

# Economics 222

## Assignment 4

March 16, 2000

Due Date: In class, Thursday, March 30th, 2000.

1. [20] Go to the Cansim database and download the following monthly data from January 1988 to December 1999.

series	Description
D100030	Index of Leading Indicators-Canada
D100044	Index of Leading Indicators-US
D100040	TSE 300 composite index
I56001	GDP at factor cost.

- a) Plot GDP at factor cost with respect to time. Determine approximately when if any recessions occurred over this time period.
- b) Now take each of the first two indicator series and plot them on a graph with GDP. Which series appears to be a better forecaster of future business cycle fluctuations. Why are these two indicators similar? Explain.
- c) In the 1990s Statistics Canada revised its set of indicators to include the TSE 300 composite stock price index. Plot this series, along with GDP with respect to time. Does there appear to be information in the TSE 300 index about future business cycles? Explain.

2. [30] Japan experienced a severe recession in the 1990s, some would refer to it as a depression. Your textbook (pages 498-500) summarizes the experiences of Japan. This question is a numerical exercise in understanding Japan's dilemma. Suppose Japan's economy can be approximated by the following information:

$$IS \quad r = 41 - 0.008Y$$

$$\frac{M^d}{P} = 0.25Y - 62.5r$$

$$\bar{Y} = 6000, M = 1250, \bar{P} = 10.$$

Initially assume that there is zero expected inflation ( $\pi^e = 0$ ) which implies that the nominal interest rate (i) equals the real interest rate (r).

- a) Japan is starting in a recession. First, derive the LM curve associated with a fixed price level of 10. Now confirm that Japan is in a recession by determining short run levels of Y and r. (Note: interest rates in this example will be given in percentage form)
- b) Towards the end of the text application, mention is made to Japan being in a liquidity trap. This implies that monetary authorities cannot force nominal interest rates below zero since people can always just hold money. If expected inflation persistently remains at zero, explain why expansionary monetary policy would be ineffective in ending this recession?
- c) One suggestion is to use expansionary fiscal policy. Explain diagrammatically what would happen in your IS/LM/FE model. If fiscal policy were successful, what would be the long run interest rate.
- d) There appears to be evidence that fiscal policy was unsuccessful in the past. Later in this passage, Paul Krugman suggests that the best policy would be to rapidly expand money supply, creating higher expected inflation. How would creating expected inflation enable monetary policy to work and bring this economy out of a recession? Determine how high expected inflation would have to be, to keep nominal interest rates above zero.

3. [30] Canada is a small open economy with the following information:  
Assume the foreign economy is the U.S.

$$C^d = 200 + 0.6(Y - T) - 600r$$

$$I^d = 500 - 1200r$$

$$NX = 100 - 0.2Y - 300r + 0.08Y_f + 100r_f$$

$$\frac{M^d}{P} = 100 + 0.5Y - 1000r$$

$$G=200, T=250, Y_f = 4000, \bar{Y} = 1700, r_f = 0.075, M = 5000.$$

- a) Derive the IS and LM curves. Determine the long run level of interest rates, consumption, investment, net exports and prices for this economy.
- b) Suppose the foreign economy experiences a boom resulting in  $Y_f = 4200$ . Repeat part a) and determine the long-run effects on the domestic economy.
- c) Suppose the foreign country's central bank fears inflation and raises interest rates to  $r_f = 0.1$ . Again examine the long-run consequences of this action on the domestic economy.
- d) Consider implicitly, the effect this policy change would have on exchange rates in Canada, both in the short and long-run. In the summer we observed nominal exchange rate depreciation here in Canada. Is this consistent with our analysis?

4. [20]

Consider a country, in long run equilibrium, with a new, recently elected, President. The term of office is four years at which time the incumbent must call an election. The incumbent will be re-elected if the unemployment rate, in the last year of office is less than six percent. Currently the inflation rate is  $\pi = 0.05$ , or five percent, and the unemployment rate is  $u = 0.08$ . Economists have a rough estimate of the expectations-augmented Phillips curve for this country:

$$\pi = \pi^e - 2(u - \bar{u})$$

where  $\pi^e$  is the expected inflation rate and  $\bar{u}$  is the natural rate of unemployment.

a) Determine  $\pi^e$  and  $\bar{u}$  initially, in long-run equilibrium.

The four-year economic policy, determined by the incumbent party, can be summarized in terms of the following (unannounced) inflation rates:  $\pi_1 = 0.04$ ,  $\pi_2 = 0.02$ ,  $\pi_3 = 0.06$  and  $\pi_4 = 0.4$ .

Initially, assume the public sets its expectations about inflation based on the previous year's inflation rate. In this context, determine  $\pi^e$  and  $u$  for each of the four years based on the incumbent's policy. Show that the incumbent will be re-elected.

b) Suppose the incumbent follows the same strategy in the second term of office. Would it be rational for the public to continue updating their expectations based on the previous year's  $\pi$ ? Explain.

Suppose they adopt a four year strategy: set  $\pi^e$  in each year equal to the observed inflation rate 4 years earlier. Determine  $u$  for each of the four years under this new strategy.

c) What would the Lucas Critique have to say about this example?

Describe policies that would be superior, in the long term, to having politically generated Business Cycles.