

Applied Time Series Econometrics

List of Projects

1 ARDL, Granger causality and Error-Correction Models

1.1 Phillips curves

Let π_t the rate of inflation and U_t the unemployment rate. Estimate and compare dynamic versions of the simple static Phillips curve

$$\Delta\pi_t = \alpha + \beta U_t + e_t \quad (\text{as e.g. suggested in } \text{Bruce Hansen's textbook}, \text{ chap 14.43})$$

or $\pi_t = \alpha + \beta \Delta U_t + e_t \quad (\text{as e.g. suggested in the } \text{textbook of Hill/Griffith/Lim}, \text{ chap 9})$

using DL and ARDL models (for various countries and/or time periods).

1.2 Stock market informational efficiency

Can stock market indices be predicted by macroeconomic variables? Test for Granger causality between stock market index and selected macroeconomic time series (for various countries).

Tomáš Plíhal (2016). “Granger Causality between Stock Market and Macroeconomic Indicators: Evidence from Germany”. In: *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* 64, pp. 2101–2108. ([Paper](#), [GENESIS](#), [ECB Data Portal](#), [Bundesbank data](#), [BIS data portal](#), [DAX](#), interest rates)

1.3 Money Multipliers

According to the textbook money multiplier approach, broader monetary aggregates can be controlled via the monetary base. Use Granger-Causality tests to investigate the relation between base money and broader monetary aggregates (for various currencies and/or time periods).

Dieter Nautz (1998). “Wie brauchbar sind Multiplikatorprognosen für die Geldmengensteuerung der Bundesbank?” In: *Credit and Capital Markets – Kredit und Kapital* 31 (2), pp. 171–189. ([Paper](#), [ECB Data Portal](#))

1.4 Do consumers learn from professional forecasters?

Compare survey measures of inflation expectations using ADL models and Granger-causality analysis.

Ekaterina V. Peneva, Daeus Jorento, and Emily Massaro (2015). *Will Household Expectations Follow Professional Forecasters'?* FEDS Notes No. 2015-10.07. ([Paper](#), [MSC data](#), [US SPF data](#))

1.5 Actual, perceived and expected inflation expectations

There is a difference between the actual inflation rate and the rate consumers perceive. If inflation expectations depend on perceived, not actual, inflation rates, central bank communication and expectations management must take consumers' perceptions more seriously. Investigate survey measures of perceived and expected inflation by Granger-causality.

Stefanie J Huber, Daria Minina, and Tobias Schmidt (2023). *The pass-through from inflation perceptions to inflation expectations*. Deutsche Bundesbank Discussion Paper 17/2023. ([Paper](#), [Civey data](#))

1.6 Transmission of monetary policy to bank interest rates

(How) do changes in money market rates (governed by the ECB) transmit to bank lending and deposit rates? Is the transmission faster when interest rates are increasing? Is the transmission different for deposit and lending rates? Does the strength of the transmission change over time? Estimate (EC-)Equations for bank rates where the bank rate adjusts to the money market rate with equal maturity.

Deutsche Bundesbank (2019). *Interest rate pass-through in the low interest rate environment*. Deutsche Bundesbank Monthly Report 43. ([Paper](#), [ECB Data Portal](#), [Bundesbank data](#))

2 Forecasting

2.1 Rationality of Forecasts

Test the rationality of forecasts by assessing the properties of forecast errors.

Consider the forecast errors corresponding to expectations surveys of consumers (or professional forecasters). Are they autocorrelated? Are they predictable?

Tyler Goodspeed (2024). "Trust the experts? The performance of inflation expectations, 1960–2023". In: *International Journal of Forecasting*. Advance online publication. ([Paper](#), [Livingston data](#), [MSC data](#), [US SPF data](#))

2.2 Forecasting with survey expectations

How good are inflation forecasts based on survey expectations?

Compare the inflation forecasting performance of AR models of inflation with survey measures of Inflation expectations.

- Magdalena Grothe and Aidan Meyler (2018). "Inflation Forecasts: Are Market-Based and Survey-Based Measures Informative?" In: *International Journal of Financial Research* 9(1), pp. 171–188. ([Paper](#), [euro area SPF data](#), [US SPF data](#))
- Lloyd B. Thomas (1999). "Survey Measures of Expected U.S. Inflation". In: *Journal of Economic Perspectives* 13(4), pp. 125–144. ([Paper](#), [Livingston data](#), [MSC data](#), [US SPF data](#))

2.3 Forecasting Exchange Rates

Cheung et al. (2019) assess the predictive content of various exchange rate models relative to a random walk.

Yin-Wong Cheung et al. (2019). "Exchange rate prediction redux: New models, new data, new currencies". In: *Journal of International Money and Finance* 95, pp. 332–362. ([Paper](#), [IMF IFS](#))

3 Volatility

3.1 Volatility transmission along the yield curve

How does volatility of short-term interest rates transmit to longer-term rates or asset returns? Estimate GARCH-type models for interest rate changes and investigate whether the estimated volatility transmits to the (GARCH)-volatility of longer-term rates and/or other assets (exchange rates).

Dieter Nautz and Christian J. Offermanns (2008). “Volatility transmission in the European money market”. In: *The North American Journal of Economics and Finance* 19 (1), pp. 23–39. ([Paper](#), [ECB Data Portal](#), [Bundesbank data](#))

3.2 Volatility in crypto markets

Are there asymmetric volatility dynamics in Crypto Markets? Estimate asymmetric volatility models (T-ARCH/E-GARCH) for returns of cryptocurrencies. Compare with symmetric specifications based on model selection criteria.

Nidhaleddine Ben Cheikh, Younes Ben Zaied, and Julien Chevallier (2020). “Asymmetric volatility in cryptocurrency markets: New evidence from smooth transition GARCH models”. In: *Finance Research Letters* 35, p. 101293. ([Paper](#), [CoinMarketCap](#))

3.3 Day-of-the-Week Effects on Stock Market Volatility

Does volatility in stock markets depend on the day of the week? Estimate GARCH-type models for daily stock market returns including day-of-the-week-dummies.

Taehyeon Kang and Eunyoung Cho (2024). “The day-of-the-week effect on global stock market volatility after a market shock”. In: *Applied Economics Letters* 31 (8), pp. 696–701. ([Paper](#), [MSCI ACWI](#), [MSCI EM](#), [S&P500](#))