NEKN34, Time Series Analysis, Spring 2020
Assignment III

Money and Income

Multiequation Time Serie Models

Deadline: 25th of March, 23:55

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Granger causality between money and income has been discussed in the economic literature since the 1970-s. However, the question still remains unresolved. Shi et al. (2020) provide a discussion on the topic pointing out the methods which have been used in the literature and the results that have been obtained.

Your task for this assignment is to contribute to the existing debate. In particular, on Canvas you will find an updated version of the data set considered by Droumaguet et al. (2017). It contains two variabels: M1 money stock and the industrial production index. A detailed data description can be found in the `MoneyIncome.xlsx` file or on `https://fred.stlouisfed.org/`. The data is on monthly basis and spans from January 1959 till December 2019. However, you are not restricted to the data provided and are welcome to consider other proxies for monetary aggregates or real economic activity, as well as other data frequency (please, indicate the source of data in that case).

The results should be reported by means of a short research paper being no longer than 10 pages. The structure of the report should follow a classical academic paper (see `tips.pdf` containing some tips on what to think of when preparing your report). Motivate and reason your choices.

General Guidelines

The following guidelines are just some help for you. You are free to structure your report in the way of your choice, i.e. the choice of modeling strategy is up to you. There is no right or wrong answer for the assignment. It is therefore important to carefully motivate your choices and results. You may use additional sources of information and data if deemed necessary (make sure to provide an access link in that case).

The analysis typically starts by exploring the data. Which data do you have (stationary/non-stationary/cointegrated)? What are potential drawbacks of the data set? Would you be interested in considering other variables (you do not necessarily have to include them, but a discussion would be good to have) and why?

Depending on the type of the data you will have to make a choice regarding the models (VAR or VECM). Make sure you provide reasoning. Except of the choice of models you will also have to decided which time period you want to consider? Is it a good idea to use the whole sample or better splitting it in parts (why/why not)?

What can you conclude about the Granger causality between money and income? How robust are your conclusions? What could be done in order to improve the analysis?

For this assignment you are asked to use the models and concepts from time series econometrics which are covered in the course. More complicated methods are not a requirement, but you are free to discuss them if they become of interest to you; this will however not affect your grade.

References

Droumaguet, M., A. Warne, and T. Woźniak (2017). Granger causality and regime inference in markov switching var models with bayesian methods. *Journal of Applied Econometrics 32*(4), 802–818.

Shi, S., S. Hurn, and P. C. Phillips (2020). Causal change detection in possibly integrated systems: Revisiting the money–income relationship. *Journal of Financial Econometrics 18*(1), 158–180.