Checklist for ECON 4115/5115 Research Projects

Check ✓	Item
	• Need at least one time series variable to forecast; forecasting multiple related variables is fine.
	• Introduction: Discuss the purpose of the forecasts, who will use them, for what purpose, etc.
	• Literature Review: Include 3 or more related studies and brief summary of the studies.
	• Need at least 30 observations ($T \geq 30$); this is really the bare minimum.
	• Table of variable names, variable definitions, descriptive stats, sample size, data sources, etc.
	• Regular time series graph(s) of primary variable with discussion of notable patterns.
	• Forecasting Model & Results: Include detailed steps leading to final forecasts.
	o Step #1. Use graphs and summary statistics to identify notable patterns.
	o Step #2. Consider if transformations or adjustments are necessary. If so, why?
	o Step #3. Consider time series components in turn: trend, seasonality & irregular.
	o Step #4. Model the trend (if any). De-trend using moving average, regression on trend, first differencing, etc. Use diagnostic tools to make sure the remainder is stationary.
	o Step #5. Model the seasonality (if any). Remove seasonality using seasonal differencing, regression on dummies, etc. Check to see if residuals are white noise.

Check ✓	Item
	o Step #6. Model the remainder portion. Check to see if white noise. If not, use various modeling possibilities: (dynamic) regression analysis, exponential smoothing, ARIMA, etc.
	o Step #7. Mathematical representation of final model.
	o Step #8. Assessing forecasting accuracy. Report in-sample accuracy measures. Also, consider splitting sample into training (in-sample) and test (out-of-sample) data.
	• Optional for ECON 4115 students. Comparison between pure time series model (ETS, ARIMA, etc.) and econometric model. Which is better and why?
	• Conclusion: What's the significance of your forecasts? Who cares? Why does it matter?
	• Appendix: Well-organized appendix with Table & Figure numbers (Table A1, Table A2, Figure A1, Figure A2, etc.) and titles. Include all background tests, graphs, etc. that are used in the process of building your preferred forecasting model. Do not copy & paste output from R console; create your own tables. Appendix does not count against page number restriction.