Econ 313, Winter 2024

HW #1

Due on Monday, January 22 (11:58 PM)

This assignment asks you to develop an econometric model that quantifies the risk of a recession. You are welcome to use the software of your choice, although I am best positioned to assist you in Stata.

The assignment is due on January 22. Please email me a pdf with the subject line "HW1, ECO 313."

1. *Leading economic indicators* are variables that tend to move in advance of the business cycle, as opposed to at the same time, or in response to the business cycle. They are therefore useful to predict macroeconomic conditions. Pick at least two leading economic indicators for your model. Your variables should be monthly or more frequent. Explain your choice.

2. Choose a timeframe for predicting a recession. if you choose one year, for example, your model will then predict the probability of a recession beginning within one-year. Obtain the National Bureau of Economic Research's recession dates and construct a variable that equals 1 if a recession begins within your timeframe and 0 if one does not. Report descriptive statistics and/or a graph of this variable.

Suppose that a recession lasts from January 1995 through June 1995. if you use a one-year time-frame, your recession variable should then equal 1 beginning in January 1994 and continuing through December 1994. This shows that a new recession will begib within one year of those dates. Your variable should equal 0 otherwise. note that you should probably exclude periods where a recession is occurring from your estimation. This can be done using an 'if" statement in Stata.

Alternatively, you may alter this assignment to estimate the risk of a recession for a country besides the United States.

3. Using OLS, regress your recession indicator on the leading economic indicators from #1. The fitted regression (using the "predict" command in Stata). Values will be the probabilities of recession. Report these. You mught choose to do so using a simple graph.

4. Should you add lagged independent variables to your model? Explain.

5. What were the odds of a recession just prior to the Great Recession and the covid-19 recession? Do you trust these estimates?

6. Suppose that a your model yielded low recession odds in January 2020. Do you think that would suggest that your independent variables are not good leading economic indicators?

7. Why is your model known as a "linear probability model?"

8. Why are binary choice models, especially probit and logit, often run instead of a linear probability model?

9. Re-run your model using either probit or logit. Describe how your results change.

10. What is your best estimate of the current risk of a recession?

In October 2022, Bloomberg economists used a model like those from #3-#9 to argue that there was a 100% chance of a recession within the next year. This was objectively wrong (if they said 99%, then they could argue that their model was right but that the economy got lucky).

11. Provide one reason why the Bloomberg analysis was inept.[1]

12. Suppose that Bloomberg's analysis was fixed to address its most egregious flaws. If so, it still would have suggested that a 2023 U.S. recession was very likely. Can you think of a reason why you might not trust that estimate anyway? Hint: think about whether something in the data generating process changed between the sample period and October 2022.

---

[1]Wingrove, J. October 17, 2022. Forecast for US Recession Within Year Hits 100% in Blow to Biden. *Bloomberg*.

13. The econometrician Henry Theil wrote that "models are to be used, not believed." Say something brilliant about how this applies to this type of recession model.

14. Geologist Randy Marsh said that "Shelley, I'm Sorry Your Little Friend Was Killed By Spider-Man Tonight. Just Know That For Spider-Man To Have Done What He Did, He Must Have Had A Very Good Reason." Think about that.