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Econ 2102
Intermediate Macroeconomics
Fall 2015

Problem Set 2

Due on October 22^{nd} at the beginning of Lecture.

1 Tax and Government Multipliers [3 points]

Two identical countries, Country A and Country B, can each be described by a Keynesian-cross model. The MPC is 0.8 in each country. Country A decides to **increase** spending by $1 billion, while Country B decides to **cut** taxes by $1 billion. In which country will the new equilibrium level of income be greater? Do not forget to include the formulas you need to use to answer the question and your calculations.

2 Multiple Choice. Choose the one alternative that best completes the statement or answers the question (1 point per question). [5 points]

1. When studying the short-run behavior of the economy an assumption of ______ is more plausible, in contrast to studying the long-run equilibrium behavior of an economy, when an assumption of ______ is more plausible.
   (a) inflation; unemployment
   (b) flexible prices; sticky prices
   (c) sticky prices; flexible prices
   (d) unemployment; inflation

2. The statistical relationship between changes in real GDP and changes in the unemployment rate is called:
   (a) the Phillips curve.
   (b) Okun's law.
   (c) the Solow residual.
   (d) the Fisher effect.

3. Assume that apples cost \$0.50 in 2002 and \$1 in 2007, whereas oranges cost \$1 in 2002 and \$1.50 in 2007. If 4 apples were produced in 2002 and 5 in 2007, whereas 3 oranges were produced in 2002 and 4 in 2007, then real GDP (in 2002 prices) in 2007 .

   (a) \$5.

   (b) \$6.50.

   (c) \$9.50.

   (d) \$11.

4. Consider the money demand function that takes the form $\frac{M}{P} = kY$, where M is the quantity of money, P is the price level, and Y is real output. If the money supply is growing at a 6 percent rate, real output is growing at a 3 percent rate, and k is constant, what is the rate of inflation in this country?

   (a) 13 percent

   (b) 10 percent

   (c) 7 percent

   (d) 3 percent

5. The ex-post real interest rate will be higher than the ex-ante real interest rate when the:

   (a) actual rate of inflation is greater than the expected rate of inflation.

   (b) actual rate of inflation is less than the expected rate of inflation.

   (c) rate of inflation is decreasing.

   (d) rate of inflation is increasing.

3 Shocks to the Aggregate Supply [4 points]

Suppose that an oil cartel effectively increases the price of oil by 50 percent, leading to a supply shock in both Country A and Country B. Assume that both countries were in long-run equilibrium (full employment) at the same level of output and prices at the time of the shock.

(a) Describe the short-run impact of this supply shock on prices and output in each country. Do not forget to support your answer with a graph. [1 point]

(b) Now assume that the central bank of Country A takes **no** stabilizing-policy actions (i.e. central bank of Country A does not try to stabilize output). After the short-run impacts of the adverse supply shock become apparent, the central bank of Country B **increases** the money supply to stabilize output. Compare the long-run impact of the adverse supply shock on prices and output in each country. Support your answer with a graph. [3 points]

4 Quantity Theory of Money. [2 points]

Consider a money demand function that takes the form $\frac{M^d}{P} = \frac{Y}{i}$, where M is the quantity of money, P is the price level, Y is real output, and i is the nominal interest rate (measured in percentage points).

(a) What is the velocity of money if the nominal interest rate is constant? [1 point]

(b) How will the level of the velocity of money change if there is a permanent (one time) decrease in the nominal interest rate, holding other factors constant? [1 point]

5 Stabilization Policy [4 points]

Let's examine how the goals of the Central Bank (BoC) influences its response to shocks. Suppose central bank A cares only about keeping the price level stable, and central bank B cares only about keeping output at its natural rates. Explain how each central bank would respond to (support your answer with a graph):

(a) An exogenous decrease in the velocity of Money.

6 Aggregate Demand [9 points]

Suppose the Central Bank of Brazil decides to increase supply of money by 10 percent.

(a) What happens to the aggregate demand curve [2 points]?

(b) What happens to the level of output and the price level in the short run and in the long run? [4 points]

(c) What happens to the real interest rate in the short run and in the long run? [3 points]

7 Keynesian Cross [2 points]

Assume that the government reduces taxes (T). Show graphically, how this Tax cut affects the Keynesian Cross and the equilibrium income. Label your graph properly and provide additional explanations. [2 points]