Topics for Today

1.) Financial Crises in the IS-LM model.

2.) Stabilization Policy + the “Policy Mix”

3.) The “Paradox of Thrift”

4.) “Liquidity Traps”

5.) Monetary Policy Rules
   - Interest Rate Targeting vs. Money Supply Targeting

6.) Using the IS-LM Model to Derive the AD Curve

7.) An Algebraic Version of the IS-LM Model
A Financial Crisis in IS-LM

1) Is the FE line affected?
2) Is the IS curve affected?
3) Is the LM curve affected?
Encouraging Investment without Inflation

\[ M^s \uparrow \Rightarrow Y \downarrow \quad \text{(but could cause)} \quad \text{inflation} \]

\[ G\downarrow, T\uparrow \Rightarrow Y \downarrow \text{ to the FE level}. \]
(G↓, T↑ (in order to reduce deficit))

⇒ IS shifts left

To keep the economy from sliding into a recession, the Central Bank could expand the money supply, which shifts the LM curve out.
Reunification spending $\Rightarrow$ IS to shift out
To avoid inflation $\Rightarrow$ Bundesbank reduced the money supply, LM shifted left.
The "Paradox of Thrift"

Suppose everyone decides to save more. What happens?
The "Liquidity Trap"

What happens when the interest rate approaches zero?
Given a money demand curve, there are 2 alternative ways of conducting monetary policy:

1) Pick an interest rate and let the Money Supply adjust to clear the market (Interest Rate Targeting)

2) Pick a Money Supply and let the interest rate adjust to clear the market (Money Supply Targeting)

Note: The Central Bank can’t pick both!
Conclusion: If most shocks to the economy are to the IS curve, then targeting the money supply leads to more stable output.
Conclusion: If most shocks to the economy are to the LM curve, then targeting the interest rate leads to more stable output.
Deriving the AD Curve

$r$

LM($P = P_1$)

LM($P = P_2$)

IS

$p_2 < p_1$

$Y_1$

$Y_2$

$P_1$

$P_2$

$A$

$B$

$AD$
The Effect of G↑ on AD
A Schematic Overview of the Keynesian System

1. Saving and Investment Curves
2. IS Curve
3. LM Curve
4. IS/LM Model
5. AD Curve
6. AS Curve
7. AS/AD Model
An Algebraic Version of the IS-LM Model

**IS:** \[ Y = C(Y - T) + I(r) + G \]

**LM:** \[ \frac{M}{P} = L(r, Y) \]

2 equations in the 2 unknowns \((Y, r)\), with 4 exogenous variables \((m, p, g, T)\).

Consumption: \[ C = a + b(Y - T) \]
Investment: \[ I = c - dr \]

\[ Y = \left[a + b(Y - T)\right] + (c - dr) + G \]

\[ \Rightarrow Y = \frac{a + c}{1 - b} + \frac{1}{1 - b} G + \frac{-b}{1 - b} T + \frac{-d}{1 - b} r \]

or alternatively,

**IS curve** \[ r = \frac{a + c}{d} + \frac{1}{d} G + \frac{-b}{d} T - \frac{1 - b}{d} Y \]
\[ L(r, Y) = e^Y - fr \]
\[ \frac{M}{P} = e^Y - fr \]
\[ \Rightarrow r = \frac{e^Y}{M} - \frac{1}{\frac{1}{P}} \]

**LM Curve**

Substitute LM curve into IS Curve

\[ Y = \frac{a+c}{1-b} + \frac{1}{1-b}G - \frac{b}{1-b}T - \frac{d}{1-b} \left[ \frac{e^Y}{M} - \frac{1}{\frac{1}{P}} \right] \]

**LM Curve**

\[ Y = \frac{f}{f(1-b) + de} \left[ (a+c) + G - bT + \frac{d}{\frac{1}{P}} \right] \]

**Output as a Function of the Exogenous Variables**

*Note:*
- \( G \uparrow \Rightarrow Y \uparrow \)
- \( T \uparrow \Rightarrow Y \downarrow \)
- \( \frac{M}{P} \uparrow \Rightarrow Y \uparrow \)
Monetarists vs. Keynesians

Monetarist: Big d/Little f

1. Fiscal Policy Ineffective. Steep LM => Lots of Crowding-Out

2. Monetary Policy Effective. Flat IS => Changes in interest rates have large output effects

Keynesians: Little d/Big f

1. Fiscal Policy is Effective. Flat LM => Little Crowding-out

2. Monetary Policy is Ineffective. Changes in M do not change interest rates much (Liquidity Trap) and interest rates do not change investment very much.