

SIMON FRASER UNIVERSITY
Department of Economics

Econ 305
Intermediate Macroeconomic Theory

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FINAL EXAM
(Solutions)

Answer the following questions True, False, or Uncertain. Briefly explain your answers. No credit without explanation. (8 points each).

1. According to the Mundell-Fleming model, output is more stable with flexible exchange rates.

UNCERTAIN. *It depends on what kind of shocks are more important. If goods market (IS curve) shocks are more important then the statement is true (according to Mundell-Fleming). However, if asset market (LM curve) shocks are more important, then the statement is false, since fixed exchange rates would produce greater output stability.*

2. According to Milton Friedman, the optimal rate of inflation is equal to the real interest rate.

FALSE. *According to Friedman, the optimal rate of inflation makes the nominal interest rate zero. By the Fisher equation, this implies the optimal inflation rate equals minus the real interest rate.*

3. Positive productivity shocks produce current account deficits.

UNCERTAIN. *It depends on how persistent the shock is. If it's temporary, then it would likely produce a current account surplus, since it would increase saving and have little or no effect on investment. On the other hand, if it's highly persistent, it will increase investment and have little effect on saving. In fact, if anything, it will likely decrease saving, since individuals expect to be richer in the future due to the increased capital stock. So in this case the statement would be true.*

4. According to the Mundell-Fleming model, an increase in government spending in the USA causes Canadian output to fall.

FALSE. *An increase in US govt spending shifts out the US IS curve, causing upward pressure on US interest rates and an appreciation of the US dollar. The US dollar appreciation decreases US net exports, but increases Canadian net exports, which shifts out Canada's IS curve. The decrease in US net exports only partially crowds out private spending in the US, since the US is a 'large' country. Instead, the world interest rate rises. Because both US income and the US dollar rise, Canada's net exports and output are unambiguously higher (at least in the Keynesian short run).*

5. Inflation targeting destabilizes output when there are supply shocks.

TRUE. *Suppose there is an adverse supply shock, so that the AS curve shifts up and to the left. This reduces output and causes the price level to rise (ie, inflation). To keep the price level stable, the Central Bank must actually reduce the money supply, which shifts the AD curve to the left as well, which exacerbates the recession.*

The following questions are short answer. Briefly explain your answer. Clarity will be rewarded.

6. (30 points). There has been much recent discussion about the effects of fiscal policy. A common criticism of fiscal stimulus programs is that they can't possibly have a positive effect on output and employment once you consider that taxes must be increased to pay for them. Increased government spending just replaces private spending, which declines because of higher taxes, and so there is no net effect on output. According to the standard (closed-economy) Keynesian model, is this conclusion correct? According to this model, what are the consequences of a balanced-budget increase in government spending? Illustrate your answer with a graph, and explain intuitively. What would a neoclassical economist say about this conclusion? According to the market-clearing/neoclassical model, what are the effects on output and employment of a balanced budget increase in government spending? Illustrate your answer with a graph.

In the simple closed-economy Keynesian model, the balanced budget multiplier is unity. That is, holding the interest rate constant, if you increase G by 100, Y will increase by 100. How can this be? The intuition is that the simple Keynesian model assumes the marginal propensity to consume is less than one. This means that households reduce their spending by less than the government increases its spending. Does this make sense? It could, if the spending increase is expected to be temporary (although Keynes himself didn't worry too much about dynamic optimization!) More formally, differentiating the goods market equilibrium condition (ignoring investment, since it doesn't change if the interest rate is constant).

$$dY = c(dY - dT) + dG$$

where $c < 1$ is the marginal propensity to consume. Imposing the balanced budget condition $dT = dG$, we have

$$dY = dG$$

Hence, the IS curve shifts out one-for-one, even when taxes are raised to fully fund the program. Of course, this doesn't mean output will rise one-for-one, since interest rates will tend to rise, which further crowds out private spending. Still, unless the LM curve is vertical, the crowding out will be less than complete, and the fiscal stimulus will indeed increase output (in the short-run that is).

Interestingly, the neoclassical market-clearing model makes the exact same prediction (albeit for different reasons). In this model, the timing of taxes doesn't matter, so whether or not it's a 'balanced budget increase' is irrelevant, since all that matters is that the intertemporal budget constraint is balanced. Again, higher taxes crowd out private consumption, due to the adverse wealth effect, but again, if the increase in G is temporary, the decline in consumption is less than the increase in G , so on net the Y^d shifts out. The new twist here is that there is a supply-side effect at work, operating through both wealth and intertemporal substitution effects on labor supply. Because of their lower wealth, households increase their labor supply. This causes the Y^s curve to shift out. However, the wealth effect is probably pretty small, if the increase in G is temporary, so the outward shift in Y^d likely dominates the outward shift in Y^s , meaning that on net the interest rate rises, which causes the labor supply curve to shift out further, due to intertemporal substitution. In sum, as in the Keynesian model, output is predicted to rise following a temporary increase in G . (See page 319 in the text for the graph, which they should provide for full credit).

The big difference between the two models concerns welfare implications. Keynesian models are based on market failure, so that output can be suboptimally low. In this case, fiscal stimulus programs can be beneficial. In contrast, in (textbook) market-clearing models, output is always at its optimum, so although an increase in G could indeed produce an increase in output and employment, it would only do so by making people feel poorer, and actually make them worse off. (For full credit, they should say something about the contrasting policy implications of fiscal stimulus programs).

7. (30 points). One of the reasons there has been so much focus on fiscal policy is the argument that monetary policy is currently stuck in a ‘Liquidity Trap’. What exactly is a Liquidity Trap? Why is it a trap? When and why do they occur? Why does monetary policy lose its ability to influence output in a liquidity trap? Use the Keynesian IS-LM model to illustrate a liquidity trap. According to Keynes, how can the economy escape from a liquidity trap? What exactly does ‘quantitative easing’ mean, and how are these policies related to liquidity traps?

According to the market-clearing/neoclassical model, are ‘liquidity traps’ a problem? Why or why not?

A Liquidity Trap occurs when the short-run nominal interest rate hits zero. In this case, money and bonds become perfect substitutes. Individuals are indifferent as to how much money vs. bonds they hold in their portfolios. During normal times, monetary policy operates by changing the portfolios of households (via open market operations). Normally, this produces market-clearing changes in the interest rate, which then produces spending changes. However, when the short-run nominal interest rate hits zero, further bond purchases by the Central Bank no longer have any effect on output. People are happy to hold more money and fewer bonds, since they are perfect substitutes. The reason the nominal interest rate cannot go below zero is that currency itself has a zero nominal interest rate, so as long as people are allowed to hold currency, you cannot drive the nominal rate below zero. In terms of the IS-LM model, this situation is described by a horizontal LM curve, which does not shift in response to monetary policy. According to Keynes, the only way to escape from a liquidity trap is to pursue expansionary fiscal policy, which now has a powerful effect, since there is likely to be little crowding out due to higher interest rates.

Normally, Central Bank open market operations are conducted with short-maturity bonds. Even in a liquidity trap, longer-term rates tend to be positive (for a variety of possible reasons, which they do not need to spell out). An upward sloping term structure opens the door to a potentially effective policy of ‘quantitative easing’, which involves having the Central Bank purchase long-term bonds instead of short-term bonds. The idea is that this policy will drive up their prices, and therefore, push down long-term yields, and so increase long-term investment spending.

Liquidity Traps are a distinctly Keynesian problem. They are not an issue for neoclassical economists. In fact, according to the Friedman Rule, having a zero nominal interest rate is a good thing! The big difference, of course, is that in simple neoclassical models, monetary policy has no effect on output anyway, so it doesn’t matter if the nominal rate hits zero. From a neoclassical perspective, monetary policy should focus solely on the price level.