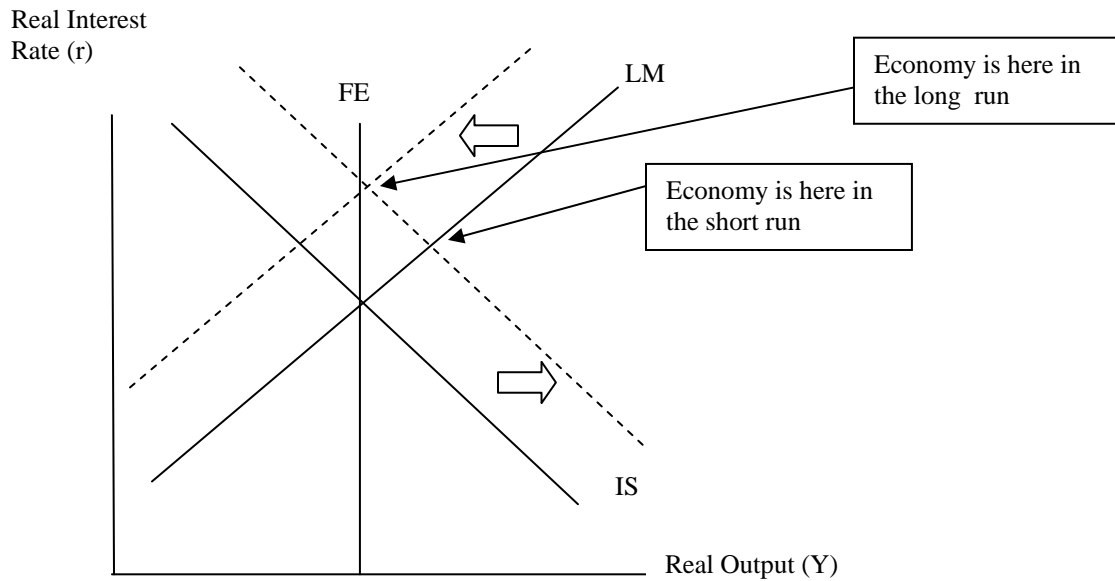


**Economics 30220
Practice Final Exam**

- 1) Over the past 30 years, the personal savings rate in the US has dropped from its high of 12% in the mid 1970's to its current level of essentially 0%.
- a) Analyze the immediate impact of a drop in savings on employment, output and the interest rate.

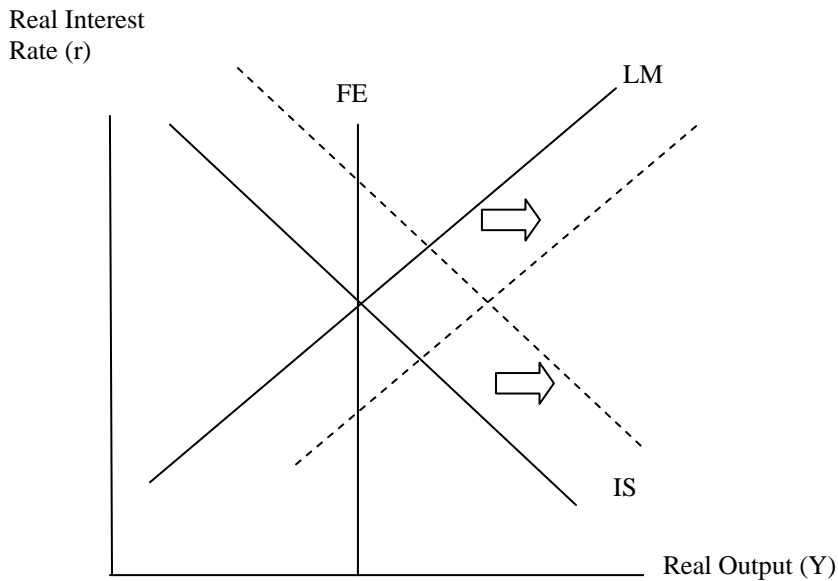


A drop in savings produces a rise in the interest rate – the IS curve shifts to the right and output rises above full employment output

- b) What will happen to interest rates, employment, and output once prices have a chance to adjust? Do prices rise or fall?

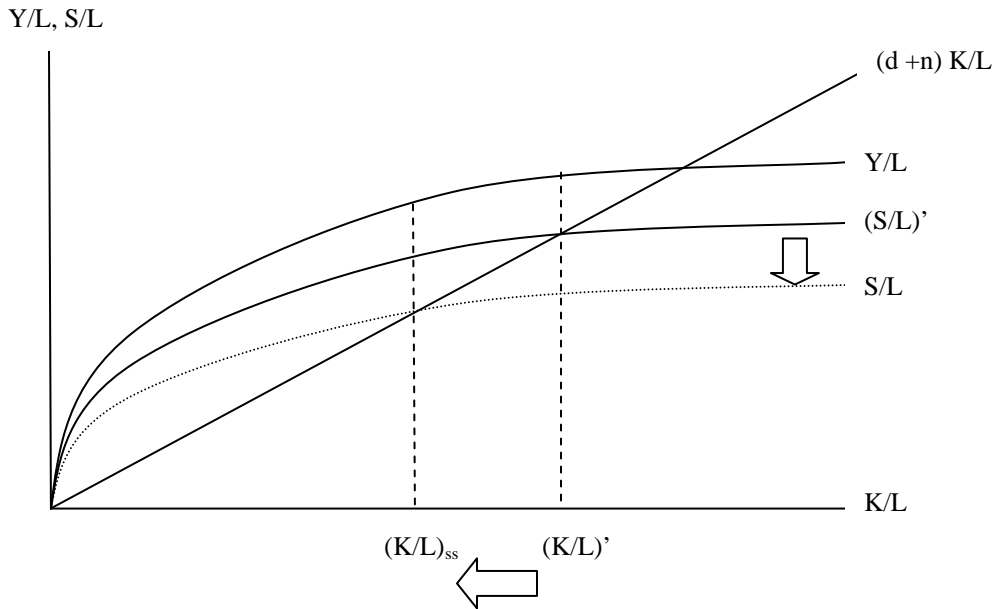
With the economy above full employment, the price level rises. This lowers the supply of real money and the LM curve shifts left. Interest rates rise again and the economy returns to full employment.

- c) If the Federal Reserve were following a fixed interest rate target, how should they respond to this drop in savings? Would your answer be different if the Fed's primary concern was inflation? Explain.



If the Fed was following an interest rate target, they would have to increase the money supply. This shifts the LM curve to the right lowering interest rates to their initial level. Note that the economy is pushed further out beyond full employment – this will create more inflation in the future. If the Fed was interested in controlling inflation, they would reduce the money supply – this would have the effect of immediately returning the economy to full employment and avoiding the price increase in (b).

- d) What are the long run growth effects of a lower savings rate in the US? Explain.



A lower savings rate will force interest rates up which lowers investment. Lower investment rates will lower the sustainable capital stock and the steady state drops. Growth in the economy will slow down until the new steady state is reached.

- 2) Consider the following Tax Cut (assume a standard deduction/exemption of \$5,000):

Taxable Income	Old Tax Code	New Tax Code
\$0 - \$10,000	15%	10%
\$10,001 - \$40,000	20%	15%
\$40,001 -	30%	25%

- a) Median income in the US is around \$40,000 per year. Calculate the impact of this tax cut on the marginal and average tax rates for the median household.

Marginal Rates: Decrease from 20% to 15%.

Average Rates:

$$\text{Old: } (\$10,000)(.15) + (\$25,000)(.20) = \$6,500/\$40,000 = 16\%$$

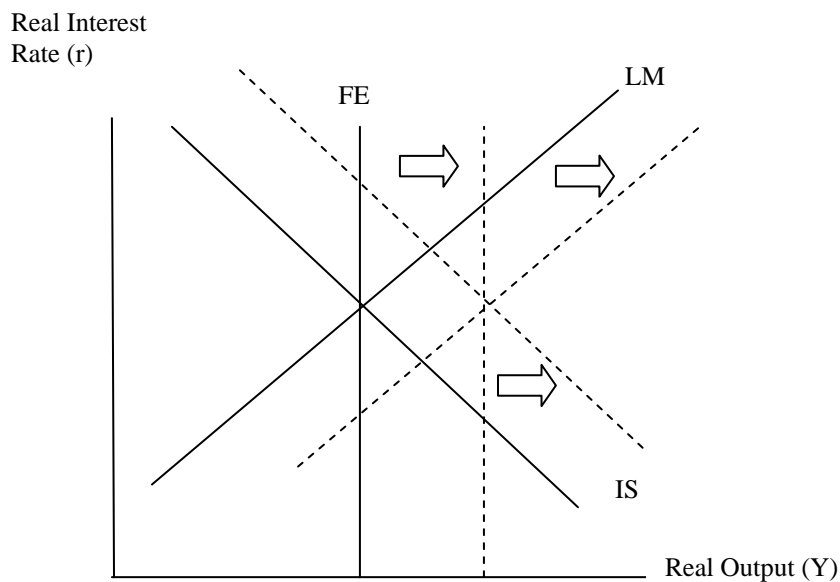
$$\text{New: } (\$10,000)(.10) + (\$25,000)(.15) = \$4,750/\$40,000 = 12\%$$

- b) How will the average household respond to this tax cut? What happens to employment and output?

The ultimate effect on employment is ambiguous. The substitution effect of a drop in the marginal rate (work more) is potentially offset by the income effect of the drop in effective rates (work less).

- c) How will this change in the tax code affect interest rates?

For this question, I will assume that the substitution effect dominates and people work more.



As employment rises, the FE curve shifts to the right and output increases. Higher employment raises investment demand and the IS curve shifts left. In the short term interest rates rise while in the long term, the price level falls returning interest rates to their initial level.

- d) If the Fed was interested in maintaining a constant price level, what action would be required?

The Fed would respond by increasing the money supply.

3) Suppose that the Federal Reserve was following a Gold standard. How would the Fed need to respond to the following events? What would be the impact on the economy?

- a) An evil super villain builds a gold machine and floods markets with new gold. (As in “Hudson Hawk”)

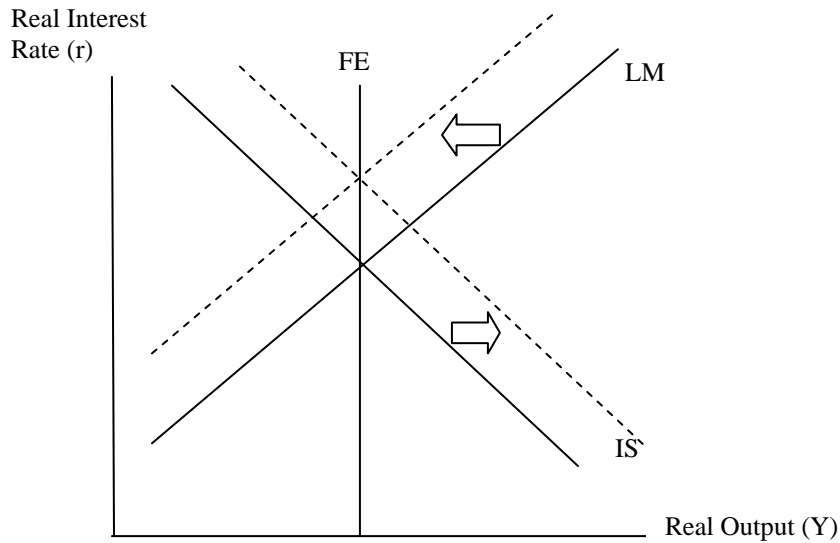
As the supply of gold increases, the market price falls below the official price. This creates an opportunity to buy gold in the market and sell to the Fed. Fed gold purchases increases the money supply. This causes interest rates to drop and output to rise in the short term but increases prices in the long term.

- b) A terrorist steals all the gold from the NY Fed and blows it up (as in “Die Hard with a Vengeance” – although the terrorist didn’t really blow up the gold!)

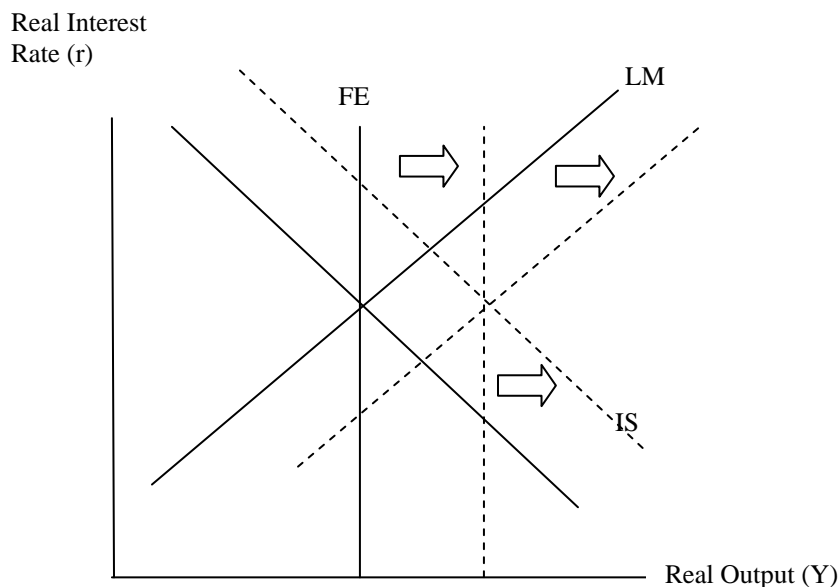
Actually, in principle, nothing should happen since the stolen gold was never in the market to begin with. If nobody knows that the gold was missing, nothing happens. If the theft is public knowledge and people are fearful that the dollar will no longer be convertible, then everybody buys gold from the fed which drastically reduces the money supply. IN the short term interest rates rise and output falls. In the long term, prices fall.

4) Suppose that Congress passes a new budget that increases spending on public education by \$300 billion (or, approximately \$1,000 per person). Assume that this spending is completely wasteful in the sense that it produces no discernable improvement in the public education system (a pretty fair assumption given the empirical evidence).

- a) Explain the impact of this policy on employment and interest rates assuming that the spending is financed by an immediate lump sum tax of \$1000 per person. Does it matter if the spending is perceived as permanent?



If the spending is perceived as temporary, there is no effect on labor supply or consumption, but savings drops as households finance the higher tax bill and IS shifts right. Interest rates rise and output increases above full employment. In the longer term, prices rise, interest rates increase even further and the economy returns to full employment. If the increase was perceived as permanent, labor supply increases, consumption falls and investment increases IS and FE shift right and interest rates rise. In the long term prices fall (LM shifts right), interest rates return to their initial level and output increases again to reach the new full employment level of output.



- b) How would your answer to (a) change if the spending was financed by a proportional increase in all marginal income tax rates.

In increase in marginal rates creates an incentive to work less. Therefore, the FE curve doesn't shift right as much as in (a).

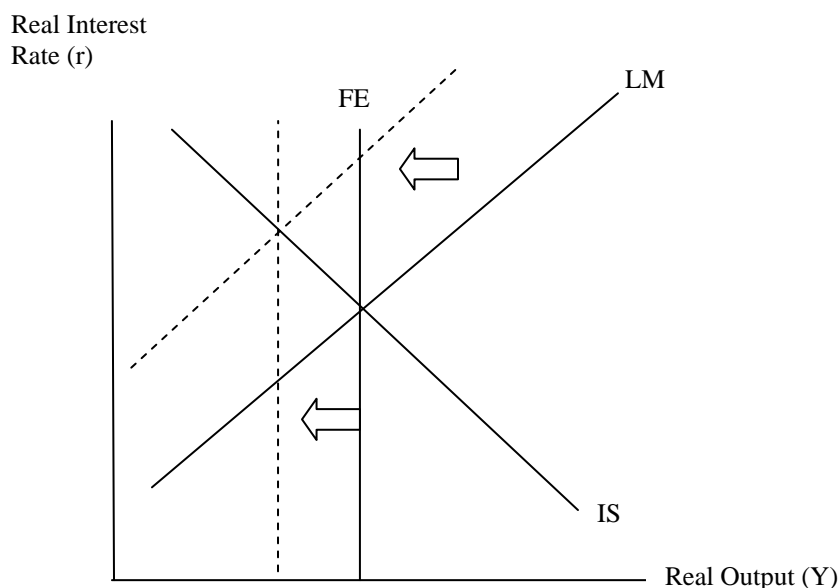
- c) How would your answer to (a) change if the spending was financed by an increase in the capital gains tax (think of the capital gains tax as a tax on savings)?

The capital gains tax should lower savings which will increase interest rates – the IS curve shifts right by more than (a) and labor supply is unaffected – no shift in FE.

- d) How would your answer to (a) change if the new spending was deficit financed?

If households savings behavior is unaffected, then the deficit raises interest rates and the IS shifts right by more than (a). If households recognize that the deficit carries with it a future tax liability, then nothing changes from (a).

- 5) Suppose that the economy is hit by a negative productivity shock. This shock is perceived to be temporary and, hence, capital investment is unaffected.
- a) Explain the impact of this shock on the economy in the short run – what happens to output and interest rates? What happens in the long run to prices?



The drop in productivity lowers labor demand, real wages, an employment and the FE curve shifts left. Consumption and investment demand are unaffected so there is no shift in the IS curve. The temporary equilibrium is at the intersection of IS and LM with no change in the interest rate and output above the new full employment level of production. Eventually, prices rise, the real value of money falls and the LM curve shifts left and output falls.

- b) If the Fed was following a constant interest rate target, what should the Fed's response be?

If the Fed is following an interest rate target, they would do nothing until prices rise – then they would have to increase the money supply. Note that this is not a sustainable policy – as they increase the money supply, the inflation rate will continue to rise until the economy falls back to the new full employment level of production represented by the FE curve.

- c) If the Fed's goal was to contain inflation, how should the Fed respond?

They would contract the money supply – this raises interest rates (LM shifts left) and immediately brings the economy back to the new level of full employment output represented by the FE curve.

Increased immigration raises the population level, not the rate of population growth. Therefore, the steady state for the US is unchanged, but we get a dramatic decrease in the capital/labor ratio. After the immigration rush the US is well below the steady state. Therefore, they will have to grow towards it. GDP per capita will increase (i.e. GDP will grow at a faster rate than the population). Once the steady state is reached, then GDP per capita will remain constant (GDP will grow at the same rate as population).

