

ECON 222

Winter 2004 – Sections C and D

Assignment 3

This assignment is due at 5:00pm on Wednesday March 10 in the 3rd floor Dunning Hall drop box.

Question 1

This question requires you to analyze data from CANSIM in MS Excel or another spreadsheet program. You will find a link to CANSIM by looking under Data Sources on the Econ 222 webpage.

Retrieve M1 money supply (D100045), the Consumer Price Index (CPI) (D19279) and Real GDP measured in 1992 dollars (D24657). When you are retrieving the money supply and price index data, select 'annual' for frequency and 'average' for conversion method. For all 3 series, use data from 1986-1999.

- (a) What is average real GDP and the average M1 money supply over the period 1986-1999?
- (b) Multiply the CPI series by 0.01. Now use the data to construct a new series for nominal GDP. What is the average annual growth rate for M1 and for the nominal GDP series? What does this tell you about the impact on the economy of a given percentage increase in the money supply?
- (c) Calculate the velocity of M1 over the period 1986-1999. Is velocity constant? What is the average velocity over this time period?
- (d) Calculate the correlation between M1 and real GDP and between M1 and the CPI index. (In MS Excel, you can use the CORREL command.) Is M1 procyclical, countercyclical. Is the CPI index procyclical or countercyclical?

Question 2

Suppose that Belarus has the following money demand function:

$$\frac{M^d}{P} = \frac{0.01Y}{i}$$

- (a) If in 1998 $Y = 100$, $i = 0.1$, and $P = 2$, what was (i) real money demand, and (ii) nominal money demand?
- (b) If the money market was in equilibrium in 1998, what must the money supply have been? What was velocity of money?
- (c) What is the income elasticity of real money demand in this economy?
- (d) From 1998-2000, the money supply in Belarus grew by 150% and the price level rose by 180%. By what percentage did real money demand change over the same period?
- (e) Given your answer in part (c), how did Y change in Belarus from 1998-2000? (Assume the nominal interest rate was constant over this period.)

Question 3

Suppose that inflation in Canada is given by:

$$\pi = \frac{\Delta M}{M} - \nu_Y \frac{\Delta Y}{Y}$$

and that expected inflation in Canada is given by:

$$\pi^e = \frac{\Delta M^e}{M} - \nu_Y \frac{\Delta Y^e}{Y}$$

Assume that the income elasticity of money demand $\nu_Y = \frac{2}{3}$

- (a) In 1981 inflation in Canada was very high and had been high for many years, so that $\pi^e = 13\%$. If output growth was expected to be 3%, what was the expected growth in the money supply $\Delta M/M$?
- (b) The Bank of Canada decided that inflation was too high, so they decided to reduce inflation by restricting the money supply so that $\Delta M/M = 3\%$. If the result of this policy was that actual inflation π dropped to 5%, what must have been the impact of this policy on output growth $\Delta Y/Y$?

(c) After a year expectations adjusted so that $\pi^e = \pi$. If output growth was once again expected to be 3%, what was the new expected growth in the money supply $\Delta M/M$?

Question 4

Suppose that an economy is partially described by the following information:
(variables are measured in billions of dollars)

$$\bar{Y} = 200$$

$$C = 60 + 0.5Y - 500r$$

$$I = 60 - 1500r$$

$$G = 40$$

- (a) Derive the IS curve for this economy.
- (b) If the economy is operating at the full employment level of output $\bar{Y}$, what is the corresponding real interest rate $\bar{r}$?
- (c) Now suppose that government spending G doubles from 40 to 80. If output remains at $\bar{Y}$, what will be the new real interest rate?
- (d) This economy also has a real money demand function given by:

$$M^d/P = 500 + 0.25Y - 1200i$$

If expected inflation $\pi^e = 0.02$, by what amount does real money demand change given the increase in G ?

- (e) Now suppose that after government spending G doubles, Y increases enough that the real interest rate does not change. In this case, what is real money demand given the increase in G and in Y ?