

Cornell University

ECON 3040 Intermediate Macroeconomic Theory

Final exam: Review session

Prof. Mathieu Taschereau-Dumouchel Spring 2018

About the exam :

- The final is on May 21st from 9am to 11am (Arrive 10 minutes early)
 - Room: Kennedy Hall 116-Call Aud
- Bring :
 - Bring your Cornell ID
 - <u>Three</u> cheat-sheet 8.5" x 11" (both sides)
 - Handwritten, cannot be reproduction of large sections of material (lectures slides, textbook, problem set solution, etc)
 - A <u>calculator</u> (no phone/tablet/computer allowed)

Preparation for Final

- Review the solutions to the problem sets
- Practice questions listed on lectures' slides.
- Practice exam on canvas

Plan for today

- Do Numerical Problem 4 from Chapter 13 from the book (similar to the second problem from PS6)
- Answer questions

 $C^d = 200 + 0.6(Y - T) - 200r.$ Desired consumption $I^d = 300 - 300r$. **Desired** investment T = 20 + 0.2Y. Taxes Government purchases G = 152. NX = 150 - 0.08Y - 500r.Net exports L = 0.5Y - 200r.Money demand Money supply M = 924.Full-employment output Y = 1000.

Questions

- a) What are the general equilibrium (that is, long-run) values of output, the real interest rate, consumption, investment, net exports, and the price level?
- b) Starting from full employment, government purchases are increased by 62, to 214. What are the effects of this change on output, the real interest rate, consumption, investment, net exports, and the price level in the short run? In the long run?
- c) With government purchases at their initial value of 152, net exports increase by 62 at any income and real interest rates so that NX = 212 - 0.08Y - 500r. What are the effects of this change on output, the real interest rate, consumption, investment, net exports, and the price level in the short run? In the long run? Compare your answer to that for Part (b).

(a) In the long-run, the economy is at its full employment level so Y = 1000. To find the other variables we need to build the IS curve. To do so, we start with our main equation

$$S - I = NX$$

$$Y - C - G - I = NX$$

$$Y - 200 - 0.6(Y - T) + 200r - 152 - 300 + 300r = 150 - 0.08Y - 500r$$

$$1.08Y - 0.6(Y - 20 - 0.2Y) + 1000r = 802$$

$$0.6Y + 1000r = 790$$

Since Y = 1000 we find an interest rate of r = 0.19 = 19%.

$$\frac{M}{P} = L = 0.5Y - 200r$$
$$\frac{924}{P} = 500 - 38$$
$$P = 2$$

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

$$C = 200 + 0.6(1000 - 20 - 200) - 200 \times 0.19$$

$$C = 630$$

I = 300 - 300rNX = 150 - 0.08Y - 500r $I = 300 - 300 \times 0.19$ $NX = 150 - 80 - 500 \times 0.19$ I = 243NX = -25

$$C + I + NX + G = 1000 = Y$$

(b) Government purchases goes from 152 to 214. In the short-run the economy is at the intersection of the IS and the LM curves. The IS curve is moving:

$$S - I = NX$$

$$Y - C - G - I = NX$$

$$Y - 200 - 0.6(Y - T) + 200r - 214 - 300 + 300r = 150 - 0.08Y - 500r$$

$$Y - 200 - 0.6(Y - 20 - 0.2Y) + 200r - 214 - 300 + 300r = 150 - 0.08Y - 500r$$

$$0.6Y = 852 - 1000r$$

For the LM curve (the price level is still P = 2 in the short-run):

$$\frac{M}{P} = L = 0.5Y - 200r$$
$$\frac{924}{2} = 0.5Y - 200r$$
$$462 = 0.5Y - 200r$$

Two equations two unknowns!

Once we have Y and r we can compute the other quantities easily.

In the long-run? Same approach as part a).

(c) We go back to G = 152. Now net export is given by NX = 212 - 0.08Y - 500r. Once again we need to build the IS curve. Notice that the change in NX completely compensate the change in government spending! The IS curve is the same as in b:

$$0.6Y = 852 - 1000r$$

The LM curve stays the same: $\frac{M}{P} = L = 0.5Y - 200r = 462$ with P = 2 in the short-run. Consumption, investment, output and interest rate are exactly the same as in b (short-run). Net exports is NX = 212 - 0.08 * 1020 - 500 * 0.24 = 10.4. The price level is still 2.

In the long run, we go back to Y = 1000 and find that consumption, investment, output, the price level and interest rate are exactly the same as in b (short-run). Net exports is NX = 212 - 0.08 * 1000 - 500 * 0.252 = 6. We see that an increase in net export for exogenous reasons act as an increase in government spending on the economy.

