When Foreign Rates Matter More: Domestic Investor Responses in a Small Open Economy

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The views expressed are those of the authors and not necessarily those of the Czech National Bank.

Motivation

- Do domestic or foreign rate moves matter more for investors in a small open economy?
  - Monetary policy shapes cross-border flows via global risk-taking, financial conditions, and relative yields (Miranda-Agrippino & Rey, 2020; Kaufmann, 2023).
  - Existing work focuses on large economies or on banks and intermediaries as the main channels (Villamizar-Villegas *et al.*, 2024).
  - Little is known about how resident investors—dominant in many SOEs—respond after monetary shocks.
- Objective: Investigate how Czech mutual fund flows respond to domestic and foreign monetary policy shocks.
  - Effects arise mainly through inflows rather than redemptions.
  - Responses are state dependent: exchange rate moves, sentiment, and the pre-pandemic LIRE regime shape sign and magnitude.
  - Heterogeneity: liquid funds and institutional investors react more, while illiquid and retail-heavy sectors adjust less.

# Czech Investment Funds: Institutional Background

- Significant growth over the past 15 years; AUM reached approx. 1.3 trillion CZK (55 billion EUR) by 2023.
- Investment funds account for nearly 15% of GDP, becoming the second-largest financial sector component after banks.
- Retail UCITS, retail alternative investment funds (AIFs), and funds designated for qualified investors. We focus on open-end retail UCITS.
  - Bond and mixed funds account for the largest share of total assets, followed by real estate and equity funds.

Bond Funds ■ Mixed Funds ■ Real Estate Funds ← AUM / Bank Assets
Equity Funds ■ Other Funds
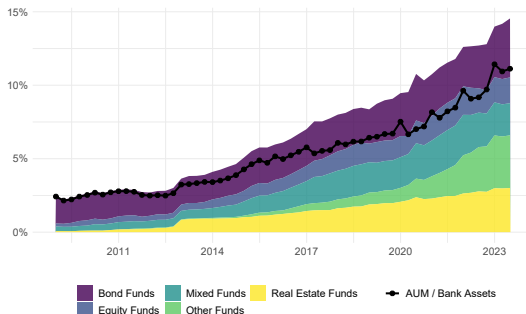
Data

- Our sample: 261 Czech mutual funds (equity, bond, real estate) from 2009 to 2023 (9% of GDP).
- Monthly observations with rich supervisory data, free from survivorship bias.
- The vast majority of investors (95–98%) in funds domiciled in the Czech Republic are domestic.

Figure: Sector Holding of Mutual Fund Shares
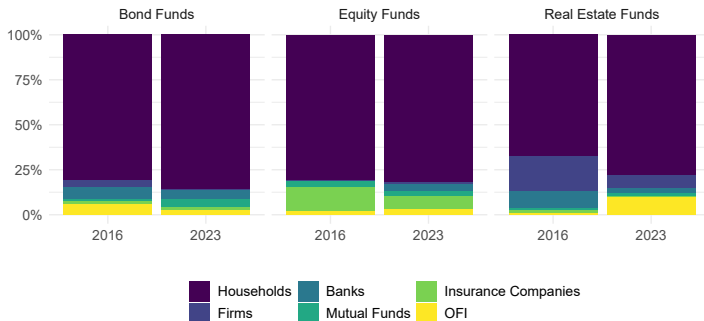
Measurement of Fund Flows

- The main variable of interest is mutual fund flows.
    - Common approach is to approximate net flows as the change in total net assets between two periods, adj. for interim fund returns.
- We leverage unique supervisory data, which include actual investor-level transactions reported by mutual funds.
- This enables us to observe gross inflows (investor purchases) and outflows (investor redemptions) separately.

$$Flows_{it} = \frac{Inflows_{it} - Outflows_{it}}{AUM_{t-1}} \tag{1}$$

Net flows   Inflows   Outflows

Q05-Q95 — Mean
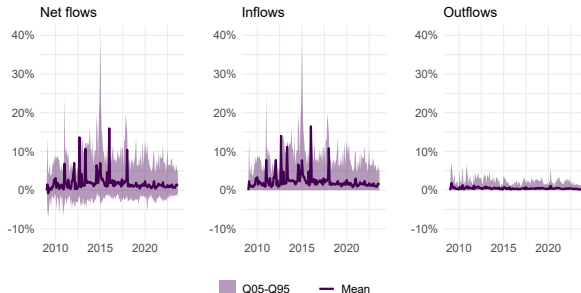
Methodology

- Motivated by a simple portfolio-rebalancing framework for a small open economy

$$\omega_{d,t} = \alpha_0 + \alpha_1(r_{d,t} - r_{f,t}) - \alpha_2 \, \text{Risk}_t + \varepsilon_t, \qquad (2)$$

where $\omega_{d,t}$ denotes the share of wealth allocated to domestic funds at time t.

- We proxy $(r_{d,t} - r_{f,t})$ with the CZ–EA interest rate differential.
- We use net flows (in % of NAV) as the observable counterpart of changes in $\omega_{d,t}$.

Figure: Interest Rate Differentials Between the Czech Republic and the Euro Area
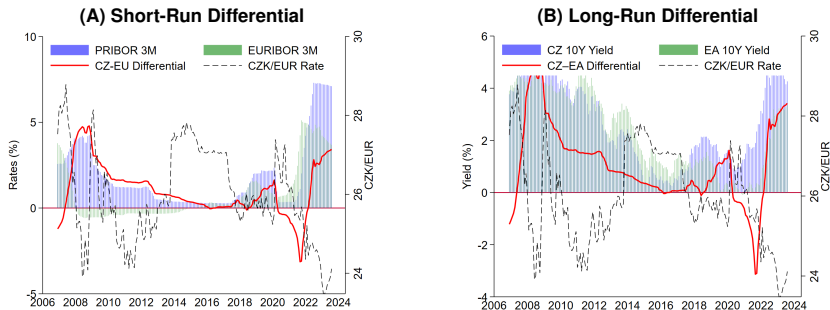
Empirical Setup

- We employ a lag-augmented panel data local projection model to estimate the response of mutual fund flows to monetary policy shocks.
- Two-stage least squares (2SLS) instrumental variables (IV) approach to account for the potential endogeneity of the interest rate differential.
- First stage isolates the exogenous component of the interest rate differential:

$$IRdiff_t = \alpha_0 + \sum_{j=1}^{3} \alpha_j DE3M_{t-j} + \sum_{j=1}^{3} \beta_j DE10Y_{t-j} + \gamma^h Z_{t-1} + \epsilon_t \qquad (3)$$

  ▶ IVs are German 3-month and 10-year bund yield changes.
    ★ Satisfies relevance (due to Germany's significant role in the euro area and for the Czech economy).
    ★ Satisfies exogeneity (since German rates are independent of Czech-specific influences).
    ★ Inclusion of three lags ensures that any delayed market reactions to euro area monetary policy shocks are taken into account.

- Second stage estimates the dynamic response of fund-level net flows to changes in the differential across different forecast horizons:
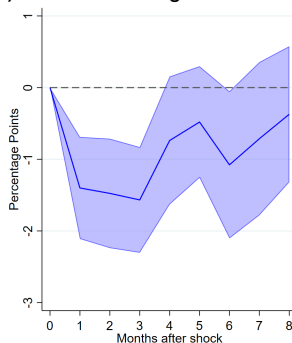
$$Flows_{i,t+h} = \alpha^h Flows_{i,t-1} + \beta^h IRdiff_{t-1} + \gamma_1^h X_{i,t-1} + \gamma_2^h Z_{t-1} + \delta_i^h + \epsilon_{i,t}^h$$

$$(4)$$

Fund Flows Response to a Monetary Policy Shock

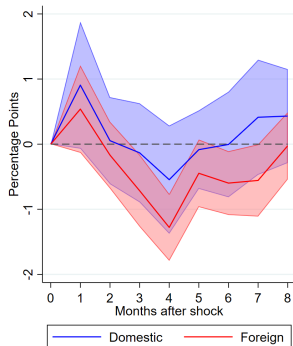**(A) Shock to the Short-Run Differential**
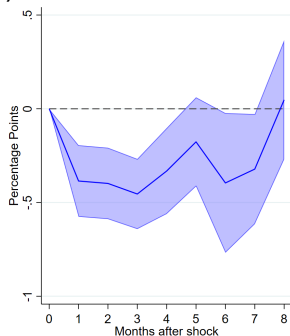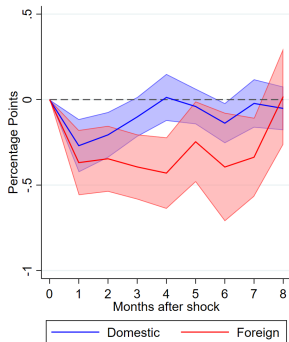
(B) Shock to the Long-Run Differential

- Higher short-run differentials discourage new capital allocation into Czech mutual funds
  - Increased perceived risk or concerns about future currency depreciation?

Domestic vs. Foreign Monetary Policy Shocks

**(A) Policy Shocks Identified Using Dummy**


(B) Policy Shocks Identified via Subsamples

- ECB policy changes have a stronger and more persistent effect on net flows into Czech mutual funds
- ECB rate hikes (decreasing interest rate differential) are associated with sustained net inflows
  - ▶ Expectations of currency appreciation, improved sentiment toward the Czech economy relative to the euro area?

Fund Inflows vs. Outflows

(A) Shock to the Short-Run Differential
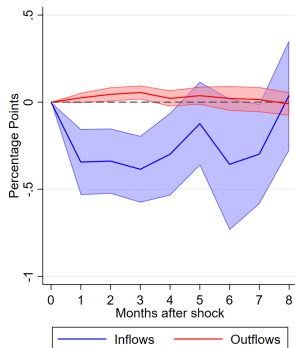
(B) Shock to the Long-Run Differential
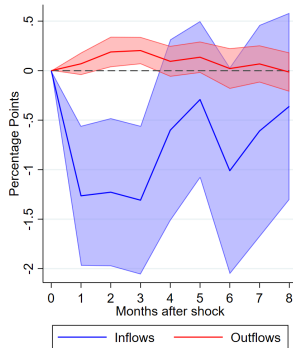
- Investors primarily adjust their new allocations in response to shifts in monetary conditions, rather than withdrawing existing investments.

Transmission Channels and Heterogeneous Responses

- We examine whether the effect of interest rate differentials on fund flows varies with the macro–financial environment Z_t

$$\omega_{d,t} = \alpha_0 + \left[\alpha_1 + \alpha_1^Z Z_t\right](r_{d,t} - r_{f,t}) - \alpha_2\,\mathsf{Risk}_t + \varepsilon_t, \tag{5}$$

Exchange Rate Movements: enrich LP with $(IRdiff_{t-1} \cdot I_{t-1}^{ER})$

- Higher short-rate differential paired with currency depreciation results in net outflows
  - ▶ Highlights how exchange rate concerns can overshadow higher yields
- When differential widens alongside appreciation, we observe stronger net inflows, particularly at longer horizons

Economic Sentiment: enrich LP with $(IRdiff_{t-1} \cdot I_{t-1}^{Sent})$

- During periods of negative sentiment, a higher short-rate differential leads to pronounced net outflows from Czech mutual funds.
  - ▶ Heighten risk aversion amplifies the adverse effects of tighter monetary conditions.
- During periods of positive sentiment, this sensitivity largely disappears

Fund Liquidity

(A) Cash Holdings Ratio (B) Liquid Assets Ratio (C) Amihud Ratio
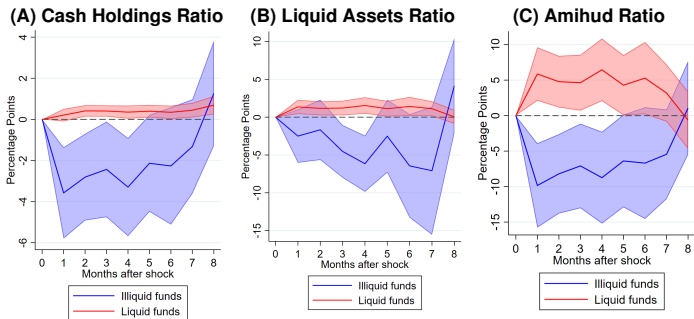
- A widening short-term differential drives net outflows from illiquid funds but net inflows into more liquid funds.
  - ► Classic flight to liquidity: investors favor funds that can more easily meet redemptions without incurring fire-sale losses.

Investor Type and Liquidity Preferences

- We examine how different investor types adjust their mutual fund holdings.
- **Liquidity-oriented investors** (banks, financial institutions, many open-ended funds)
  - ▶ Respond strongly to short-term rate differentials; outflows rise when short-term rates increase.
  - ▶ Prioritize liquidity for daily operations, short-term liabilities, and redemptions.
  - ▶ More responsive to **domestic shocks**.
- **Long-horizon investors** (firms, insurance companies, pension funds)
  - ▶ Focus on strategic goals and long-term growth rather than immediate liquidity.
  - ▶ Adjust holdings mainly in response to **long-term rate** changes.
  - ▶ More influenced by **foreign shocks**.

Conclusions

- Both domestic and foreign monetary policies affect Czech mutual fund flows, but foreign policy has the stronger and more persistent impact.
- Responses operate mainly through inflows, with outflows remaining relatively stable.
- Exchange rates and sentiment shape transmission:
  - Currency depreciation and weak sentiment amplify flow declines.
- Fund liquidity is a key cross-sectional margin:
  - Liquid funds attract inflows during tightening.
  - Illiquid funds see reduced inflows (and occasionally higher outflows).
- Investor heterogeneity matters for shock transmission:
  - Liquidity-oriented sectors react to short-rate gaps and domestic shocks.
  - Long-horizon investors respond more to long-term rates and foreign shocks.
- Foreign monetary policy can meaningfully steer domestic portfolio allocation even when foreign investors are scarce.

Thank you for your attention

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