Currency downside risk, liquidity, and financial stability

Helena Chuliá
(Universitat de Barcelona)

Julián Fernández
(Universidad del Valle)

Jorge M. Uribe
(Universitat de Barcelona)

25th Finance Forum

Outline

Introduction

Motivation

- Co-movements, and risk spillovers in currency markets have economic and social effects in terms of financial and macroeconomic stability.
- Currency shocks spillovers are closely linked to global imbalances, investor speculation and sovereign debt concerns (Chen, 2014), and to sudden stops, sharp real depreciations and asset price crashes (Apostolakis and Papadopoulos, 2015; Korinek and Mendoza, 2014).
- Currency trading, measured in dollar volume, represents the largest financial market on the planet.

Introduction

Motivation

- The study of return- and volatility-spillovers in currency markets imposes some sort of symmetry to the analysis, since implicitly assumes that for a given country, it is equivalent to face depreciation or appreciation pressures.
- Central banks may lean against the wind when appreciation pressures arise in the horizon but they are much more restricted when the issue in hand is depreciation.

Introduction

Objective

The **objective** is to analyze downside risk propagation across global currency markets and its relation with liquidity.

Two **contributions**:

- We address directly the issue of risk spillovers in the left tail of daily currency returns (depreciations), unlike previous studies that focus on return co-movements and volatility spillovers in currency markets.
- We explore whether turnover is related to risk spillovers in global currency markets.

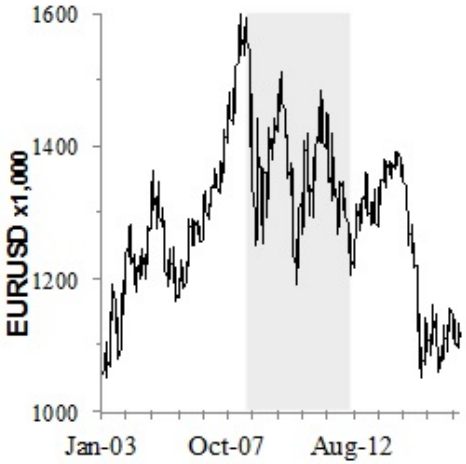
Our tail-spillover estimates can be used to construct a new financial stability index for the FX market.

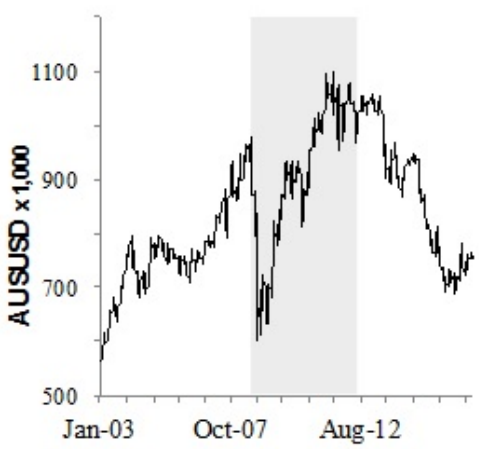
Data

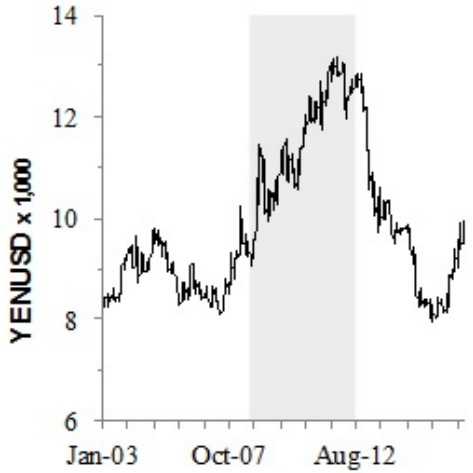
- Twenty of the most traded currencies per US dollar.
- January 1, 2003 - September 5, 2016.

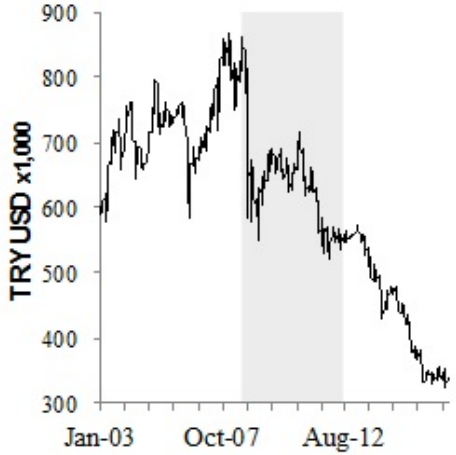
Code	Currency	Country	Exchange Regime
EUR	Euro	Europe	Free Floating
JPY	Yen	Japan	Free Floating
GBP	Pound Sterling	United Kingdom	Free Floating
AUD	Australian Dollar	Australia	Free Floating
CAD	Canadian Dollar	Canada	Free Floating
CHF	Franc	Switzerland	Managed Floating
SEK	Swedish Krona	Sweden	Free Floating
MXN	Mexican Peso	México	Free Floating
NZD	New Zealand Dollar	New Zealand	Floating
SGD	Singapore Dollar	Singapore	Managed Floating
NOK	Norwegian Krone	Norway	Free Floating
KRW	Won	South Korea	Floating
TRY	Lira	Turkey	Floating
INR	Rupee	India	Floating
BRL	Real	Brazil	Floating
ZAR	Rand	South Africa	Floating
PLN	Zloty	Poland	Free Floating
THB	Baht	Thailand	Floating
COP	Colombian Peso	Colombia	Floating
PHP	Philippine Peso	Philippines	Floating

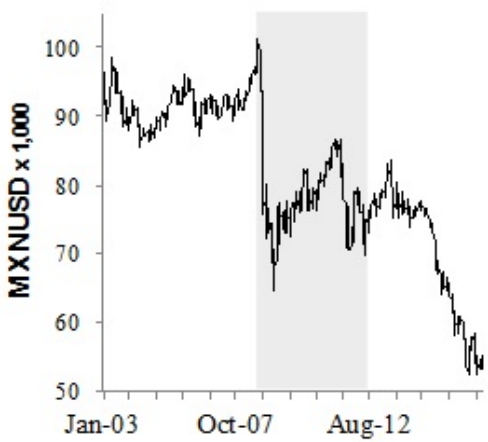
Data

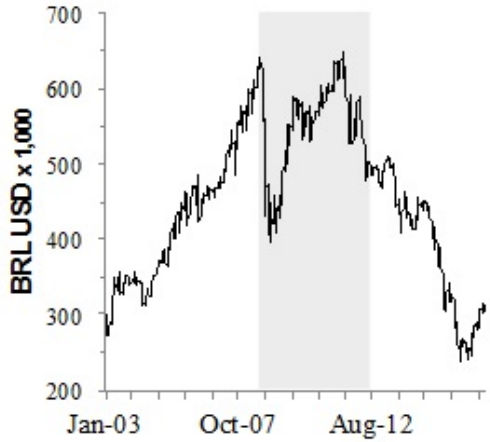

EURUSD x1,000
1600
1400
1200
1000
Jan-03
Oct-07
Aug-12


AUSUSD x 1,000
1100
900
700
500
Jan-03
Oct-07
Aug-12


YENUSD x 1,000
14
12
10
8
6
Jan-03
Oct-07
Aug-12


TRYUSD x1,000
900
800
700
600
500
400
300
Jan-03
Oct-07
Aug-12


MXNUSD x 1,000
100
90
80
70
60
50
Jan-03
Oct-07
Aug-12

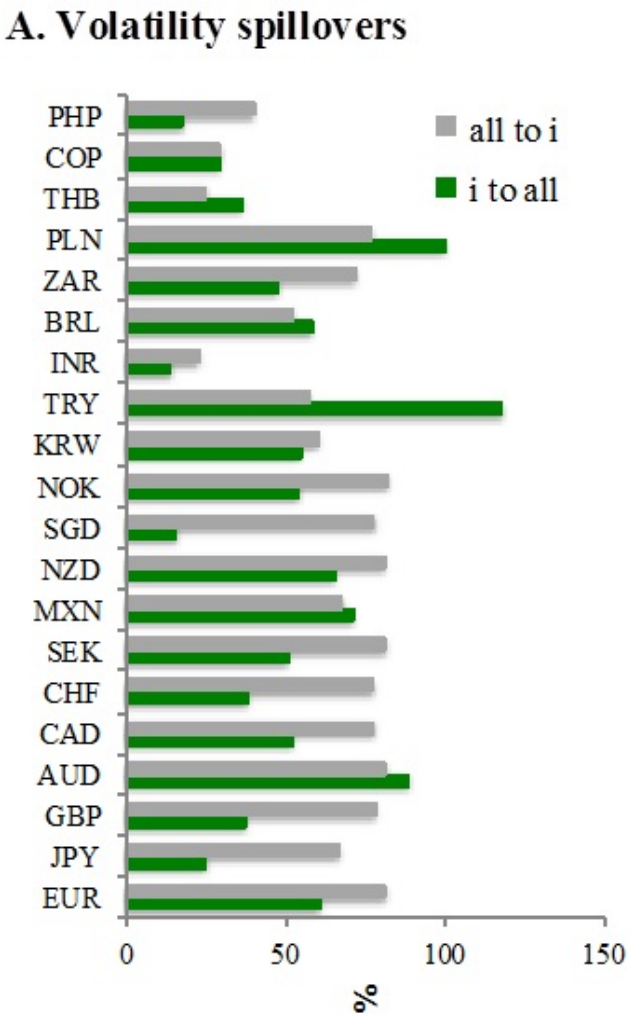

BRLUSD x 1,000
700
600
500
400
300
200
Jan-03
Oct-07
Aug-12

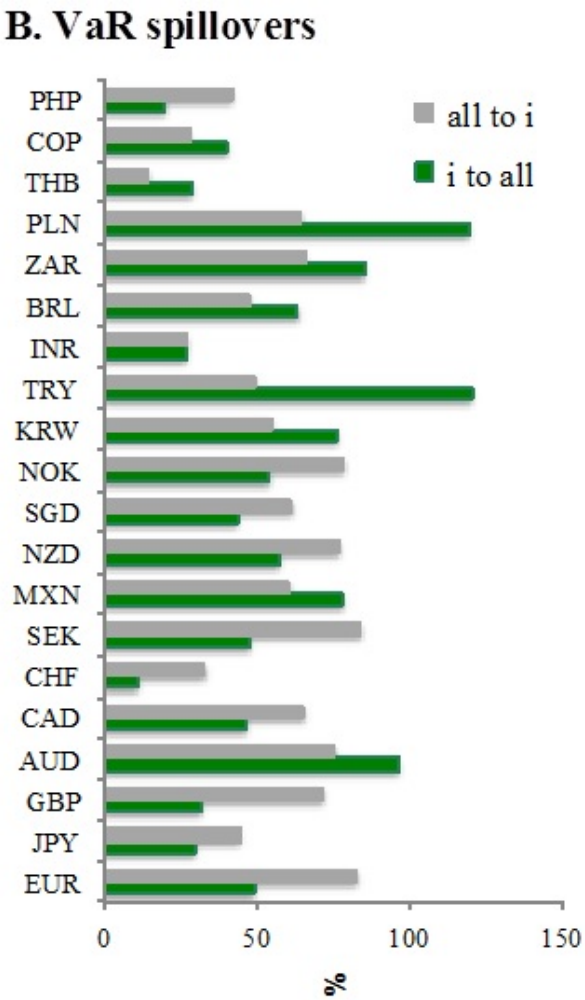
Methodology

- Volatility measure: Intraday range-based volatility framework proposed by Parkinson (1980)
- Conditional quantiles: Conditional Autoregressive Value at Risk model (CAViaR) by Engle and Manganelli (2004)
- Spillovers: Diebold and Yilmaz (2012, 2014) statistics
- Networks

Results

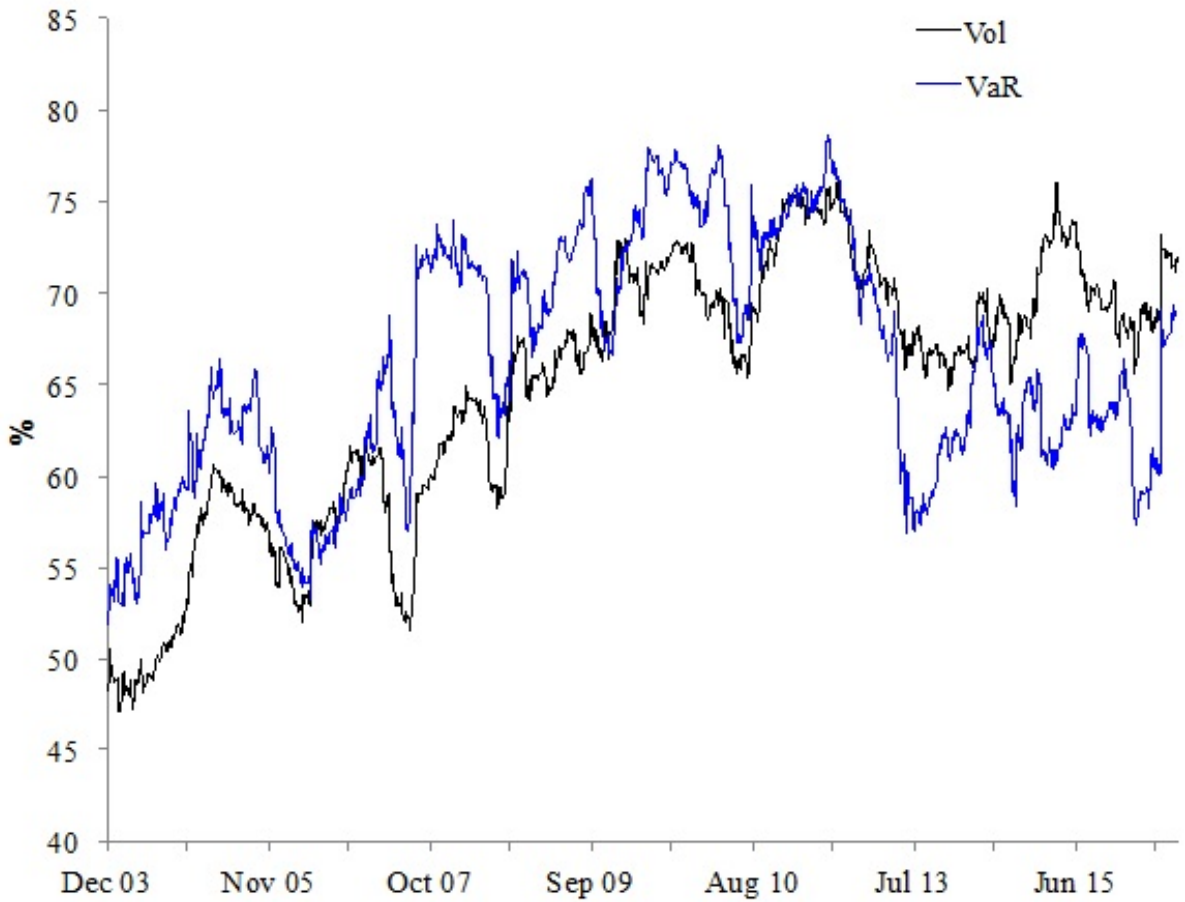
Static Variance decomposition





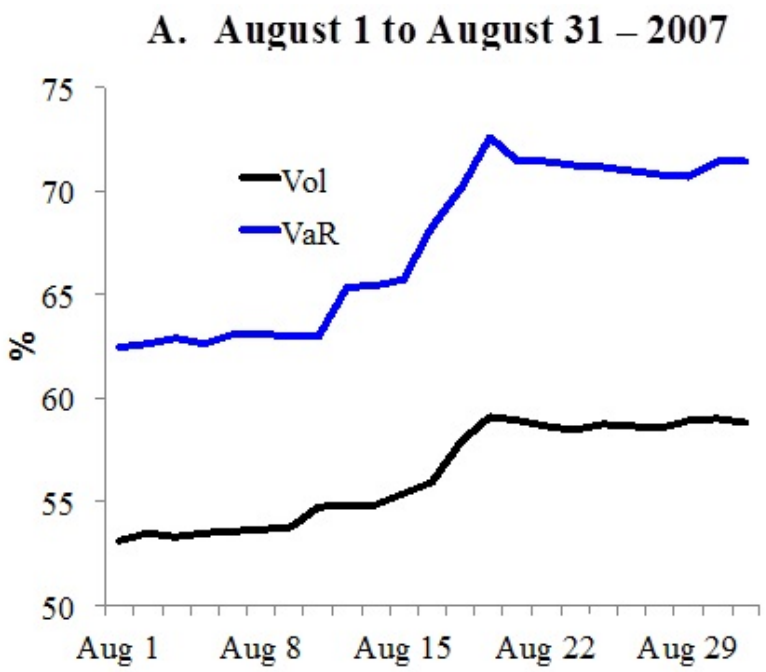
Results

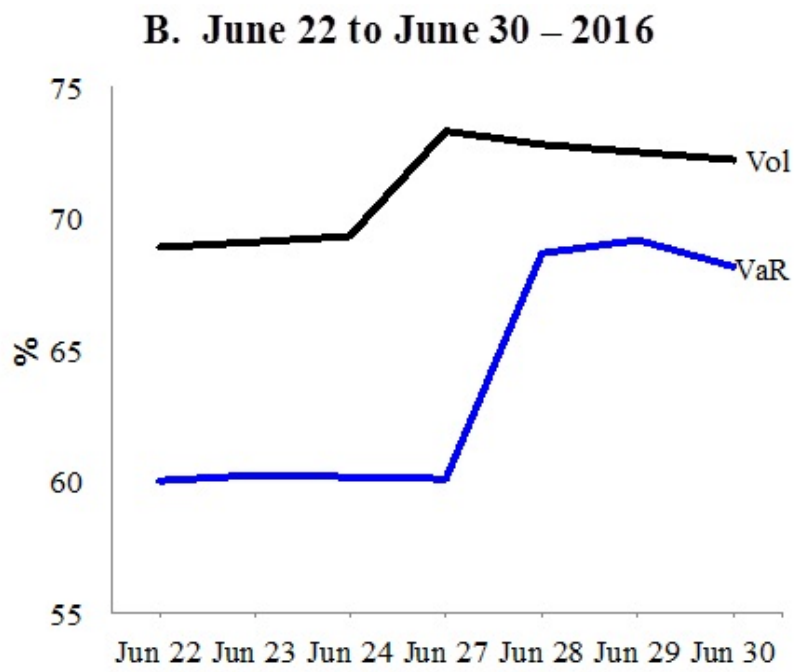
Spillover indices



Results

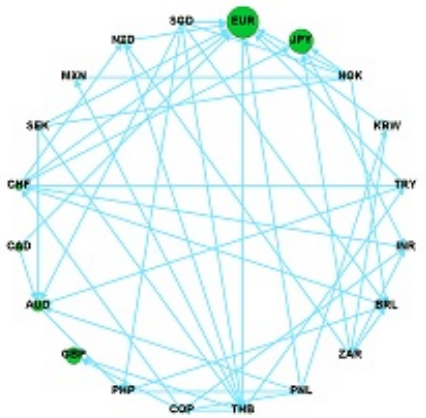
Spillover indices: two dates



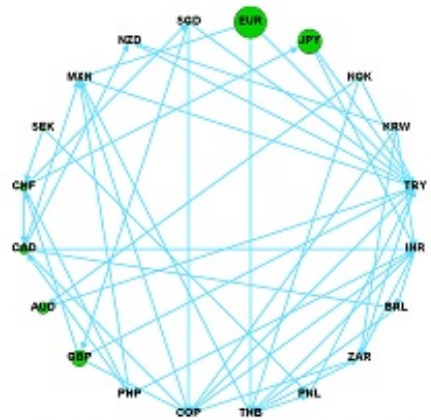


Results

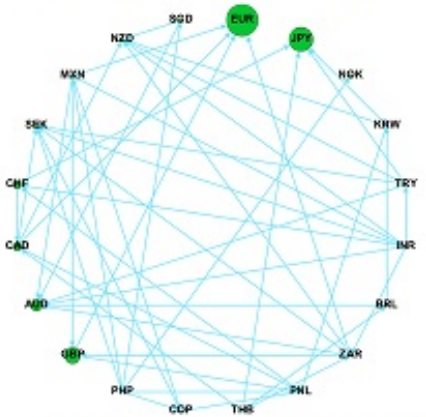
Network



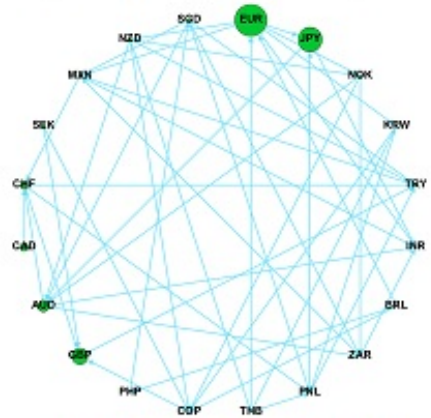
(a) 20 August 2007: net-volatility spillovers



(b) 20 August 2007: net-quantile spillovers



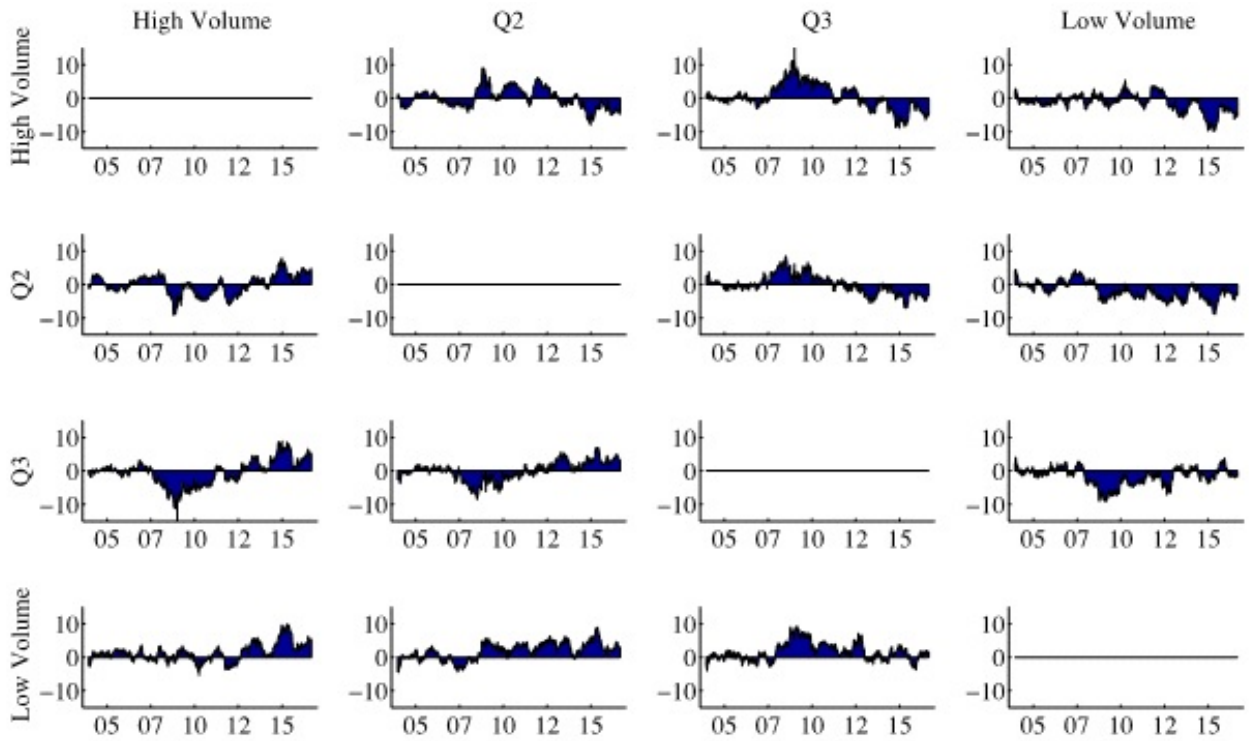
(c) 28 June 2016: net-volatility spillovers



(d) 28 June 2016: net-quantile spillovers

Results

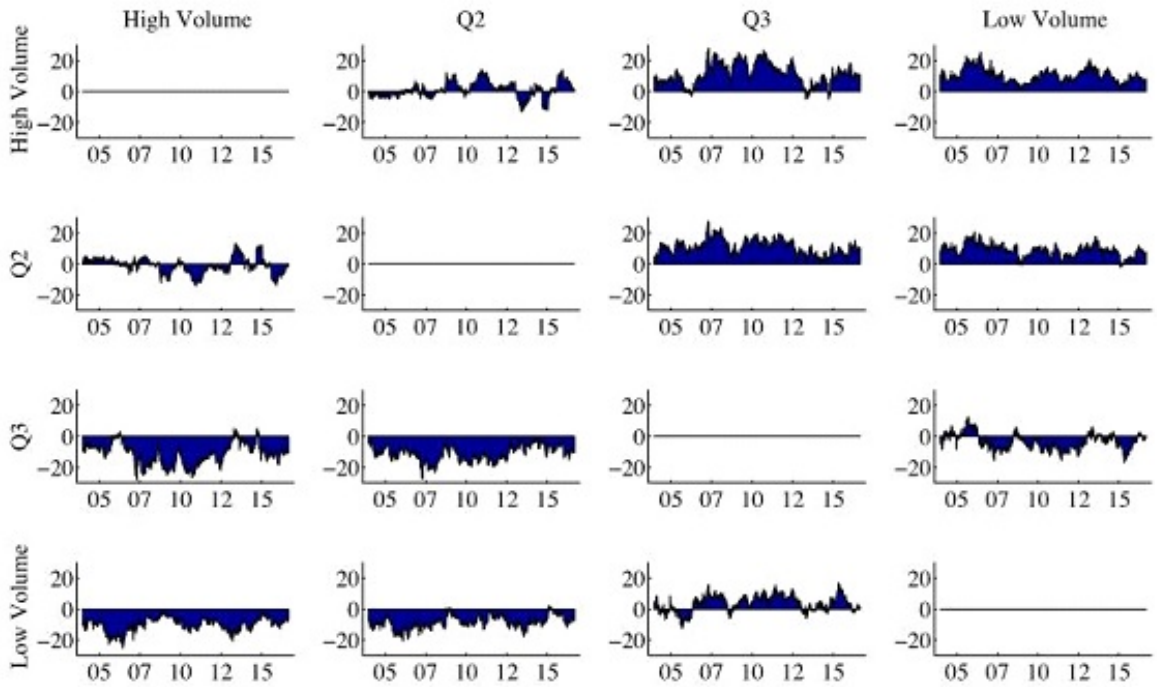
Liquidity and spillovers



Net volatility spillovers

Results

Liquidity and spillovers



Net VaR spillovers

Conclusions

- We estimate volatility spillovers and (depreciation) quantile spillovers across 20 global currencies against the US Dollar.
- We uncover significant asymmetries in the propagation of risk across global currency markets.
- The quantile-based statistic reacts more significantly to events that have a sizable impact on FX markets.

Conclusions

- Our tail-spillover estimates can be used as a new financial stability index for the FX market.
- This index is easy to build, does not require intraday data and is more informative about currency crises and pressures than traditional spillover statistics based on volatilities.
- We also document differences in the relation between liquidity and volatility and quantile spillovers, respectively.

Thank you for your attention!