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Introduction

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

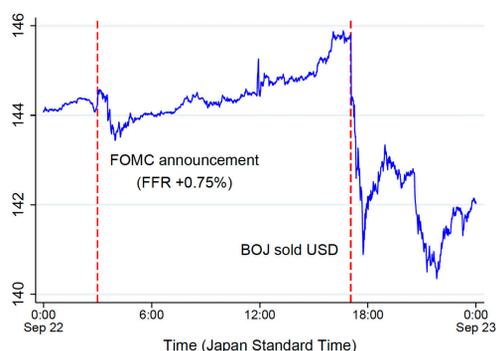
Method:

- 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

Figure 1: Spot Exchange Rate: 1USD = JPY



Data

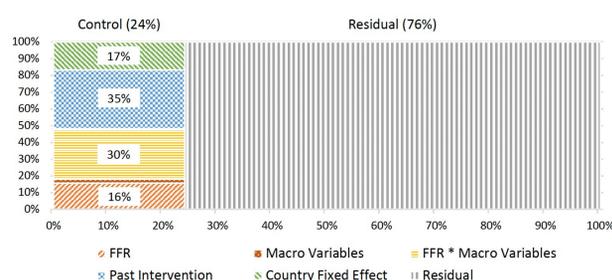
- **Period:** 2000-2019, 13 countries, 4,060 firms
 - Argentina, Australia, Brazil, Chile, Colombia, Costa Rica, Georgia, Hong Kong, Japan, Mexico, Peru, Switzerland, and Turkey
 - Criteria: daily FXI data is available + intervened against US dollar
- **FX intervention:** central bank website, FRED, 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

$$\widehat{FXI}_{c,t} = \alpha + \sum_c \beta_c (FFR_t \times \gamma_c) + \delta Z_{c,t} + \gamma_c + \epsilon_{c,t}$$

- $\widehat{FXI}_{c,t}$: **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_t : US monetary shock on date t (FFR_t ↑ = US tightening)
- $Z_{c,t}$: 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**

Figure 2: Variance Decomposition for Counter-Intervention



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Balance Sheet Channel

$$\log(y_{i(c),t+h}) - \log(y_{i(c),t-1}) = \gamma_h FFR_t \times USD_{i(c),y-1(t)} + X \delta_x^h + \alpha_{i(c)} + \alpha_{c,t}^h + \epsilon_{i(c),t}^h$$

- $y_{i(c),t+h}$: Stock price, $\forall h = \in [-5, 5]$
- FFR_t : US monetary shock (FFR_t ↑ = US tightening)
- $USD_{i(c),y-1(t)}$: 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

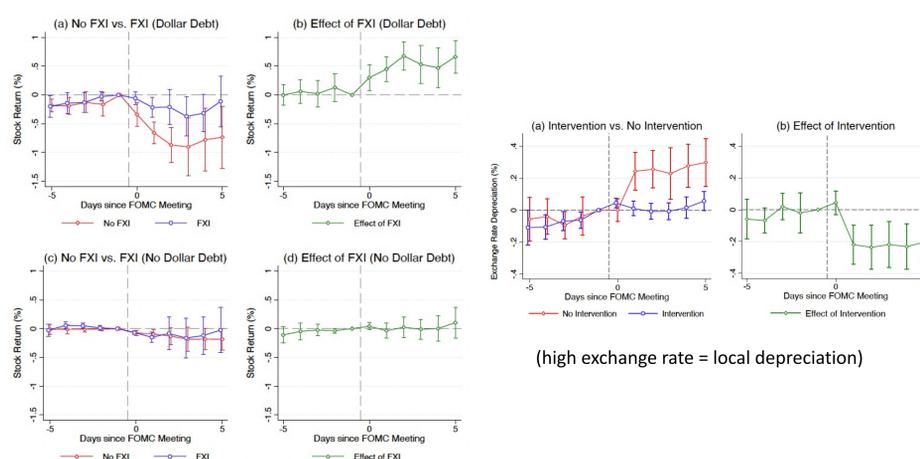


Figure 3. Effect of FXI on Stock Price (B/S channel)

Figure 4. Effect of FXI on Exchange Rate

Expenditure Switching Channel

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

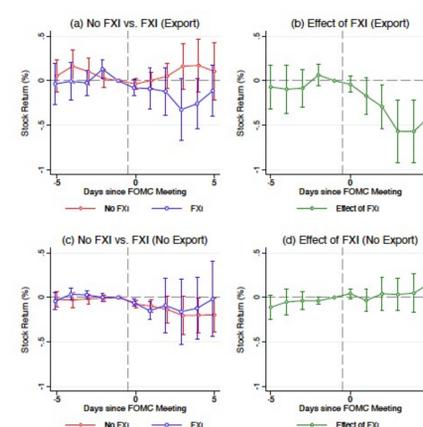


Figure 5. Effect of FXI on Stock Price (expenditure switching channel)

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 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)