The project is to forecast the March non-seasonally adjusted estimates of average weekly earnings and total employment for private employers (total private) for a Florida metropolitan statistical area (MSA) of your choice and write up a professional report on your forecast. Successful completion of the project requires application most of the major material from class and clear interpretation and exposition of your data, methods, and results. The project allows you to demonstrate material mastery outside an exam setting, working at your own pace with access to any supporting materials you find useful.

Due Wednesday April 20th. (Yes. this is after the release, due to unfortunate timing.

Steps

1) Choose a Metropolitan Statistical Area in Florida.

a. Go to FRED https://fred.stlouisfed.org/

b. Browse by release. Select "State and Metro Area Employment, Hours, and Earnings", monthly, not seasonally adjusted, Florida, and Metropolitan Statistical Area.

c. Choose an MSA for which monthly employment is available for at least 15 years (180 observations) and monthly earnings data is available for at least 10 years (120 observations).

d. Go to the Discussion Board and post a reply to the relevant topic stating your choice.

2) Download the data. You should start right away. However, the data for February will not be posted until March 25th. This means you will need to download the data again in late March and update your models accordingly. In addition to non-seasonally adjusted average weekly earnings and total employment, also obtain average hourly earnings, average weekly hours, and average and total weekly earnings (the product of employment and weekly earnings), again for private employment. You should try at least some of these as possible predictor variables. You should choose and download other variables to use as predictors as well. Select the ones you think will be most useful. To help with your selection, it would be useful to do some research on the local area. This is not required but is probably helpful.

3) The next step is to start building models suitable for a one period ahead forecast for each variable, select the best one for each variable, and prepare your point and interval forecast.

4) Write a very neat and professional report explaining your approach, justifying your model selection, and presenting your results.

The Report

1) Format (body). 12 point font, first line of paragraphs indented half an inch, single spaced, one-half inch left margin and two and one-half inch right margin (to allow space for me to comment/grade), self-explanatory section headings sequentially numbered and in bold, an extra space between the section header and the last line of the previous paragraph.

2) Tables and figures. They should appear as near to where they are mentioned as possible, be neat, and be labeled too be self-explanatory.

3) Sections.

a. Title page, with an abstract of no more than 200 words at the bottom.

b. Introduction. Imagine you are preparing a forecast of these variables for a paying client.

c. Data. Describe the sources used and present summary statistics. For example tslines for the variables to be predicted, ACs, PACs, etc… Present figures and summary statistics that are useful to conveying your work, not everything you could possibly think of.

d. Model estimation and selection. Present relevant information on your model selection process. Fully justify your choice of the "best" models. Discuss them. Do the coefficients make sense? What narrative would you tell your boss or client about the model? That is, does the model make any sense, or, does it just work?

e. Final Results. Re-estimate your best models on the full set of data. Obtain the forecast and forecast interval. Make sure you clearly present the point forecast, the RMSE for the out of sample one step ahead rolling window forecasts, and the forecast intervals. A nice plot of the forecast errors over time can be very helpful. A chart showing determination of the optimal window lengths can be helpful too.

f. Conclusion. Summarize your results, including a discussion of any important strengths, weaknesses, and limitations of your forecast.

g. Appendix A. A do file capable of replicating your analysis, as the last item in your written report.

h. Appendix B. The log file from a clean run of your do file as a SEPARATE pdf. Include this in the canvas submission only. In the paper version, simply provide a note that the log file of complete results is available on Canvas. This is the equivalent, for our purposes, of providing more detailed results in an online appendix to a report.

g. Appendix C. Your dataset as a SEPARATE csv file. Include this in the canvas submission only. In the paper version, simply provide a note that the log file of complete results is available on Canvas. This is the equivalent, for our purposes, of providing the data needed to replicate your report online.

Intermediate Deliverables (Check Points, count as a problem set/assignment)

1) Summary statistics, tsline plots, ACs and PACs for the two variables you will forecast. You need not provide this for other (predictor) variables you consider. Due Monday March 21st.

2) Do file and log file for step 1 of model selection. For total private employment and average weekly earnings for all private employees, use VSELECT to estimate and evaluate some alternative models you think are reasonable. Take the log and difference if doing so is called for, don't if it is not called for. For a reasonable set of models from VSELECT, also calculate the LOOCV. Include a simple 12-lag AR only model as a benchmark. Prepare a table summarizing the fit measures for these reasonable models. Due Wednesday April 6th.

3) Do file and log file for model and window selection. Building from (2), use the rolling window procedure to make final model selection, including selecting window width. Include a simple 12 lag AR only model as a benchmark. ***Clearly report the best window width and the resulting rolling window RMSE for this benchmark model.*** Due Wednesday April 13th.

Final Report Submission

Submit an electronic version to Canvas by Wednesday April 20th.