# Class 20

Econ 402
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Class 17 Outline

- More on the Keynesian Cross and IS Curve

- More on the Money Market and the LM Curve

- Why "IS" and "LM"?

- Keynes v. Hicks

Keynesian Cross

- Income (Y) causes planned expenditures (E) via consumption function C=C(Y-T)

- Planned expenditures (E) cause income (Y) via adjustment to unplanned inventories (N)

- Model

- Planned expenditure function: $E = C(Y-T)+I+G$

- unplanned inventory accumulation $= \Delta N = Y-E$

- Law of motion: $\Delta Y = -\Delta N$
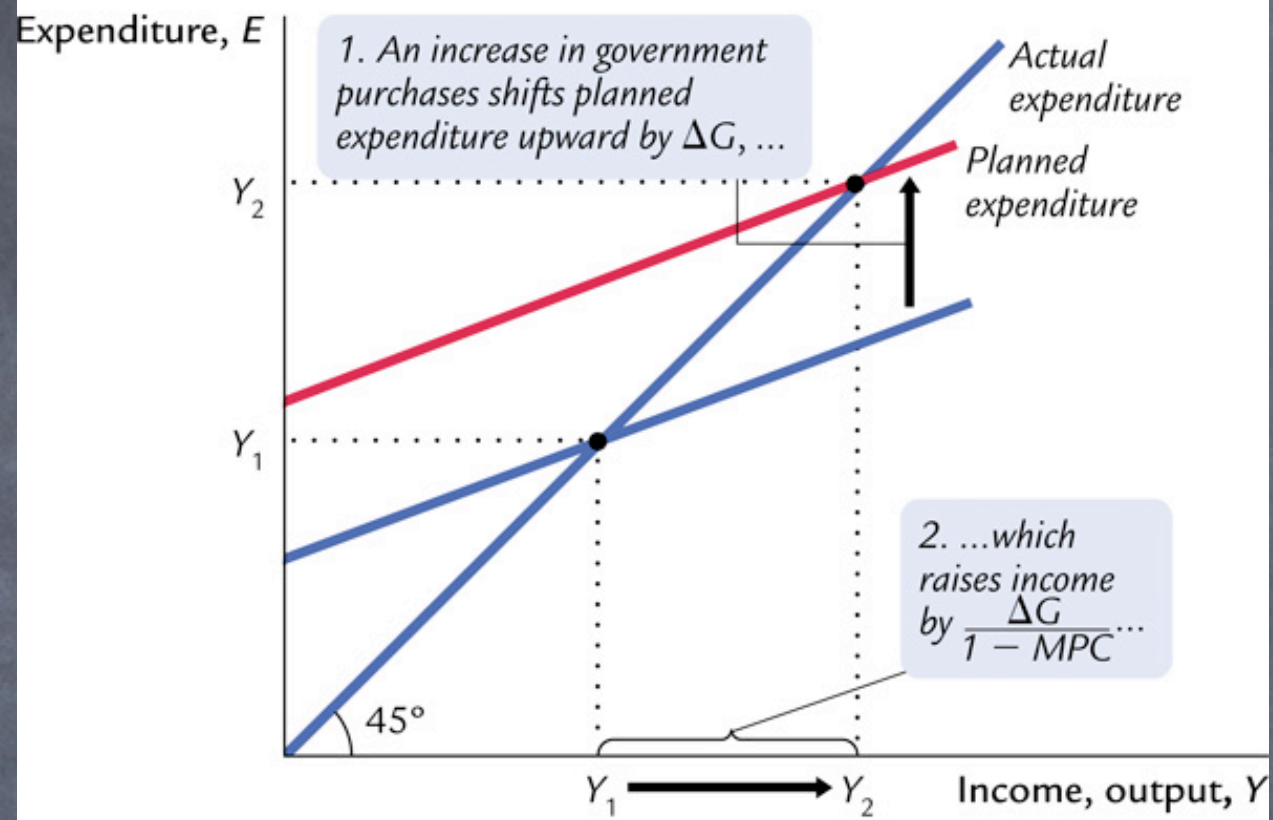
- Steady-state: $Y=E$
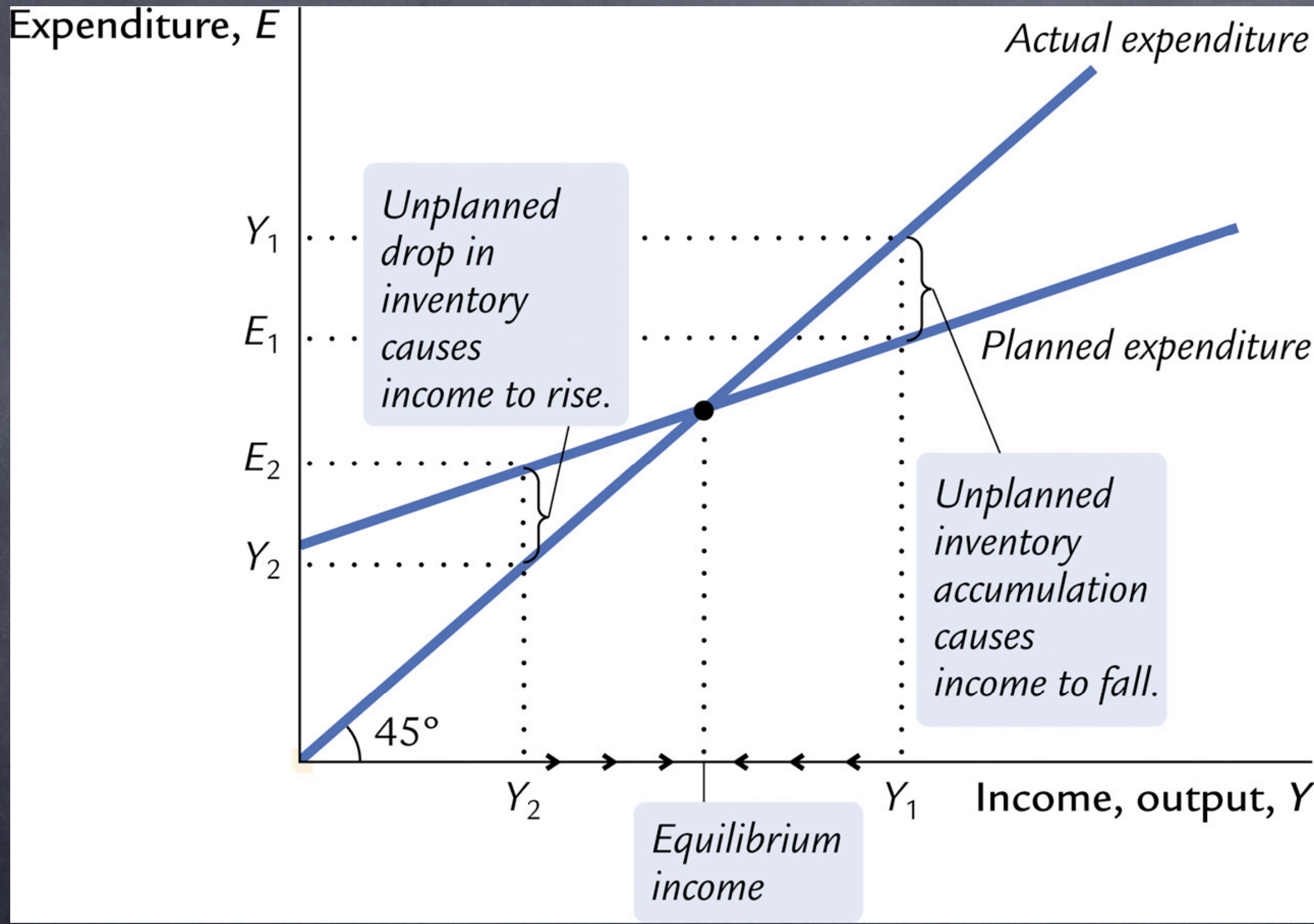
IS Curve

- An exogenous change in the "interest rate" causes a movement along the IS Curve

- A change in anything else that affects planned expenditures causes a shift in the IS Curve
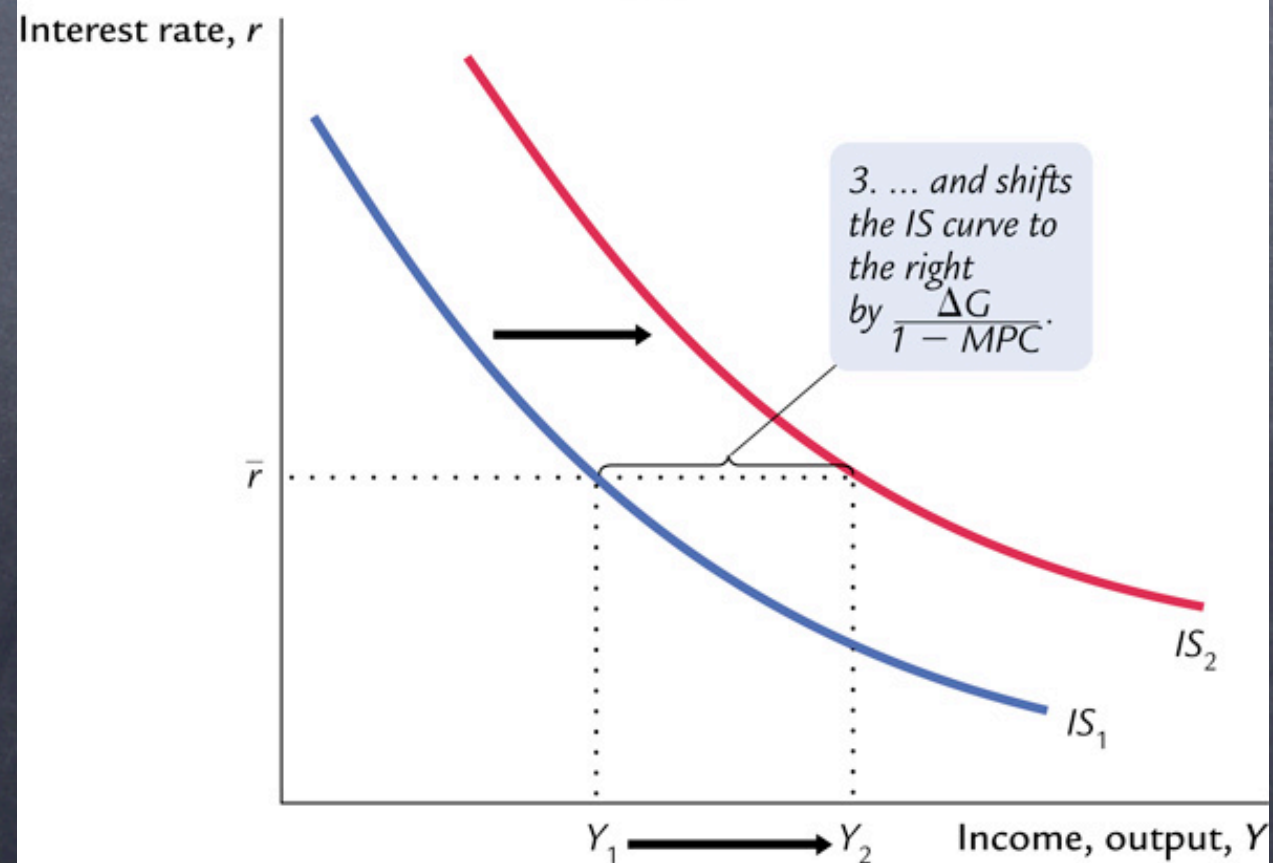
  - Fiscal policy, Animal Spirits

Exercise

- Use the Keynesian Cross model to show how an increase in government expenditures shifts the IS Curve

(a) The Keynesian Cross

Expenditure, E

1. An increase in government purchases shifts planned expenditure upward by ΔG, …

Actual expenditure

Planned expenditure

Y_2

Y_1

2. …which raises income by $\dfrac{\Delta G}{1 - MPC}$ …

45°

$Y_1 \longrightarrow Y_2$ Income, output, Y

(b) The *IS* Curve

Interest rate, r

3. … and shifts the IS curve to the right by $\dfrac{\Delta G}{1 - MPC}$.

$\bar{r}$

IS_2

IS_1

$Y_1 \longrightarrow Y_2$ Income, output, Y

LM Curve

- An exogenous change in income causes a movement along the LM curve

- What causes a shift in the LM curve?
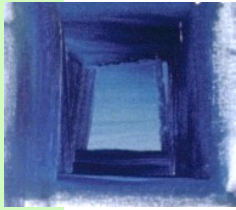
Exercise: Shifting the LM curve

- Suppose a wave of credit card fraud causes consumers to use cash more frequently in transactions.

- Use the liquidity preference model to show how these events shift the *LM* curve.
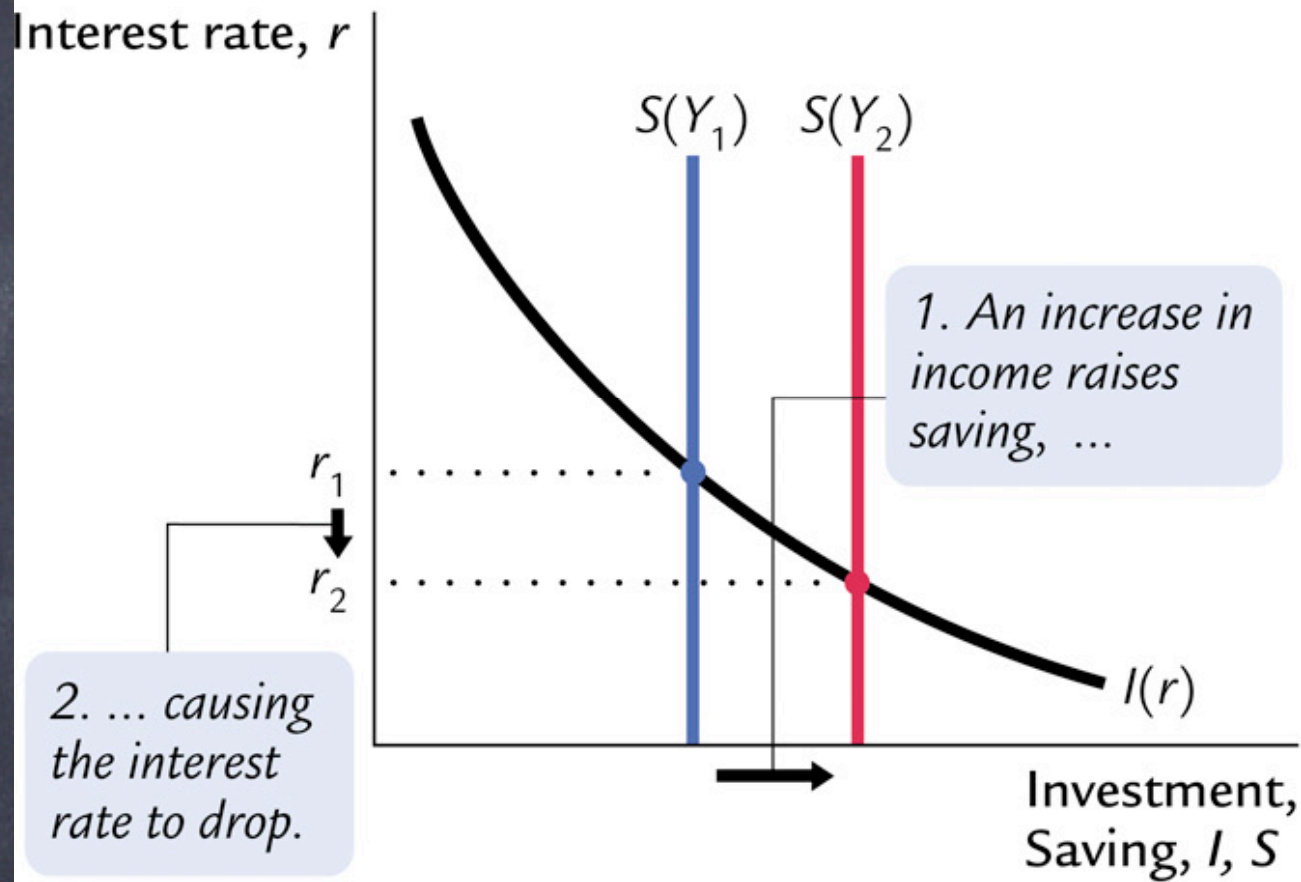
IS-LM

- Interest rate and Income are not exogenous, but endogenous

- How are they determined?

- Model clarifies potentially circular discussions about policy, interest rates, and income (Why are interest rates low?)
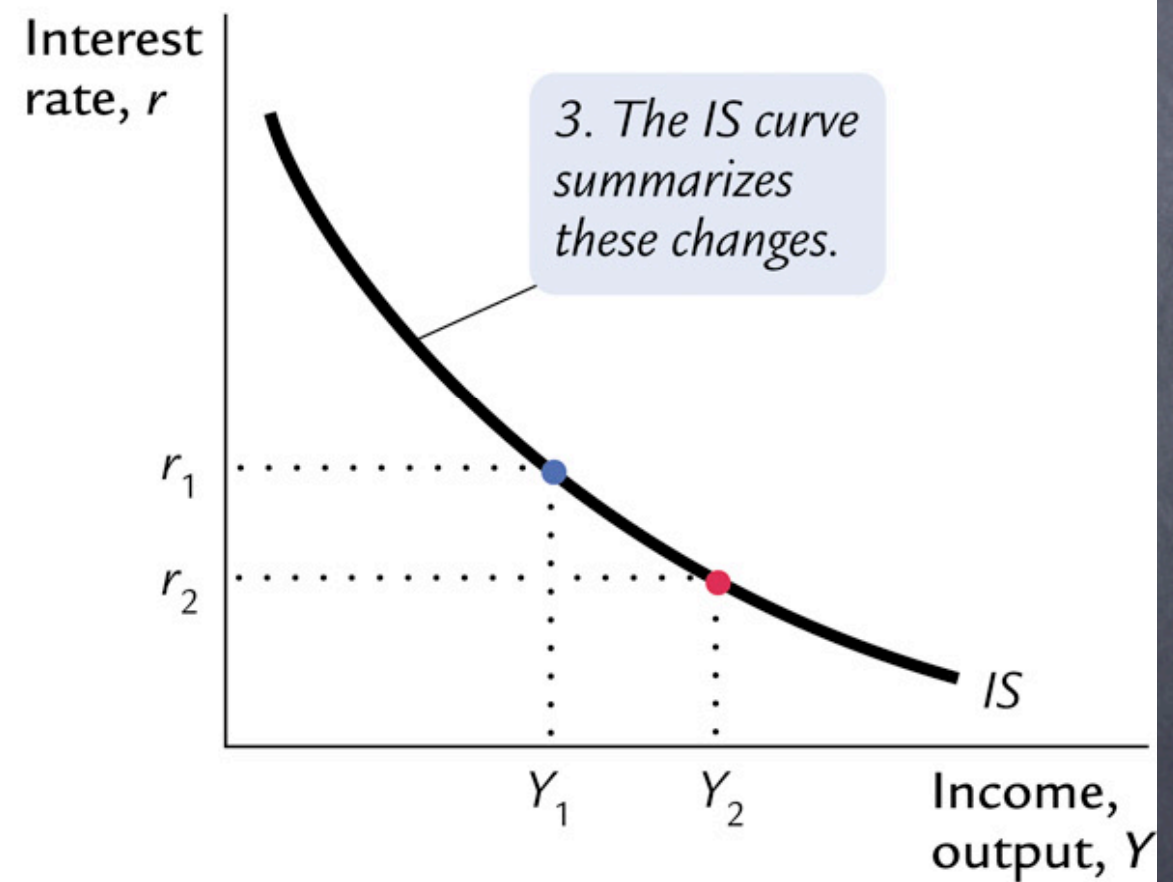
Why "IS-LM"?

- "LM" is straightforward

- "IS" is based on loanable funds approach to deriving IS curve

(a) The Market for Loanable Funds

Interest rate, r

$S(Y_1)$ $S(Y_2)$

1. An increase in income raises saving, …

r_1

r_2

$I(r)$

2. … causing the interest rate to drop.

Investment, Saving, I, S

(b) The IS Curve

Interest rate, r

3. The IS curve summarizes these changes.

r_1

r_2

IS

Y_1 Y_2

Income, output, Y

Keynes v. Hicks

"Now if the investment-demand schedule shifts, . . . income will, in general, shift also. But the above [saving/investment] diagram does not contain enough data to tell us what its new value will be; and, therefore, not knowing which is the appropriate [saving] curve, we do not know at what point the new investment-demand schedule will cut it. If, however, we introduce the state of liquidity-preference and the quantity of money and these between them tell us that the rate of interest is r_2, then the whole position becomes determinate. . . . Thus the [investment] curve and the [saving] curves tell us nothing about the rate of interest. They only tell us what income will be, if from some other source we can say what the rate of interest is." (Keynes)

Keynes v. Hicks

"The curve IS can therefore be drawn showing the relation between income and interest which must be maintained in order to make saving equal to investment." (Hicks)

Material also covered in Chapter 5 of Romer in the reading package (Sections 5.1 and 5.2)

Next time: Applying the IS-LM Model (Chapter 11 in Mankiw)