Investment Funds, Monetary Policy, and the Global Financial Cycle

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JEEA Teaching Slides
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[1]Disclaimer: The views expressed in this paper are those of the authors only and do not necessarily reflect the views of the ECB or the Eurosystem.

Introduction

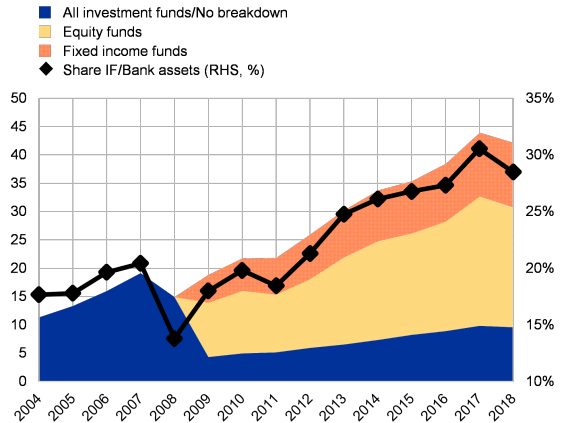
- **Global financial cycle:** Synchronisation in movements of risky asset prices, capital flows & bank leverage *(Rey, 2013)*
  - US monetary policy and global risk appetite identified as main drivers
  - Global banks as main transmitter of US financial conditions across the world until 2008 *(Miranda-Agrippino & Rey, 2020; Bruno & Shin, 2015)*

- Increasing role of **non-bank financial intermediation** during "second phase of global liquidity" *(Shin, 2013)*
  - Firms substitute bank with market-based financing
  - Global assets of investment fund sector tripled since 2008
  - Investment funds account for more than half of global portfolio flows

- Investment funds emerged as new (additional) driver of global financial cycle after global financial crisis

Motivation

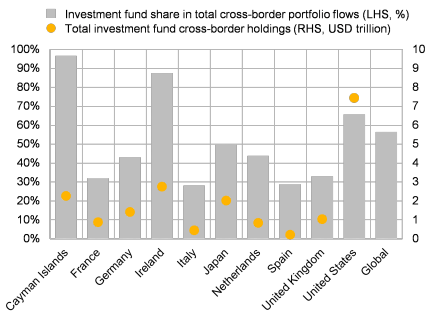
- Global assets of investment fund sector tripled to more than USD 42 trillion (28% of banking sector) between 2008 and 2019

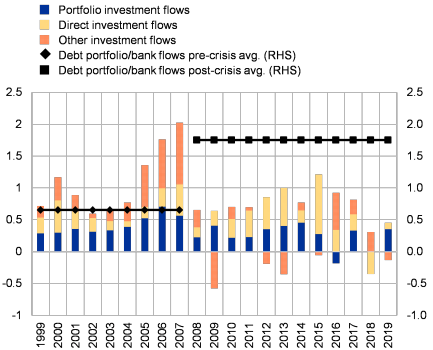


Sources: Financial Stability Board (2020)

Motivation

- Investment funds account for more than half of global debt and equity portfolio flows
- Relative importance of debt portfolio to banking sector inflows almost tripled in euro area after 2008





Sources: IMF CPIS and ECB Balance of Payments Statistics.

Introduction

- **This paper:** Analyses role of investment funds for transmission of US/global financial conditions with focus on euro area (EA)
  - **Method:** Identify effect of US monetary policy shocks in structural Bayesian Vector Auto Regressions **(BVAR)**
- **Research questions:**
  - Do investment fund flows respond systematically to changes in global liquidity?
  - Effects on risk-taking behaviour of fund investors (portfolio rebalancing)?
  - To what extent do portfolio flows and rebalancing lead to improved financial conditions for EA firms and stimulation of real activity?

Transmission of Financial Conditions via Investment Funds

Example: Loosening of US monetary policy

- Higher **global risk appetite** *(Bekaert et al., 2013; Bruno & Shin, 2015)*: Additional inflows and changes in risk profile of global investment portfolios
- Portfolio flows of investors **searching for yield** globally *(Choi & Kronlund, 2017; Becker & Ivashina, 2015)*
  - Higher (expected) **return differential** *(Ammer et al., 2019; Fratzscher et al., 2018)*: portfolio flows to international (EA) assets
- **Fund flow-performance pro-cyclicality:**
  - Positive valuation effects on asset prices can lead to momentum in fund returns and further inflows *(Feroli et al., 2014; Goldstein et al., 2017)*
- Improved financing conditions for firms, increased **securities issuance** and real economic activity

Related Literature

- VAR analysis of global financial cycle:
  - Miranda-Agrippino & Rey (2020a, 2020b); Rey (2013); Bruno & Shin (2015a, 2015b); Gerko & Rey (2017)
- Effects of monetary policy & global factors on (investment fund) portfolio flows:
  - Habib & Venditti (2019); Scheubel et al. (2019); Converse et al. (2020); Kalemli-Özcan (2019); Fratzscher et al. (2016, 2018); Bubeck et al. (2018); Bertaud et al. (2021)
- Monetary policy transmission through investment funds/NBFIs:
  - IMF GFSR (2016); Hau & Lai (2016); Feroli et al. (2014); Niepmann & Schmidt-Eisenlohr (2018); Holm-Hadulla & Thürwächter (2020); Lo Duca et al. (2016)

Analysing the 2nd phase of global liquidity

- Baseline BVAR model with 5 variables
  - Global **investment fund flows** to bonds/equities
  - USD/EUR **exchange rate**
  - **VIX**: measure of global risk aversion
  - **S&P 500** stock market index
  - **US monetary policy** measure: 10-year US treasury rate or shadow FFR rate *(Wu & Xia, 2016)*
  - (Further augmented using marginal approach)
- Estimation on **monthly data** from Apr 2007 - Mar 2019 using BEAR-toolbox *(Dieppe et al., 2016)* estimation

Investment funds data: EPFR global

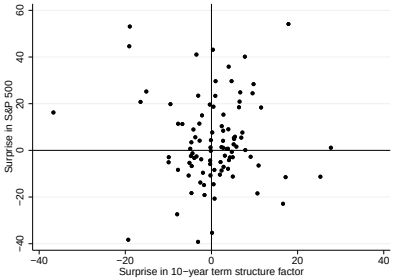
- Monthly data by **fund type** (e.g., bonds, equities, MMFs) using the following regional focus–domicile country combinations:
  - Global-to-Global
  - Global-to-EA
  - EA-to-EA
- Information on total net assets, **nominal flows**, returns (incl. price valuation), FX valuation changes
- Fund-type specific breakdowns allow for construction of **portfolio risk indicators**:
  - Bond funds: corporate/sovereign; high-yield/investment grade
  - Equity funds: market cap size
- Good and increasing coverage of investment fund universe: from 62% (2009) to 74% (2018)

▸ Cumulative fund flows

Monetary policy shock identification

Hiqh-frequency data & sign restrictions *(Jarociński & Karadi, 2020)*

- Identify monetary policy surprises in daily changes of FFR, ED Futures & Treasury rates from 1 month to 10 years on FOMC dates
- Disentangle "target" and **"term structure" factor** as in Gürkaynak, Sack, Swanson (2005)
  - Little shock variation in short-end of yield curve in post-crisis sample (ZLB!)

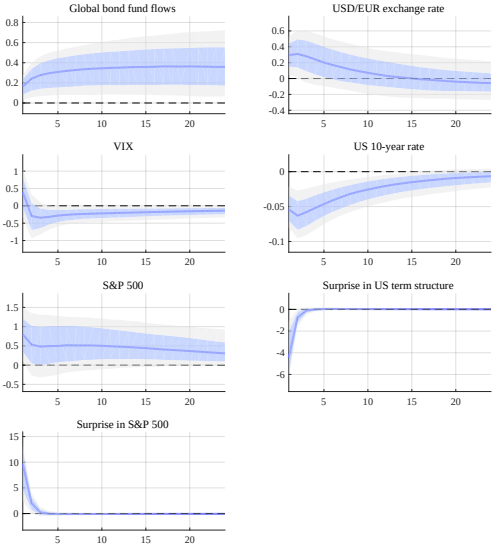


Notes: Horizontal axis in basis points, vertical axis in index points. Each dot represents one FOMC announcement between April 2007 and March 2019.

- Separate monetary policy from information shocks using S&P 500 changes on FOMC dates
  - Focus here on negative co-movement shocks
  - Implementation in BVAR using sign restrictions

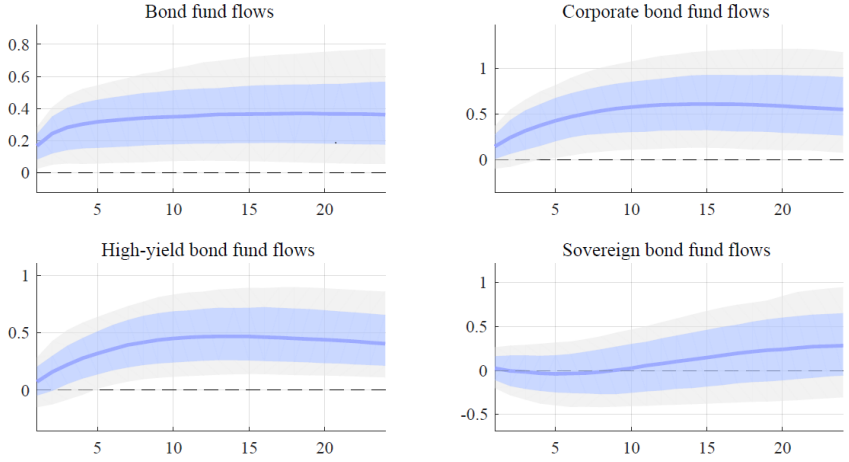
▸ Shock comparison ▸ Sign restrictions

Results: Baseline model with global bond fund flows



Notes: Impulse responses to an expansionary US monetary policy shock inducing a 5 bps decrease of the ten-year US treasury rate (blue lines) with 68% (blue-shaded areas) and 90% (grey-shaded areas) credibility intervals obtained from a structural BVAR with high-frequency sign restriction identification.

Global investment fund flows: Bonds



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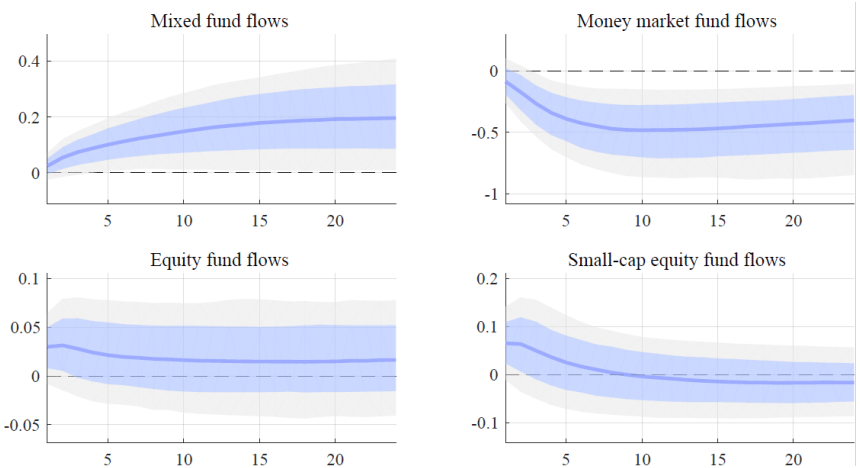
Global investment fund flows: Mixed, MMFs, Equities



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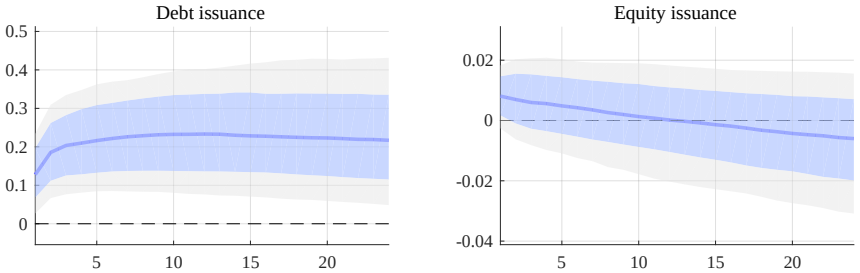
▸ Global-to-EA flows ▸ EA-to-EA flows

Euro area securities issuance



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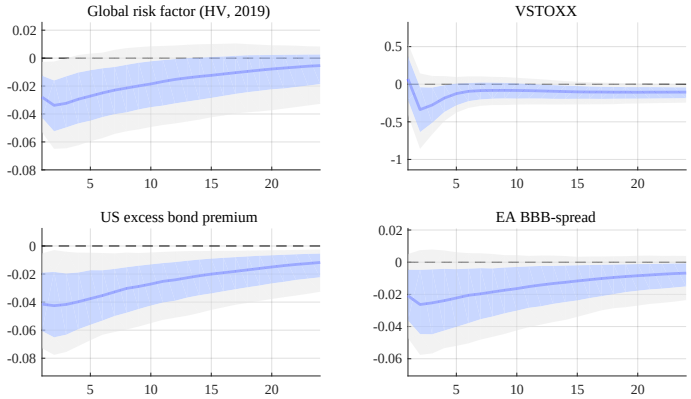
- Foreign and domestic investment funds main holder sector of euro area non-financial corporations debt securities (50%)

▸ NFC debt investor base

Global financial cycle & friction measures



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- Global risk factor by Habib & Venditti (2019); US excess bond premium by Gilchrist & Zakrajsek (2012) ▸ additional results ▸ sensitivity

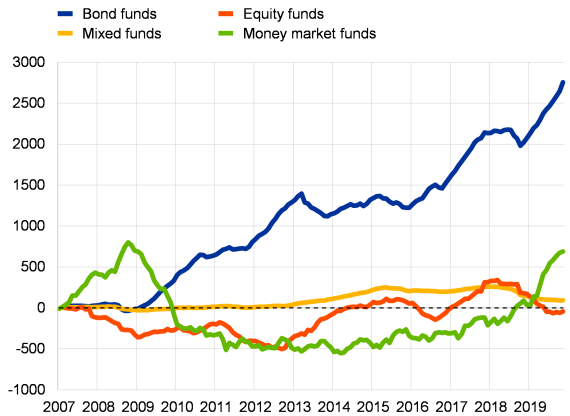
Conclusion

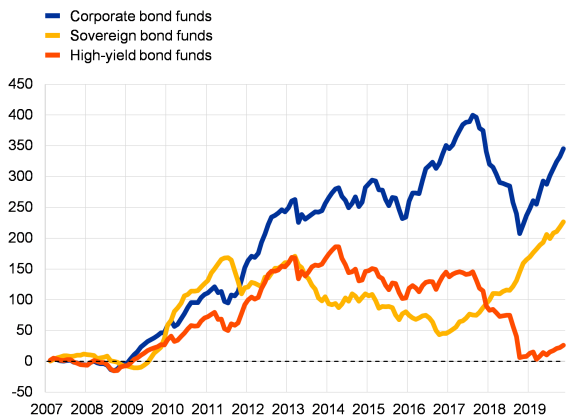
- **Significant spill-overs** of US monetary policy to global and EA financial markets via investment fund sector
  - Global investment funds adjust purchases of bonds and equities, particularly in **riskier market segments** (e.g., HY corporate)
  - EA non-financial corporations securities issuance affected

- **Policy implications** for monetary & financial stability
  - Outflows from (illiquid) risky asset markets $\Rightarrow$ risk of fire sale spirals $\Rightarrow$ supports call for introduction & international coordination of **macroprudential instruments** for investment funds
  - Foreign financial spill-overs need to be taken into account when assessing EA **monetary policy** stance

Background slides

Cumulative global investment fund flows





Notes: Cumulative nominal monthly global flows into different investment fund classes relative to April 2007. Axis unit: USD billion.

▸ back: data

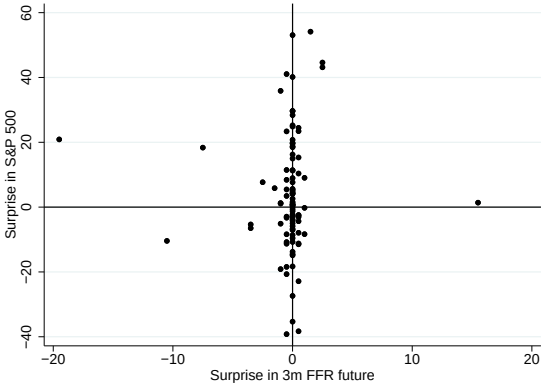
Estimation

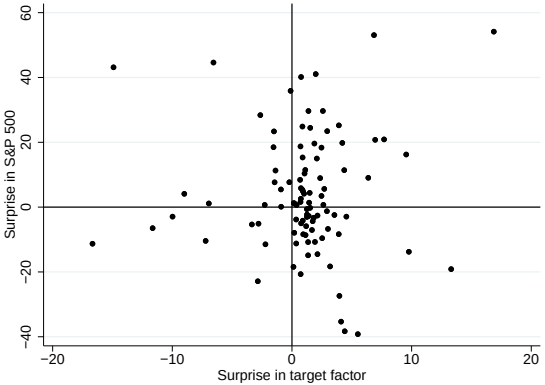
- Estimation on **monthly data** from Apr 2007 - Mar 2019 using BEAR-toolbox *(Dieppe et al., 2016)*
- BVAR estimated with 4 lags using Independent Normal-Wishart prior
- Hyperparameter choices:
  - Overall tightness: $\lambda_1 = 0.1$
  - Cross-variable weighting: $\lambda_2 = 0.5$
  - Lag decay: $\lambda_3 = 2$
  - Exogenous variable tightness: $\lambda_4 = 100$
- Robustness checks with other standard priors (e.g., *Litterman (1986)* "Minnesota" and conventional Normal-Wishart) and more lags

back: analysis

Shock comparison

3-month FFR future & target factor





Notes: Horizontal axis in basis points, vertical axis in index points. Each dot represents one FOMC announcement between April 2007 and March 2019.

▸ back: identification

Shock comparison

	Mean	Std. Dev.	Nr. of obs. with negative co-movement	Nr. of obs. with positive co-movement
Term structure factor	0.55	8.81	41	56
Target factor	0.97	4.68	50	47
3-month FFR future	-0.30	2.96	24	22

Notes: The table shows summary statistics on US monetary policy shock measures at the 97 FOMC announcments between April 2007 and March 2019. An increase of the term structure (target) factor by one unit reflects a 100bps increase of the 10-year US Treasury (current month federal funds) rate. Mean and standard deviations (std. dev.) are given in bps. The third and forth column count the observations with negative and positive correlation with the change in the S&P 500 stock market index. The change of the 3-month federal funds rate (FFR) is zero for 51 observations.

▸ back: identification

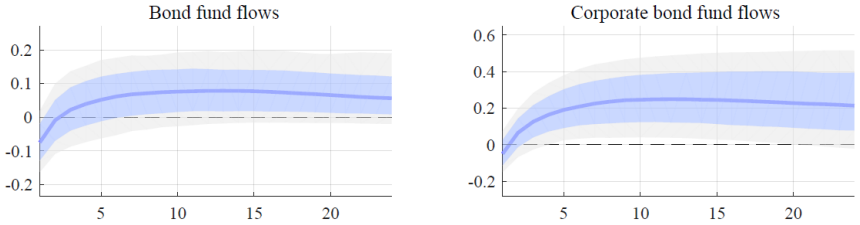
Identifying Sign Restrictions

	Shock type		
	Monetary policy	CB information	other
Variables	(negative co-movement)	(positive co-movement)	
High-frequency:			
Interest rate measure	+	+	0
Stock index	-	+	0
Low-frequency:			
Investment fund flows etc.	•	•	•

Notes: Table shows restrictions on the contemporaneous responses of variables to shocks to implement the identification method by Jarocinski & Karadi (2020). +, -, and 0 denote sign and zero restrictions, while • denotes unrestricted responses.

▸ back: identification

Global-to-EA investment fund flows: Bonds



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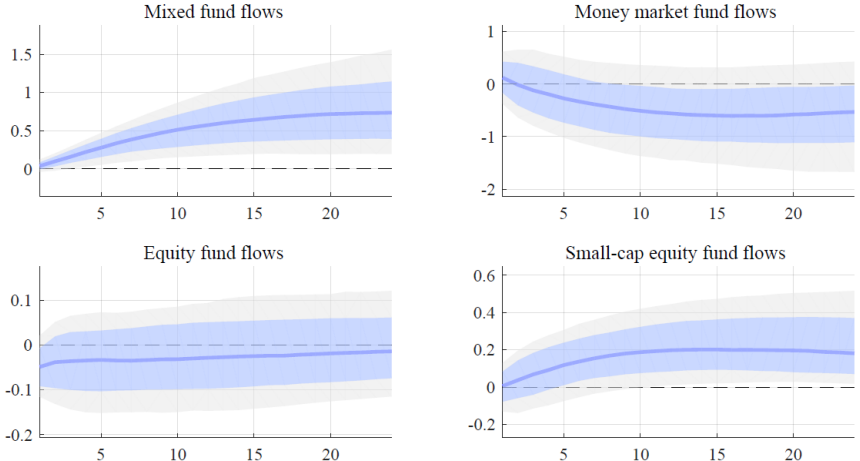
Global-to-EA investment fund flows: Mixed, MMFs, Equities



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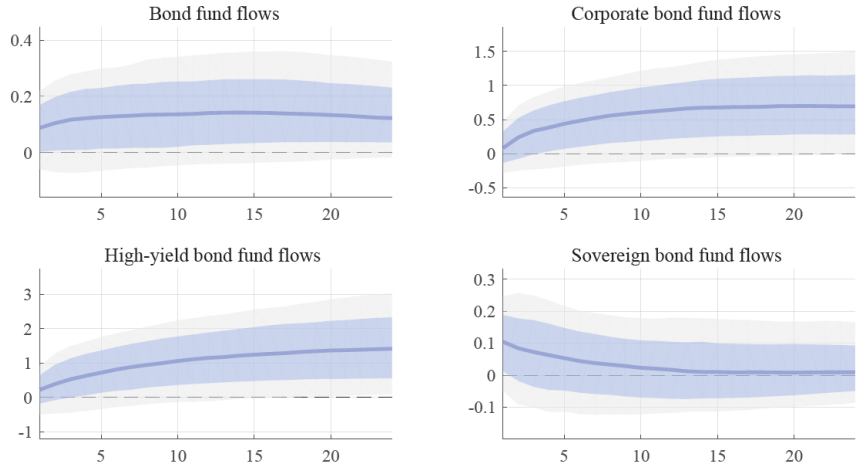
back: results

EA-to-EA investment fund flows: Bonds



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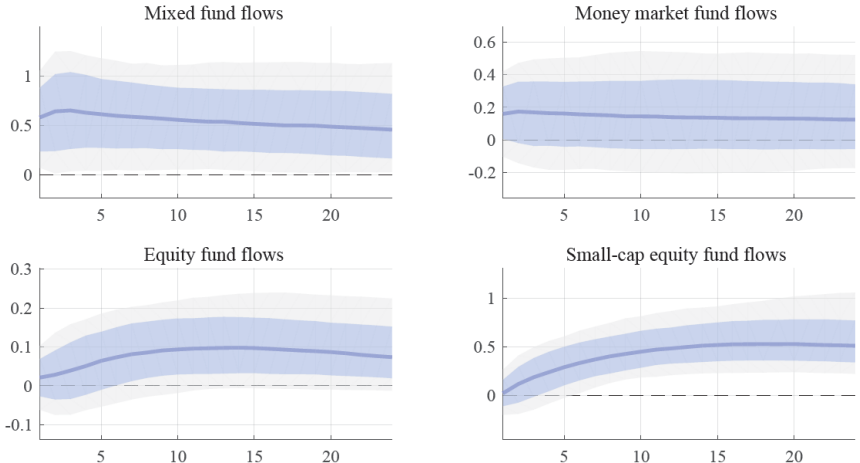
EA-to-EA investment fund flows: Mixed, MMFs, Equities



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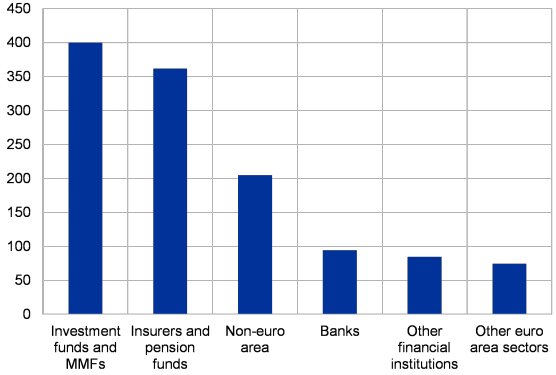
▸ back: results

Euro area NFC investor base

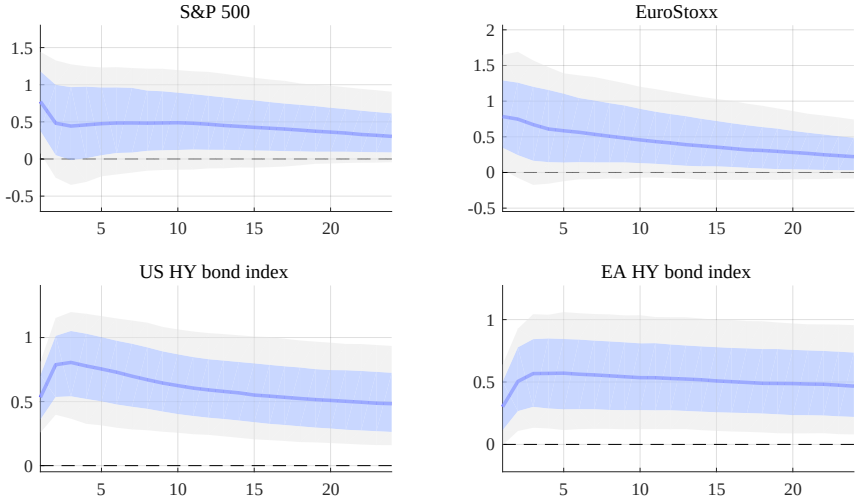


Notes: Axis unit: EUR billion. Data shown for end of 2019.

Data source: ECB Securities Holding Statistics

▸ back: securities issuance

Equity & bond market indices



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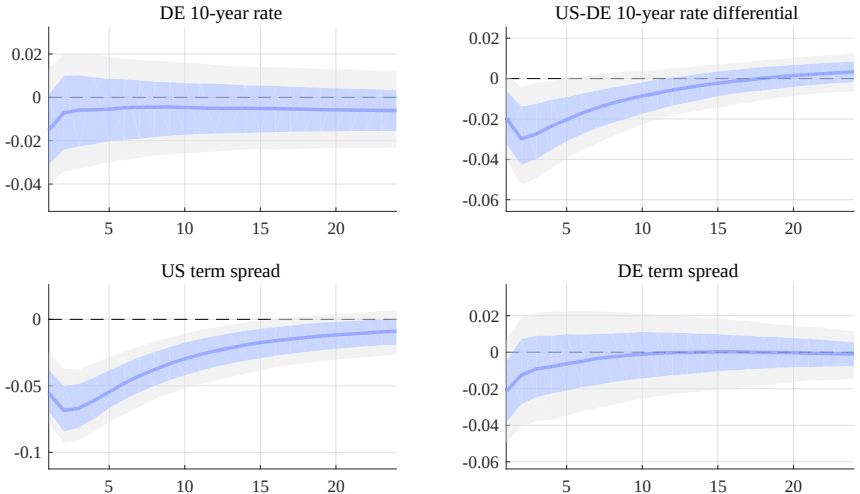
Transmission channel: Interest rate pass-through



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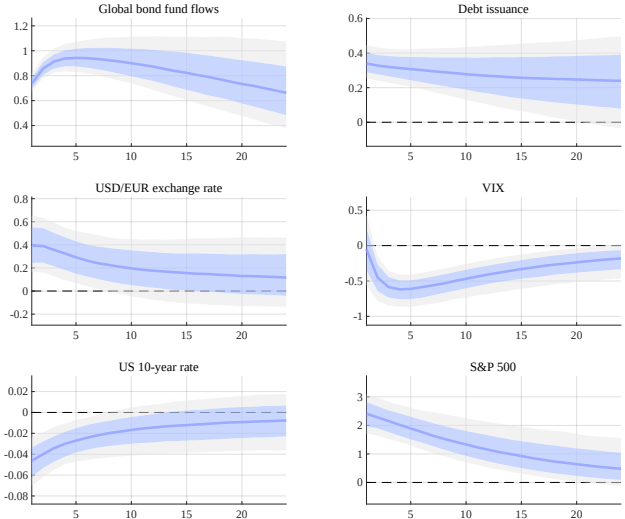
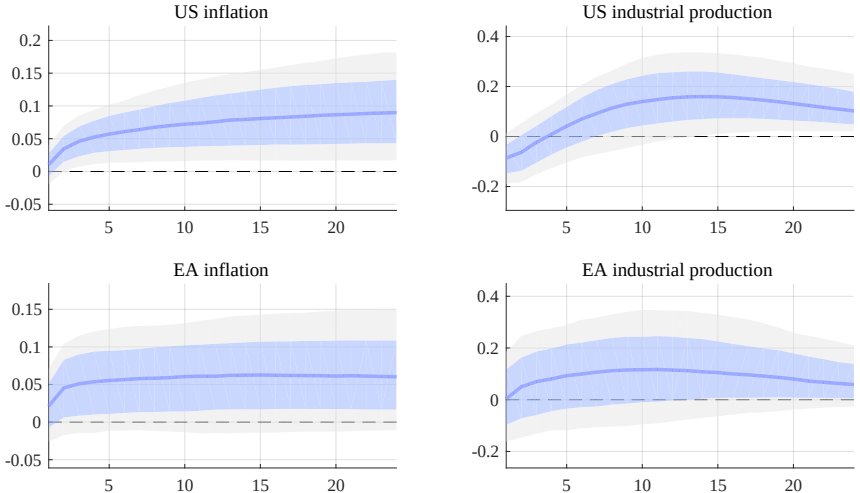
Amplification through fund flows



Notes: Impulse responses to an inflow shock to global bond funds (blue lines) with 68% (blue-shaded areas) and 90% (grey-shaded areas) credibility intervals obtained from a structural BVAR with Cholesky recursive identification. Global bond fund flows are ordered first.

Macro responses in US and EA to monetary policy shock



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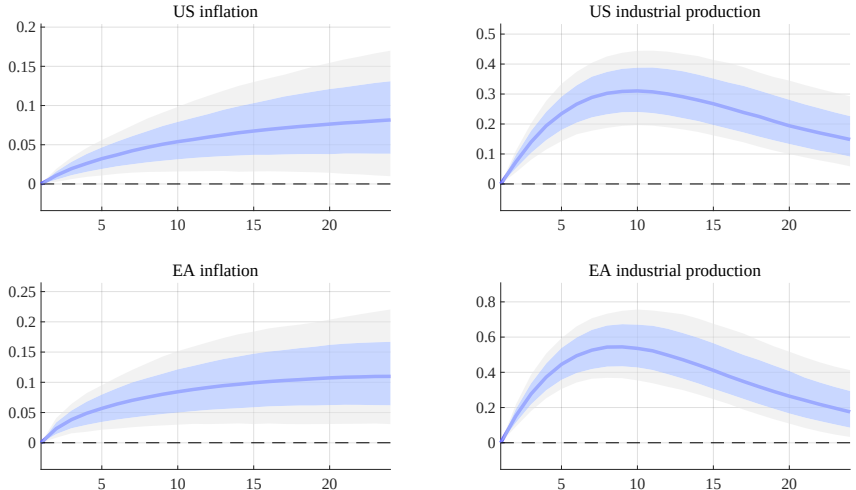
Macro responses in US and EA to fund flow shock



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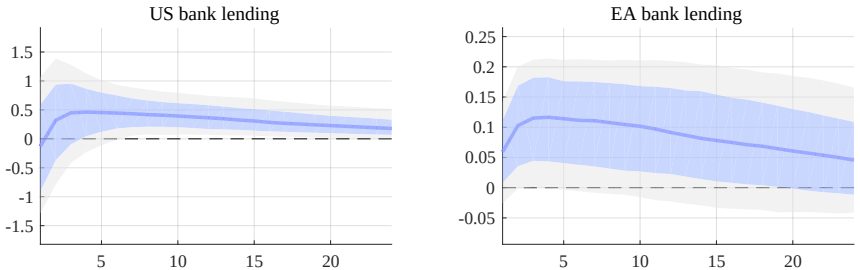
Bank lending in US and EA



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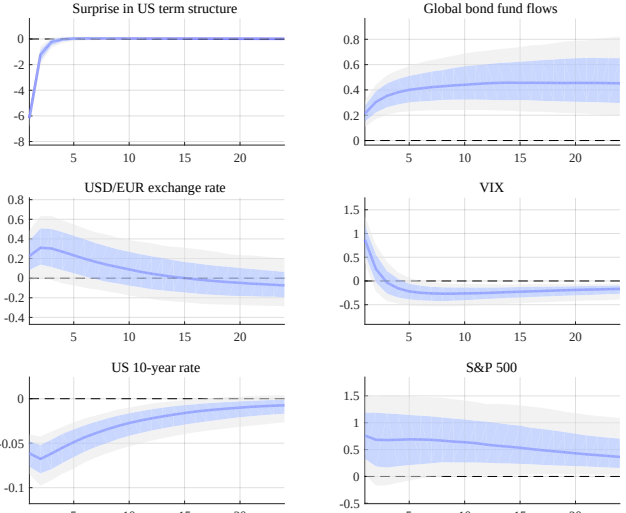
Sensitivity: Standard High-frequency Identification



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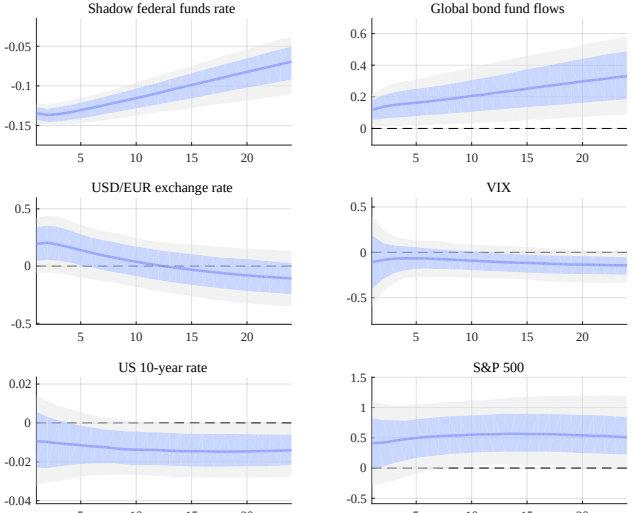
Sensitivity: Cholesky Identification with Shadow FFR



Notes: Impulse responses to an expansionary US monetary policy shock inducing a 1 bps decrease of the ten-year US treasury rate (blue lines) with 68% (blue-shaded areas) and 90% (grey-shaded areas) credibility intervals obtained from a structural BVAR with Cholesky recursive identification. Wu & Xia (2016) shadow federal funds rate is used as monetary policy indicator and is ordered first.