

ECON 112: MACROECONOMIC DATA ANALYSIS, UCSD, RONDINA, SUMMER 2024

Final Paper + Presentation (100 pts total)

Assignment Main Task

Drawing upon the structural vector autoregression methodology, write a paper that presents and explains the empirical evidence on the following question: do changes in the short-term nominal interest rate controlled by the Federal Reserve Bank cause any effects on two measures of economic activity at the State level: real GDP growth and the unemployment rate?

Objectives of the Assignment

You should have three main objectives in working on this assignment.

1. Numerical Analysis (30 pts): show that you know how to perform the proper empirical analysis to answer the main question above. In particular, you should show that you know how to: summarize the important features of the data that you use in the analysis; identify the statistical models that most adequately capture the important correlation patterns in the data; obtain from the estimated models the critical information that you need to evaluate the causal effect of monetary policy.

2. Choice of Reporting (30 pts): show that you know what are the critical elements of your numerical analysis to report in the main text of the paper, in the Appendix, or to not report at all. In particular, you should make sure that anything you report in the main text has a clear purpose in the development and exposition of your analysis.

3. Clarity and Competence of Writing (40 pts): show that you know how to clearly communicate in writing with a narrative that showcases competence: what you do in your empirical analysis; what are your main results and how they inform your response to the research question you are asking; and what are the limitations/issues that you think affect your analysis. To help you achieve this objective, an outline of the sections of the paper that you are required to follow is provided below.

Assignment Prompt

Suppose you are a junior researcher in the research department of Federal Reserve Board in Washington D.C. The head of research asks you to write a paper to be circulated among economists both at the bank and at other academic institutions that evaluates whether there is any evidence that changes in the short-term nominal interest rate has any causal effects on economic activity of your assigned U.S. State. Two measures of economic activity should be considered: real GDP growth, and the unemployment rate. You should imagine that the economists that will read your paper have a solid training in economics, but are not experts in time series econometrics.

Your paper should be organized according to the following structure. For each item the specific objectives are indicated, but you should always remember that all items should contribute towards the main objective of the paper, as stated above.

The following is the required outline of the paper, starting from its title.

An Empirical Investigation of the Impact of Monetary Policy on the Economic Activity of “Your Assigned U.S. State”

1. Introduction.

The introduction should contain:

- the main question you ask in the paper;
- why it is important to know the answer to that question;
- a high-level summary of what you do to answer that question;
- a quick statement of the results that you find;
- a list of the remaining sections in the paper with a short description of each one.

2. Monetary Policy Effectiveness: Empirical Challenges.

This section should lay out what are the empirical challenges in estimating the causal effect of monetary policy on economic activity. More specifically:

- You should describe why the issue of endogeneity represents the main empirical challenge and what are examples of endogenous feedbacks in the context of monetary policy and state-level economic activity;
- You should next describe your approach to deal with endogeneity, which corresponds to Sims (1980) proposed solution;
- Finally, you should discuss to what extent the restriction implied by Sims’s approach is economically reasonable, pointing out both its strengths and weaknesses.

Overall, Section 2 should not exceed 5-6 paragraphs.

3. Data and VAR Model Estimation.

- Describe the data you are using, report and comment on any features of the data that you think are useful for your subsequent analysis (plot raw data, ACF, etc.).
- Describe how to select your preferred VAR models and explain why the VAR you selected is your preferred specification.
- Report and describe in a clearly formatted Table the point estimates, standard errors, p-values, and any useful summary statistics of your preferred VAR models.
- Comment on any features of your estimates that you think are important to take into account for the main results of the next section.

4. Evidence of Effect of Monetary Policy on Economic Activity

- Report the critical information you get from the models you estimate in Section 3 (e.g. the appropriate impulse responses) and explain how that information represents the key piece of empirical evidence to evaluate whether monetary policy causes changes in economic activity.
- Make sure to describe in words how to interpret any plots that you report, and elaborate on any features of the plots that are important for the analysis.
- Conclude the section with a summary paragraph that clearly states the answer to the main question of the paper in light of the empirical evidence you just presented.

5. Discussion of Limitations, Robustness, and Extensions (Optional)

Section 5 is optional and will result in extra credit if completed.

- Discuss what you think are the main limitations of the interpretation you just gave to your empirical results.
- Describe any robustness checks that you have done to evaluate whether your main results change if you change some of the choices you made in your analysis, and discuss their relevance for the answer you have provided in Section 4.
- Extend your analysis in any direction that you think is useful to make further progress in providing an answer to the main question of the paper.

Note: The body of the paper should be **at least 1,500 words**, excluding tables and figures, any extension of the main analysis that you may perform in Section 5, and any Appendix.

Presentation

The submission of your paper should be accompanied by a 8-10 minute Zoom recorded video in which you present your paper. The goal of the presentation is not to evaluate your presentation skills, but to evaluate

your familiarity with the writing and the results in your paper. In the presentation, you should not read from a prepared script, but you should go through the sections of your paper providing an oral summary of each one of them. If you have worked on the writing of the paper, the presentation should not take much time to prepare.

In the presentation you should make sure to discuss in your own words:

- the main research question that you ask in the paper
- the main empirical challenge of your analysis
- the data that you used for your empirical analysis
- how you picked your preferred VAR models
- the key empirical evidence that you use to answer the main research question
- the key limitations of your analysis
- any extensions that you have performed (optional)

You should share your screen and scroll through your paper during your presentation. No separate slides are expected/required for the presentation, but you are welcome to prepare slides if you think it would be helpful.

The assignment is due *Saturday September 7* by 11:59 pm on Canvas.

Important Notes:

1. Any unauthorized outside help received in the preparation of your paper and your presentation, including employing a tutor, will be considered a violation of academic integrity and will be reported to the Academic Integrity Office.
2. The use of Chat GPT is allowed to help you get started on your writing; however, your writing is expected to be specific to your analysis and your results; any generic/disconnected paragraphs, no matter how well written by Chat GPT, will not contribute to your grade in the assignment, and may end up reducing your overall score.