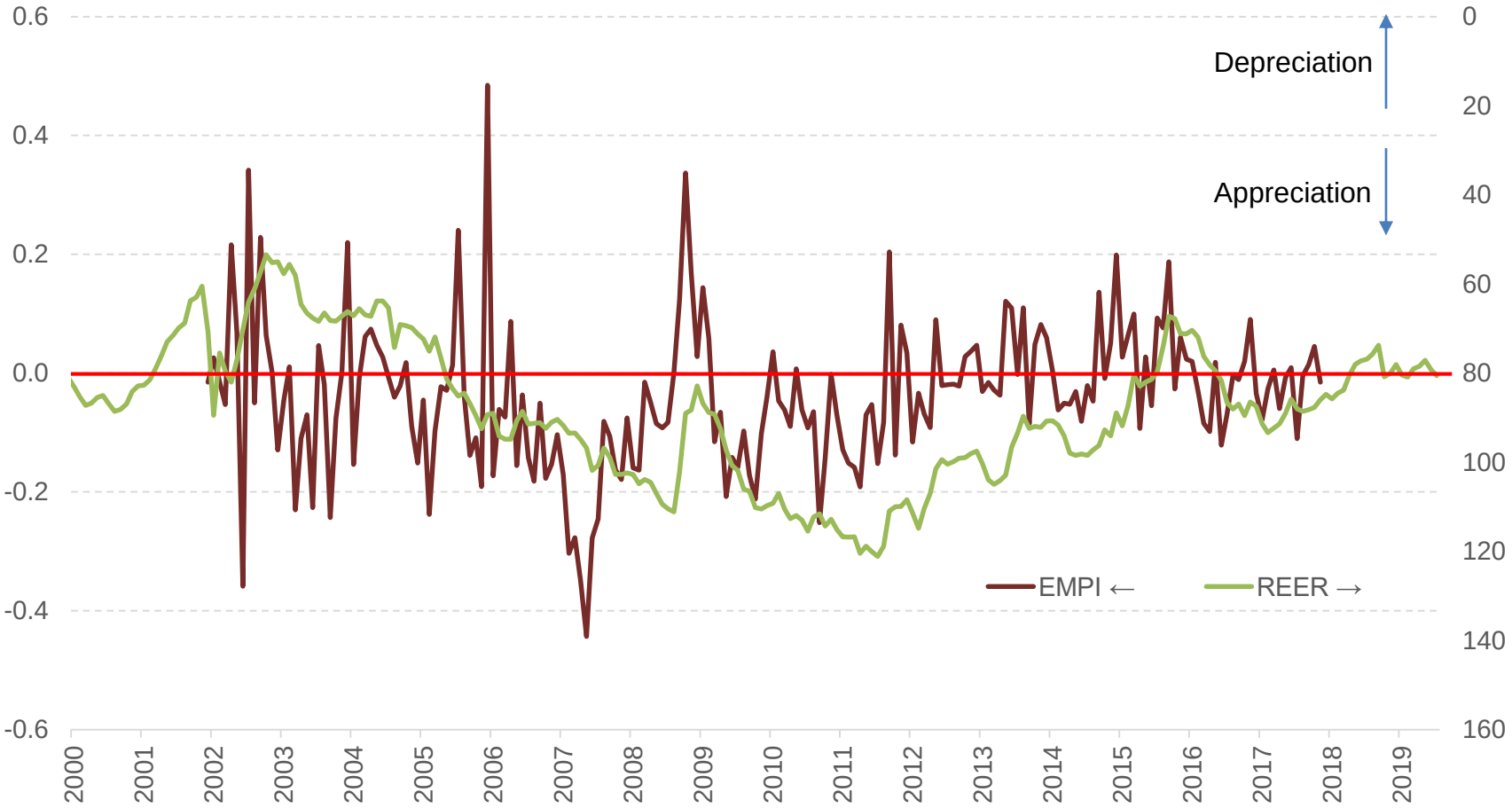
7. Exchange rate market pressure has been typically measured as a weighted sum of **variations in the exchange rate, in reserves (scaled) and in the local interest rate**. Their constructions are typically *ad hoc*.
8. Goldberg and Krogstrup (2018) propose a similar index, primarily based on the BOP and UIP deviations, which provides their index with economic content. They argue that it accounts for capital flows, among other relevant variables.
9. **Their Exchange Market Pressure Index (EMPI)** is **a measure of capital flows' pressures**. **In it, a positive EMP denotes an international capital outflow pressure (depreciation), and a negative EMP denotes a capital inflow pressure (appreciation).**

EMPI Brazil



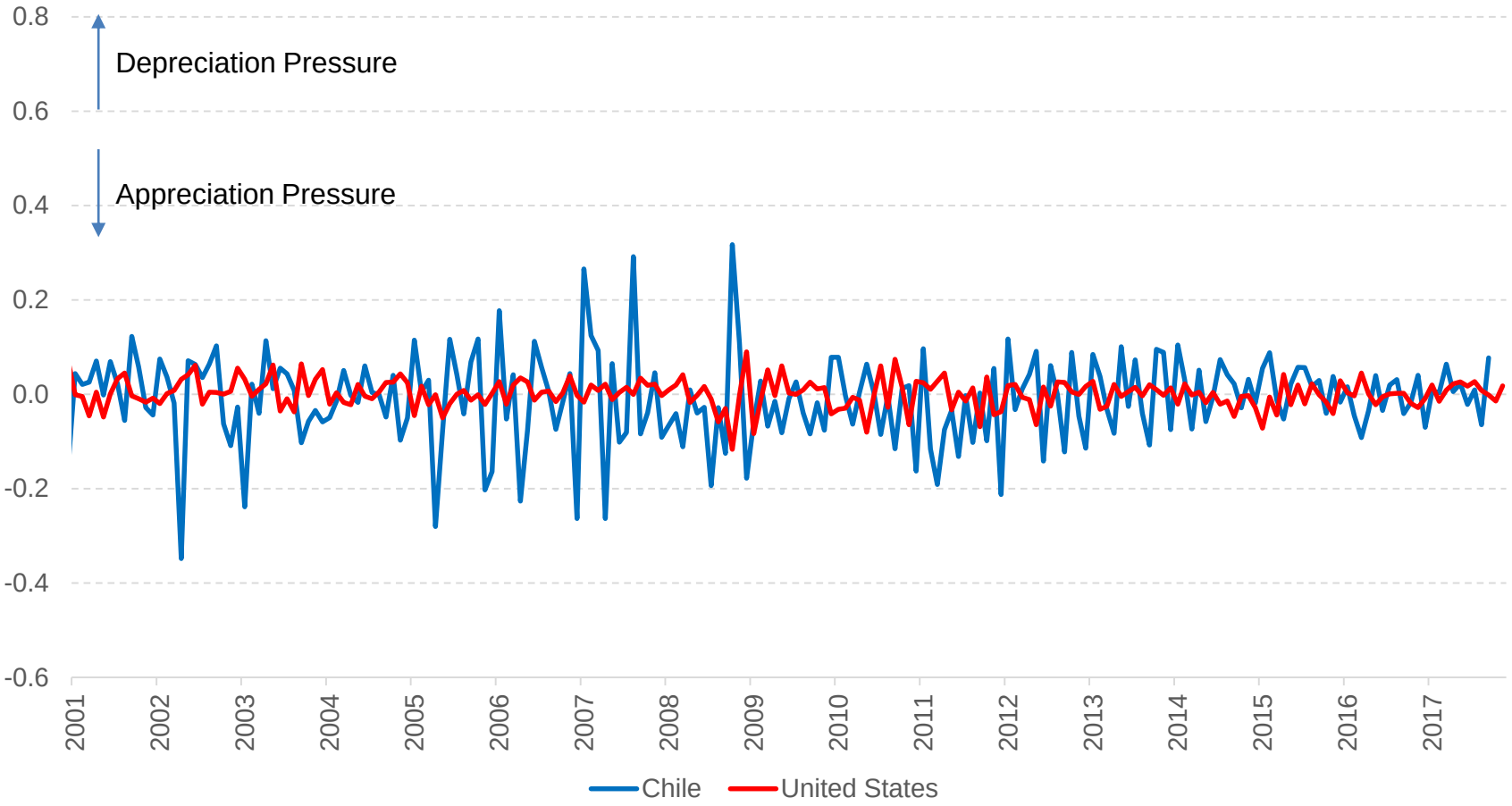
Notes: A positive EMP denotes an international capital outflow pressure (local currency depreciation pressure), and a negative EMP denotes a capital inflow pressure (local currency appreciation pressure).

Real Effective Exchange Rates and EMPI - Brazil



Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

EMPI Chile



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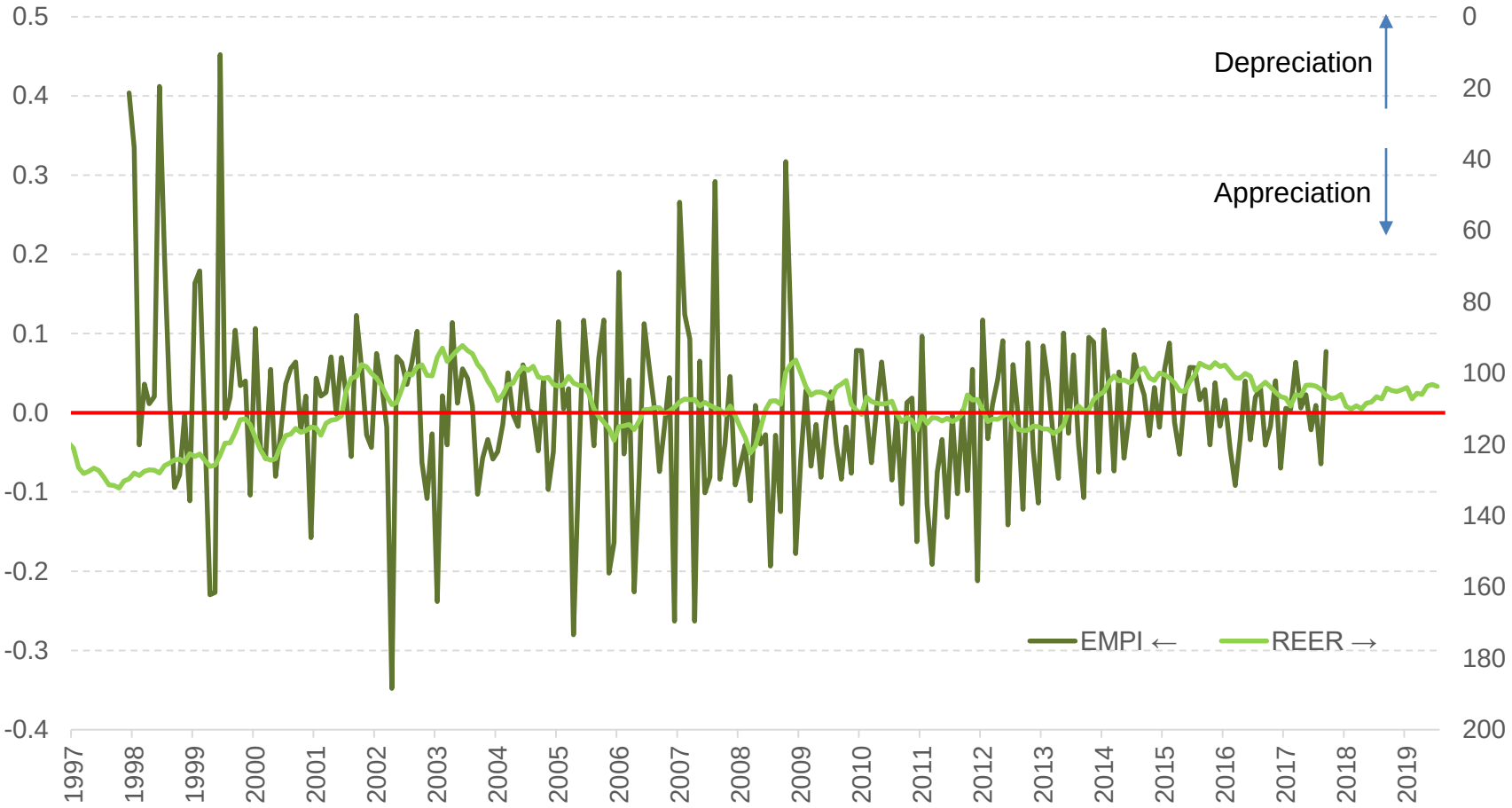
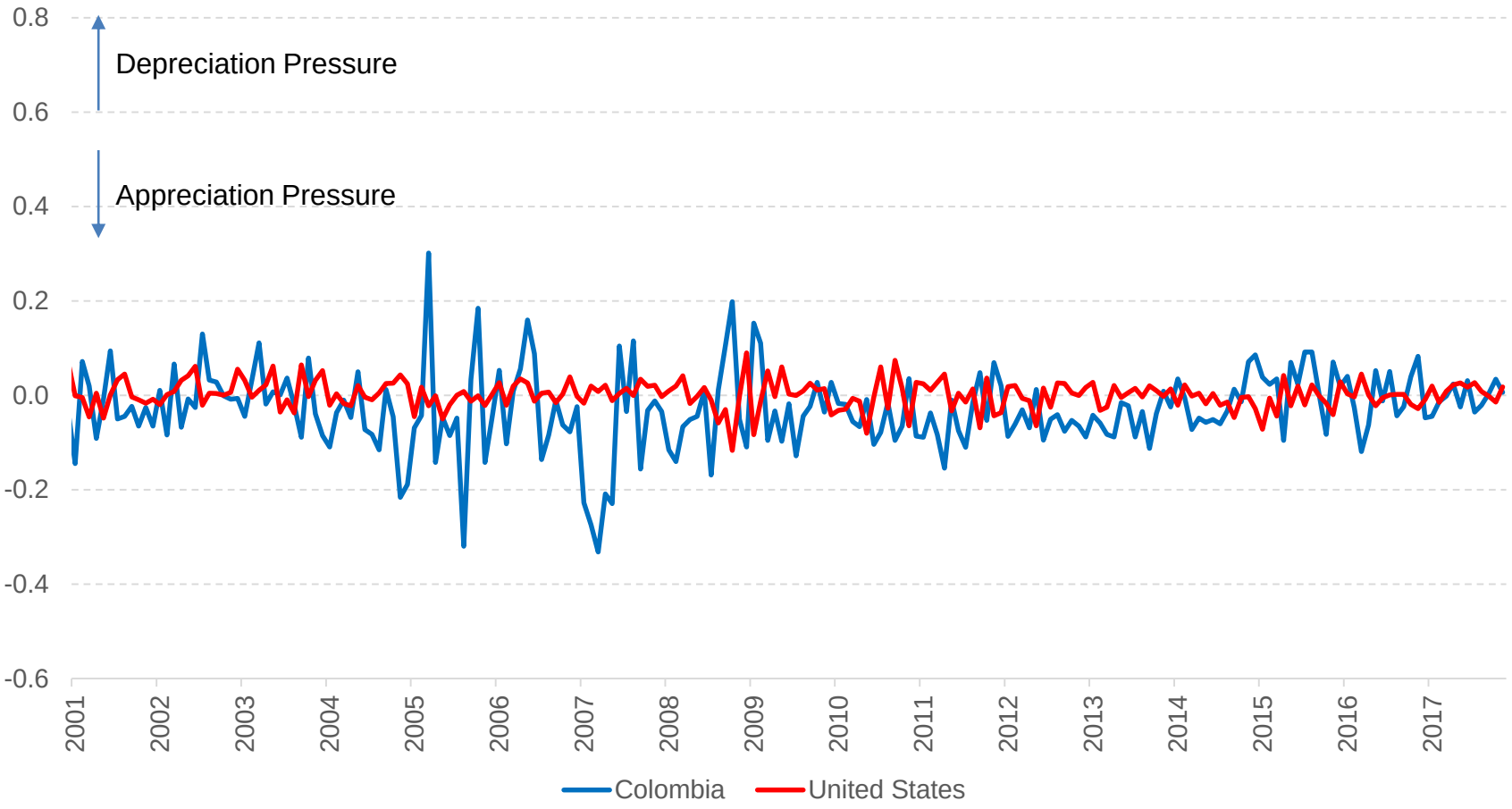
Real Effective Exchange Rates and EMPI - Chile



Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

EMPI Colombia



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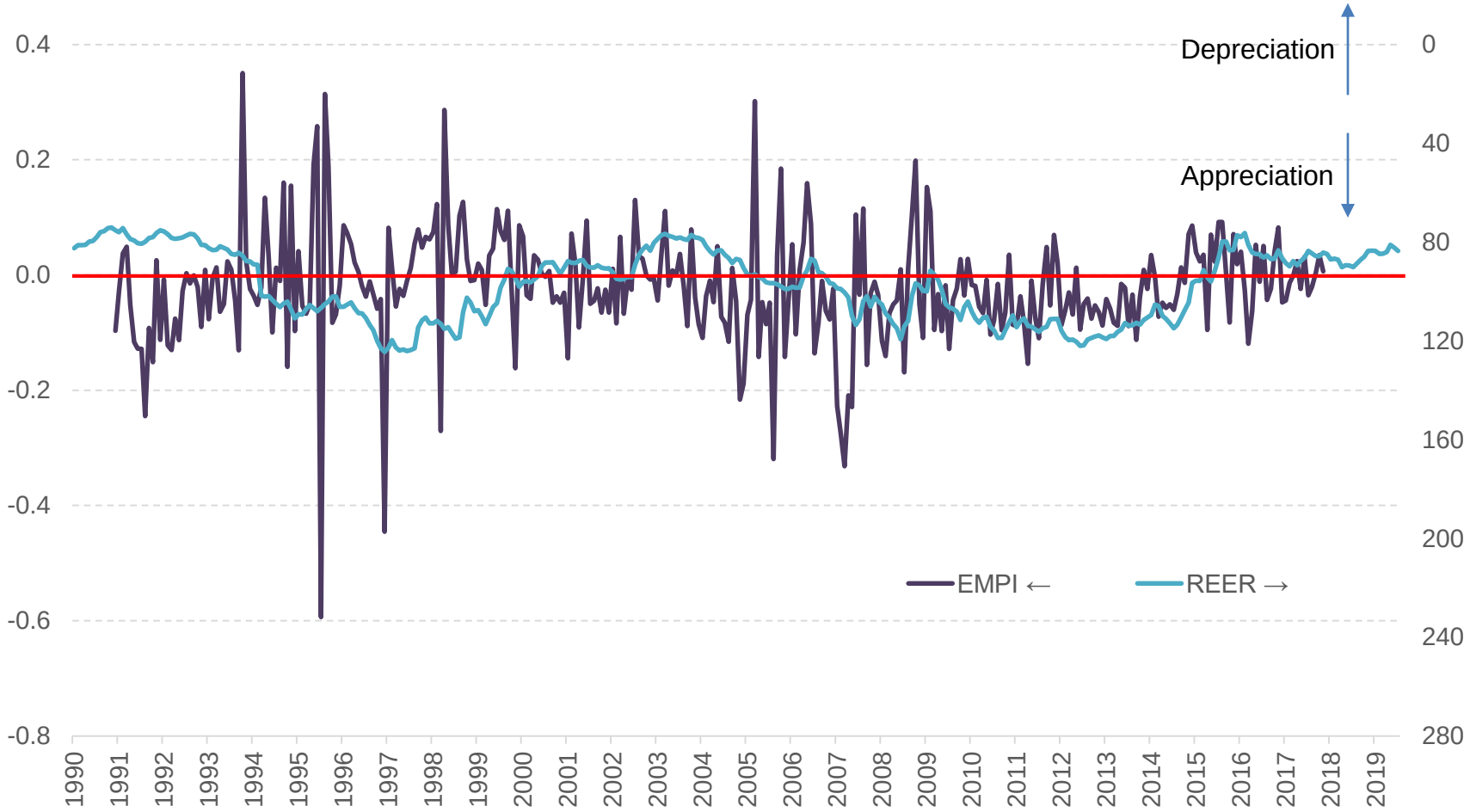
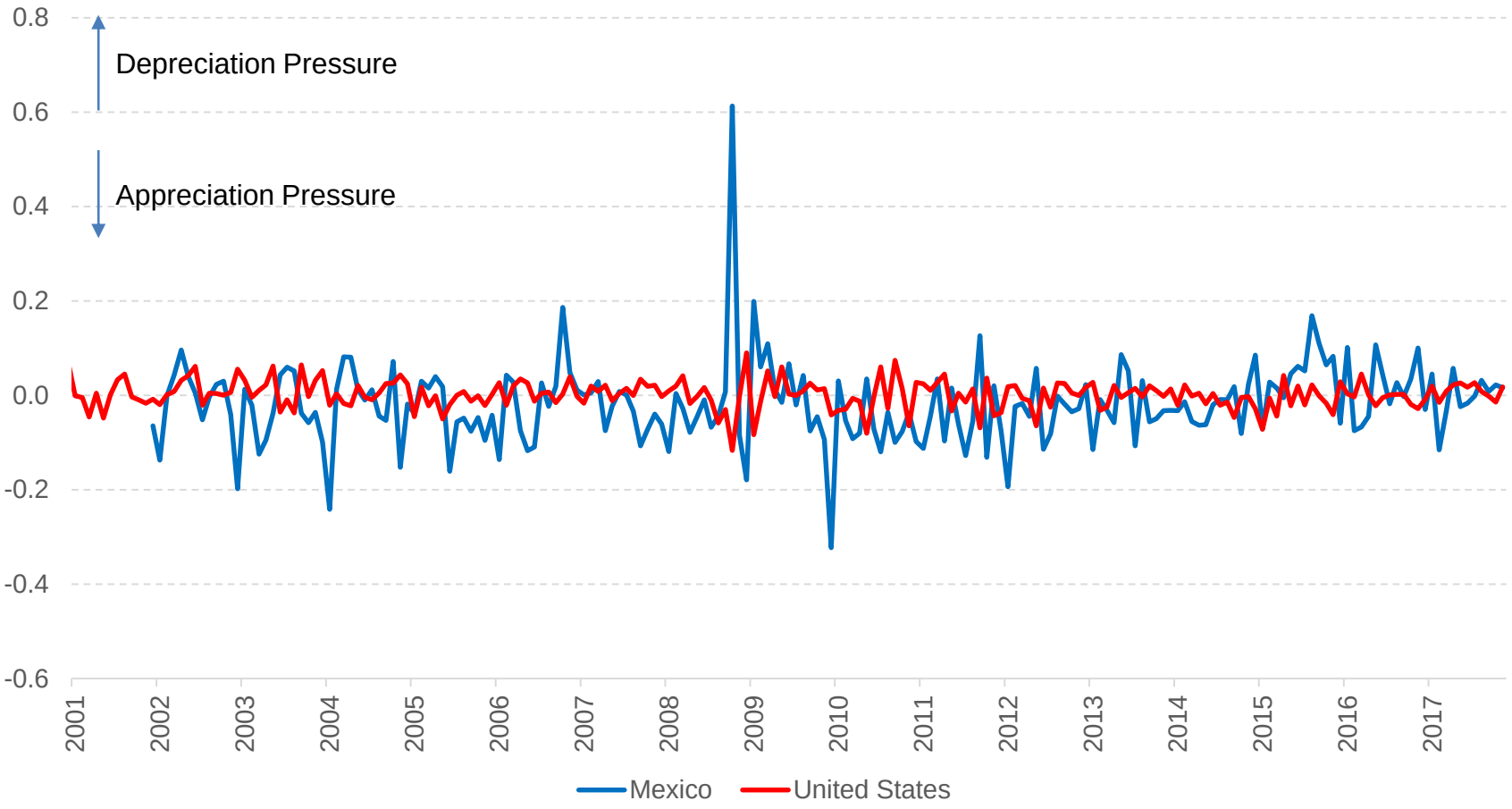
Real Effective Exchange Rates and EMPI - Colombia



Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

EMPI Mexico



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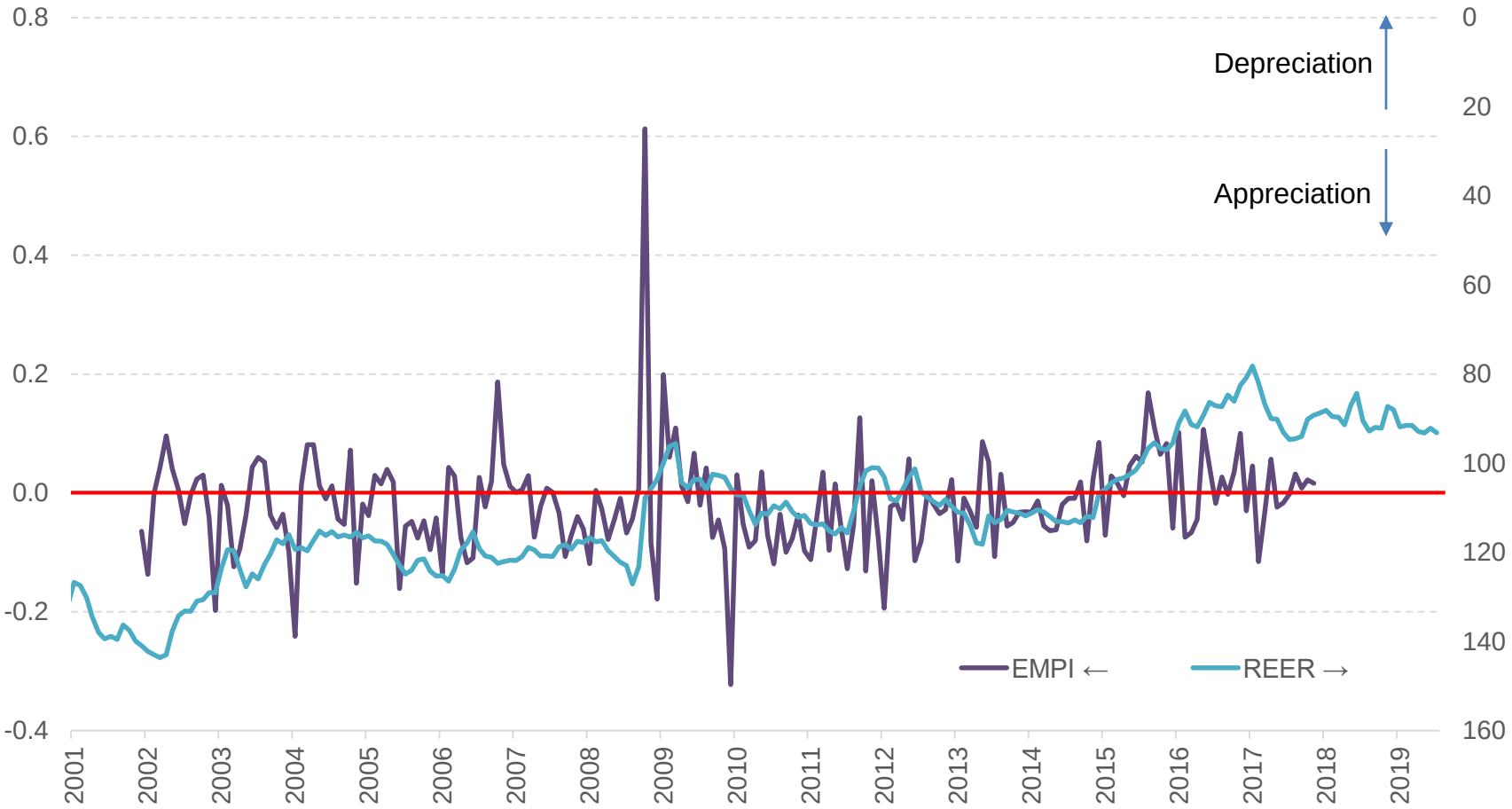
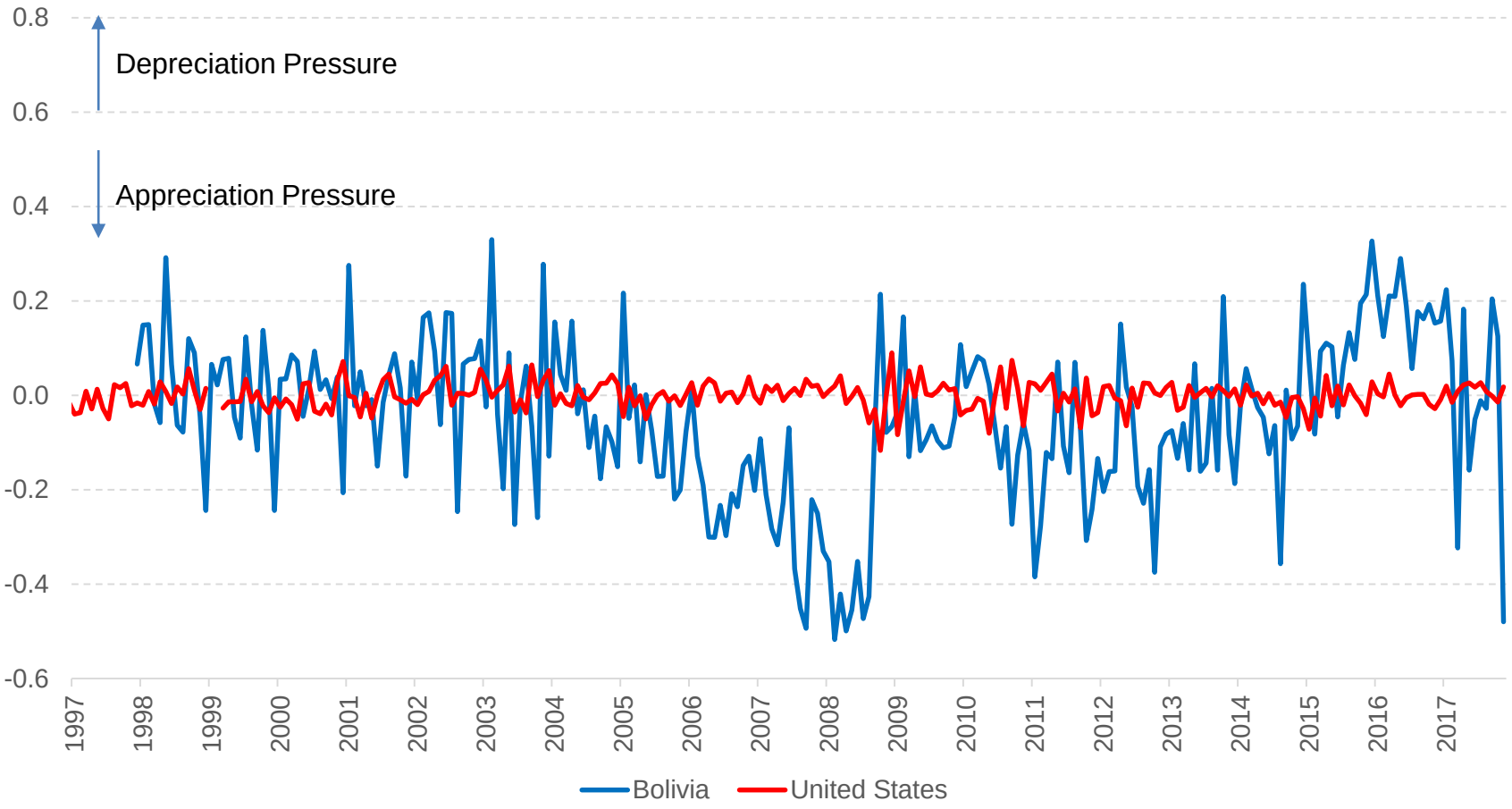
Real Effective Exchange Rates and EMPI - Mexico



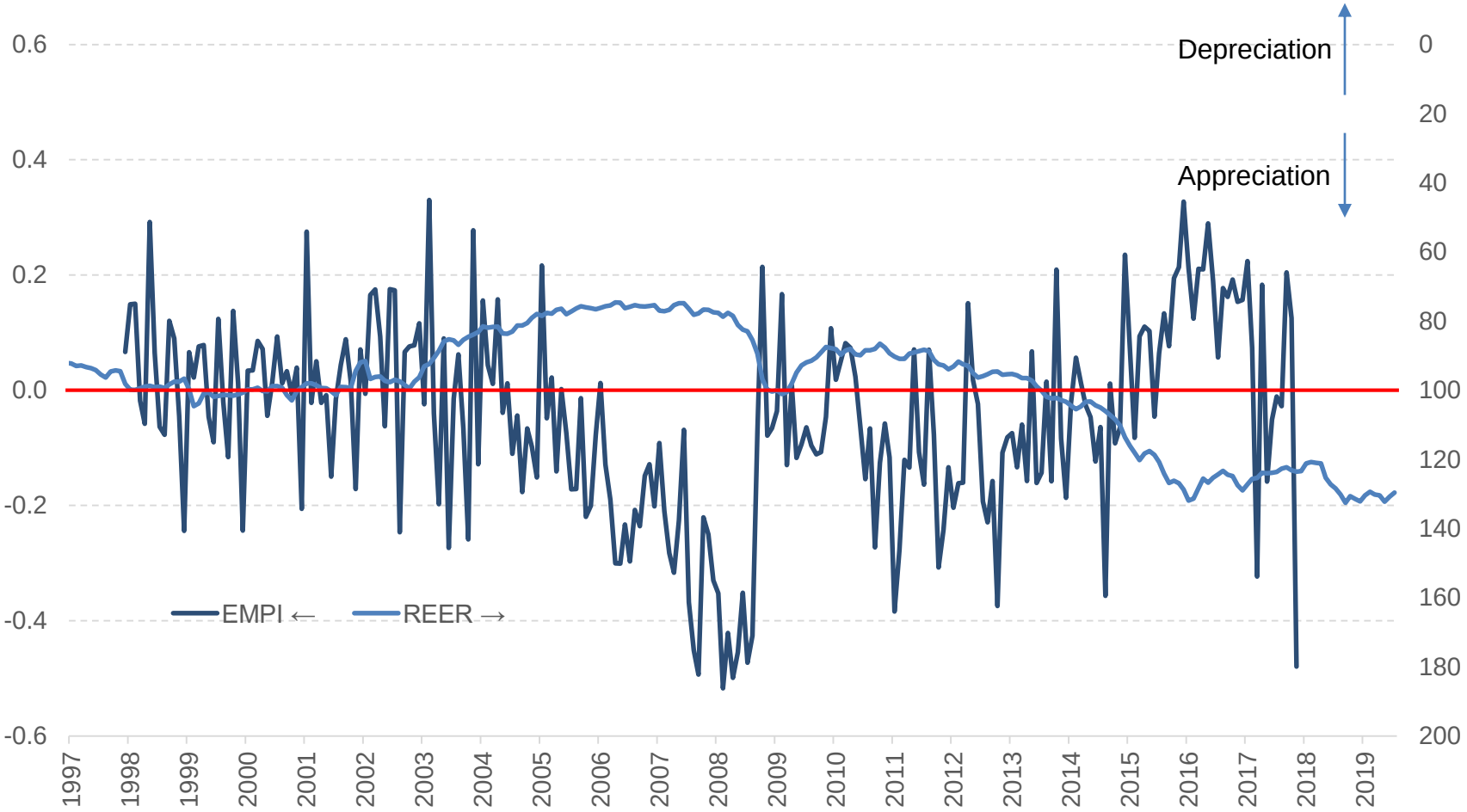
Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

EMPI Bolivia



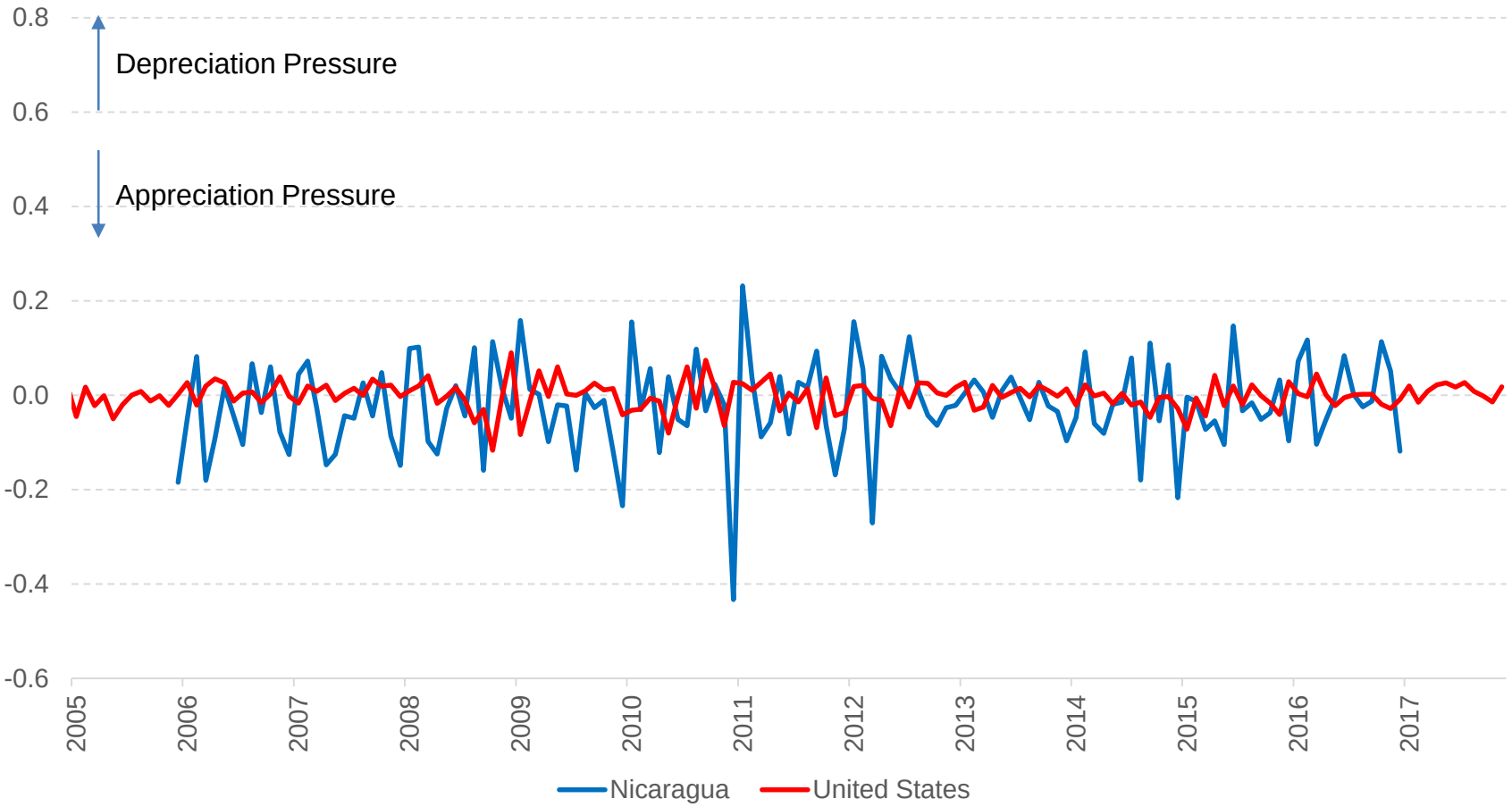
Notes: A positive EMP denotes an international capital outflow pressure (local currency depreciation pressure), and a negative EMP denotes a capital inflow pressure (local currency appreciation pressure).

Real Effective Exchange Rates and EMPI - Bolivia



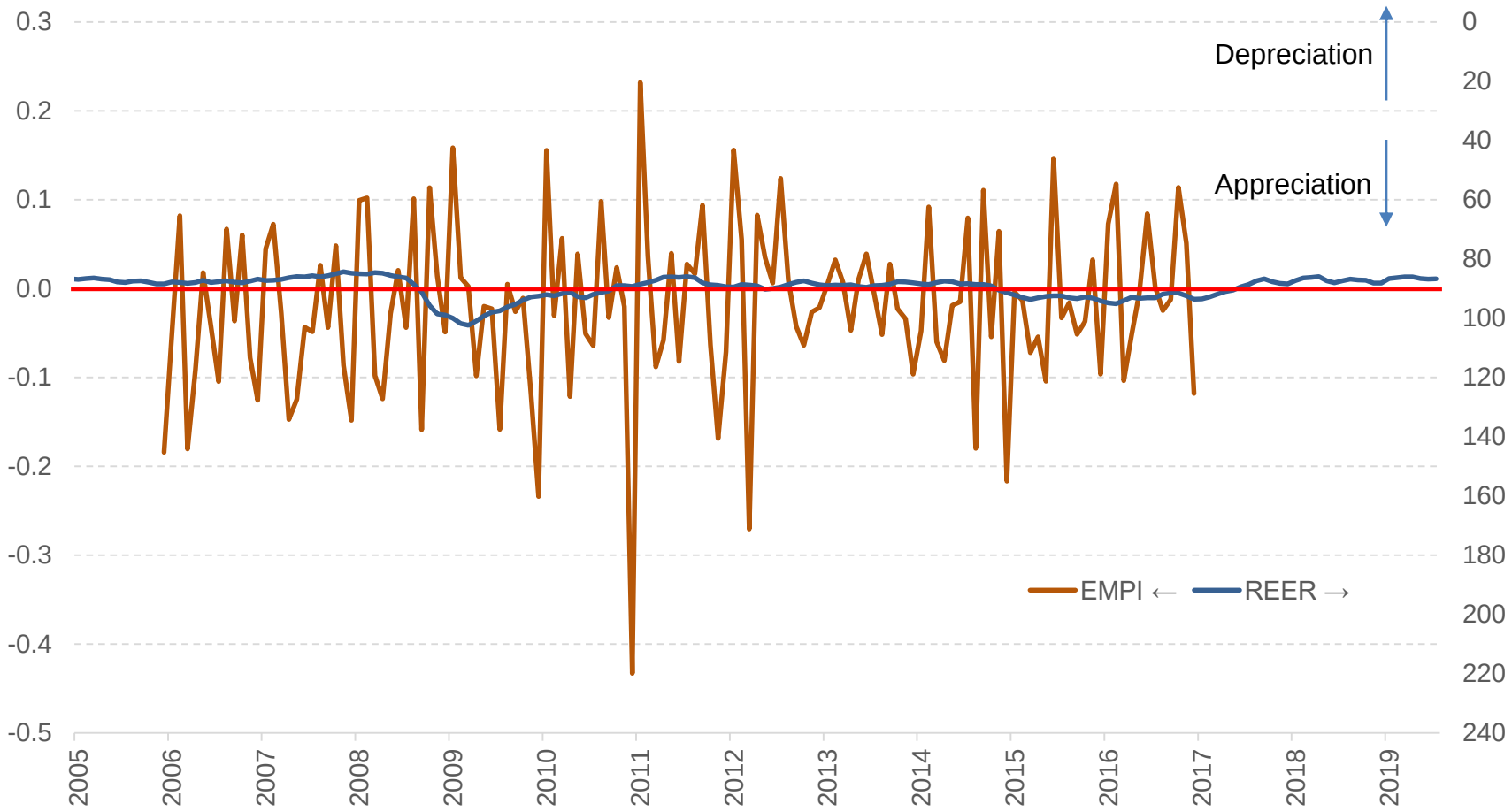
Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

EMPI Nicaragua



Notes: A positive EMP denotes an international capital outflow pressure (local currency depreciation pressure), and a negative EMP denotes a capital inflow pressure (local currency appreciation pressure).

Real Effective Exchange Rates and EMPI - Nicaragua



Notes: *Right-hand side*: Real Effective Exchange Rate (REER). 2009 = 100. *Left-hand side:* Exchange Market Pressure Index (EMPI). **Sources:** International Financial Statistics (IFS), and Goldberg and Krogstrup (2018).

Relevant Topics

- **Competitive Easing** (Rajan, 2014).
- How important is the **Global Financial Cycle**? What are its implications? To what extent does it affect local monetary policies?
  - Helen Rey (2015). Has the **Trilemma** turned into a **Dilemma**?
- Given the externalities → the possibility of **international policy coordination** was raised (Mishra and Rajan, 2016).
  - **Coordination, however, is typically challenging to implement given the lack of an authority that could enforce it, and its associated (non-) cooperative collusive equilibrium is generally unstable.**

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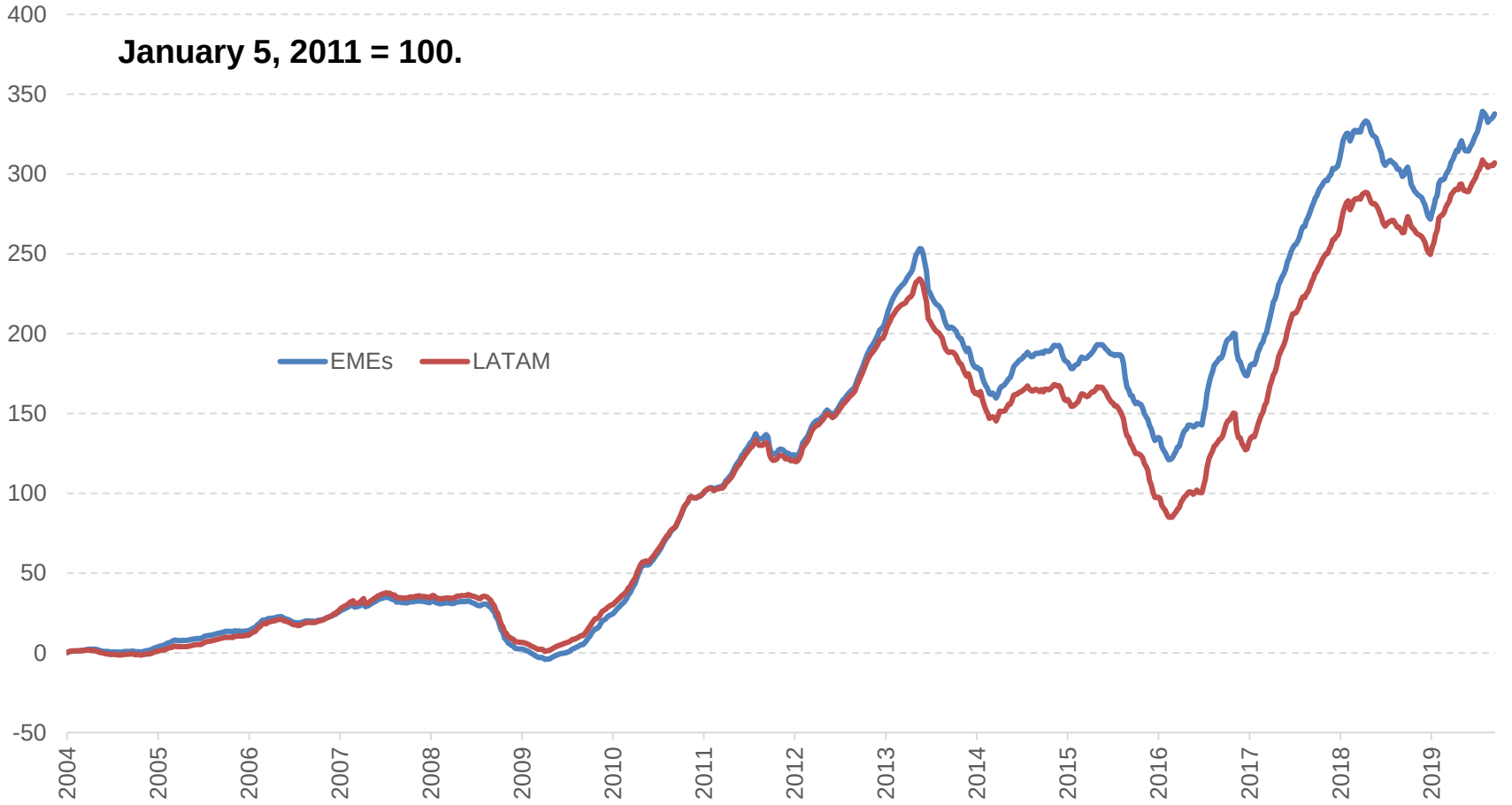
Session III

The “Taper Tantrum” and Capital Outflows

Accumulative Bond Flows Index



Source: EPFR Global**. Notes: EMEs:** Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey and Uruguay. **LATAM:** Argentina, Brazil, Chile, Colombia, Mexico, Peru and Uruguay.

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Volatility in Financial Markets

1. In the last few decades there have been, at times, episodes where **volatility has increased considerably** in financial markets.
2. Historically, different phenomena have been identified and analyzed that can contribute to this. They entail **externalities, market failures, problems** with market infrastructures, and others.
3. Among the most prominent ones, we have:
   - **Incomplete information** (Brunnermier 2001), e.g., investors are of two types, good and bad, which are unobserved. Types can be deduced from performance. The bad might follow the good to hide their type.
   - **Asymmetric information** (Brunnermier, 2001). A group of investors might follow another group assuming that the latter is better informed.

Volatility in Financial Markets

3. [continues…]

- **Rational bubbles** (Blanchard and Watson, 1982). A group of investors might knowingly ride a bubble. This feeds into the bubble and is sustainable so long as it does not burst. (There is another group with an optimistic view that directly feeds the bubble.)
- **Informational Cascades** (Bikhchandani et al., 1992). Investors see each other's actions and sequentially receive a noisy signal. Under some conditions, the aggregate behavior of investors can change purely based on the signals.

In practice, all factors can be present and interact with each other, **making herd-like behavior more likely**.

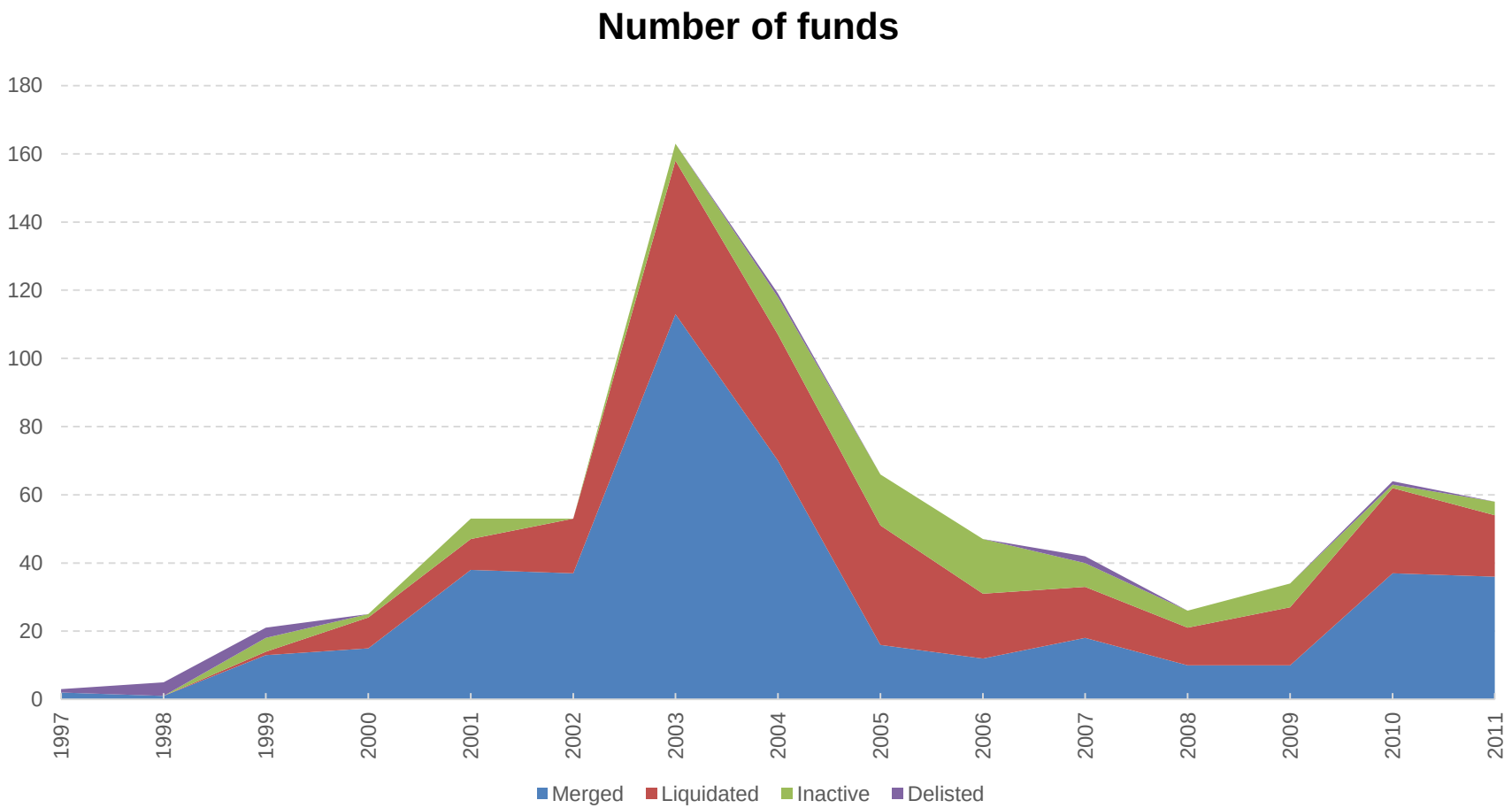
Global Monetary Game

1. **Global investors compare** the **expected return they can obtain in a core economy** (e.g., US) against **that of an economy in the periphery** (an EME). The expected return in the core economy depends mostly on the **expected path of the [US] policy rate**. The expected returns of the EMEs largely depend on the **positions of other global investors in that EME**.
2. **Global Asset Management Companies** (GAMs) **have recently gained participation in financial markets**. The nature of GAMs is different than that of previous dominant players, like banks. **First** of all, they are mostly unleveraged. **Second**, an **essential feature of GAMs is that agency problems permeate investment relations**.
3. In effect, in the case of a GAM, there is typically **a long chain of principal agent relations separating the owners of capital from the fund managers**, who allocate the capital.
4. **A mechanism to mitigate such agency problems is to compare the performance of fund managers against a market index.**

Global Monetary Game

5. Arguably, such a comparison makes **fund managers averse to ranking last** among their peers (eg, Feroli et al. 2014). Fund managers that rank last, or low, are punished through **redemptions** and, more generally, **reputationally**.
6. There is also the **market structure** of GAMs, which is characterized by a **substantial concentration of Assets Under Management**. There is the potential problem of having one fund holding a significant portion of an EMEs asset; indeed, there could be players' and investments' concentration.
7. What is more, GAMs use **common analytical tools to measure their risks and select optimal portfolios**. As this makes price co-movements more likely, **it could reinforce herd behavior among fund managers.**

Fund Survival



Notes: This Figure reports the number of delisted funds per year, by the following types: merging, liquidation, inactivity and other delisting. Data are reported for 1,624 open-ended accumulation mutual funds with major or full allocation in equities, extracted for the period starting on Friday December 30, 1994 and ending on Friday January, 2010. At the end of the period totals were 418, 257, 82 and 12, respectively, for a grand total of 769. Thomson Reuters Datastream. The date and the reason of the delisting are retrieved manually, mainly from Bloomberg. **Source:** Cogneau and Hubner (2015). The prediction of fund failure through performance diagnostics. *Journal of Banking and Finance*. Vol. 50.

Global Monetary Game

8. A relatively more recent issue has been the growth of **automated trading** (AT), in particular, **high frequency trading** (HFT). While this implies some benefits, it also has brought new risks, some potentially unknown.
9. There is the **depth of EMEs financial markets**, and **market microstructure** issues.
10. In general, there has been a **very intense search for yield**.
11. **All in all, these elements make herd behavior more likely in EMEs financial markets**. Thus, **considerable variations in financial asset prices can take place *without significant changes in fundamentals***.

Capital Flow Volatility and Liquidity Risks

- **Significant Risk: Liquidity**.

  Strong increase in the demand for higher risk assets (long-term bonds, corporate bonds, EMEs assets).

  - ✓ **Recent regulation**, such as heavier capital weights and operating restrictions, have reduced traditional market-makers' capacity.
  - ✓ **High concentration of players and investments.** Dominant players: GAMs. ETFs, as well as specialized investors such as HFTs, dominate investments (crowded trades).
  - ✓ **Growing operation of anonymous electronic platforms**, which dominate automated operations (intense liquidity demand vs. supply).
    - ❖ Liquidity provision by algorithms during stress periods (i.e., kill switches).
  - ✓ **Investment vehicles (funds) offer more liquidity than that allowed for by their investments.**

Interconnectivity and Financial Stability

- **Complexity, Liquidity and Financial Stability.**

  Low rates and instability. At least three channels: increased risk taking; credit standards are relaxed; increase the appeal of Ponzi games.

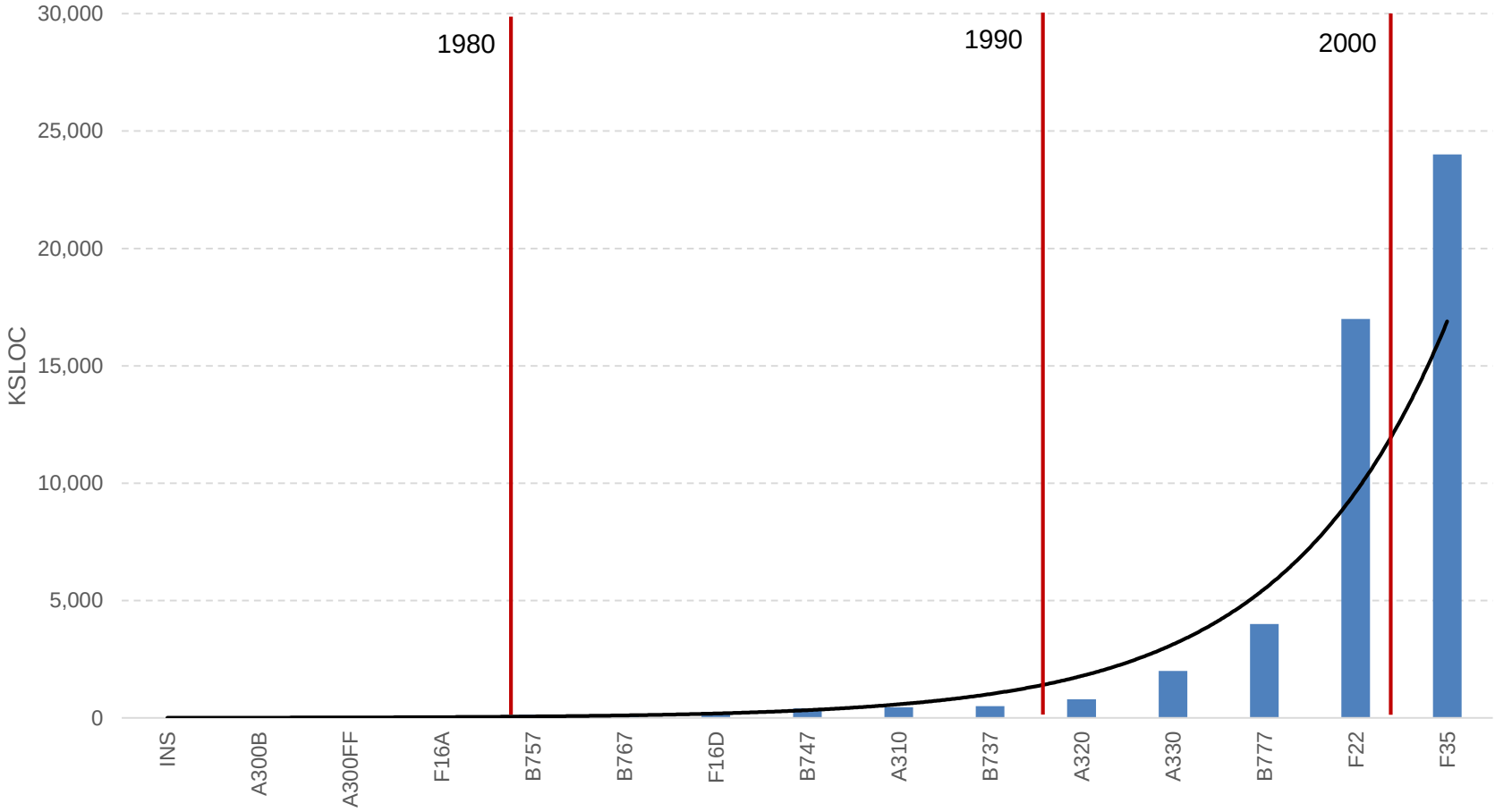
  Fintech increases complexity through **rises in interconnectivity and structural features** of the ecosystem. An important aspect is the lack of information, as well as models to detect vulnerabilities and anomalies.

  ✓ IT applications through interfaces. **Large increases in the number of software** interacting with each other **lead to a strong rise in the complexity of systems.** Linear increase in software size exponentially rises complexity and **maintenance costs**. They also increase **vulnerability points**.

  ✓ **Interconnectivity and direct and indirect exposures.**
  - ❖ Importance of indirect exposures. Portfolios overlap is an important source of contagion and systemic risk.
  - ❖ Concentration of certain asset holdings and asset fires-sales.

  In general, more complexity makes regulation more challenging.

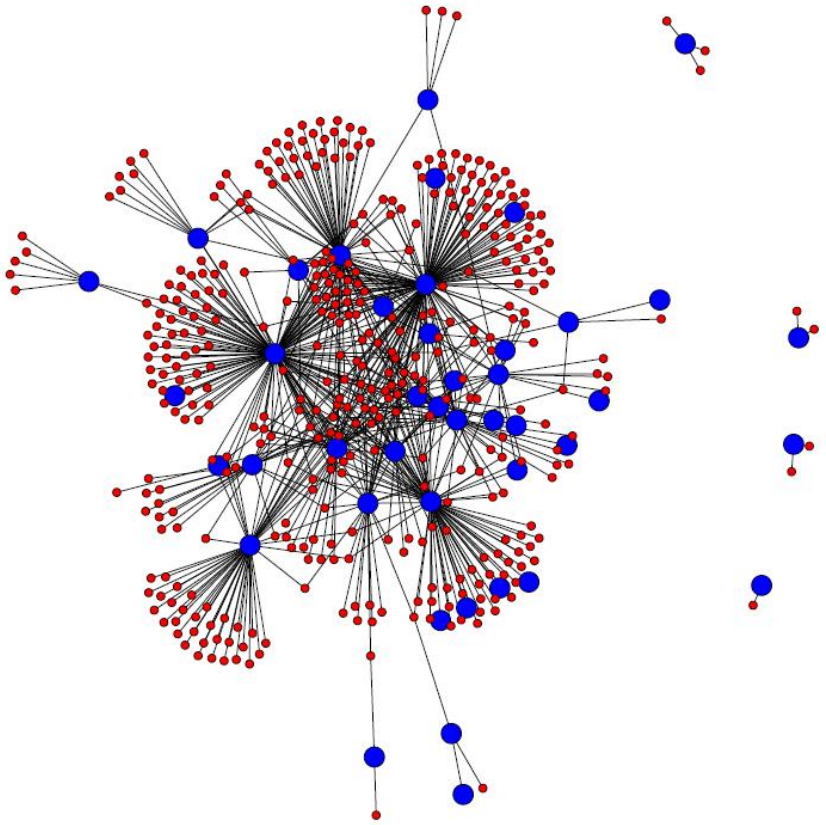
Growth of Software Complexity in Aircraft



Note: Thousands of Lines of Code (KSLOC) Used in Specific Aircraft over Time.
Source: System Architecture Virtual Integration (SAVI) program. https://savi.avsi.aero/about-savi/savi-motivation/

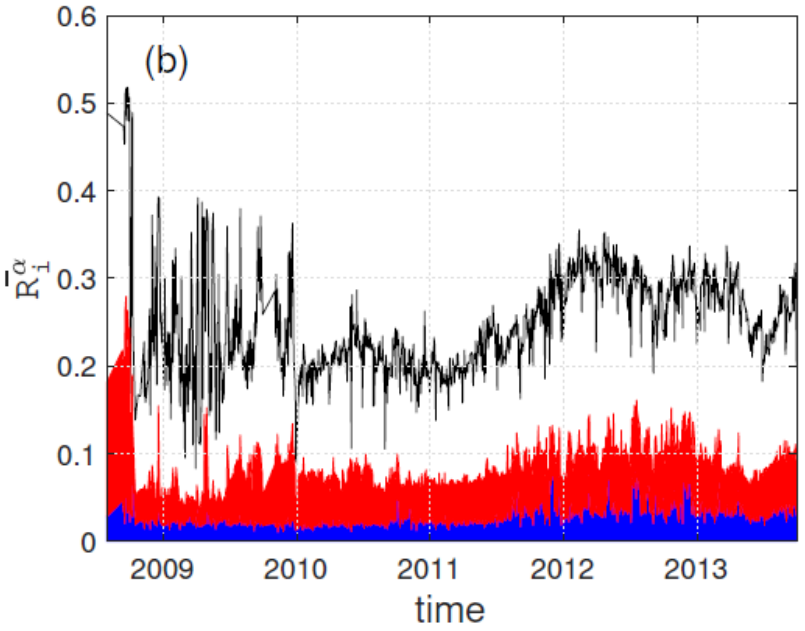
Systemic Risk in Private Banks, Mexico

Banks Network: Blues nodes stand for Banks, Red nodes stand for securities



Source: Poledna, Martinez-Jaramillo, Caccioli, and Thurner, 2019.

Risk due Direct Exposures in Blue, due to Overlapping Portfolios Exposures in Red; and Total Risk in Black. (R Measures Systemic Risk in the Banking Sector)



Source: Poledna, Martinez-Jaramillo, Caccioli, and Thurner, 2019.

Global Monetary Game and High, Volatile Capital Flows

1. **Low natural interest rates in AEs. [Push]**
2. **Persistently higher inflation, term premia and growth expectations in EMEs. [Pull]**
3. **Changes in risk-aversion? Intensive search for yield. [Pull]**
4. **New players (GAMs) (Liquidity ↑?). New ways to operate (HFT, AT) (Liquidity ↓). Anonymous electronic platforms. [Pipes]**
   - **Concentration of players, investment vehicles (ETFs) and exposures (Liquidity ↓).**
   - **Crowded Trades (Liquidity ↓).**
   - **Unrealistic redemption policies from GAMs (Liquidity ↓).**

The interaction of these elements has resulted in the presence of herd behavior, contributing to *highly volatile capital flows*. This, in turn, has led to:

- ✓ **A rise in the dollar-denominated debt issued by nonfinancial firms in EMEs.**
- ✓ **Vulnerability. But also, complacency?**

Comments

The **interaction** of various elements in the context of a **Global Monetary Game** has led to a considerable increase in the volatility of capital flows.

- ✓ *This is possibly one of the most important challenges that EMEs currently face in terms of macro management.*
- ✓ *Under these conditions, it´s very important that central banks understand the different (and changing) aspects of the Global Monetary Game.*
- ✓ *Case in point: GAMs have substituted banks as the dominant players in EME financial markets. GAMs are of a different nature (mainly unleveraged), and face different incentives.*
- ✓ *For example, the interaction between fund managers and fund shareholders can be thought of as a principal agent relationship.*
- ✓ *Adequate liquidity provision is crucial for EMEs to absorb shocks efficiently.*
- ✓ *Technological progress, for all its uses and benefits, can play an important role in liquidity shortages, and can have adverse effects on financial stability through increased interconnectivity (system complexity and indirect exposures).*
- ✓ *Main line of defense against capital flow volatility is sound macro management, strengthening institutions and incentivizing the economy to be productive. No shortcuts.*

Global Monetary Game: *EMEs' Response*

1. International Reserves Accumulation, Exchange Rate Interventions, Domestic Monetary Policy (Relative Monetary Stance?), Capital Controls, Macroprudential Policies, Other Macro Policies, Liquidity Provision, etc. (Menna and Tobal, 2018, Ramos- Francia et al., 2019)
2. Has it been too much?
   - ***The increase in capital flows (and their volatility) to EMEs during the last decade due to an unprecedented US MP accommodation (and normalization? (QE and QT?)) has been significant. However, the increased difficulties in EMEs monetary policy (and, more generally, macro management) can hardly solely be attributed to US MP.***
   - ***One also has to consider local factors, such as vulnerabilities, macro responses, various frictions present in financial markets, as well as factors associated with EMEs' financial markets' microstructure, all of this in the context of a global monetary policy game (Morris and Shin, 2014).***
3. Good communication by the Federal Reserve in recent years has been and will continue to be crucial.

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Session IV

A Low Interest Rate Environment and EMEs Policy Outlook

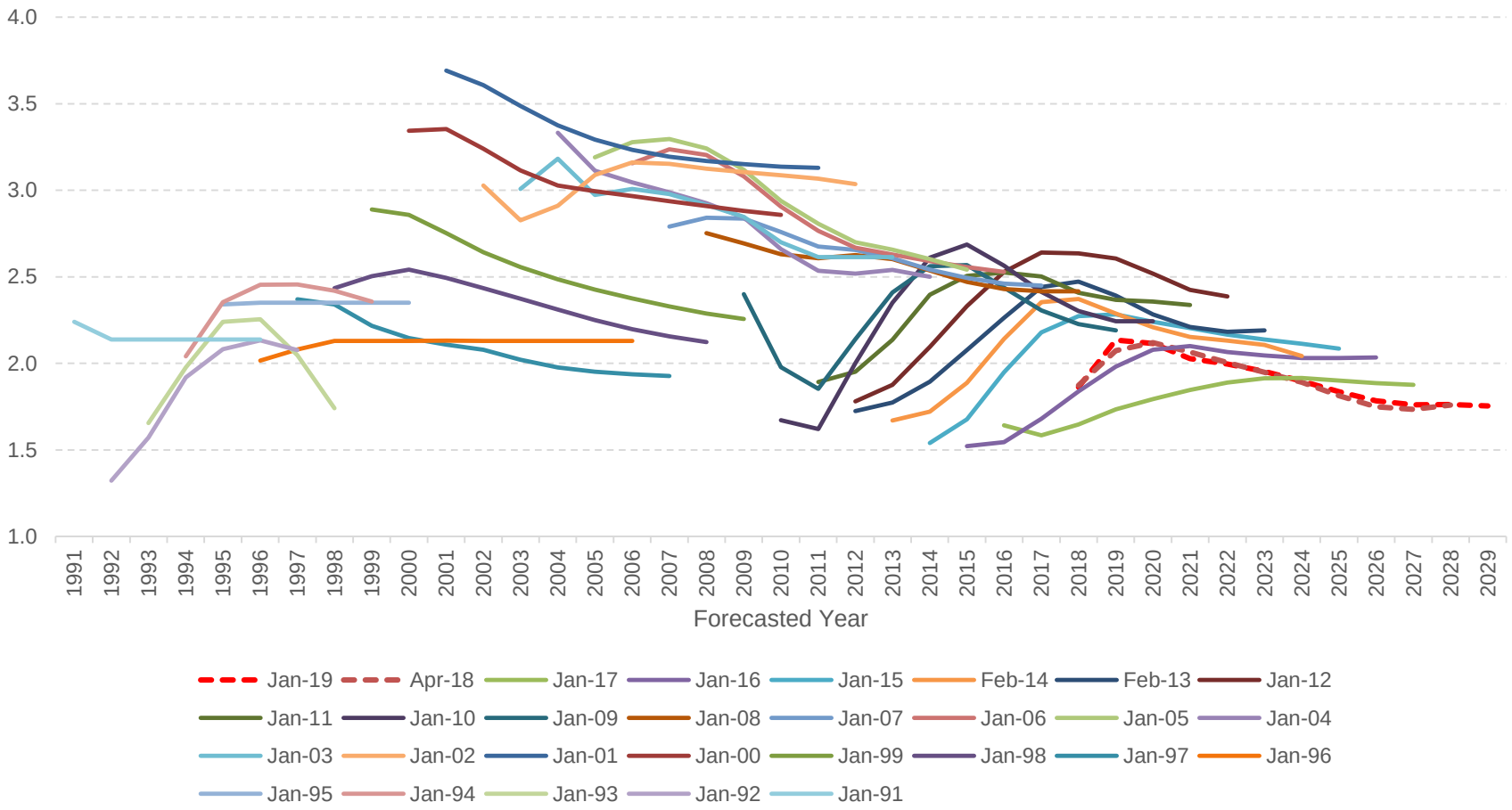
Secular Stagnation?

The global environment has been characterized by low interest rates and weak economic growth. Secular stagnation(?). Three possible explanations.

- ✓ **Potential growth (Solow-Romer factors).**
  - ❖ Demographic dynamics; educational plateau; income inequality; high public debt.
- ✓ **A persistent deviation from potential output.**
  - ❖ Insufficient growth in demand with respect to potential output: rise in the global propensity to save, fall in the global propensity to invest.
- ✓ **Hysteresis.**

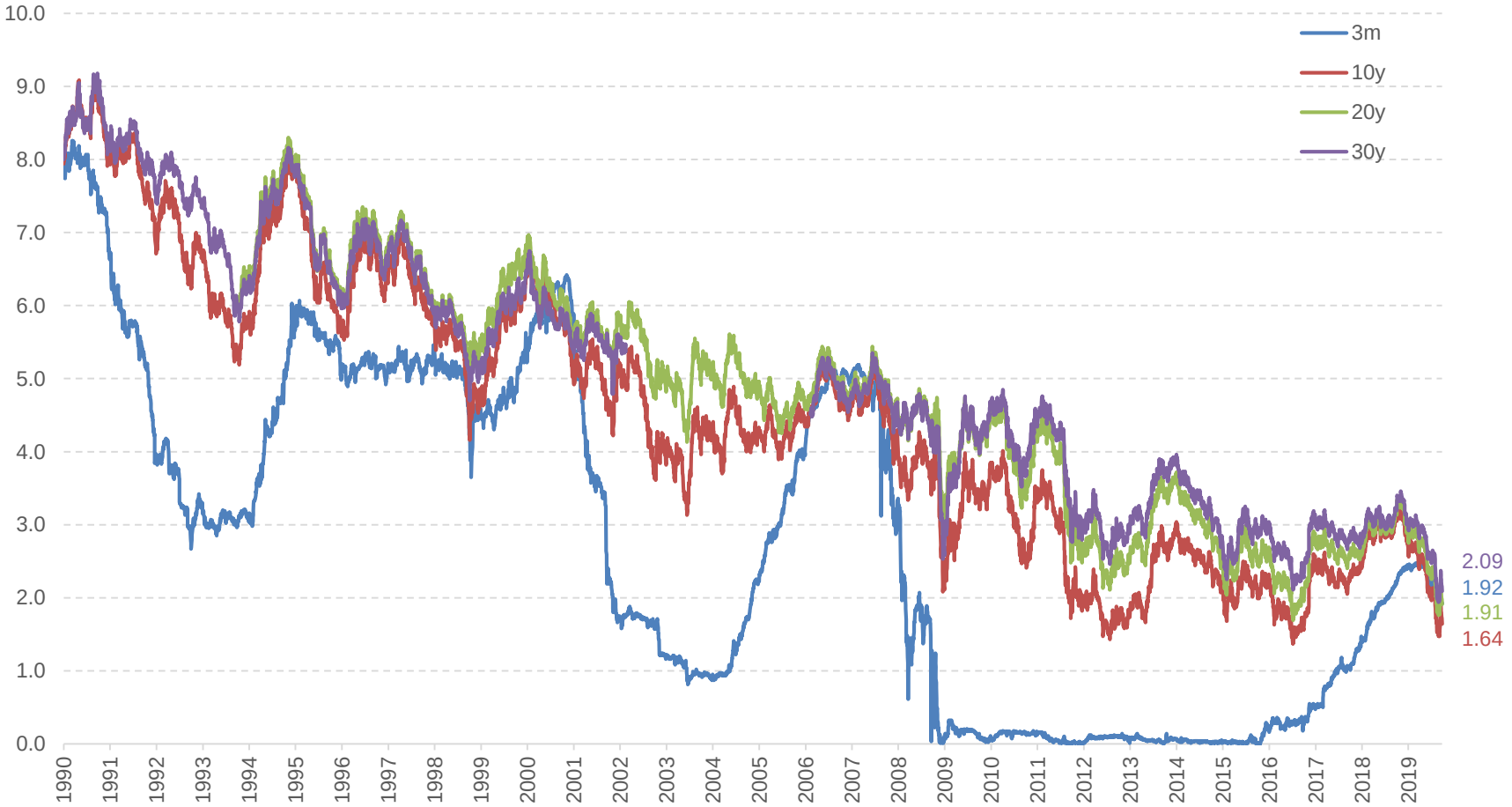
→ These conditions are being reflected in low natural interest rates.

U.S. Potential Growth Expectations



Notes: Annual growth rates.
Source: Congressional Budget Office.

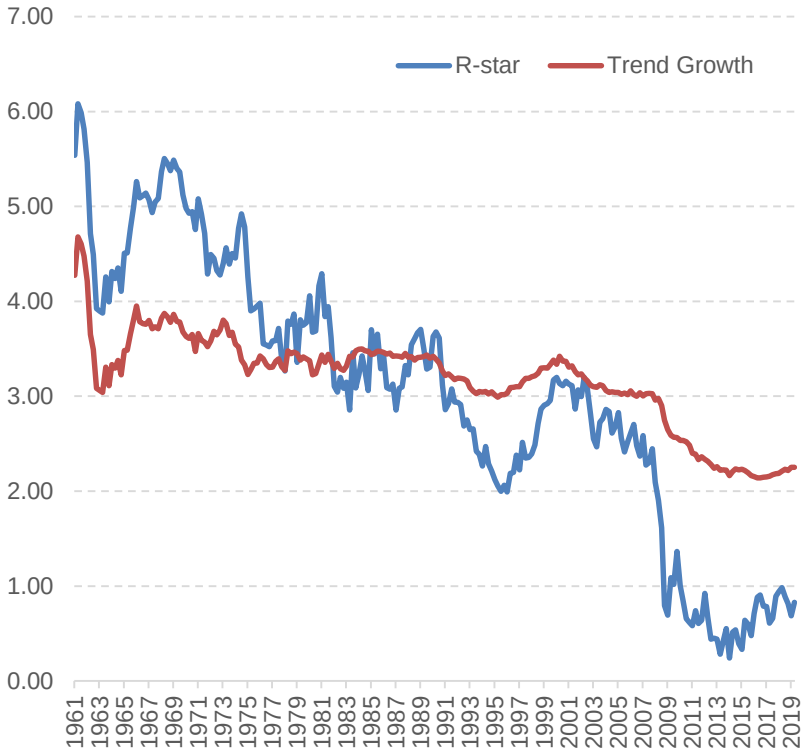
US Nominal Interest Rates



Note: m refers to month, y to year, both indicate the maturity**.** Last datum corresponds to September 24, 2019.
Source: US Treasury

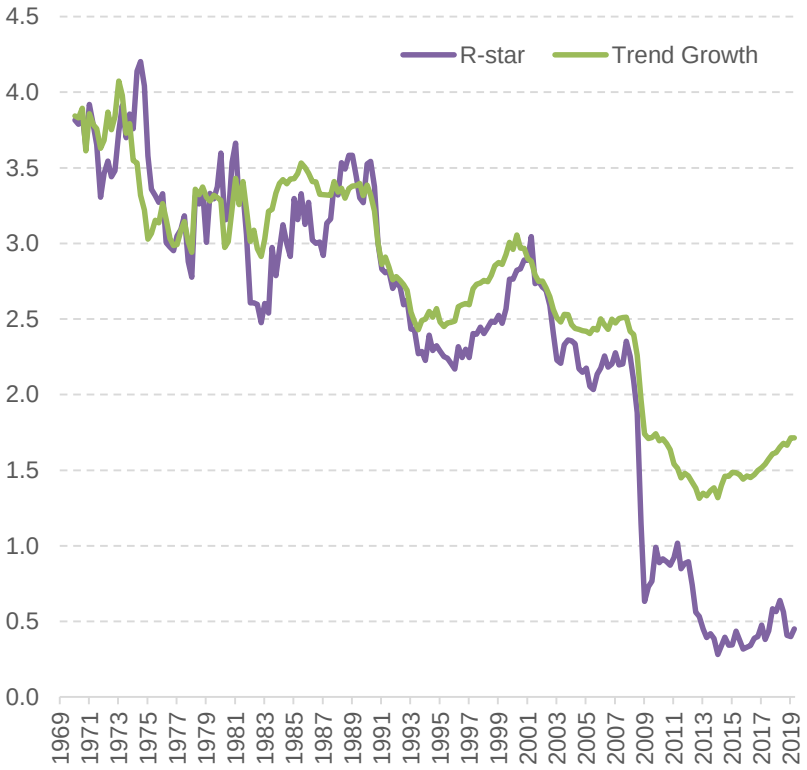
Natural Interest Rates

Natural Rate R*, US, Laubach-Williams (2003)



Notes: The **Laubach-Williams (2003) model** uses data on real GDP, inflation, and the federal funds rate to extract trends in U.S. economic growth and other factors influencing the natural rate of interest. Last datum corresponds to 2019Q2.
Source: Federal Reserve Bank of New York.

Natural Rates R*, Advanced Economies Holston-Laubach-Williams (2017)



Notes: The **Holston-Laubach-Williams (2017) model** extends this analysis to other advanced economies, estimating r-star and related variables for the United States, Canada, the Euro Area, and the United Kingdom. For the Advanced Economies R*, the authors use a weighted average using each economy estimate and their PPP GDP as weights. Last datum corresponds to 2019Q2. **Source:** Federal Reserve Bank of New York.

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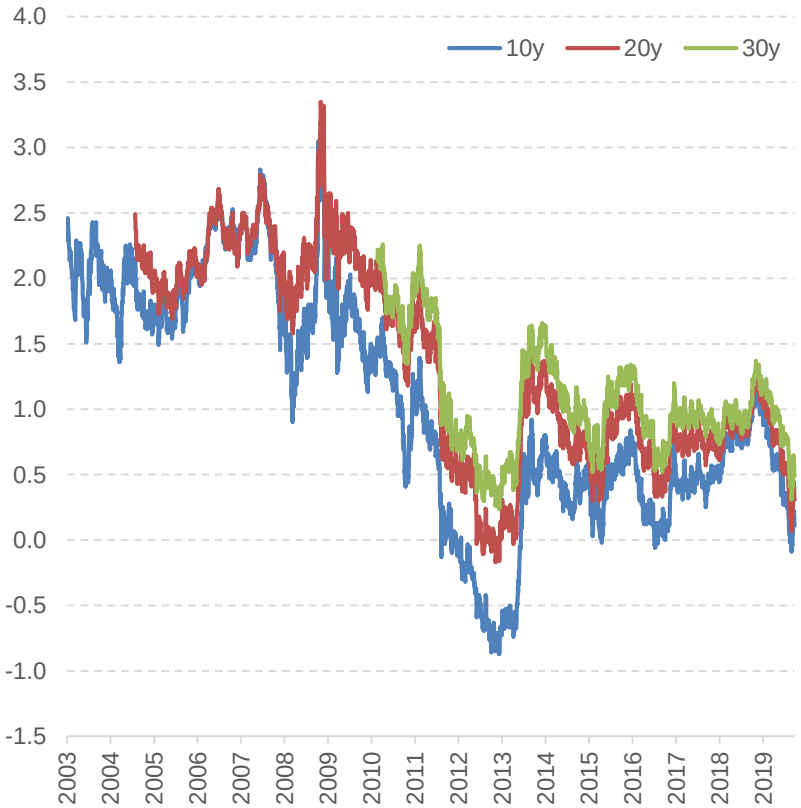
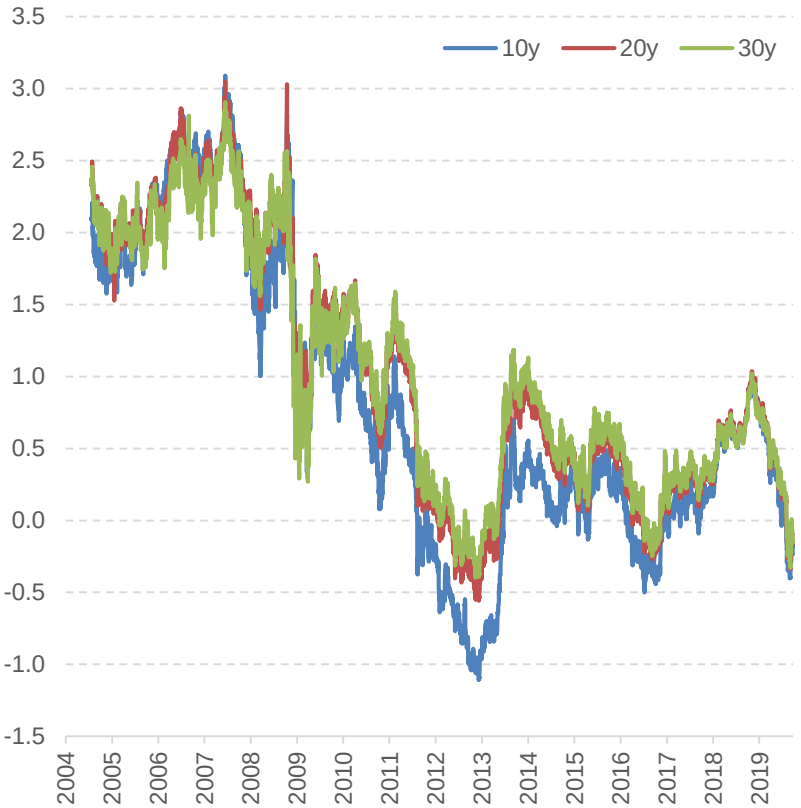
US Long-term Real Interest Rates

Treasury Inflation-Protected Securities (TIPS)



Note: Last datum corresponds to September 23, 2019.
Source: US Treasury

Implicit in Nominal Interest Rate Swaps and Inflation Swaps



Note: Difference between nominal interest rate and inflation swaps**.** Last datum corresponds to September 23, 2019.**Source:** Bloomberg

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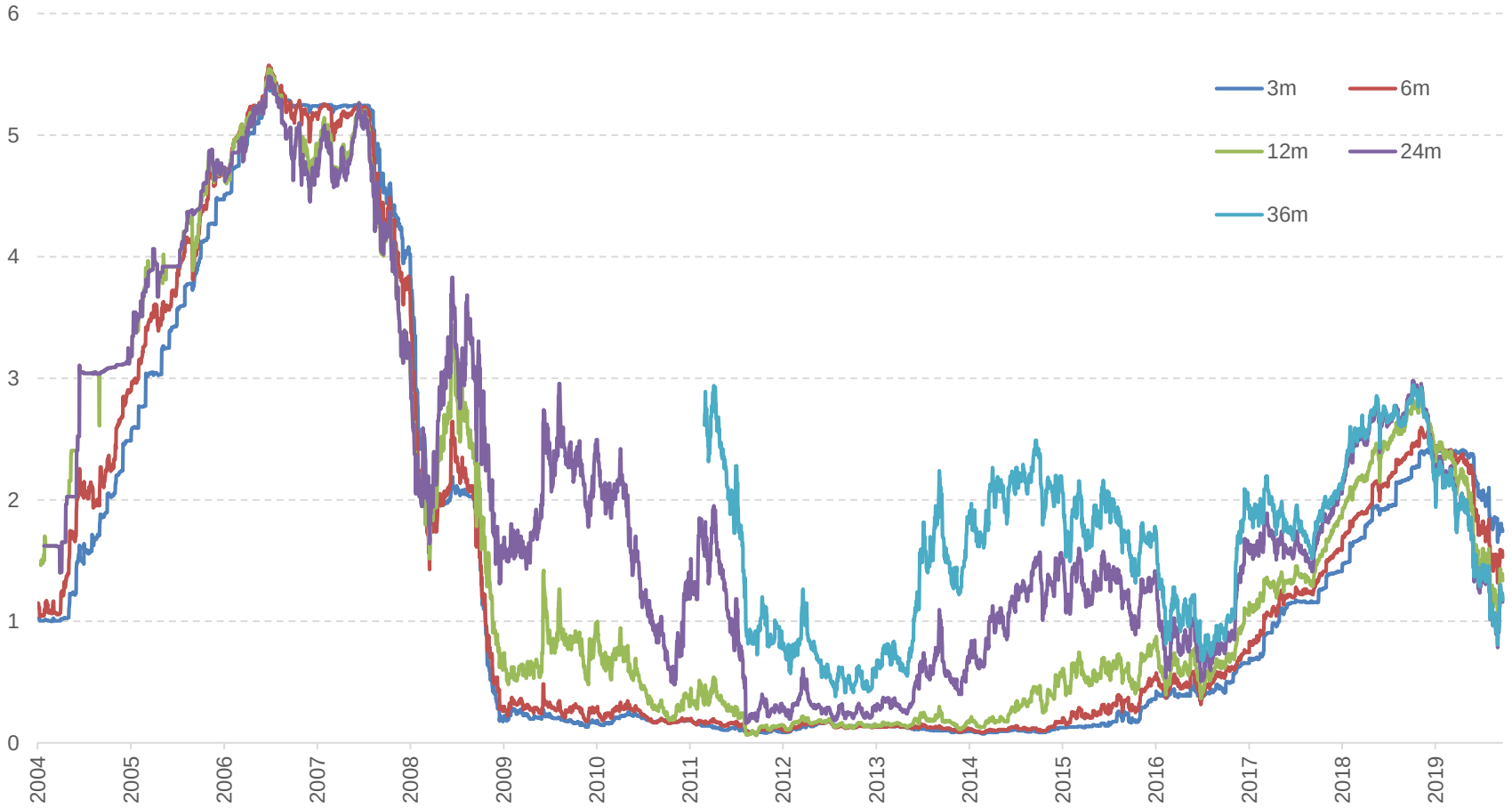
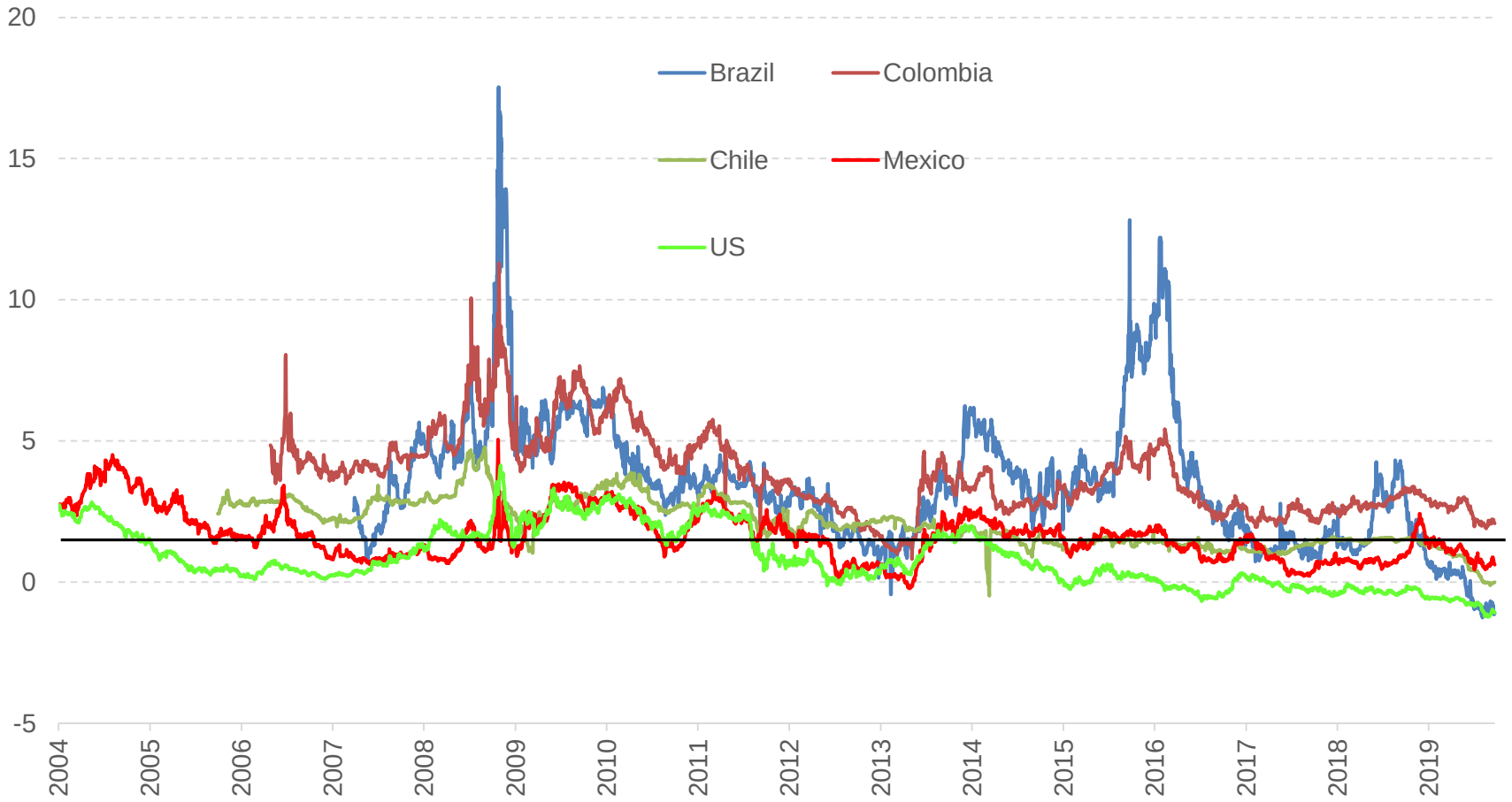
Federal Funds Rate Futures



Note: m refers to month, the future maturity**.**
Source: Bloomberg.

Regional Term Premiums



Notes: 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **Sample** begins**:** *Brazil: March 27, 2007. Colombia: April 28, 2006. Chile: September 29, 2005. US, and Mexico: January 2, 2004.* Each sample ends at September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg and Valmer.

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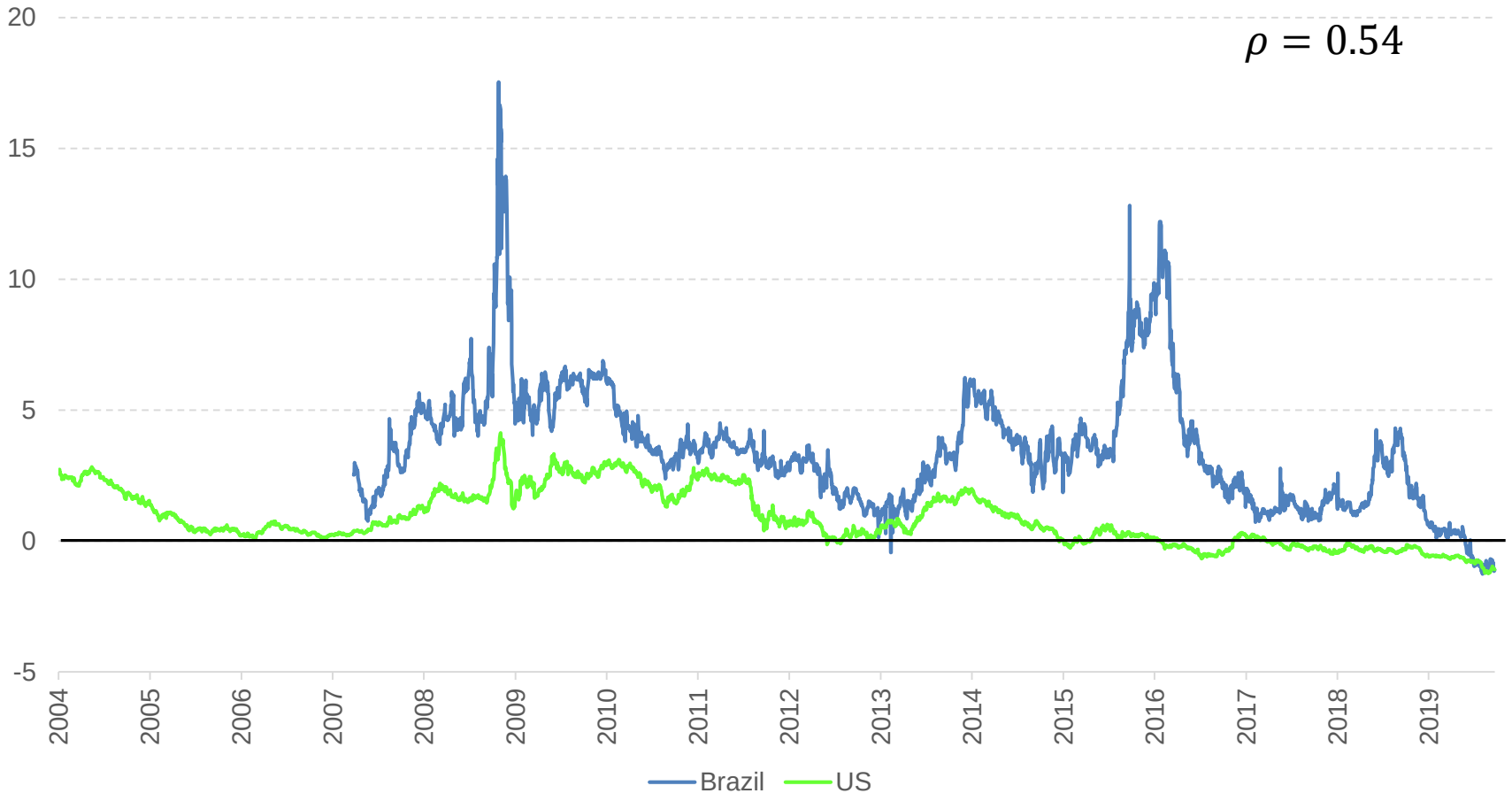
Term Premium Estimates Brazil



Notes: 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **Sample** begins at**:** *Brazil: March 27, 2007. US: January 2, 2004.* Each sample ends at September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

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Term Premium Estimates Colombia

Notes: 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **Sample** begins**:** *Colombia: April 28, 2006. US: January 2, 2004.* Each sample ends at September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

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Term Premium Estimates Chile

Notes: 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **Sample** begins**:** *Chile: September 29, 2005. US: January 2, 2004.* Each sample ends at September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

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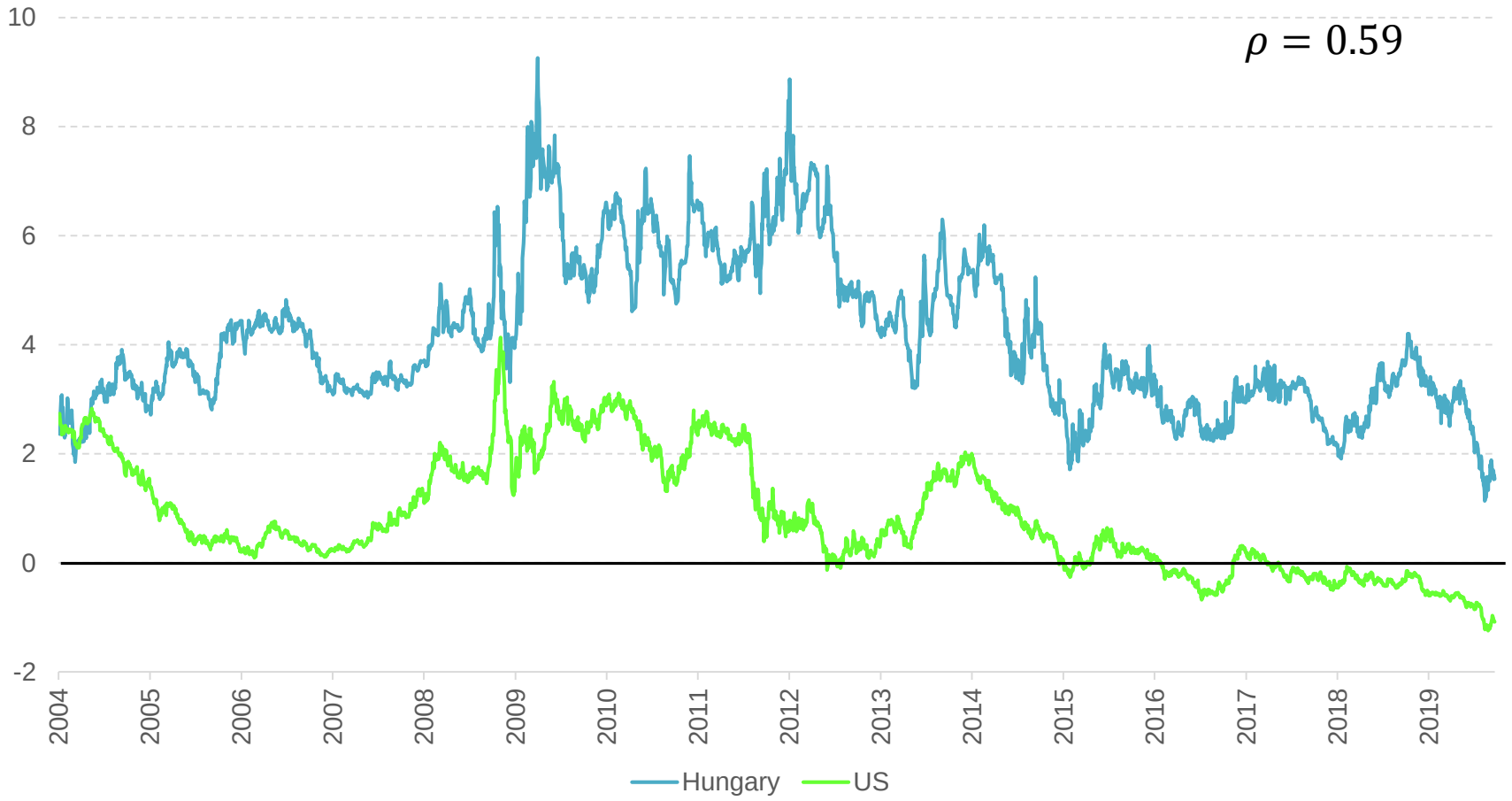
Term Premium Estimates Mexico

Notes: 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **Sample:** January 2, 2004-September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Valmer.

Term Premium Estimates Hungary



Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

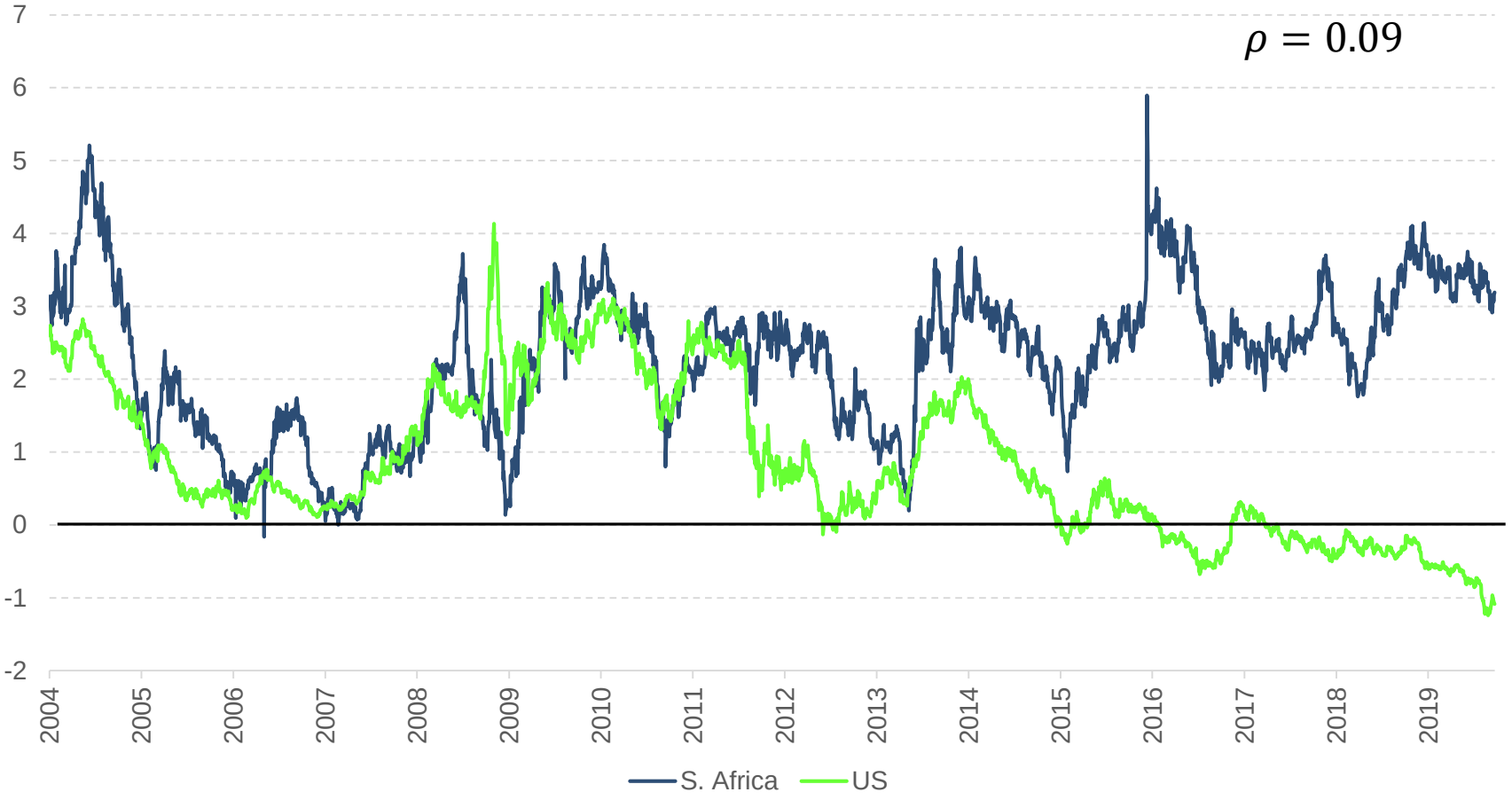
Term Premium Estimates Poland

Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

Term Premium Estimates Czech Republic

Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

Term Premium Estimates South Africa



Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

Term Premium Estimates India

Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

Term Premium Estimates S. Korea

Notes: 10-year term premiums estimated following Adrian et al. (2013) in simple rates. **Samples:** From January 2, 2004 to September 23, 2019. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg.

Term Premium Estimates EMEs + LatAm

Notes: Averages of 10-year term premiums, estimated following Adrian et al. (2013), in simple rates. **EMEs:** Brazil, Chile, Colombia, Czech Republic, Hungary, India, Mexico, Poland, South Africa, and South Korea. **LATAM:** Brazil, Colombia, Chile, and Mexico. **Source:** Adrian et al. (2013) for the U.S., and with data from Bloomberg and Valmer.

Term Premiums Co-movements

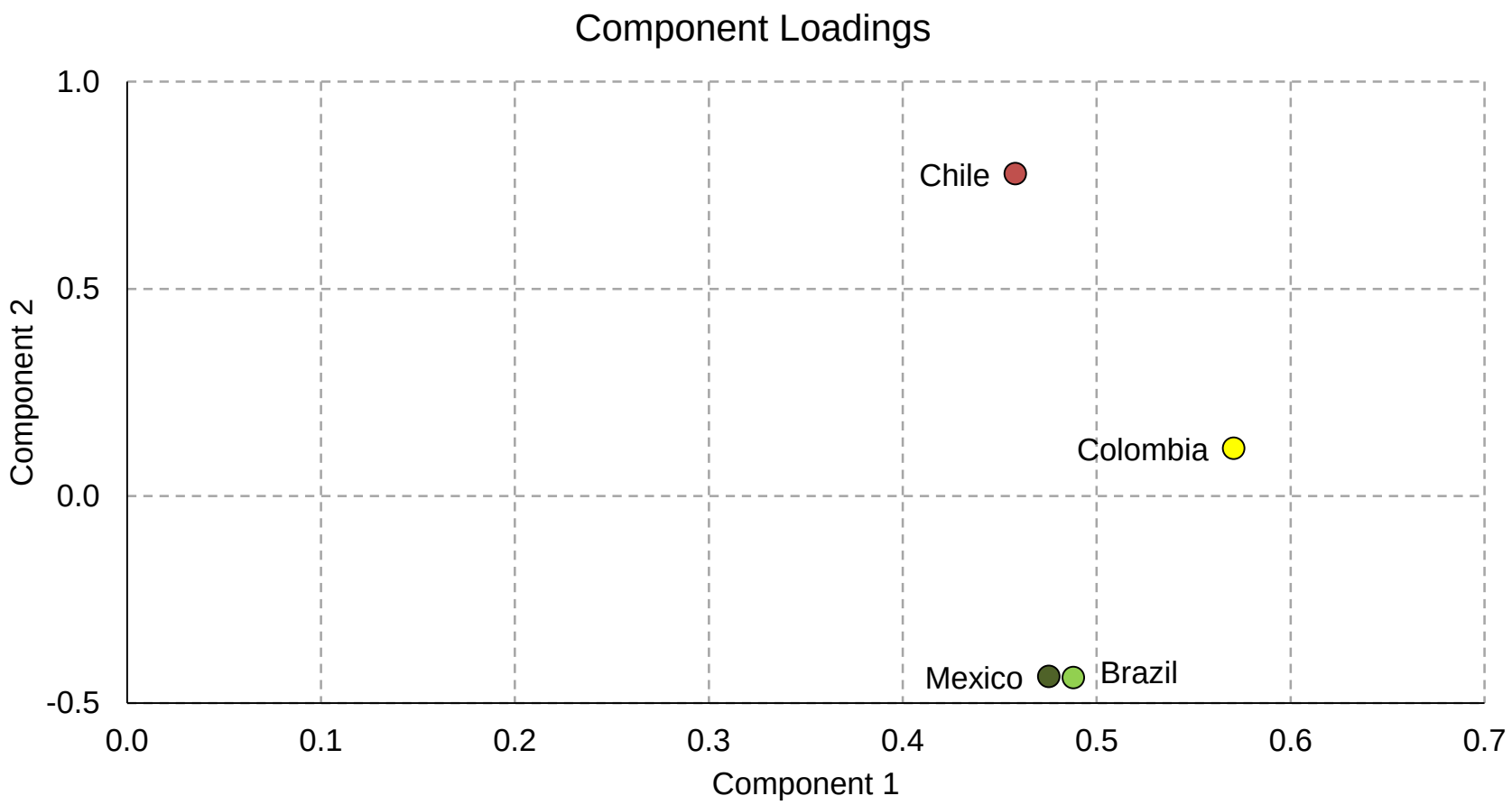
PCA (Full sample)

Component	Proportion of explained variance	Cumulative
1st Component	0.69	0.69
2nd Component	0.16	0.85
3rd Component	0.11	0.97
4th Component	0.04	1.00

Scoring Coefficients (Component Loadings)

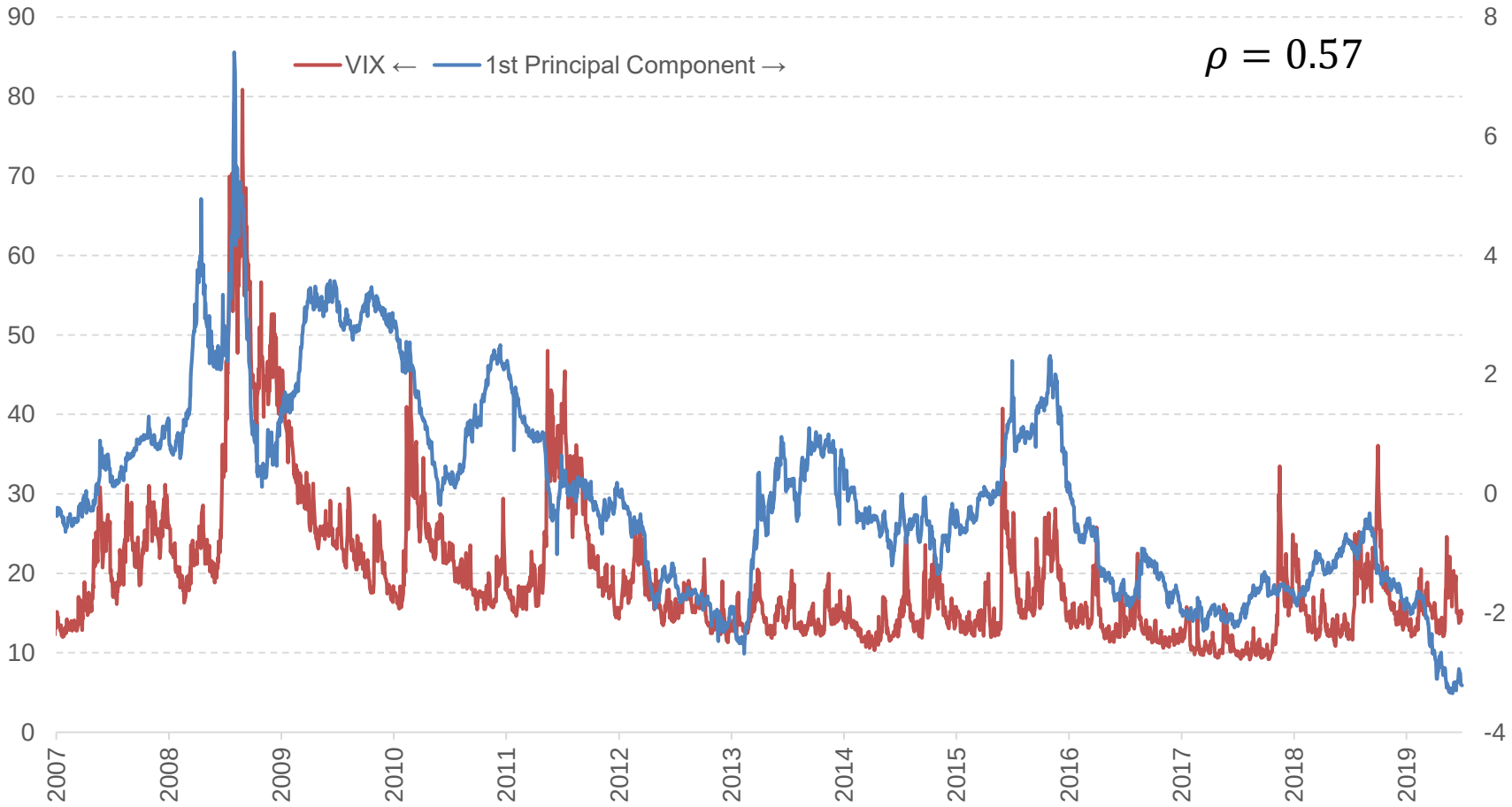
Variable	1st Component	2nd Component	3rd Component	4th Component
Brazil	0.49	-0.44	-0.66	0.36
Chile	0.46	0.78	0.05	0.43
Colombia	0.57	0.11	-0.09	-0.81
Mexico	0.48	-0.44	0.74	0.19

Component Loadings, Full sample



Sample: March 27, 2007 – September 23, 2019. **Source:** With data from Bloomberg and Valmer.

1st Principal Component and the VIX Index



Sample: March 27, 2007 – September 23, 2019. **Source:** With data from Bloomberg and Valmer.

Key Estimates – Full Sample (w/ FF Rate)

Announcements approach:

Dependent Variable: TP

	US TP	US FF	QE1	QE2	QE3	OT1	OT2	TT	FG1	FG2	FG3	FG4	FG5	EPFR	adj R^2
Brazil	0.72 ***	-0.28 ***	4.00 ***			-1.62 ***	-1.04 **	2.69 ***		-1.17 **			-1.85 ***	-0.005 ***	0.42
Chile	0.42 ***	0.08 ***	-0.27 **			-0.34 ***	0.25 **		-0.48 ***				0.35 ***		0.77
Colombia	1.04 ***	0.23 ***	1.27 ***					1.09 ***		-0.70 ***		-0.61 ***	-1.40 ***	-0.010 ***	0.66
Czech Rep.	1.13 ***	0.19 ***	-0.81 ***			0.96 ***	1.51 ***		1.89 ***	0.69 ***	1.21 ***	0.63 ***		0.010 ***	0.79
Hungary	0.82 ***	-0.06 ***	-1.13 ***	1.10 ***		2.52 ***	2.13 ***		3.06 ***	1.33 ***	2.48 ***	1.22 ***			0.45
India	0.31 ***	0.05 ***	-1.45 ***	0.35 **		0.64 ***	0.81 ***	0.59 ***	-0.41 **	0.41 **	0.56 ***	0.58 ***	0.35 **	-0.004 ***	0.19
Mexico	0.30 ***	-0.19 ***	-1.12 ***	-0.40 **			-0.95 ***	1.08 ***	-0.34 **	-0.62 ***		-0.84 ***	-0.87 ***	-0.001 ***	0.57
Poland	0.50 ***	0.07 ***	-0.24 ***			1.19 ***	0.78 ***	0.40 ***	0.34 ***	0.83 ***	0.81 ***	0.56 ***	-0.33 ***	0.001 ***	0.83
S. Africa	0.30 ***	-0.14 ***	-1.84 ***	-0.80 ***				1.07 ***		-0.60 ***		-0.78 ***	-1.35 ***	-0.002 ***	0.39
S. Korea	0.66 ***	0.24 ***	1.95 ***			0.31 **			2.58 ***			-0.51 ***	-0.44 ***	0.000 **	0.77
Average	0.62	0.02	0.04	0.06		0.52	0.50	1.15	0.95	0.02	1.27	0.03	-0.69	-0.001	0.58
LATAM Average	0.62	-0.04	0.97	-0.40		-0.98	-0.58	1.62	-0.41	-0.83	-	-0.73	-0.94	-0.006	0.61

Duration approach:

Dependent Variable: TP

	US TP	US FF	QE1	QE2	QE3	OT1	OT2	TT	FG1	FG2	FG3	FG4	FG5	EPFR	adj R^2
Brazil	0.71 ***	-0.60 ***	-0.39 **	-2.23 ***	-1.40 ***	-1.82 ***	-1.69 ***	1.75 ***		-2.16 ***		1.41 ***	-1.33 ***	-0.006 ***	0.52
Chile	0.52 ***	0.08 ***	-0.44 ***		-0.31 ***		0.39 ***	0.14 ***		-0.34 ***	-0.23 **		0.61 ***		0.80
Colombia	1.03 ***	0.08 ***		-0.92 ***	-1.50 ***	-0.71 ***	-0.38 ***			-1.33 ***		0.77 ***		-0.011 ***	0.78
Czech Rep.	1.06 ***	0.31 ***	1.30 ***	0.56 ***		1.80 ***	1.13 ***		1.11 ***	1.10 ***			0.62 ***	0.009 ***	0.87
Hungary	0.85 ***	0.21 ***	1.30 ***	1.35 ***	0.85 ***	3.56 ***	1.95 ***		2.64 ***	2.01 ***		-0.69 ***	0.46 **	-0.003 ***	0.72
India	0.49 ***	0.20 ***	-0.24 ***	0.16 **	0.76 ***	1.12 ***	0.79 ***	0.39 ***		0.72 ***		-0.57 ***		-0.002 ***	0.38
Mexico	0.19 ***	-0.23 ***	0.13 **	0.20 ***	-0.19 ***	-0.18 ***	-0.98 ***		-0.50 ***	-0.63 ***			-0.81 ***	-0.001 ***	0.59
Poland	0.58 ***	0.13 ***	0.05 **	0.35 ***	-0.22 ***	1.06 ***	0.80 ***		0.40 ***	0.93 ***		0.15 **		0.001 ***	0.91
S. Africa	0.44 ***	-0.19 ***	-0.69 ***	-0.92 ***	-0.72 ***	-0.19 **	-0.54 ***			-0.88 ***			-0.86 ***	-0.002 ***	0.43
S. Korea	0.45 ***	0.20 ***	1.36 ***		-0.44 ***	0.19 ***	-0.17 ***		1.37 ***					-0.001 ***	0.87
Average	0.63	0.02	0.26	-0.18	-0.35	0.54	0.13	0.76	1.00	-0.06	-0.23	0.21	-0.22	-0.002	0.69
LATAM Average	0.61	-0.17	-0.23	-0.98	-0.85	-0.90	-0.67	0.95	-0.50	-1.12	-0.23	1.09	-0.51	-0.006	0.67

Note: *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Key Estimates – Full Sample (w/ Shadow Rate)

Announcements approach:

Dependent Variable: TP

	US TP	US Shadow	QE1	QE2	QE3	OT1	OT2	TT	FG1	FG2	FG3	FG4	FG5	EPFR	adj R^2
Brazil	1.08 ***	0.10 ***	4.12 ***					1.98 ***						-0.005 ***	0.41
Chile	0.37 ***	0.03 ***	-0.36 ***			-0.32 ***	0.25 **		-0.57 ***			0.26 **	0.43 ***		0.77
Colombia	1.13 ***	0.22 ***	0.97 ***			0.70 ***	0.76 ***				0.52 ***		-0.41 **	-0.009 ***	0.75
Czech Rep.	0.95 ***	0.03 ***	-0.95 ***			0.82 ***	1.30 ***		1.72 ***	0.62 ***	1.09 ***	0.50 **		0.009 ***	0.78
Hungary	0.54 ***	-0.20 ***	-1.08 ***	0.62 **		1.39 ***	1.12 ***	1.26 ***	3.01 ***		1.69 ***		-0.64 **	-0.003 ***	0.53
India	0.11 ***	-0.07 ***	-1.47 ***					0.98 ***	-0.50 ***					-0.004 ***	0.23
Mexico	0.54 ***		-0.99 ***	-0.35 **		0.40 **	-0.57 ***	0.90 ***		-0.40 **		-0.55 ***	-0.62 ***	-0.001 ***	0.53
Poland	0.41 ***		-0.29 ***			1.06 ***	0.64 ***	0.47 ***	0.27 ***	0.74 ***	0.72 ***	0.45 ***	-0.42 ***	0.001 ***	0.83
S. Africa	0.54 ***	0.04 ***	-1.76 ***	-0.68 ***		0.52 **		0.76 ***					-0.94 ***	-0.002 ***	0.37
S. Korea	0.64 ***	0.15 ***	1.74 ***			0.71 ***	0.54 ***		2.40 ***		0.61 ***				0.80
Average	0.63	0.04	-0.01	-0.14		0.66	0.58	1.06	1.06	0.32	0.93	0.17	-0.43	-0.002	0.60
LATAM Average	0.78	0.12	0.94	-0.35		0.26	0.15	1.44	-0.57	-0.40	0.52	-0.15	-0.20	-0.005	0.62

Duration approach:

Dependent Variable: TP

	US TP	US Shadow	QE1	QE2	QE3	OT1	OT2	TT	FG1	FG2	FG3	FG4	FG5	EPFR	adj R^2
Brazil	1.14 ***	-0.17 ***		-2.27 ***	-1.43 ***	-1.56 ***	-1.45 ***	2.02 ***		-2.09 ***		1.33 ***	-1.34 ***	-0.006 ***	0.48
Chile	0.49 ***	0.04 ***	-0.49 ***		-0.27 ***		0.43 ***	0.11 **	-0.24 **	-0.29 ***			0.67 ***		0.79
Colombia	1.15 ***	0.15 ***		-0.69 ***	-1.10 ***		0.28 ***	-0.18 **		-0.67 ***		0.54 ***		-0.010 ***	0.80
Czech Rep.	0.92 ***	0.15 ***	1.22 ***	0.79 ***	0.16 ***	2.07 ***	1.42 ***	-0.25 ***	0.98 ***	1.47 ***			0.99 ***	0.009 ***	0.85
Hungary	0.58 ***		1.30 ***	1.41 ***	0.75 ***	3.21 ***	1.57 ***		2.41 ***	1.73 ***		-0.58 **		-0.004 ***	0.70
India	0.38 ***	0.08 ***	-0.30 ***	0.27 ***	0.87 ***	1.20 ***	0.86 ***	0.32 ***		0.86 ***		-0.60 ***		-0.003 ***	0.33
Mexico	0.47 ***	-0.04 ***			-0.14 ***		-0.76 ***	0.25 ***		-0.54 ***			-0.73 ***	-0.001 ***	0.53
Poland	0.52 ***	0.07 ***		0.45 ***	-0.12 ***	1.19 ***	0.95 ***	-0.08 **	0.37 ***	1.10 ***			0.19 **	0.001 ***	0.90
S. Africa	0.69 ***		-0.68 ***	-0.97 ***	-0.63 ***		-0.20 **			-0.65 ***			-0.64 ***	-0.002 ***	0.40
S. Korea	0.46 ***	0.16 ***	1.28 ***	0.14 ***	-0.08 **	0.68 ***	0.29 ***		1.38 ***	0.36 ***			0.32 ***	-0.001 ***	0.87
Average	0.68	0.05	0.39	-0.11	-0.20	1.13	0.34	0.31	0.98	0.13		0.17	-0.08	-0.002	0.67
LATAM Average	0.81	-0.01	-0.49	-1.48	-0.74	-1.56	-0.38	0.55	-0.24	-0.90		0.94	-0.47	-0.006	0.65

Note: *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Main Points I

1. The US FF (or Shadow Rate) is an important determinant of TPs in EMEs. The case of the Shadow Rate is indicative of the general implications of US UMPs.
2. The US UMPs tend be statistically significant in several cases. The signs of their associated coefficients are not always the expected ones.
   - We hypothesize that one would more generally need to account for local factors. For example, this is indeed the case for Mexico.
3. The US TP is important for EMEs TPs in general. Nonetheless, the magnitudes of associated coefficients have, on average, diminished through the subsamples.
   - When using the Shadow Rate, US TP have had a **higher effect (on average) on the LATAM EMEs**, compared with all the considered EMEs.
   - When we use the full sample, LATAM EMEs with a **free-floating exchange rate** seem to be less exposed to the US TP. Thus, the coefficients of Mexico and Chile are lower than those of Colombia and Brazil. This is echoed in the PC analysis.

Main Points II

4. In general, bond inflows (outflows) impliy a reduction (increase) of the respective term premium. In this respect,
   - Although Colombia and Brazil are relatively more closed than Chile and Mexico (based on their Chin-Ito index), bond flows affect Brazil and Colombia's term premiums to a greater extent.
   - One would expect that the greater the use of macroprudential policies, the lower the impact of bond flows. However, TPs from LATAM EMEs with relatively little activity in macroprudential policies such as Mexico (with rates from 2 to 4) are less affected than Colombia (with rates from 6 to 7). We note that the MPI is a broad indicator.
5. Some of the results are reflected in the principal component analysis of the TPs from the region.
   - We have a very strong first component, accounting for 69% of the variance. The first and second components account for 85% of the variance.
   - Colombia seems to be the most sensitive to shocks on the first component, while Chile seems to be the least. Brazil and Mexico respond very similarly to variations in the first and second components.

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