

SIMON FRASER UNIVERSITY
Department of Economics

Econ 305
Intermediate Macroeconomic Theory

Prof. Kasa
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PROBLEM SET 3
(Solutions)

1. (20 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. (Hint: See the Krugman article entitled “IS-LMentary” posted on the class webpage).

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 become 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 interest 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. (See the posted Krugman article, “ISLementary” for a picture). 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.

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

2. (20 points). Explain how the neoclassical/market-clearing model explains a positive correlation between inflation and output. (Hint: See either the notes or textbook under the heading ‘Lucas Supply Curve’). According to this view, can monetary policy be used to stabilize output? Why or why not?

In the data, we sometimes see output and inflation moving inversely (e.g., in so-called ‘stagflationary’ episodes like the 1970s). This is exactly what the productivity-driven neoclassical model predicts. However, we often see output and inflation moving in the same direction, with booms being accompanied by rising inflation, and recessions being accompanied by falling inflation. The simple market-clearing, neoclassical model has a harder time explaining this, since it presumes output only changes when the AS curve shifts, and with a downward sloping AD curve this is bound to produce a negative correlation. Lucas showed that if firms and households have imperfect information about all the prices in the economy, the AS curve might slope up, even though all markets clear, and all prices are flexible! In this case, AD shifts (perhaps due to monetary policy) would produce a positive correlation between output and inflation.

The basic idea is that firms only want to expand output if they think prices in their industry are rising relative to other prices. If all prices (including the prices of their inputs) go up by 10%, firms will simply raise their output prices by the same amount, and not change output or production. Likewise, households care about their real wage rate, not their nominal wage rate. However, they don’t necessarily know at all points in time what this is, because they might not know what the prices are of all the goods they might consume. If firms and households both have imperfect information about the economy-wide price level, then for example, a 10% inflation rate might be interpreted, at least partially, as an increase in local, industry prices by firms, which makes them want to expand production. To do so, they hire more labor, which requires them to increase (nominal) wages, say by 7%. In response, households supply more labor, because they think that at least some of this 7% nominal wage increase represent a real wage increase. (In fact, with a 10% inflation rate, their real wage is declining!). So, at the end of the day, higher inflation leads to higher output and employment.

Notice, however, that if the inflation rate is observed or expected, no change in output or employment will occur. According to Lucas, only unanticipated changes in inflation cause output to change. Unfortunately, this implies that systematic, predictable, changes in monetary policy are ineffective, because people expect them. Although random, unpredictable, monetary policy produces random output changes, there is no way to use monetary policy to stabilize output, simply because there is no way to systematically fool people (according to Lucas). It is no coincidence that Lucas was the architect of the so-called Rational Expectations Revolution!

3. (20 points). According to the open-economy IS-LM model, would an economy’s output and employment be more stable under flexible exchanges or fixed exchange rates? Illustrate your answer with a graph.

This is straight out of the notes. (See lecture slides 18 (extended version), pages 19-20). Whether fixed or flexible exchange rates produce more stability depends crucially on the nature of shocks. If most shocks are in the goods markets (IS curve shocks), then flexible exchange rates produce more stability. Exchange rate adjustments act as a ‘shock absorber’ in response to goods market shocks. On the other hand, if most shocks are in the financial markets (LM curve shocks), then fixed exchange rates would produce more stability. Fixing the exchange rate makes the money supply endogenous, and produces automatic accommodating changes in money supply in response to fluctuations in money demand.