

### Problem Set #3: Macroeconomic Indicators

Revised: November 9, 2013

*You may do this assignment in a group. Whatever you hand in should be the work of your group and include the names of all of the contributors.*

1. *Cyclical businesses (20 points)*. Rate each of the following businesses as not cyclical, cyclical, or very cyclical. Explain your reasoning.
  - (a) Machine tools (5 points)
  - (b) Grocery stores (5 points)
  - (c) Family practice medicine (5 points)
  - (d) Mercedes S-class sedans (5 points)

2. *Monthly indicators (40 points)*. The idea is to apply some of the tools we've developed to establish the cyclical patterns of various economic indicators.

We'll use data from the St Louis Fed's [FRED](#). Download monthly data from 1990 to the present for industrial production (series INDPRO), nonfarm employment (PAYEMS), housing starts (HOUST), retail sales (RRSFS, starts in 1992), and the purchasing managers index (NAPM).

Construct year-on-year growth rates for each series. With them in hand:

- (a) Compute and report the standard deviation of each one. (10 points)
  - (b) Compute and report the correlation of each variable with industrial production. Which variable has the highest correlation? Are any of them counter-cyclical? (10 points)
  - (c) Compute and plot cross-correlation functions for each variable with industrial production. Which variables are leading indicators of industrial production? Which are lagging indicators? (20 points)
3. *Near-term economic conditions (40 points)*. You are delighted to have a summer internship at JP Morgan. Your first rotation: the foreign exchange trading desk. On your first day, the Managing Director gives you a small project to get your feet wet. Noting that currency markets are driven partly by macroeconomic news, she asks you to write a report summarizing the near-term prospects for the US economy, specifically the next two quarters.

You go (again) to FRED and download 6-8 of your favorite economic indicators. (If you're short of ideas, look at the Bloomberg [economic calendar](#)) After collecting the data, you:

- (a) Explain (briefly) why you chose each indicator. Comment also, if you like, on why you used the indicator, its growth rate, or some other “transformation.” (10 points)
- (b) Graph each indicator (suitably transformed) over some sensible sample period. What are the advantages of a long sample period? Disadvantages? Include on the graph lines representing the sample mean and plus/minus one standard deviation. (10 points)
- (c) Summarize your findings in a business cycle scorecard, as outlined in the notes. (10 points)
- (d) Overall, do they indicate above-average, below-average, or average growth of the US economy? What judgemental factors would you add to your analysis? Where do you think the US economy is headed over the next 3-6 months? (10 points)