

MACROECONOMICS FIELD EXAM

INSTRUCTIONS: Do Part ONE and 2 out of 3 of Parts TWO, THREE, and FOUR. (In Part ONE, answer 6 out of 7. For each other part that you do, answer all the questions in that part.)

PART ONE (general macro; 30 minutes). Briefly explain 6 of the 7 following concepts and why it is or is not important to macroeconomics.

1. The new Keynesian IS curve.
2. The Shimer puzzle.
3. Precautionary saving.
4. Technology shocks.
5. Jordà local projections.
6. The labor wedge.
7. The zero lower bound.

PART TWO (1 hour and 15 minutes). Answer both questions.

1. Short questions (True/False + a brief explanation; explanation determines the grade; 35 minutes: 3-4 minutes per question):

1. Romer and Romer (AER 2010) document that fiscal shocks have significant effect on output which is inconsistent with the predictions of the basic real business cycle model.
2. Ed Prescott recently said that the available evidence is inconsistent with monetary policy capable to influence output. Is this statement true/false/uncertain?
3. Real business cycle models require elastic labor supply to match the data.
4. In the basic New Keynesian model, the central bank can stabilize prices by stabilizing employment in response to demand side shocks.
5. In the basic New Keynesian model, the main cost of business cycles stems from the volatility of unemployment rather than the volatility of output.
6. A sufficient condition for the optimal monetary policy in the basic New Keynesian model is that the real interest rate should increase in response to technology shocks.
7. Milton Friedman said that inflation is always and everywhere a monetary phenomenon. Is this statement true/false/uncertain?
8. Empirical macroeconomists use VARs to construct monetary policy shocks. The most common identifying restriction is to put fed funds rate (the main policy instrument of the Fed) first in the Cholesky ordering to make sure that the shock is not correlated with other shocks contemporaneously.
9. Estimated DSGE and VAR models routinely impose non-stationarity to ensure invertibility of shocks.
10. Housing starts is a coincident business cycle indicator.

(Part TWO continues on next page)

PART TWO (CONTINUED)

2. Longer question: Rational Expectations and Econometrics (40 minutes). Suppose you wish to test the null hypothesis that, over some sample period, all fluctuations in the inflation rate are attributable one-for-one to fluctuations in expected inflation after controlling for output gap. Mathematically, your hypothesis is

$$\pi_t = E_t \pi_{t+1} + \kappa \times x_t$$

where

π_t is the one-period inflation rate in period t

π_{t+1} is the rate of inflation in period $t+1$ (that is, inflation between t and $t+1$)

x is the output gap which evolves exogenously.

(Note that x_t is known at time t , but π_{t+1} is not known until time $t+1$.)

Unfortunately, you observe actual inflation, not expected inflation. You ask your RA how she thinks you should proceed. She suggests four regressions that she might run to examine the relationship between current inflation and expected future inflation:

1. Regress π_t on π_{t+1} and x_t
2. Regress π_t on π_{t+1}
3. Regress π_{t+1} on π_t and x_t
4. Regress π_{t+1} on π_t

- A. Under what hypothesis, what would you predict for each of these four regressions?
- B. Suppose you can run only one regression. Which one do you prefer for testing your hypothesis? Why?
- C. Does the regression that you choose have power against alternative hypothesis that current inflation is uncorrelated with expected inflation? That is, if your null hypothesis is wrong and instead π_t and $E_t \pi_{t+1}$ are uncorrelated, what would your regression find?

Hint: You may find it useful to consider the special case in which inflation is generated by an AR(1) process: $\pi_t = \rho \pi_{t-1} + e_t$ with $\rho \in [0,1)$.

PART THREE (1 hour and 15 minutes). Answer both questions.

1. Traditionally, the effects of monetary policy shocks have often been estimated using vector autoregressions (VARs) identified through timing assumptions (such as that monetary policy does not respond to output and inflation within the period, or that output and inflation do not respond to monetary policy within the period). What are the main weaknesses of the use of VARs to estimate the effects of monetary policy shocks? Are there countries and/or time periods for which you would find VAR-based evidence about the effects of monetary policy shocks persuasive (and why or why not)? If you did use a VAR, what timing assumptions would you make (and why)? What measure of monetary policy would you use (and why)? (Some candidates might be the stock of high-powered money; a broader measure of the money supply, such as M1; the short-term nominal policy interest rate; and a medium-term nominal interest rate). Finally, what are the leading alternatives to VARs to estimate the effects of monetary policy shocks?

2. A large number of recent papers in macroeconomics use data from regions of countries (such as states, counties, cities, and provinces). What are some of the main strengths and weaknesses of the use of regional data to address macroeconomic questions? Be sure to illustrate both the strengths and the weaknesses using examples based on specific papers.

PART FOUR (1 hour and 15 minutes). Answer the following question.

In a text titled “On the Puzzling Prevalence of Puzzles” (August 2, 2016), former Minneapolis Federal Reserve President Narayana Kocherlakota writes:

“To an outsider or newcomer, macroeconomics would seem like a field that is haunted by its lack of data. In the absence of that data, it would seem like we would be hard put to distinguish among a host of theories with distinct policy recommendations. So, to the novice, it would seem like macroeconomists should be plagued by *underidentification* or *partial identification*. But, in fact, expert macroeconomists know that the field is actually plagued by failures to fit the data—that is, by *overidentification*.

“Why is the novice so wrong?”

“The answer is the role of *a priori* restrictions in macroeconomic theory. [...] The mistake that the novice made is to think that the macroeconomist would rely on data alone to build up his/her theory or model. The expert knows how to build up theory from *a priori* restrictions that are accepted by a large number of scholars. [...] Those restrictions are what give the models their empirical content. As it turns out, the resulting models actually end up with too much content—hence, the seemingly never-ending parade of puzzles.”

Discuss **three** puzzles of your choosing in macroeconomics or international macroeconomics. For each puzzle you will (a) present the theoretical predictions as sharply (and analytically) as possible; (b) discuss the empirical evidence; (c) discuss possible resolutions of the puzzle in the literature, or your own. Which *a priori* restrictions of the model are responsible for these puzzles in your view?