

Second challenge: Solutions
Eco 212: Spring 2006

Question 1 (15 points).

- a. Negative.
b. The AIDS epidemic has reduced life expectancy. The result is that workers have less incentive to invest in education and job training, since workers will not be around as long to benefit from their training. Growth in labor embodied technical change slows.
- a. Positive.
b. The policy encourages investment in new capital with the latest technology. Thus the policy improves embodied capital improving technical change. (This policy has been proposed as an alternative to extending the recent dividend tax cut).
- a. Neutral.
b. No disembodied or embodied technical change is being subsidized. Funding an opera company may have artistic merit, but it does not result in more production with the same capital or labor.
- a. Negative.
b. The tax is a tax on savings, which otherwise would be invested in new capital with the latest technology. Thus embodied capital improving technical change slows. Further, the banking system is harmed, so credit markets in Argentina are not functioning properly. This also slows capital improving technical change.
- a. Positive.
b. Job training programs subsidize technical change embodied in labor.

Question 2 (10 points).

Poor countries by definition have little capital and therefore relatively abundant labor. Thus wages are low. Low wages should attract FDI, new businesses, etc. resulting in fast growth. Developed countries with high labor costs should grow more slowly. Examples include Japan and some of Europe after WWII, the US South after the Civil War, and Europe since 1960.

Question 3 (10 points).

- a. If gold is identical, then we would expect $e = 1$ and thus:

$$e = 1 = \frac{PE}{Pf} = \frac{\frac{\$P}{\text{Ounce}} \cdot 5 \frac{\text{yen}}{\$}}{\frac{3000 \text{ Yen}}{\text{Ounce}}} \quad (1)$$

$$\frac{\$P}{\text{Ounce}} = \frac{Pf \frac{\text{Yen}}{\text{Ounce}}}{E \frac{\text{Yen}}{\$}} = \frac{3000}{5} \quad (2)$$

$$\rightarrow P = \$600 \quad (3)$$

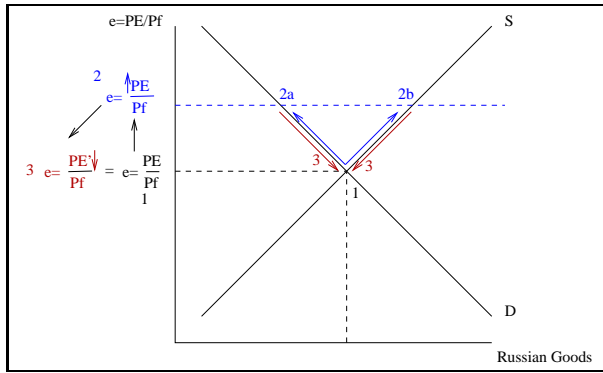
- b. An ounce of gold costs \$400 in the US and \$600 in Japan, so gold is more expensive in Japan. The dollar buys too little Yen, and thus too little gold in Japan. The dollar is thus undervalued. Alternatively, from the equation (2), E must rise to get P down to \$400.

Question 4 (5 points).

Capital inflows are when foreigners use dollars to buy US assets. To get the dollars, foreigners must either save dollars by purchasing less US exports, or get more dollars by selling more US imports. Either way, the trade deficit rises. Many economists view our current trade deficit as more the result of strong demand for US assets than weak demand for US exports or strong demand for US imports.

Question 5 (20 points).

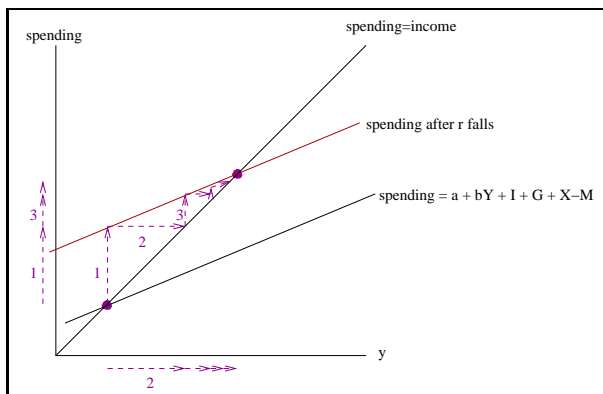
- a. When the supply of money increases, its price or value decreases, like any other good. If the dollar is less valuable, it buys less goods, so a good costs more dollars. This is an increase in prices or inflation.
- b. Costs include menu costs, increased bartering and costly credit arrangements (recall the picture of Russian coffin builders being paid in coffins), and monetary confusion.
- c. Inflation means P is rising. Since Russian goods are becoming more expensive, both to Russian and US consumers, e rises. A Russian good buys more US goods, and so more Russian goods are supplied, to get the relatively cheap US goods (point 2b on the graph). Similarly, US goods buy less of the expensive Russian goods. Demand for Russian goods falls (point 2a on the graph). Supply exceeds demand, so the real exchange rate must fall. This occurs by decreasing the nominal exchange rate E (point 3 on the graph).



d. The value of the Ruble (E) falls. Inflation thus results in the Ruble being able to purchase less goods and less foreign currency.

Question 6 (15 points).

a. Graphically:



A decrease in interest rates causes households to decrease savings and increase consumption (why save when you can receive little interest?). Consumption spending is a type of spending, so total spending rises (number 1 on the figure). A rise in consumption means that store owners and employees have more income. Therefore, income rises (number 2 on the figure). But then the store owners and employees spend more, increasing consumption further (number 3 on the figure). The process continues until spending equals income.

b. Thus consumption, income, and spending all rise.

Question 7 (25 points).

a.

$$\text{multiplier} = \frac{k+1}{k+rrr} = \frac{\frac{1}{4}+1}{\frac{1}{4}+\frac{1}{4}} = 2.5 \quad (4)$$

So \$2.5 in money supply is created for each \$1 of the monetary base.

b.

$$M = \text{multiplier } MB \rightarrow \$1000 = 2.5 \cdot MB \rightarrow MB = \$400 \quad (5)$$

c. Several methods exist to solve this problem. For example:

$$\$1000 = M = (k+1)D \rightarrow \$1000 = \left(\frac{1}{4}+1\right)D \quad (6)$$

$$\rightarrow \$1000 = \frac{5}{4}D \rightarrow D = \$800 \quad (7)$$

$$BR = rrrD = \frac{1}{4}\$800 = \$200 \quad (8)$$

$$CU = kD = \frac{1}{4}\$800 = \$200 \quad (9)$$

d. The FED sells tbills and buys dollars, so \$100 cash is being removed from the economy. We have:

$$\Delta M = \text{multiplier } \Delta MB = 2.5 \cdot -\$100 = -\$2,500 \quad (10)$$

So the removal of \$100 cash from the economy results in the additional destruction of checking accounts for a total decline in M of \$2,500.

e. The FED prefers Open Market Operations (the buying and selling of tbills). Open market operations are precise and cheap to implement, and both small and large changes in M are feasible. Changing the discount rate is imprecise since it is uncertain how many additional banks borrow from the FED when the discount rate falls. In addition, since few banks borrow from the FED, large changes in M are not possible by changing the discount rate.