

Shocking Interest Rate Floors

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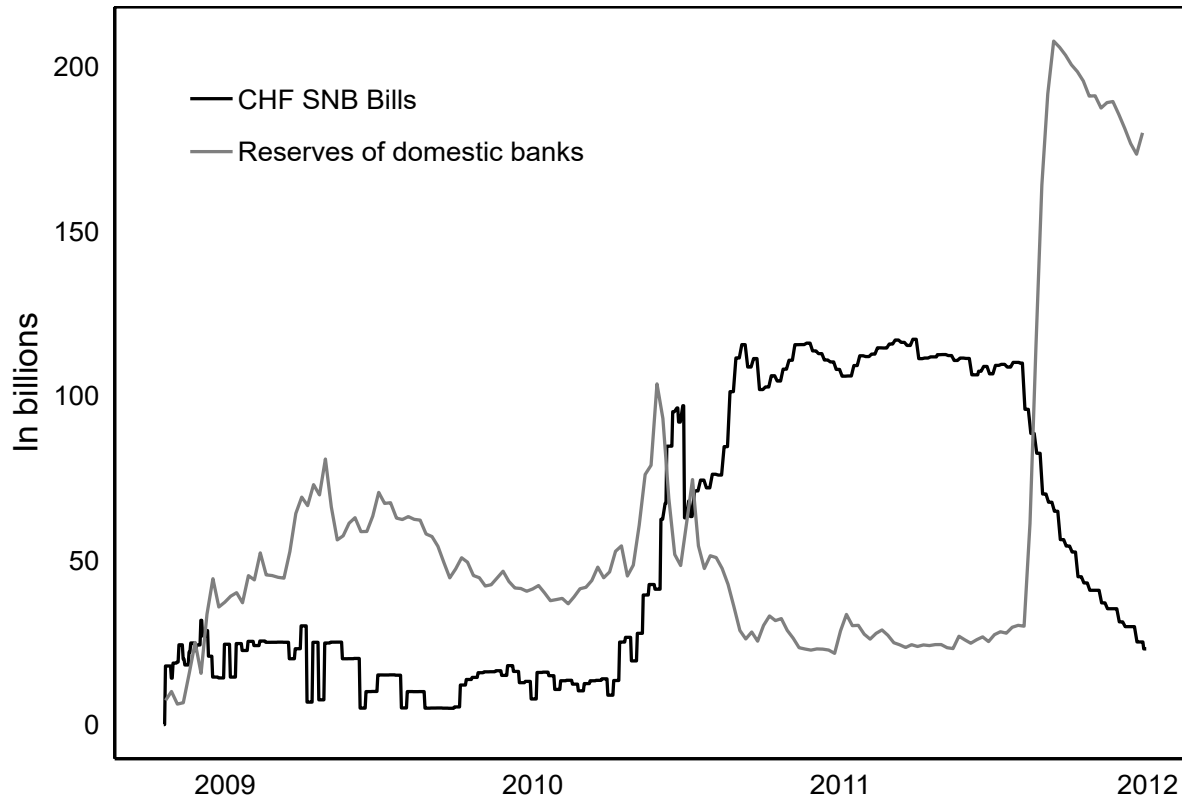
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Summary

- Central banks (CB) strongly expanded reserves held by commercial banks through large-scale asset purchases
- Therefore, money market rates hit a floor (interest paid on reserves)
- To raise money market rates in such an environment
 - Sell assets
 - Pay higher interest on reserves
 - **Issue interest-bearing CB debt securities**
- **Research question:** What is the impact of an interest rate floor?
 - **Theory:** Yield and volume of CB debt securities jointly determine an interest rate floor
 - **Empirics:** Restrictive CB debt security shock raises money market rate, appreciates the currency, and lowers stock prices

Volume of SNB Bills and reserves

The Swiss National Bank (SNB) issued debt securities (**SNB Bills**) to drain reserves from the banking system. We know the timing of all **167 auctions** (announced in advance, usually weekly).



Estimation and identification

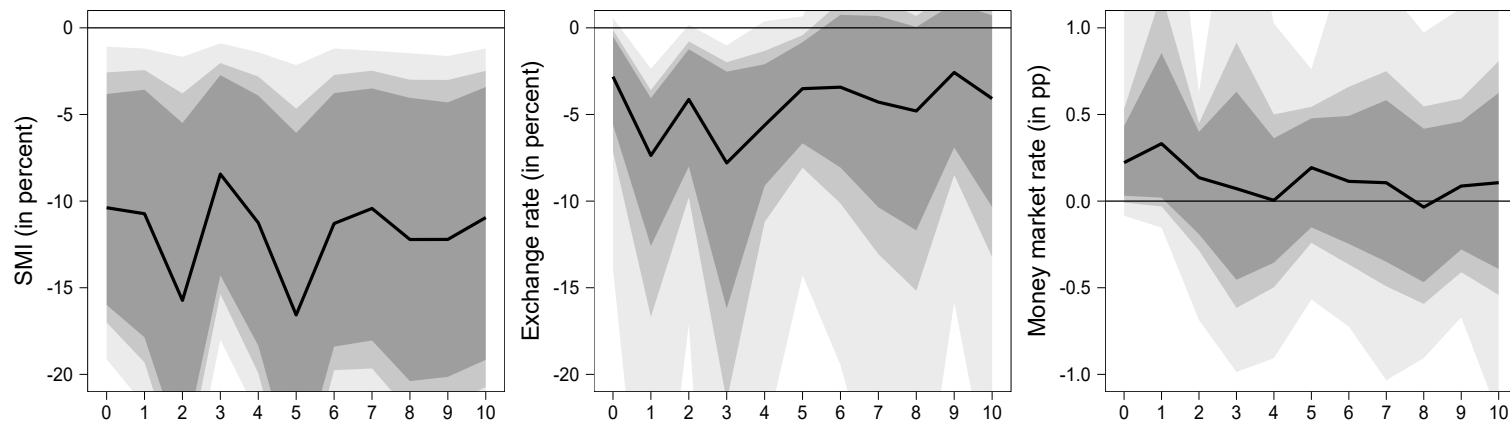
- **Deterministic timing of auctions:** Exploit the increase in variance of financial market variables on auction days (identification through heteroskedasticity: Rigobon, 2003)

$$y_{1t} = \begin{cases} \phi_{11}y_{1t-1} + \phi_{12}y_{2t-1} + \psi_{11}^0 e_{1t} + \psi_{12}^0 e_{2t} & \text{for } t \in \{\text{auction}\} \\ \phi_{11}y_{1t-1} + \phi_{12}y_{2t-1} + \psi_{11}^0 e_{1t} & \text{for } t \in \{\text{no auction}\} \end{cases}$$

$$\underbrace{V(\psi_{11}^0 e_{1t} + \psi_{12}^0 e_{2t})}_{t \in \{\text{auction}\}} - \underbrace{V(\psi_{11}^0 e_{1t})}_{t \in \{\text{no auction}\}} = (\psi_{12}^0)^2 V(e_{2t})$$

- Identify restrictive shock by imposing a negative sign on stock price response
- Estimate cumulative dynamic effects with a VAR or local projections (Jordà, 2005)

Impact of a 25bp interest rate hike



Notes: Local projection response for up to 10 business days to a restrictive SNB Bill shock leading to a 25bp interest rate increase in black. The response of stock market prices and the exchange rate are measured in percent, the response of interest rates in percentage points. The shaded areas give 99%, 95%, and 90% confidence intervals based on a block bootstrap algorithm.

Thank you very much for your attention

Do not hesitate to contact me if you have suggestions!

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Canetg, F. and D. Kaufmann (2019), *Shocking Interest Rate Floors*, IRENE Working Paper 19-02, University of Neuchâtel, <https://ideas.repec.org/p/irn/wpaper/19-02.html>