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Macroeconomics

Exam 2 Answers

1. A small open economy is characterized as follows:

Full employment $Y = 1000$

$$C^d = 100 + .8(Y - T)$$

$$I^d = 300 - 2000r^w$$

$$G = 200$$

$$r^w = .03$$

$$T = 300$$

a) Calculate equilibrium values of desired consumption, government savings, national savings, current account balance, capital account balance.

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

$$1000 = (100 + .8(1000 - 300)) + (300 - 2000(.03)) + 200 + NX$$

$$1000 = 660 + 240 + 200 + NX \quad \leftarrow C \text{ is } 660$$

$$NX = -100 \quad \leftarrow \text{current account balance}$$

$$\text{Capital account balance} = -NX = -(-100) = 100$$

$$\text{Government savings} = T - G = 300 - 200 = 100$$

$$\text{national savings} =$$

$$\begin{aligned} \text{government savings} + \text{private savings} &= 100 + (Y - T - C) = 100 + (1000 - 300 - 660) \\ &= 140 \end{aligned}$$

check: Investment = national savings + capital account balance?

$$240 = 140 + 100 \quad \text{yes!}$$

b) The government in this country wishes to reduce its capital account balance.

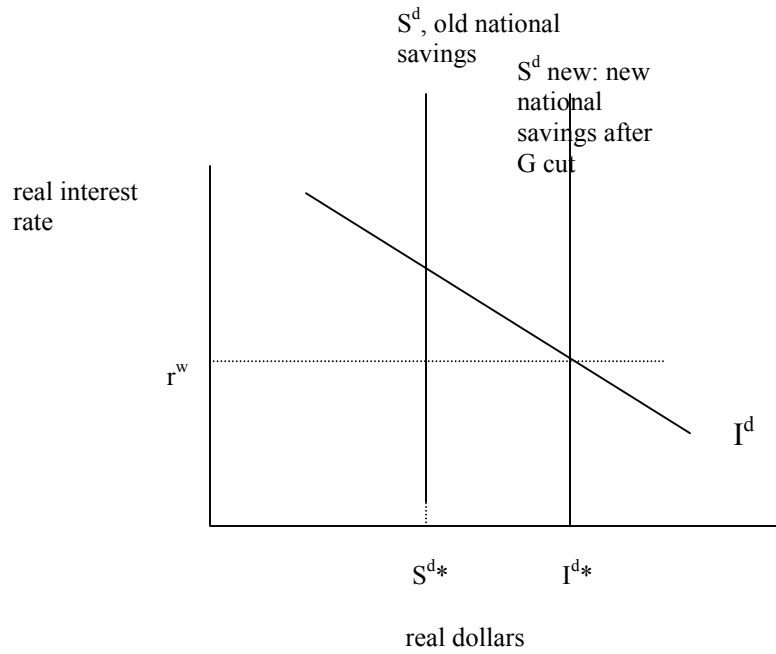
i) Name an appropriate policy that will achieve this goal, and perform calculations that demonstrate the change in the capital account balance that results from the policy.

Cut G by 100. This increases national savings to $140 + 100 = 240$ and eliminates the capital account balance.

check: Investment = national savings + capital account balance?

$$240 = 240 + 0 \quad \text{yes!}$$

ii) Use a graph to illustrate how the policy changes the capital account balance. (Precise numbers aren't required on the graph.)

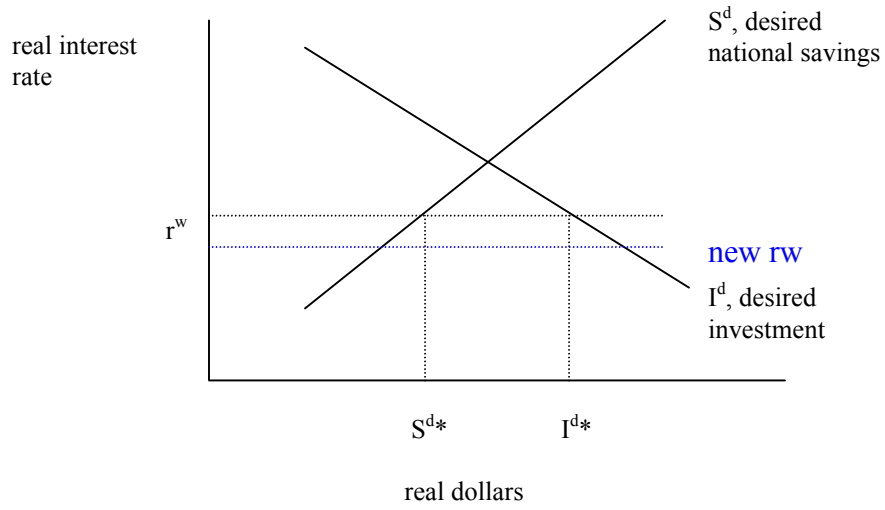


2. Government in a large open economy reduces government purchases.

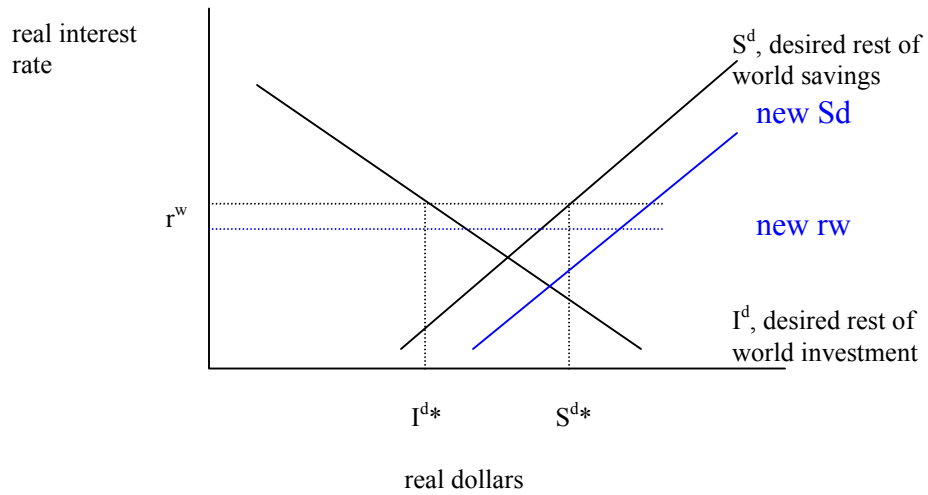
a) Use two graphs—one representing the economy in the long run, and the other representing the “rest of the world” economy in the long run—illustrating the effects of the reduction in government purchases on national saving and interest rates.

The graphs on the next page assume that the country has positive net exports

The rest of the world



the country



b) Carefully explain how each of the following are affected by the government policy:

- investment: rises due to lower user cost of capital caused by lower r
- net exports: rise due to increased national savings
- user cost of capital: see above
- capital account balance: rises; more national savings to put abroad
- government savings: higher since there's a greater excess of tax revenue over government spending

c) Suppose that the changes described in (b) persist for many years. Use the growth accounting equation to predict the effects of the changes on long term economic growth.

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + a_N \frac{\Delta N}{N} + a_K \frac{\Delta K}{K}$$

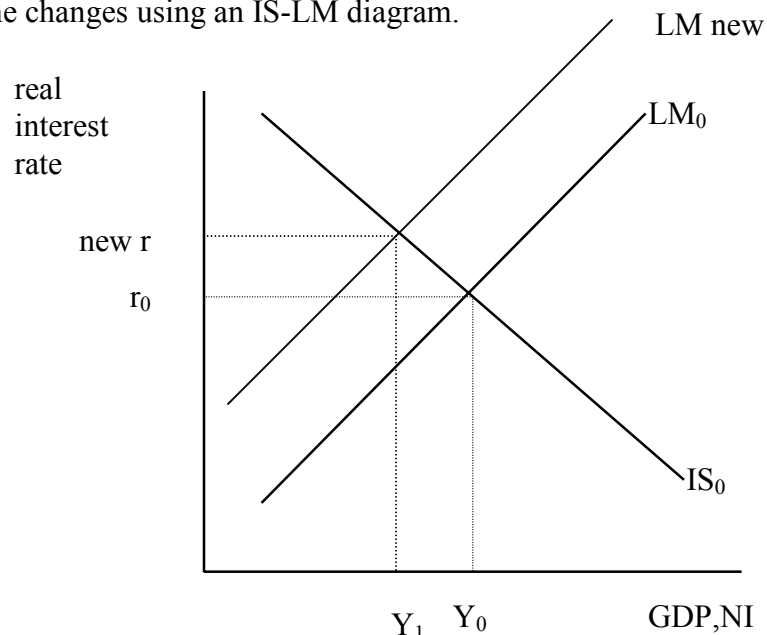
higher Investment leads to a larger change in K (the last term on the right), leading to higher economic growth (the only term on the left).

3. The Central Bank in a closed economy sells government securities in secondary markets.

i) Use the IS-LM model to forecast the effect of this sale on interest rates, unemployment, and consumption in the short run.

Money supply shrinks, causing higher interest rates. This reduces aggregate spending (especially I and C), causing the GDP (Y) to shrink. Lower Y leads to higher cyclical unemployment. Also, lower Y means lower national income, causing C to fall.

ii) Illustrate the changes using an IS-LM diagram.



4. “A tax cut causes higher spending. This should result in a boom in production that should continue for many many years”

Comment on the consistency of this claim with models discussed in class.

Short run: The IS-LM model forecasts an increase in Y in the short run (illustrated by shifting the IS curve to the right).

Long run: Our long run models only show how a tax cut changes the composition of full employment Y ; the level of full employment Y is not affected by the tax cut in the long run

Many many years: Both the growth accounting equation and the Solow growth model predict slower growth of Y due to the tax cut, since the tax cut reduces national savings, raises interest rates, and reduces investment, resulting in slower growth of capital (and capital per worker).