FAU – School of Business, Economics and Society
Chair of Statistics and Econometrics

Seminar: Economic Expectations and Forecasting Methods

Summer term 2024 – Syllabus

Overview: Expectations and forecasts are very important for decision making in economic policy, at firms, and in our private lives. Therefore, it is no surprise that numerous methods have been developed to compute economic forecasts based on different types of data. Especially the availability of big datasets in recent years has led to an adoption of forecasting methods from the machine learning literature in business and economics.

At the same time, researchers, central banks, and other institutions have collected more and more survey data on economic expectations of firms, private households, and professional forecasters that allow analyzing the nature of those expectations and answering questions such as: How large is the observed heterogeneity? Which factors can explain differences in, for instance, inflation or growth forecasts? Do agents with different expectations behave differently?

In this seminar, students will discuss different empirical topics that either deal with specific forecasting methods (ranging from classical time-series models to machine learning approaches) or with a certain feature of observed (survey-based) economic expectations. Students will gain experience in writing academic texts, conducting literature research and in presenting and discussing empirical economic research. They will be able to explain the basics of advanced forecasting methods, to analyze advantages and disadvantages of forecasting methods, and to interpret survey data about forecasts/expectations.

Instructor:
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Office hours: By appointment

Seminar meetings:
- Kick-off meeting at the start of the semester (16.4., 16:45h, via Zoom)
- Seminar workshop with student presentations (13.6./14.6., room LG 4.109)

Registration: Please send an e-mail to wiso-oekonometrie@fau.de if you want to register for this seminar. **Deadline for registration is 12. April 2024!**

- Please state clearly i) your name and surname, ii) your student ID, iii) your study program, and iv) your first, second, and third choice for a topic that you want to work on in the seminar (see list of topics below).

- **Please register as early as possible – we distribute topics according to a first-come-first-served principle and the number of students is restricted to a maximum of 20. Priority will be given to IES students.**
- **You will have to register officially for the seminar on campo at the beginning of the semester during a special registration period (I'll send a reminder!). After that you will not be able to unsubscribe from the seminar anymore.**

Grading: Your grade for the module depends on the seminar paper (50 %), the presentation (roughly 30 minutes) of the paper in the seminar (30 %), and your participation in the discussions after the seminar presentations (20 %). We will distribute information about the formal requirements regarding length and layout of the seminar papers during the kick-off meeting.

Deadline for seminar papers: Your seminar paper is due on **28. June 2024 at 18:00h**.

List of topics (with "starting literature"):

1. **Expectation Formation of Firms and Households**
   - 1a. Inflation expectations and supermarket prices
     Cavallo, A., G. Cruces, and R. Perez-Truglia (2017). Inflation Expectations, Learning, and Supermarket Prices: Evidence from Survey Experiments, American Economic Journal: Macroeconomics, 9(3), 1-35.
   - 1b. How Do Firms Form Expectations?
     Coibion, O., Y. Gorodnichenko, and S. Kumar (2018). How Do Firms Form Their Expectations? New Survey Evidence, American Economic Review, 108(9), 2671-2713.
   - 1c. Socioeconomic Status and Macroeconomic Expectations
     Das, S., C. M. Kuhnen, and S. Nagel (2020). Socioeconomic Status and Macroeconomic Expectations, The Review of Financial Studies, 33(1), 395-432.
   - 1d. Personal experience and expectations about aggregate outcomes
     Malmendier, U. and S. Nagel (2016). Learning from Inflation Experiences, The Quarterly Journal of Economics, 131, 53-87.
   - 1e. Expectations and business decisions
     Coibion, O., Y. Gorodnichenko, and T. Ropele (2020). Inflation expectations and firm decisions: New causal evidence, The Quarterly Journal of Economics, 135(1), 165-219.
     Buchheim, L., J. Dovern, C. Krolage, and S. Link (2022). Sentiment and Firm Behavior during the COVID-19 Pandemic, Journal of Economic Behavior & Organization, 195, 186-198.
   - 1f. Expectation uncertainty and economic decisions
     Kumar, S., O. Coibion, and Y. Gorodnichenko (2023). The Effect of Macroeconomic Uncertainty on Firm Decisions, Economtrica, 91(4), 1297-1332.
     Coibion, O., D. Georgarakos, Y. Gorodnichenko, G. Kenny, and M. Weber (2021). The Effect of Macroeconomic Uncertainty on Household Spending, NBER Working Paper, No. w28625.
   - 1g. Expectations and household decisions
     Roth, C. and J. Wohlfart (2020). How Do Expectations about the Macroeconomy Affect Personal Expectations and Behavior?, Review of Economics and Statistics, 102(4), 731-748.

2. Machine Learning Methods

2a. Neural Networks

Hastie, T., R. Tibsharani, and J. Friedman (2007). The Elements of Statistical Learning, 2nd edition, Springer, Sections 11.1 – 11.5 (pp. 389ff).
Woloszko, N. (2020). Tracking Activity in Real Time with Google Trends, Economics Department Working Papers 1634, OECD.

2b. LASSO

Hastie, T., R. Tibsharani, and J. Friedman (2007). The Elements of Statistical Learning, 2nd edition, Springer, Section 18.4 (pp. 661ff).
Scherr, S. and J. Zhou (2020). Automatically Identifying Relevant Variables for Linear Regression with the Lasso Method: A Methodological Primer for its Application with R and a Performance Contrast Simulation with Alternative Selection Strategies, Communication Methods and Measures, 14(3), 204-211.
Moriwaki, D. (2019). Nowcasting unemployment rates with smartphone GPS data, in: International Workshop on Multiple-Aspect Analysis of Semantic Trajectories (pp. 21-33). Springer.

2c. Machine Learning and Macroeconomic Forecasting

Goulet Coulombe, Ph., M. Leroux, D. Stevanovic, and St. Surprenant (2022). How is machine learning useful for macroeconomic forecasting?, Journal of Applied Econometrics, 37(5), 920-964.
Masini, R. P., M. C. Medeiros, and E. F. Mendes (2021). Machine Learning Advances for Time Series Forecasting, Journal of Economic Surveys, 37, 76-111.

3. Text Data in Economic Forecasting

3a. Social Media Data

Schnaubelt, M., T. G. Fischer, and C. Krauss (2020). Separating the signal from the noise–financial machine learning for Twitter, Journal of Economic Dynamics and Control, 114, 103895.
Cui, R., S. Gallino, A. Moreno, and D. J. Zhang (2018). The operational value of social media information, Production and Operations Management, 27(10), 1749-1769.

3b. Media Data

Thorsrud, L. A. (2020). Words are the new numbers: A newsy coincident index of the business cycle, Journal of Business & Economic Statistics, 38(2), 393-409.
Barbaglia, L., S. Consoli, and S. Manzan (2024). Forecasting GDP in Europe with Textual Data, Journal of Applied Econometrics, forthcoming.

3c. Web Search Data

Choi, H. and H. Varian (2012). Predicting the present with Google Trends, Economic Record, 88, 2-9.
Borup, D. and E. C. M. Schütte (2022). In search of a job: Forecasting employment growth using google trends, Journal of Business & Economic Statistics, 40(1), 186-200.

3d. Financial Report Data

Bochkay, K. and C. B. Levine (2019). Using MD&A to improve earnings forecasts, Journal of Accounting, Auditing & Finance, 34(3), 458-482.

4. Time-Varying Parameter Models

4a. Stochastic Volatility Models

Clark, T. E. and F. Ravazzolo (2015). Macroeconomic forecasting performance

under alternative specifications of time-varying volatility, Journal of Applied Econometrics, 30(4), 551-575.

4b. TV-VAR Models
D'Agostino, A., L. Gambetti, and D. Giannone (2013). Macroeconomic forecasting and structural change, Journal of Applied Econometrics, 28(1), 82-101.

5. Large-Scale Data Sets

5a. Dynamic Factor Models
Stock, J. H. and M. W. Watson (2002). Macroeconomic forecasting using diffusion indexes, Journal of Business & Economic Statistics, 20(2), 147-162.

5b. Large-Scale BVARs
Bańbura, M., D. Giannone, and L. Reichlin (2010). Large Bayesian vector auto regressions, Journal of applied Econometrics, 25(1), 71-92.

6. Hierarchical Forecasting

Athanasopoulos, G., R. A. Ahmed, and R. J. Hyndman (2009). Hierarchical forecasts for Australian domestic tourism, International Journal of Forecasting, 25(1), 146-166.
Hyndman, R. J. and G. Athanasopoulos (2014). Optimally reconciling forecasts in a hierarchy, Foresight: The International Journal of Applied Forecasting, (35), 42-48.

7. Density Forecasting

Kascha, C. and F. Ravazzolo (2010). Combining inflation density forecasts, Journal of Forecasting, 29(1-2), 231-250.
Clements, M. P. (2018). Are macroeconomic density forecasts informative?, International Journal of Forecasting, 34(2), 181-198.

Course requirements: Course participants are required to …

- **Attend.** Students can only pass the course if they attend the seminar because the discussions of the presented papers are an essential part of the seminar and will be graded.
- **Be interested in empirical research.** The topics deals with empirical analyses of either survey-based expectation data or forecasting methods.
- **Prepare.** Before the seminar sessions, all students are required to read at least all abstracts and introductions of the "starting literature" for those topics that are presented in the seminar.
- **Register on StudOn.** I will make course material available through the course website on StudOn (available from mid-April). I will also make announcements using this platform.