

The Monetary Policy and Aggregate Demand Curves
ECON 4673
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Problems

1. When the inflation rate increases, what happens to the federal funds rate? Operationally, how does the Federal Reserve adjust the federal funds rate?
2. How does an autonomous tightening or easing of monetary policy affect the MP curve?
3. What factors affect the size of the decline in output after an increase in inflation?
4. If net exports are not sensitive to changes in the real interest rate, is monetary policy more or less effective in changing output?
5. Consider an economy described by the following data: $\bar{C} = \$3.25$ trillion, $\bar{I} = \$1.3$ trillion, $\bar{G} = \$3.5$ trillion, $\bar{T} = \$3.0$ trillion, $\bar{NX} = -\$1.0$ trillion, $MPC = 0.75$, $d = 30$, $x = 10$, $\bar{f} = 0.01$, $\bar{r} = 0.02$, $\pi^* = 0.01$, and $\theta = 1$.
 - a. Derive the expression for the IS curve.
 - b. Derive the expressions for the MP curve (assume $\pi^e = \pi$).
 - c. Derive the expressions for the AD curve.
 - d. Assume that $\pi = 0.01$. Calculate the real interest rate and the equilibrium level of output.
 - e. Suppose the Federal Reserve increases \bar{r} to $\bar{r} = 0.03$. Calculate the real interest rate and the equilibrium level of output at this new level of \bar{r} . You can assume $\pi = 0.01$.
6. Suppose the monetary policy curve is given by $r = 0.015 + 0.75 \times \pi$, and the IS curve is given by $Y = 13 - 100 \times r$.
 - a. Calculate an expression for the aggregate demand curve.
 - b. Calculate the real interest rate and aggregate output when the inflation rate is 2%, 3%, and 4%.
 - c. Draw graphs of the IS, MP, and AD curves, labeling the points from part (b) on the appropriate graphs.
7. Describe the impact of the following situations on the IS, MP, and AD curves.
 - a. A decrease in financial frictions.
 - b. An increase in the Federal Reserve's inflation target.
 - c. An increase in the current inflation rate.

- d. Firms become more optimistic about the future of the economy.
- e. A new Federal Reserve chair puts more emphasis on fighting inflation.