UNIVERSITY OF CALIFORNIA
DEPARTMENT OF ECONOMICS

Economics 134
Spring 2018
Professor David Romer

PROBLEM SET 4

DUE AT THE *BEGINNING* OF LECTURE ON MONDAY, APRIL 23RD

You may work together on the problems, but your answers must be ***in your own words*** and ***handwritten***. You also must ***list the other students with whom you worked***.

Unless noted otherwise, be sure to explain your answers and to use graphs whenever appropriate.

1. Our model with an interest rate differential assumes that all investment depends on a single interest rate, r^b. In truth, there are many interest rates, and they are relevant to many different kinds of investment.

To partially capture this idea, suppose investment is the sum of two types of investment, a safer type I^1 and a riskier type I^2. I^1 depends on r^{b1} and I^2 depends on r^{b2}: $I^1 = I^1(r^{b1})$, $I^2 = I^2(r^{b2})$, where both functions are decreasing. Suppose also that $r^{b1} - r^s = d^1(Y)$ and $r^{b2} - r^s = d^2(Y)$, again with both functions decreasing. To reflect the idea that Type 2 investment is riskier than Type 1 investment, assume that for a given Y, $r^{b2} - r^s$ is greater than $r^{b1} - r^s$, and that when Y falls, $r^{b2} - r^s$ rises by more than $r^{b1} - r^s$ does.

- **a.** In this model, suppose there is a tax cut.
  - **i.** What is the effect of this change on r^s, Y, $r^{b1} - r^s$, and $r^{b2} - r^s$?
  - **ii.** Is the change in $r^{b1} - r^s$ larger, smaller, or the same as the change in $r^{b2} - r^s$, or is it not possible to tell?
- **b.** One message we have stressed is that a modeling assumption is not inherently "good" or "bad"; the value of an assumption depends on the question we are trying to answer. Thus, give ***one*** example of a question that moving from a model with just one interest rate differential ($r^b - r^s$) to one with two differentials ($r^{b1} - r^s$ and $r^{b2} - r^s$) would be helpful in answering. Give ***one*** example of a question where moving from a model with one differential to a model with two would complicate the analysis without generating any significant additional insights.

2. Consider the model in Section V of Romer, *Short-Run Fluctuations* (discussed in lecture on April 16). Suppose the central bank changes its interest rate rule to set a higher value of the saving real interest rate for a given level of output.

- **a.** Show the effects of this change in the IS-MP diagram.
- **b.** Describe whether this change increases, decreases, or has no effect on each of the following variables (or whether it is not possible to tell): output, the saving real interest rate, the borrowing real interest rate, and the interest rate differential.

3. Label each of the following statements as True, False, or Uncertain, and explain your answer briefly.

- **a.** Rising income inequality was one factor that led to the large expansion of credit in the early 2000s.
- **b.** Conventional monetary and fiscal policy cannot be used either to stem a financial crisis or to mitigate the harmful effects of a financial crisis on the macroeconomy.

4. One of the three "coping mechanisms" listed by Robert Reich in *Aftershock* is "Everyone works longer hours." Reich appears to be implying that not only did many families switch from having one earner to having two, but also that conditional on working in the labor market, Americans were working more hours.

- **a.** Find some data that shed light on this claim. Do they support it? (A few comments: First, there

is not necessarily just one right answer here—we want you to find one data series that sheds light on this question, and there may be more than one that does so. For example, data on either average weekly hours of workers or average annual hours of workers would be useful. Data on hours worked per person in the entire population, or in the entire adult population, on the other hand, seem less useful, since they would be affected by Reich's first coping mechanism—"Women move into paid work." Second, since Reich is concerned with the effects of rising inequality, which has been occurring for decades, ideally the data you use would go back more than just a few years. Likewise, it is not crucial that the data incorporate the past few years.)

b. In a few sentences, say a little about the source of the data. Do the data appear credible (for example, are they from a government statistical agency)?

Pick the ***best*** answer to each of questions 5–8. No explanations of your answers are needed.

5. Uncertainty is likely to have an especially large negative short-run effect on spending by households and firms if:

- **a.** They do not expect the uncertainty to be resolved soon.
- **b.** There are large costs to reversing their spending decisions.
- **c.** The real interest rate is high.
- **d.** Inflation is high.
- **e.** All of the above.
- **f.** None of the above.

6. When economists speak of hysteresis, they refer to the fact that:

- **a.** Once a recession starts, it is likely to last for a while.
- **b.** High unemployment tends to be followed by low unemployment.
- **c.** Prolonged high unemployment can cause the natural rate of unemployment to rise.
- **d.** Prolonged high unemployment will eventually reduce inflation.

7. In "The Aftermath of Financial Crises" (Chapter 14 of *This Time Is Different* by Carmen Reinhardt and Kenneth Rogoff), Reinhardt and Rogoff find that following financial crises, on average:

- **a.** Unemployment rises sharply.
- **b.** House prices fall sharply.
- **c.** Government debt rises sharply.
- **d.** All of the above.
- **e.** None of the above.

8. The "borrowing" interest rate, r^b, is usually higher than the "saving" interest rate, r^s, because:

- **a.** Financial intermediaries' information production, liquidity transformation, and diversification provision are costly.
- **b.** Government regulations limit the interest rates that banks can pay.
- **c.** The interest rates that foreigners can get on their savings are generally lower than interest rates in the United States.
- **d.** The inflation rate faced by savers is usually lower than the inflation rate faced by borrowers.