

Monetary Shocks without a Central Bank: Evidence from the Swiss Free-Banking Period

Danish Kandasamy
MScAPEC, University of Neuchâtel
July 11, 2025

Research Question and Motivation

This thesis examines whether monetary shocks, measured as unexpected changes in the Bank of England discount rate, had significant macroeconomic effects on the Swiss economy, before the creation of the Swiss National Bank. At the time, Switzerland maintained a fixed exchange rate, first under bimetallism and later under the gold standard, while operating with free capital flows and without a central bank. In this context, the country faced the classical trilemma of open-economy macroeconomics : with a fixed exchange rate and free capital mobility, Switzerland had limited room for autonomous interest rate setting, making it particularly exposed to foreign interest rate shocks, especially those stemming from London. Our empirical analysis focuses on the period from 1855 to 1906, just before the foundation of the Swiss National Bank.

The research question that we adress is: *What were the macroeconomic effects of monetary shocks during the Swiss free-banking period?* This research is motivated by three considerations. First, recent work by Jordà, Singh, and Taylor (2024) finds that monetary shocks can have persistent real effects, challenging the classical view of monetary neutrality. However, most of the evidence refers to economies with central banks. Second, while Switzerland’s 19th-century monetary history is well-documented (Baltensperger & Kugler, 2017), quantitative evidence on the macroeconomic effects of external monetary shocks remains scarce. Third, this thesis aims to contribute to the literature by using monthly historical data to estimate impulse response functions (IRFs) for monetary shocks in 19th-century Switzerland, an approach that allows for greater statistical precision and improved short-term analysis.

Literature and Contribution

This thesis contributes to the literature by applying modern empirical techniques to a historical setting without a central bank. We aim to examine how exogenous monetary shocks propagated in this context. The methodology builds on Jordà (2005) and Jordà et al. (2024), who use local projections with instrumental variables (LP-IV) to estimate dynamic causal effects of monetary policy shocks. Existing work on Switzerland, such as Baltensperger and Kugler (2016), focuses on exchange rate dynamics and safe-haven behavior. Another related study by Gerlach and Kugler (2018) focuses on money demand in Switzerland during the free-banking period. In addition, Kaufmann and Stuart (2024) study money-market integration in 19th-century Switzerland. However, the domestic transmission of foreign monetary shocks has received limited empirical attention, particularly in this historical setting. This thesis shifts attention to this neglected dimension, offering new insight into how small open economies functioned under monetary regimes without centralized authority. We contribute to the literature in a novel manner using high-frequency historical data and aim to advance our understanding of monetary shocks in this particular historical setting.

Empirical Strategy and Data

The identification strategy relies on variation in the Bank of England’s discount rate as a source of external monetary shocks. To isolate the unanticipated component, BoE rate changes will be regressed on UK macroeconomic variables (e.g., industrial production, inflation, crisis dummies). The residuals from this regression, which represent monetary shocks, can be compared to established shock series, such as Lennard (2023), as a robustness check for the adequacy of the control variables.

In the first stage, Swiss short-term interest rate proxies, reconstructed from cantonal and note-issuing bank records (Kaufmann and Stuart, 2024), will be used. These rates will then be regressed on the identified BoE shocks to obtain an instrumented proxy for Swiss monetary conditions ($\hat{r}_{CH,t}$).

The second stage estimates dynamic effects using LP-IV:

$$y_{i,t+h} = \alpha_{i,h} + \beta_{i,h}\hat{r}_{CH,t} + \gamma_h X_t + \varepsilon_{i,t+h}, \quad h = 0, \dots, H$$

where $y_{i,t+h}$ denotes macroeconomic outcomes observed at monthly frequency, such as prices (Kaufmann and Stefanopoulos, mimeo), railway activity, or a textual activity indicator (Burri and Kaufmann, mimeo), the matrix X_t includes lagged controls and other covariates (e.g., BdF rates, UK inflation, regime dummies), and standard errors are heteroskedasticity-robust. Instrument strength will be assessed using weak instrument tests such as the HAR test (Lewis & Mertens, 2022).

As a potential extension, monetary shocks from the Banque de France can be identified and could be used as an alternative instrument. Instrumenting the Swiss rate once with BoE changes and once with BdF changes would yield an overidentified IV setup, enabling a J-test of instrument validity.

The monthly dataset (1855–1906) will combine several sources. Price series will be taken from Kaufmann and Stefanopoulos (mimeo), while real activity indicators, including both a textual economic sentiment index and railway traffic data, will be drawn from recent work by Burri and Kaufmann (mimeo). UK variables used for orthogonalizing BoE rate changes will be drawn from the Millennium Dataset. Historical Banque de France policy rates will be incorporated, along with Swiss short-term rate proxies reconstructed from cantonal and note-issuing bank records (Kaufmann and Stuart, 2024). Exchange rate and long-term interest rate data will be obtained from Hauzenberger et al. (2022). Finally, additional foreign controls will be sourced from the NBER Macrohistory Database (FRED).

Timeline

- **Summer 2025:** Finalize data collection and preprocessing
- **September:** Estimate LP-IV models and perform robustness checks
- **October–November:** Draft, revise, and finalize thesis
- **December:** Submission and preparation for oral defense

References

- Baltensperger, E., & Kugler, P. (2016). *The historical origins of the safe-haven status of the Swiss franc*. *Aussenwirtschaft*, 67(2), 1–30.
- Baltensperger, E., & Kugler, P. (2017). *Swiss Monetary History since the Early 19th Century*. Cambridge University Press.
- Burri, M. (2024). *Three Centuries of Swiss Economic Sentiment* (Mimeo).
- Gerlach, S., & Kugler, P. (2018). Money demand under free banking: Switzerland 1851–1906. *Swiss Journal of Economics and Statistics*, 154, 18. <https://doi.org/10.1186/s41937-017-0013-8>
- Hauzenberger, N., Kaufmann, D., Stuart, R., & Tille, C. (2022). *What Drives Long-Term Interest Rates? Evidence from the Entire Swiss Franc History 1852–2020*. IRENE Working Paper 22-03.
- Jordà, Ò. (2005). Estimation and inference of impulse responses by local projections. *American Economic Review*, 95(1), 161–182.
- Jordà, Ò., Singh, S. R., & Taylor, A. M. (2024). The long-run effects of monetary policy. *Federal Reserve Bank of San Francisco Working Paper* 2020-01. <https://doi.org/10.24148/wp2020-01>
- Kaufmann, D., & Stefanopulos, J. (2024). *Monthly Price Data for 19th Century Switzerland* (Mimeo).
- Kaufmann, D., & Stuart, R. (2024). *Private Money and Money Market Integration: The Role of Payments Infrastructure in 19th Century Switzerland*. IRENE Working Paper 24-05.
- Lennard, J. (2018). Did monetary policy matter? Narrative evidence from the classical gold standard. *Explorations in Economic History*, 68, 16–36. <https://doi.org/10.1016/j.eeh.2017.10.001>
- Lewis, D. J., & Mertens, K. (2022). A robust test for weak instruments for 2SLS with multiple endogenous regressors. *Federal Reserve Bank of Dallas Working Paper No. 2208*.