Macroeconomics: Lecture 4

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Agenda

- Derive the *IS* relation.
- Derive the *LM* relation.
- $IS - LM$ model.
- Effect of policy changes on output and interest rates.
- Material: Blanchard, Chapter 5.

Story Thus Far

- We know that production = demand for goods. $Y = Z$
- $Z = C(Y - T) + \bar{I} + G$
- Interest rate didn't enter our story.

Investment, Sales, and the Interest Rate

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Investment is not constant. It depends upon...

- **The level of sales** $\uparrow$ sales $\Rightarrow \uparrow$ production $\Rightarrow \uparrow$ investments.
- **The interest rate** Higher interest rates make investments less attractive.
- For now, we assume that there is just one interest rate in our economy.
- $$I = I(Y, i)$$

Determining Output

We modify the goods market equilibrium by incorporating the investment relation.

$$Y = C(Y - T) + I(Y, i) + G$$

For any given interest rate, demand is an increasing function of output.

- $\uparrow$ Output $\Rightarrow \uparrow$ Income $\Rightarrow \uparrow$ Disposable Income $\Rightarrow \uparrow$ Consumption.
- $\uparrow$ Output $\Rightarrow \uparrow$ Investment.

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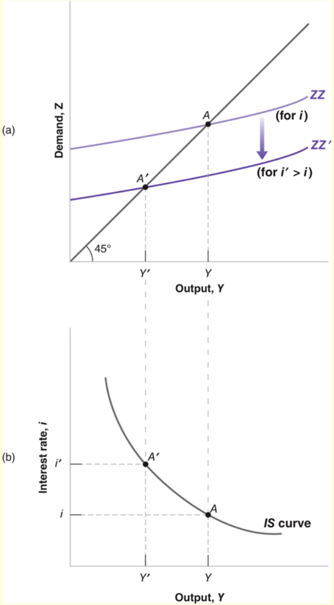

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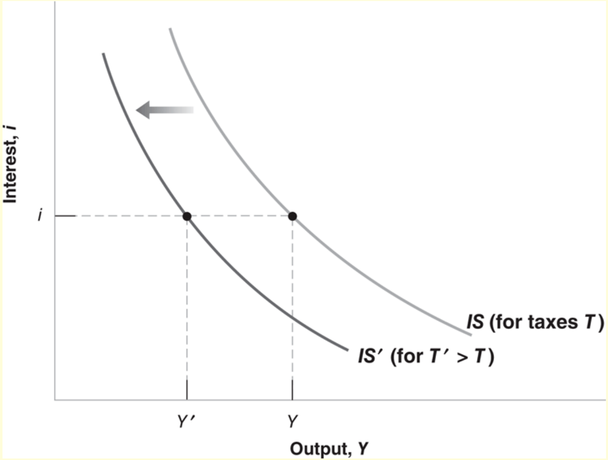

Real Money, Real Income, and the Interest Rate

- We modify the money demand equation by introducing price level.

$$\frac{M}{P} = YL(i)$$

- We can now think of equilibrium in terms of *real money demand and supply*.
- **Example?**

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- **Example?**
- Think of the cash you would keep to buy two cups of coffee during a class day.

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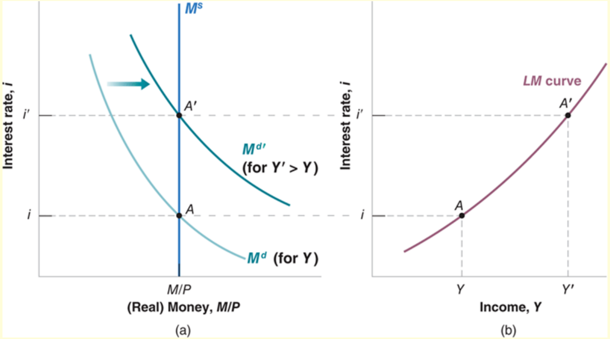

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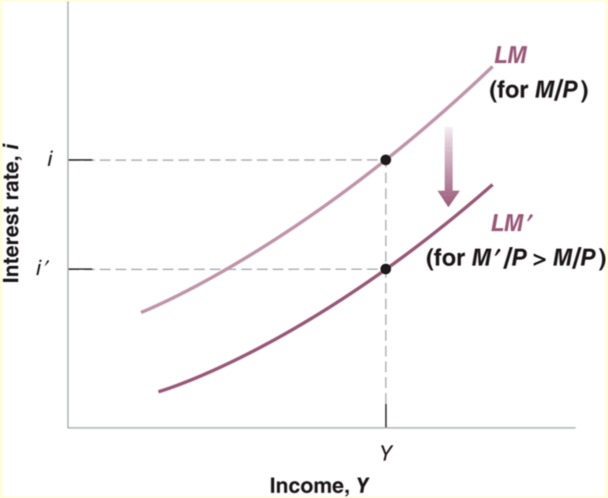

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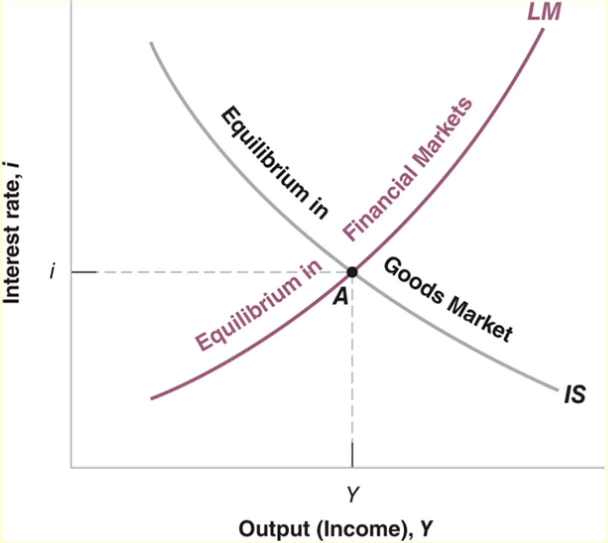

Fiscal Policy, and the Interest Rate

Cookbook

1. How does the change affect the goods market and the financial market?
2. Search for the new equilibrium point.
3. Everything needs to be ‘laypersonized’.

Increase in Taxes

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- Lullaby: Rising taxes lead to lower disposable consumption $\Rightarrow$ lower consumption $\Rightarrow$ lower income. Declining income $\Rightarrow$ lower money demand $\Rightarrow$ pushes interest rates down.
- The net effect would be determined by the size of tax-rise and the quantum of interest rate fall.

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- If both interest rate and sale determine investments, we need more precise information.
- $\uparrow$ Deficit $\Rightarrow \downarrow$ Investments. We call it **Crowding Out** of investments.
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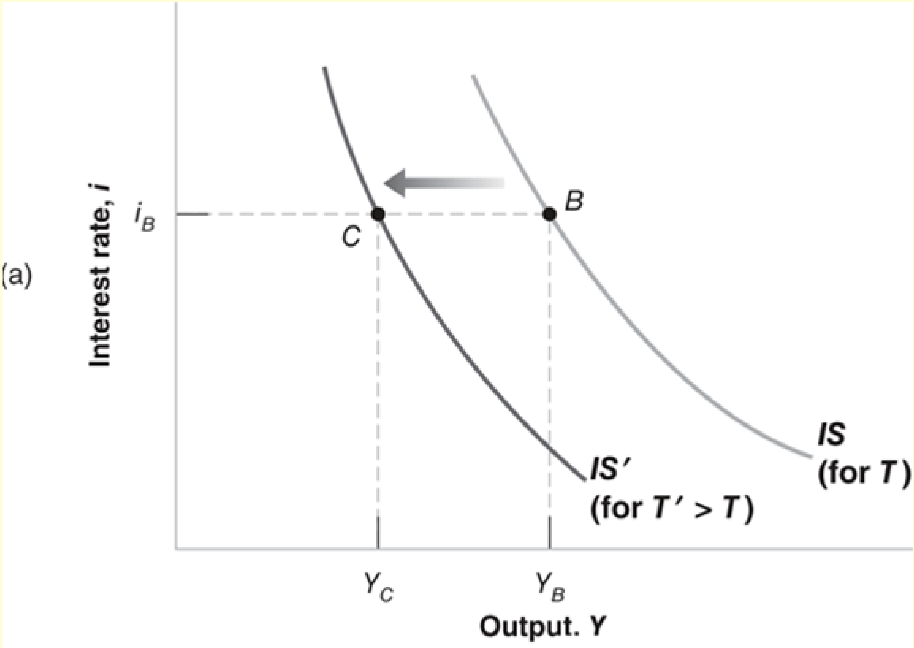
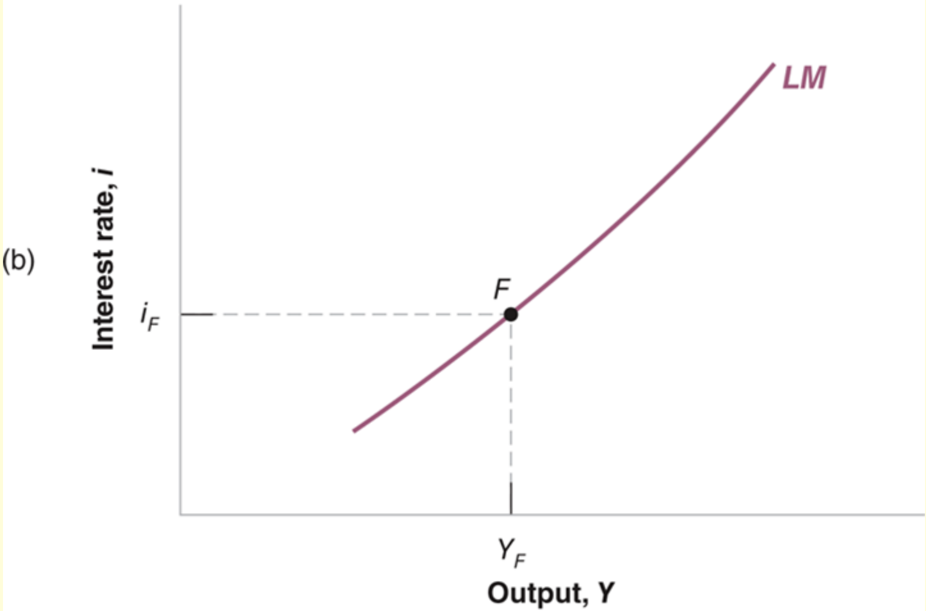
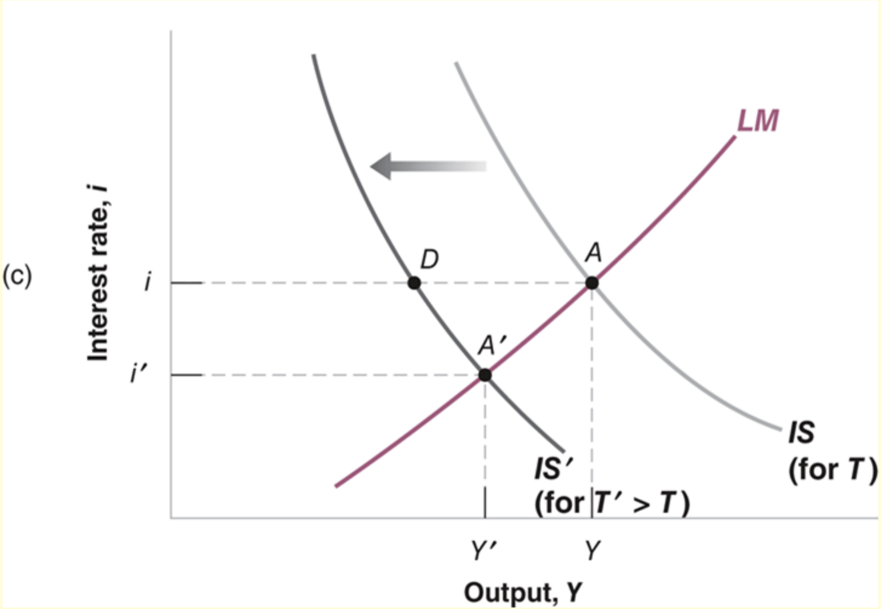


(a)
Interest rate, i
i_B
B
C
IS'
(for $T' > T$)
IS
(for T)
Y_C
Y_B
Output. Y



(b)
Interest rate, i
LM
F
iF
YF
Output, Y



(c)
Interest rate, i
i
i′
LM
D
A
A′
IS′
(for T′ > T)
IS
(for T)
Y′
Y
Output, Y

Monetary Policy

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- What happens to the financial market?
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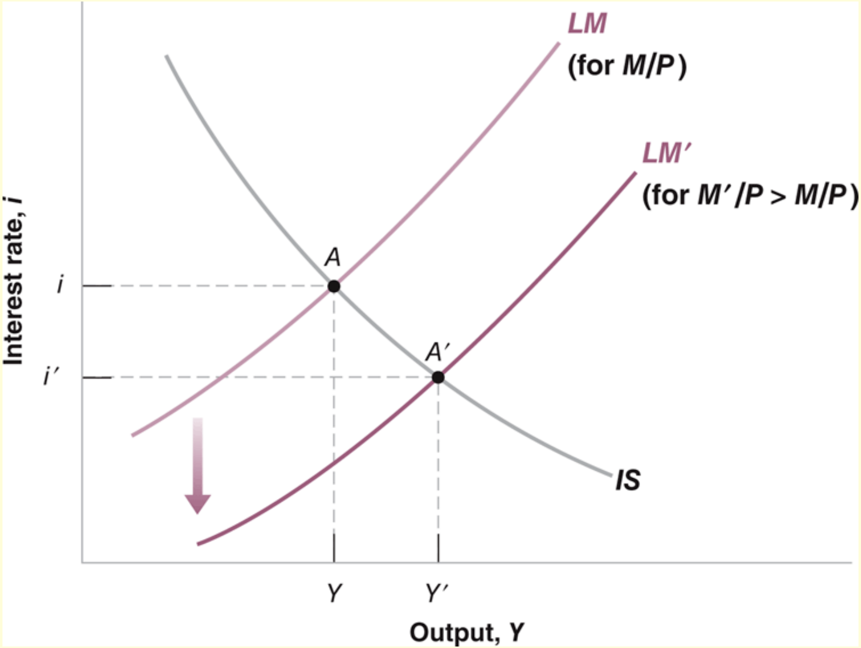
- What happens to the goods market? Nothing
- Monetary expansion $\Rightarrow \downarrow i$ and $\uparrow Y$.
- Lullaby: Increase in money supply $\Rightarrow$ lower interest rate $\Rightarrow$ increase in investment $\Rightarrow$ higher output and demand.


LM
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LM′
(for M′/P > M/P)
Interest rate, i
A
i
A′
i′
IS
Y
Y′
Output, Y

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The Effects of Fiscal and Monetary Policy: Cheatsheet

	Shift of *IS*	Shift of *LM*	Movement in Output	Movement in Interest Rate
Increase in taxes	left	none	down	down
Decrease in taxes	right	none	up	up
Increase in spending	right	none	up	up
Decrease in spending	left	none	down	down
Increase in money	none	down	up	down
Decrease in money	none	up	down	up

Using a Policy Mix

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- Response 2: $\downarrow$ tax rates & $\uparrow$ expenditure $\Rightarrow$ *IS* curve shifts to the right. pause
- Because of the two sets of policy decisions, economy could be rescued.

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- What's the problem with this story? (Hint: **Budget Deficits**)
- Why was the same diagnosis not administered in 2009?