

Extracting Local and Global Shocks Indices in Emerging Exchange Rate Markets

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*The views expressed in this presentation are those of the authors and do not necessarily represent the official views of the Central Bank of the Republic of Turkey

Outline

- Overview
- Introduction & Motivation
- Literature Review
- Data and Methodology
- Results
- Conclusion

Overview

- What are the sources of shocks that EMEs had experienced?
- Which macroeconomic variables are affected from those shocks?
- What are the Central Banks' reaction to the shocks?

Introduction & Motivation

- EMEs increasing connection to the global financial system since the early 1990s
- Emergence of a new literature exploring the shocks that affected EMEs
- Sources of shocks?
- Identify local, regional and global factors in exchange rate movements in EMEs over time in order to develop high frequency local, regional and global factor indices for EMEs.

Literature Review-I

- Capital flows (Calvo et al (1993), Fernandez-Arias (1996), Chohan (1998), Brana and Lahet (2010) – Mixed results.
- Bond markets (Kennedy and Pallern, 2014)- Kennedy and Pallern reported that, before the global financial crisis (GFC), local factors dominated global ones whereas the increase in spreads during the GFC was caused by mainly global factors.
- Bond markets (Dailami et al. (2008)) –Dailami et al. (2008) argued that global factors, mainly US interest rates, significantly affected EME bond spreads depending on countries' debt levels (i.e. local factors).
- CDS (Hibbert and Pavlova, 2017) – They have investigated the effects of global and local factors on the CDS spreads of EMEs. They found that CDS spreads have high communalities. They claimed that global factors mostly affect Latin America spreads whereas local factors are more important for European spreads.

Literature Review-II

- «Most important indicator of vulnerability in EMEs» (Siklos, 2018)
- Exchange rates play a more central role in EMEs than in advanced economies (Ghosh et al. (2016)
- First line of defense against any type of shocks (Edwards and Yeyati, 2005)
- Studies mostly focused on the impact of shocks while the question of what causes those shocks remains unanswered (Forbes et al., 2016)

Data & Methodology-I

- 20 EMEs Log of 1M Forward and Spot Exchange Rates
- 2 January 2010 – 9 March 2018

- **Unbiasedness hypothesis**

- $s_{t+30}^i - s_t^i = \delta^i + \beta^i (f_t^i - s_t^i) + \mu_{t+30}^i \quad (1)$

Ex-post future
depreciation/appre-
ciation

Forward discount

Unexpected local, regional
and global shocks

Data & Methodology-I

$$\mu_t^i = \gamma^{1i} + \theta_1^i CGF_t^i + \vartheta_t^i \quad (2) \quad \widehat{\mu_t^i} \longrightarrow \text{Global shocks}$$

$$\vartheta_t^i = \partial^{1i} + \rho_1^i Regional_t^i + \omega_t^i \quad (3) \quad \widehat{\vartheta_t^i} \longrightarrow \text{Regional shocks}$$

Local shocks
↑

Latin America Countries: Argentina, Brazil, Chile, Colombia, Mexico and Peru;

Asian Countries: India, Indonesia, Malaysia, Phillipines South Korea and Thailand;

Central and Eastern Europe: Bulgaria, Czechia, Hungary, Poland, Russia, Romania, South Africa and Turkey.

Data & Methodology-II

- Three categories of variables (January 2010-March 2018, interpolation)
 1. Financial deepness of country (foreign holdings in local bonds, market capitalization to gdp)
 2. External financing fragility (reserve to imports, current account)
 3. Government financing needs (gov debt to gdp)
- The following models are estimated by using fixed effects and robust standard errors.

$$Z_{it} = \alpha + \beta Global_{it} + \gamma Local_{it} + \epsilon_{it} \quad (4)$$

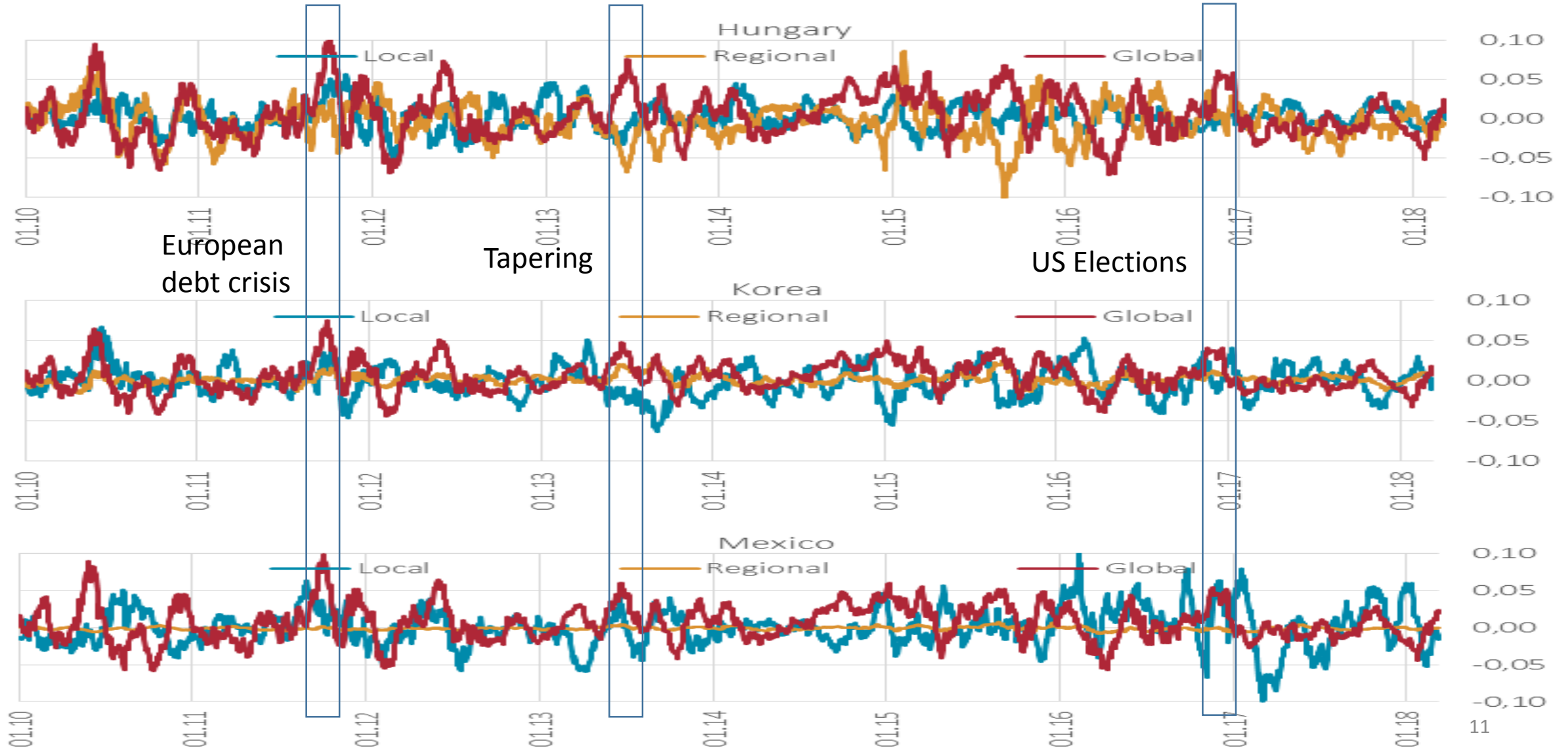
$$Z_{it} = \{\text{Foreign holdings, Res_Import, CA_GDP, Gov_GDP, Marcap_GDP}\}$$

Data & Methodology-III

- Response of Central Bank Policy Rate to the Shocks
- Real rates (3M Money Market Rate-Inflation)
- PVAR (following Love and Zichinno (2006) and Abrigo and Love (2015) GMM estimation is used)
- $X_{it} = \Gamma_0 + \Gamma_1 X_{it-1} + f_i + e_{it}$
 - $X_{it} = \{VIX_{it} \text{ Global}_{it} \text{ Policyrate}_{it} \text{ Realrate}_{it}\}$
 - $X_{it} = \{\text{Global}_{it} \text{ Local}_{it} \text{ Policyrate}_{it} \text{ Realrate}_{it}\}.$
 - $X_{it} = \{\text{Global}_{it} \text{ Regional}_{it} \text{ Policyrate}_{it} \text{ Realrate}_{it}\}$

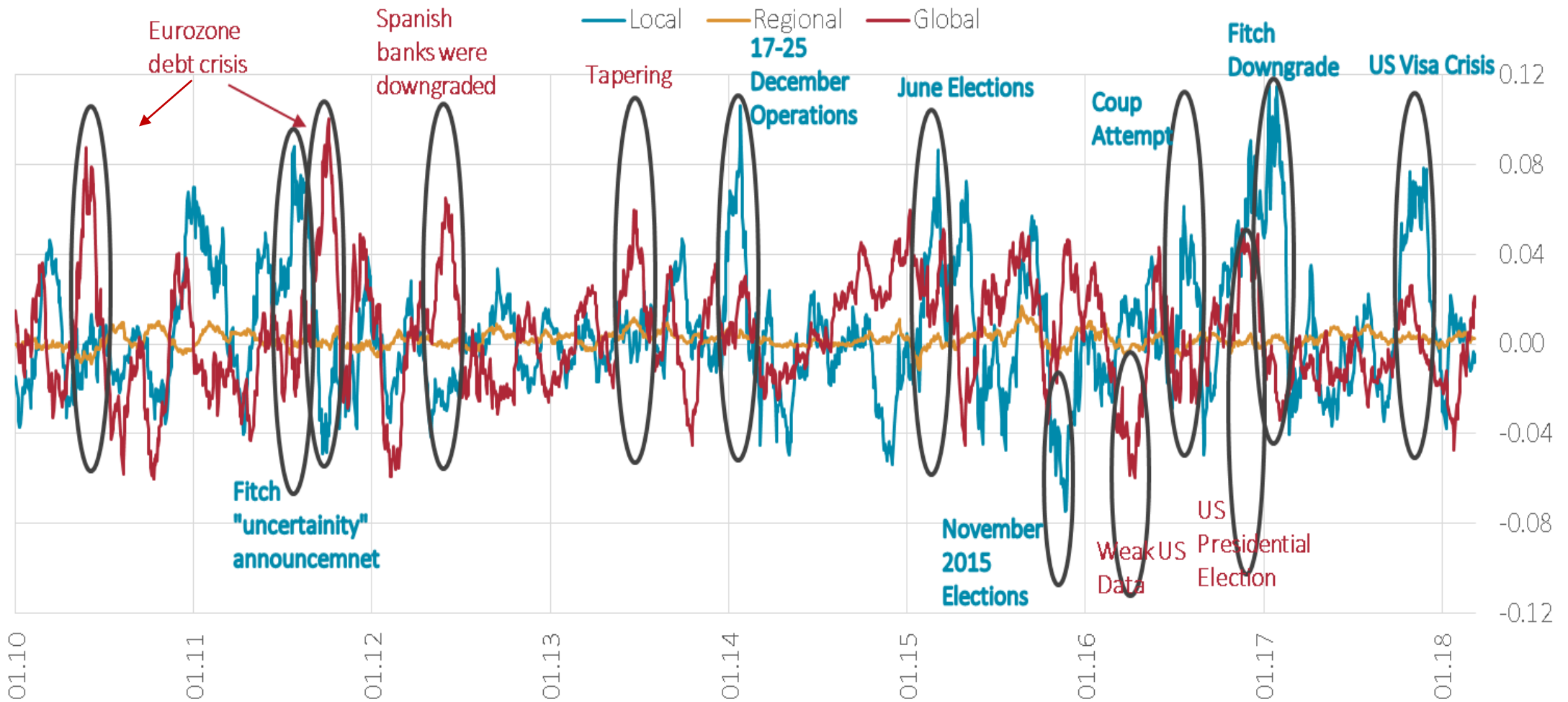
Results-I

Local, Regional and Global Shocks to Selected Countries



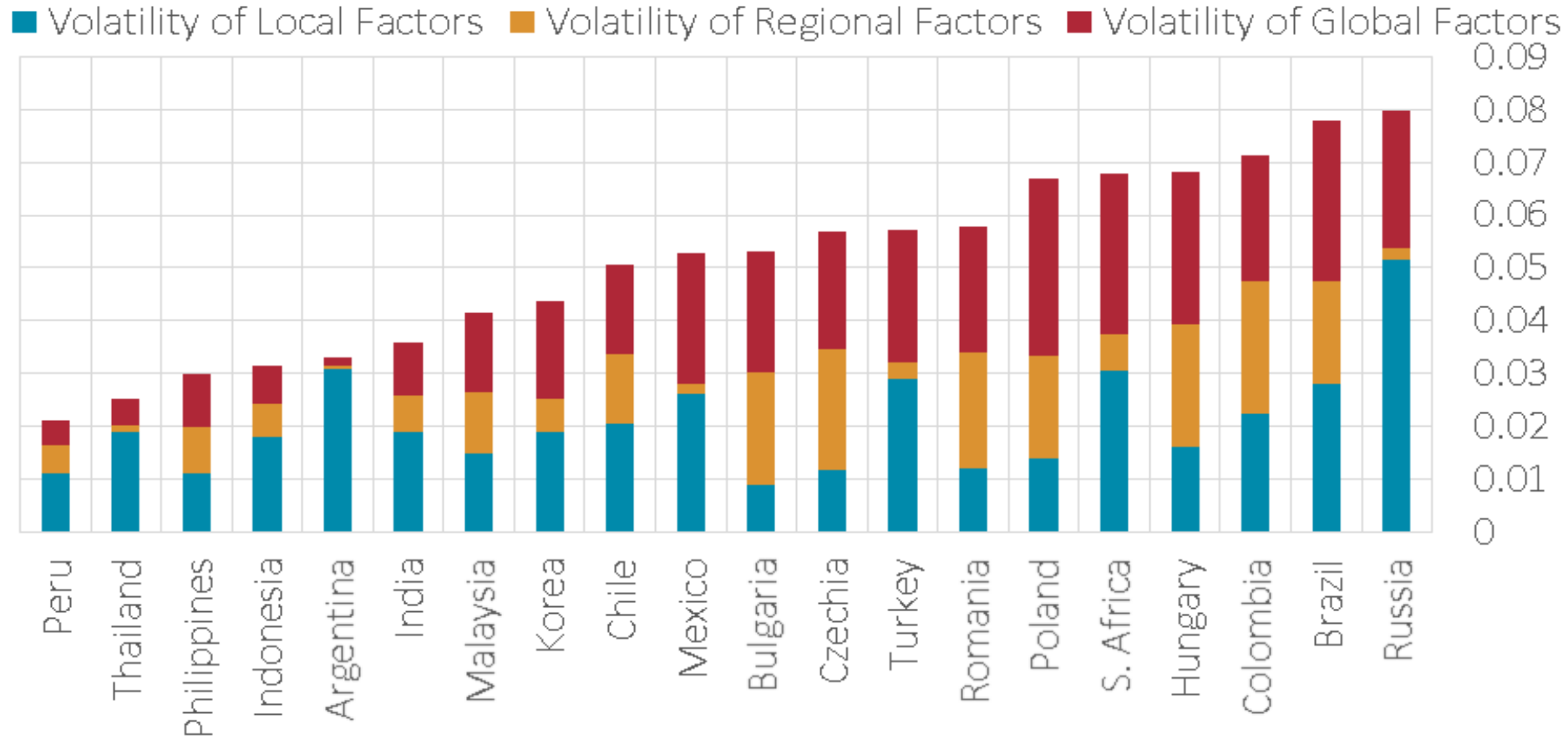
Results-I

Local, Regional and Global Shocks to Turkey



Results-I

Volatility of Local, Regional and Global Factors



Results-II

Impacts of Shocks

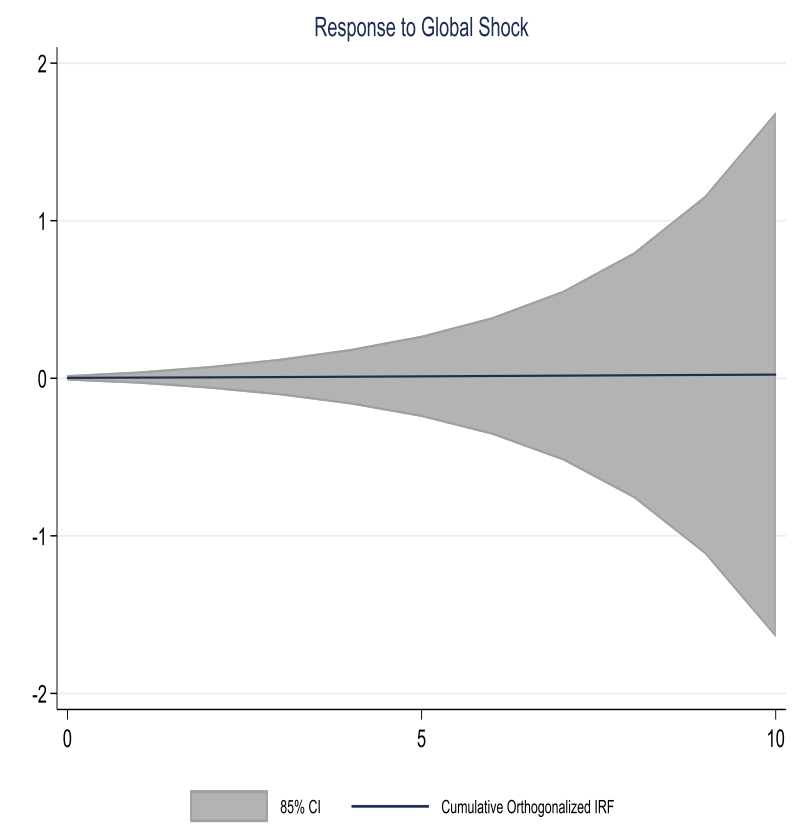
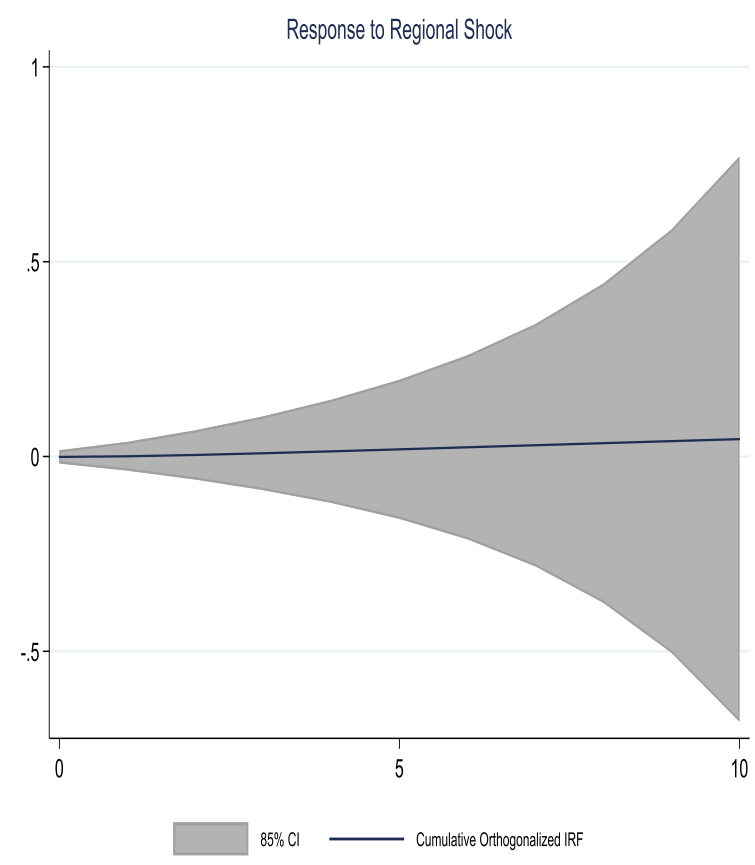
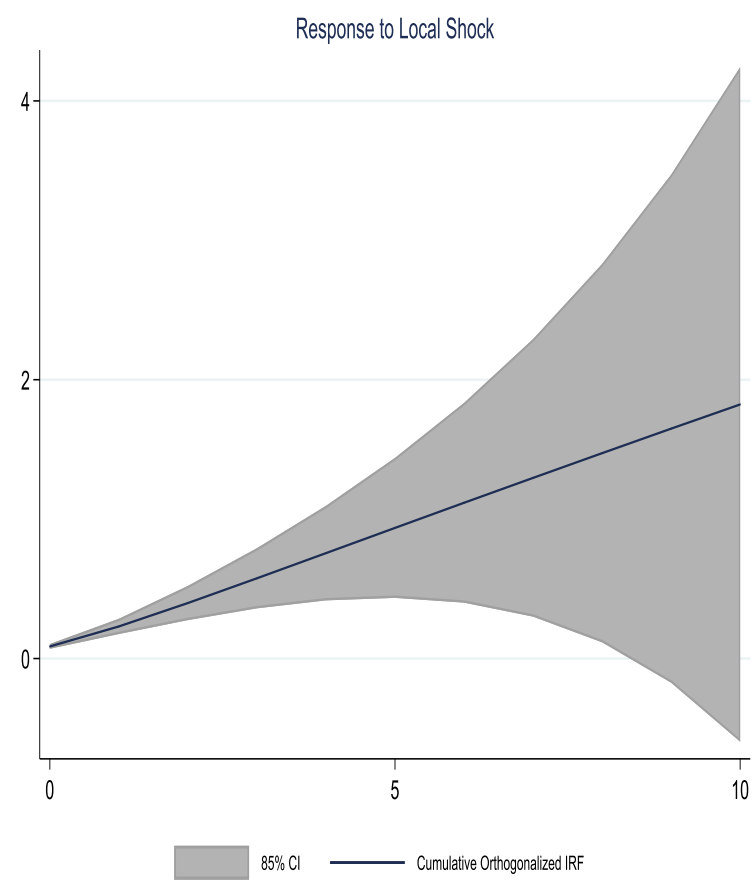
VARIABLES	(1) d.foreign_holdings_bond	(2) d.res_imp	(3) d.ca_gdp	(4) d.gov_gdp	(5) marcap_gdp
global	-5.7619*** [1.176]	-2.0137*** [0.385]	-0.8146 [2.299]	1.2842 [0.766]	-9.830*** [1.7076]
local	-4.0269*** [1.190]	-0.8009** [0.287]	0.5470 [1.039]	2.2957* [1.187]	-5.5562** [2.4465]
Constant	0.1512*** [0.004]	-0.0024** [0.001]	-0.0019 [0.004]	0.0416*** [0.003]	5.5620*** [5.1208]
Observations	1,706	1,980	1,980	1,980	1,969
Number of id	19	20	20	20	20

Robust standard errors in brackets

*** p<0.01, ** p<0.05, *p<0.1

Results-III

Response of Policy Rate



Conclusion

- Develop a global, regional and local shocks indices from the residuals between forward exchange rates and concurrent spot exchange rates
- Financial deepness, external financing fragility and government financing characteristics are affected from the shocks.
- Central Banks react local shocks more than the regional and global shocks.

Thank you for listening

Questions and Comments