

Instructions

1. This part of the exam is take-home, open-book, and open-notes. You may use any class materials at your disposal in preparing your answers.
 2. You may not communicate in any way with anyone other than the instructor about the exam or the questions. It is to be done strictly on an individual basis.
 3. The exam is due at noon on Wednesday, November 7.
 4. You are responsible for making sure that you understand each question clearly. In case of any ambiguity, be sure to consult the instructor.
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1. The Great Depression in the United States was preceded by a crash in the stock market in October 1929. Keynes attributed the onset of the Great Depression to a collapse in the “animal spirits” of investors, leading to a large contraction of aggregate demand. Use the q theory of investment as presented in Romer’s Chapter 8 to show how stock prices and investment demand would respond to a sudden decrease in firms’ expected marginal profitability of capital. How long would you expect such a downturn in aggregate demand to last?
2. In class, we developed a condition for whether a country’s debt/GDP ratio would be rising or falling over time if its primary deficit was zero. Use whatever online data sources you think are pertinent (being sure to cite them) to determine whether the current U.S. debt/GDP ratio would be rising or falling if the primary budget were in balance. For the current United States federal budget, approximately what is the primary budget balance? Based on these results, what do you expect to happen to the U.S. debt/GDP ratio in the near future?
3. Some empirical studies have argued that investment spending is quite sensitive to the firms’ own cash flow. Since this might seem obvious to a non-economist, explain briefly why basic economic theory suggests that under certain assumptions there might *not* be a connection. What assumptions of that theory would need to be violated in order to have a cash-flow effect on investment? For what kinds of firms are these violations likely to occur? Does the empirical evidence support this?
4. Suppose that the demand for money is

$$\frac{M}{P} = Y^\alpha (r + \pi)^{-\beta},$$

where Y is real output, r is the real interest rate, π is the inflation rate, and the elasticity parameters α and β are both assumed to be positive.

- a. Assuming that Y and r are constant and independent of the rate of inflation, show that the long-run steady-state inflation rate must be equal to the growth rate of the money supply μ .
- b. Derive the government's seigniorage revenue as a function of the rate of money growth. What rate of money growth maximizes seigniorage? Do you need to make any restrictions on the values of the elasticity parameters in order to assure a finite maximum? If so, explain the underlying intuition?
- c. What is the elasticity of real money demand with respect to the inflation rate when the government chooses the revenue-maximizing rate of money growth? Explain the intuition of this result.
- d. In evaluating government seigniorage, should the money demand equation above relate to a broad concept of money (including various bank deposits and possibly other assets) or a narrow concept? Why?