

Problem Set 2

Due *in lecture* on Monday, October 14. Be sure to put your name on your problem set. Put “boxes” around your answers to the algebraic questions.

1. Consider the Aggregate Demand-Aggregate Supply framework. Suppose lump sum taxes are decreased when we are not in a liquidity trap (and do not end up in a liquidity trap), and the Fed does *NOT* target the interest rate. You can assume for simplicity expected inflation is always zero.

1.1 Show what happens in an IS-LM and AD-AS graph in the period lump sum tax decrease occurs.

1.2 Show what happens over time to output, the price level, and the interest rate.

2. Use the same AD-AS model, but assuming the economy *begins in a liquidity trap*.

2.1 Show what the IS-LM and AD-AS graphs look initially.

2.2 Show what happens over time, assuming no activist government policy or central bank policy.

2.3 Show what happens if the government implements entrepreneur and business friendly measures that increase the natural level of output (also known as potential GDP).

3. Suppose firms can borrow from either the bond market or the banking sector.

3.1 Show graphically what happens when government spending is increased.

3.2 Show graphically what happens if all physical investment projects are suddenly perceived to be more risky than they previously were (but banks still retain the same proportion of deposits as reserves).

3.3 In your answer to 3.2, can you say what happens to the interest rate on loans?

3.4 Show graphically what happens if the Fed increases the amount of reserves in the economy by undertaking open market operations. You can assume the interest rate paid on reserves is zero, and the money multiplier is constant.

3.5 Explain, *in words*, why GDP rises in your answer to 3.4. Be explicit about all the channels by which output is increased.

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4. Leverage, liquidity, and bank balance sheets

Consider two banks, H (high bank capital) and L (low bank capital).

High Bank Capital		Low Bank Capital	
Assets	Liabilities	Assets	Liabilities
Reserves \$9M	Deposits \$90M	Reserves \$10M	Deposits \$96M
Loans \$71M	Bank Capital \$10M	Loans \$70M	Bank Capital \$4M
ABS \$20M		ABS \$20M	

Bank capital is the equity of the owners (shareholders) of the bank. ABS stands for asset backed securities.

- 4.1 Calculate the return on equity (ROE) for each bank, if the rate of return on loans is 5%, and 10% on ABS, and the interest rate on deposits is 2%. (Return on equity is the total return earned on securities and deposits, divided by bank capital, or “equity”).
- 4.2 Show what happens to each of the bank balance sheets when the asset backed securities lose 25% of their value.