Intervening against the Fed

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Disclaimer: The views expressed in the paper are solely those of the authors and do not necessarily represent the views of the Federal Reserve Board or the Federal Reserve System.

Introduction

**Question:** Can FX Intervention mitigate the effect of US monetary shock?

**Method:**
- Event study using US monetary surprise
- Daily FXI, exchange rate, firm-level stock price and currency denomination of B/S
- Identify FXI via deviation from estimated FXI rule

**Result:** When the Fed hikes unexpectedly,
- **No FXI:** Local currency depreciates + stock price of firms w/dollar debt decreases
- **FXI:** Exchange rate and stock price are stable
- **FXI** prevents US monetary spillover through B/S channel

Data

- **Period:** 2000-2019, 13 countries, 4,060 firms
  - Argentina, Australia, Brazil, Chile, Colombia, Costa Rica, Georgia, Hong Kong, Japan, Mexico, Peru, Switzerland, and Turkey
- **Criteria:** daily FXI data is available + intervened against US dollar
- **FX intervention:** central bank website, FRED, individual contacts
- **US monetary shock:** Nakamura and Steinsson (2018)
- **Exchange rate and stock returns:** Datastream
- **Balance sheet** (currency denomination of debt): Capital IQ
- **Fundamentals:** Worldscope, OECD Input-Output Table

**FXI Policy Rule**

\[ FXI_{it} = a + \sum_{c} \beta_{c} (FFR_{i} \times Y_{c}) + 8Z_{it} + Y_{c} + \epsilon_{it} \]

- **FXI** : Counter-intervention dummy
  - 1 if FFR↑ on date t, CB sells but does not buy USD b/w t and t+5
  - -1 if FFR↓ on date t, CB buys but does not sell USD b/w t and t+5
- **FFR**: US monetary shock on date t (FFR↑ = US tightening)
- **Z**: controls
  - Past trend and volatility of exchange rate, past intervention, macro variables (policy rate, GDP, CPI inflation, unemployment rate, trade balance over GDP ratio), macro variables × FFR shock
  - 76% of variation in counter-intervention is cannot be explained.
- Residual = Unexpected intervention

Balance Sheet Channel

\[ \log(Y_{it+1} - Y_{it}) = \alpha_{i} FFR_{i} USD_{i(t-2)-10} + X_{it}^{b} + \alpha_{i}^{h} + \epsilon_{i(t+5)}^{h} \]

- **Y** : Stock price, \( \epsilon \in [-5, 5] \)
- **FFR**: US monetary shock (FFR↑ = US tightening)
- **USD**: dollar debt indicator
- **X**: controls
  - Firm-level: total asset, export intensity, liquidity over asset ratio, firm age
  - Industry-level: import content of production

**Result:**
- **No FXI:** US monetary spillover via balance sheet channel through depreciation
- **FXI:** spillover is mitigated

Expended Switching Channel

- Depreciation effect of US tightening may boost exports
- However, also negative demand effects
- FXI mutes the depreciation effect without mitigating demand channel

Robustness checks:
- Intensive and extensive margins of dollar debt, alternative definition for unexpected counter-intervention, size of intervention, daily policy rate, FX reserves, debt maturity, international sales and asset, currency denomination of stock price, exclude each country

Conclusion

- Identification of spillover of US monetary policy by using high-frequency US monetary shock and firm-level data
- Estimate deviation from FXI policy rule to understand how interventions can help countries insulate against spillover
- FXI can be a tool to insulate countries from global financial cycle.
- Buildup of reserves over last decades reduces US spillover effects
- Important to understand general equilibrium implications and optimality of policy (IMF's integrated policy framework)

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Figure 1: Spot Exchange Rate: 1 USD = JPY

Figure 2: Variance Decomposition for Counter-Intervention

Figure 3. Effect of FXI on Stock Price (B/S channel)

Figure 4. Effect of FXI on Exchange Rate

Figure 5. Effect of FXI on Stock Price (expenditure switching channel)