

**ECON 222 Macroeconomics**

**Exam I: Building blocks and long-run model Spring 2020 Make-up**

**Consider an economy with the following parameters:**

**Production:  $Z = 40$ ,  $K = 4,000$ ,  $\rho = 4$ ,  $N = 121$ ,  $\alpha = 0.3$ ,  $\delta = 0.35$ ,  $\gamma = 0.35$**

**Government:  $G = 400$ ,  $t = 20\%$**

**Consumption:  $C_0 = 200$ ,  $C_Y = 0.75$**

**Imports:  $IM_Y = 0.1$**

**Exchange rate:  $\epsilon_0 = 110$ ,  $\epsilon_r = 700$ ,  $r_f = 5\%$**

**Gross exports:  $GXY = 0.02$ ,  $Y_f = 3,000$ ,  $GX_\epsilon = 1$**

**Investment:  $I_0 = 300$ ,  $I_r = 1,200$**

1. **Solve the model. All dollar quantities can be rounded to no decimal places. The interest rate should be shown to two decimal places (e.g., 3.45%, or 0.0345). [10 pts]**

$$Y =$$

$$Y = p(z+k)$$

$$= 4 * (40 + 4000)$$

$$= 16160 \text{ units}$$

$$T = 20\% * 16160 \text{ units}$$

$$= 3232 \text{ units}$$

$$C = C_0 + \delta \gamma$$

$$= (200 + 0.35 * 16160) \text{ units}$$

$$= 5856 \text{ units}$$

$$S(\text{private}) = Y - C$$

$$= (16160 - 5856) \text{ units}$$

$$= 10304 \text{ units}$$

$$S(\text{public}) = Y - C - T$$

$$= (16160 - 5856) \text{ units}$$

$$= (10304 - 3232) \text{ units}$$

$$= 7072 \text{ units}$$

$$IM = 0.1 * Y$$

$$=0.1*16160 \text{ units}$$

$$=1616 \text{ units}$$

$$r = I_r/y$$

$$=1200/16160$$

$$=7.42\%$$

$$\mathbf{GX} = G_0 + T$$

$$= (3232 - 400) \text{ units}$$

$$=2832 \text{ units}$$

$$\mathbf{I} = (I_0 + I_r)$$

$$= (300 + 1200) \text{ units}$$

$$=1500 \text{ units}$$

2. *Now consider a situation where there is a large increase in the resource supply. Simultaneously, there is a decrease in Z, down to a new level of 38 and an increase in p up to a new level of 4.5. The net effect on the quantity of labor from increased resource supply and decreased Z is that the employment level rises to 128. Solve the model. The same rounding guidelines apply as in question 1. [10 pts]*

$$Y = Y = p (z + k)$$

$$=4.5*(38+4000)$$

$$= 18171 \text{ units}$$

$$T = 20\% * 18171 \text{ units}$$

$$=3634 \text{ units}$$

$$\mathbf{C} = C_0 + \delta y$$

$$= (200 + 0.35*18171) \text{ units}$$

$$=6560 \text{ units}$$

$$\mathbf{S (private)} = Y - C$$

$$= ((18171 - 6560)/121) \text{ units}$$

$$=90 \text{ units}$$

$$\mathbf{S (public)} = Y - C$$

$$= (18171 - 6560) \text{ units}$$

$$=11611 \text{ units}$$

$$IM = 0.1 * Y$$

$$= 0.1 * 18171 \text{ units}$$

$$= 1817 \text{ units}$$

$$r = I_r / Y$$

$$= 1200 / 18171$$

$$= 6.60\%$$

$$GX = T - Go$$

$$= (3634 - 400) \text{ units}$$

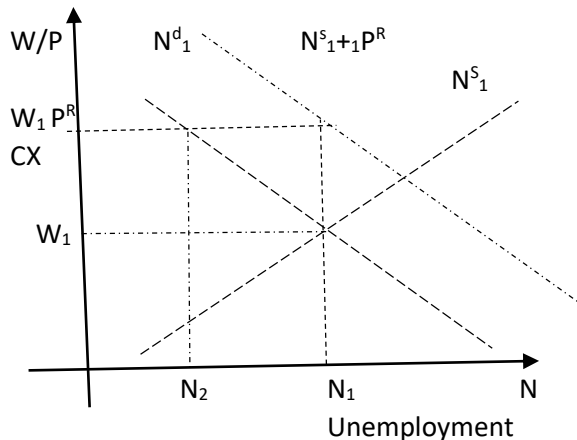
$$= 3234 \text{ units}$$

$$I = (I_0 + I_r)$$

$$= (300 + 1200) \text{ units}$$

$$= 1500 \text{ units}$$

3. On the diagram below move any curves that need to be moved to reflect the situation in question 2 (increased supply of resources, decreased level of  $Z$ , increased level of  $p$ ). Explain why you're moving any curve(s) that you move. If any shifts are ambiguous (you could make an argument for them going either way), note that. Note: since question 2 specifies that the equilibrium labor input goes up, be sure to draw your curves such that you end up with  $N_2 > N_1$ . [10 pts]

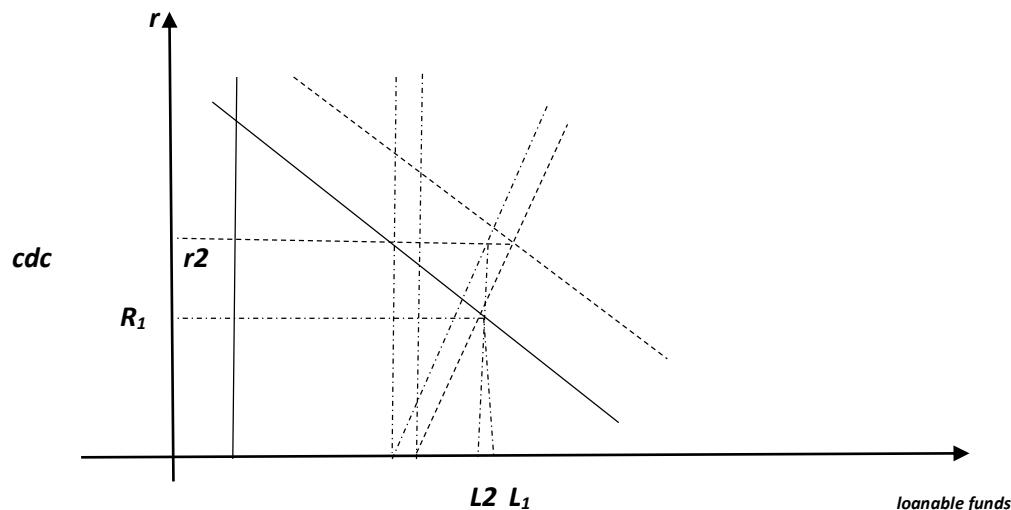


4. Why might the increase in resource supply actually be a cause (over enough time) of the decline in  $Z$  and increase in  $p$ ? (5 pts)

If there is increase in resources, it means that the resources will be supplied in plenty hence increase in the aggregate supply of the commodity in the market. Economically, increase in aggregate supply leads to increase in aggregate demand in the market of the commodity. This is from says law which states that every supply creates its own demand. This would lead to

decreased production of Z, decreased production would further lead to increased prices of commodities P.

5. *On the diagram below, treat the printed lines as depicting the situation in question 1. Draw new lines based on your results from question 2. (They don't have to be quantitatively accurate, but they should be qualitatively in line with the way your answers in question 2 differed from your answers in question 1—that is, everything should move in the right direction, but the exact distance is not important). Label the new interest rate  $r_2$  and the new level of investment  $I_2$ . Indicate the quantity of international saving in the question-2 situation (in other words, the quantity that is shown by your new lines). [8 pts]*



6. *(Don't show this on the diagram above.) How would you expect increased resource supply in question 2 to affect the investment demand? Explain. [5 pts]*

Increased resource supply will result to increase in aggregate demand of product. Investment is a component of aggregate demand. Therefore increase in demand will increase the investment desires because the firms has plenty of capital drawn from increased demand of commodities.

7. *If investment demand changed in the way you said in question 6, how would that affect the interest rate? [3 pts]*

Investment and interest rate are interrelated, increased demand on investment decreases the interest rates. This is because, increased investments means that there is a lot of capital invested, hence it will earn little bit less interest when invested.

8. *If investment demand changed the way you said in question 6, how would that affect the trade balance? [3 pts]*

Investment demand has a positive effect on trade balance. In case of trade deficit, investment in the economy can be a great cure. Increased demand of investment increases chances of an economy moving from trade balance or trade deficit to trade surplus.

9. *In the data chart below, what is happening to the U.S. trade balance? [2 pts]*

In years the trade balance in United States has not been positively growing. The chart shows a trade deficit that is continuously growing.

10. *What change in  $\epsilon_0$  would tend to cause the effects seen in the data above? Explain the mechanism (i.e., how would your answer about the change in  $\epsilon_0$  lead to the effects seen in the chart?). [5 pts]*

The effect shows a growing trade deficit in the American economy. It is mainly caused by decrease in national export and increase in imports. There are several factors that could have caused the trade deficit. They are as follows;

- a) Americans are consuming more and saving less. To cure trade deficit, the opposite should be applied where one saves more and consume less so as to have resources to consume during depression and recession business cycles.
- b) The international exchange rate between American dollar and other currencies is high hence making exports cheap and imports expensive. This negatively affects the economy as it makes trade deficit to grow bigger and bigger
- c) The capital inflows of the economy is fast, very cheap loans which makes Americans borrow more hence increasing the trade deficit.

**11. What change in  $IM/Y$  would tend to cause the effects seen in the data above? Explain the mechanism (i.e., how would your answer about the change in  $IM/Y$  lead to the effects seen in the chart?). [5 pts]**

The effect shown above is an increasing trade balance deficit in the American economy over years. This is mainly caused by increase in national imports from overseas economies to the USA. Increased imports may be due to reduced cost of importing goods, increased level of national consumption in the American economy and increased ease to get borrowing from overseas economy.