

Economics 222
Exercise C
due Friday 11 November by noon

1. During the mid-twentieth century, the USSR grew rapidly as a result of an increase in its saving rate. To describe this event using the growth model of chapter 6, suppose that the population growth rate is $n = 3\%$, the depreciation rate is $d = 5\%$, and $y = k^{0.3}$.

(a) The saving rate is $s = 16\%$. Find the steady-state capital labour ratio, k^* , and output per capita, y^* .

(b) If the saving rate rises to $s = 32\%$, find the new, steady-state value of y^* .

(c) Suppose that the transition takes 10 years. What is the total growth in output over that time?

2. Suppose that the demand for M1 in Canada can be described by:

$$\frac{M}{P} = Y^{\frac{1}{2}},$$

that $M^s = M^d$, and that $\frac{\Delta Y}{Y} = 2$ percent per year.

(a) If the money supply grows at a steady rate of 4 percent per year, what will the inflation rate be?

(b) What will happen to M1 velocity over time?

3. Retrieve the Canadian unemployment rate from Cansim II (series v2062815) and the US unemployment rate from DRI Basic Economics (series lhur) for 1976-2004.

(a) Graph the two series against time.

(b) Based on these indicators, which last longer expansions or contractions?

(c) Would you describe the timing as coincident?

4. Imagine a closed economy, with consumption behaviour following this pattern:

$$C = 20 + 0.6Y$$

and investment spending following this pattern:

$$I = 40 - 2i.$$

The expected inflation rate is constant at $\pi^e = 2$. Government spending is $G = 30$. The money market is described by:

$$\frac{M}{P} = Y - 10i.$$

The full-employment level of output is given by

$$\bar{Y} = 200.$$

The money supply is $M^s = 150$.

- (a) Find expressions for the IS curve and the LM curve.
- (b) Solve for the real interest rate r , for investment, I , and for the price level, P .
- (c) Let us use this model to predict some of the effects of an oil price shock on a large economy like the United States. Suppose that a sharp rise in the price of oil has the effect of lowering full-employment output to $\bar{Y} = 180$. Find the predicted effects on r , I , and P .
- (d) Illustrate your answers with an $IS - LM - FE$ diagram.

5. The impact of changes in monetary policy depends on how rapidly prices adjust in the economy. To illustrate this property, imagine that in a closed economy $C = 30 + 0.5Y$, $I = 25 - 5i$, $G = 10$, and $\pi^e = 0$. Meanwhile, $\bar{Y} = 100$ and $M/P = Y$.

- (a) Initially, $M = 200$. Solve for the price level and the real interest rate.
- (b) Suppose that monetary policy is loosened, so that $M = 220$. In a classical version of this economy, solve for the new values of the price level and the real interest rate.
- (c) Now consider a Keynesian version of this economy, in which there is an intermediate period in which the price level does not adjust. Find the values of the real interest rate and output during this period.
- (d) Illustrate each of these outcomes using an $IS - LM - FE$ diagram.
- (e) Sketch what the time paths of the price level and output would look like under the classical and Keynesian versions of this model.

6. This question studies the real exchange rate between Canada and the United States. View Canada as the home economy and the United States as the foreign one.

- (a) Collect data for e_{nom} , P , and P_{for} for January 2000 and January 2005 and list them in a table. (Hint: Look under ‘frequently requested series.’)
- (b) What are the cumulative inflation rates in the two countries over that time?
- (c) What is the cumulative real appreciation or depreciation over that time? (Hint: First use the underlying levels to find e .)
- (d) Why might a real appreciation concern Canadian policy-makers?

7. Read James Powell’s *A History of the Canadian Dollar* (available from the Economics 222 web pages) and comment on this claim: “The Canadian dollar has depreciated steadily since World War II.”