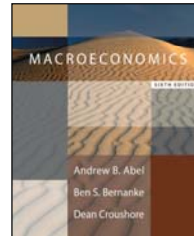




Business Cycles Econ 402 Professor Yamin Ahmad

Lecture 3: The IS/LM Model

- Goods Market Equilibrium (IS Curve)
- Money Market/Asset Market Equilibrium (LM Curve)



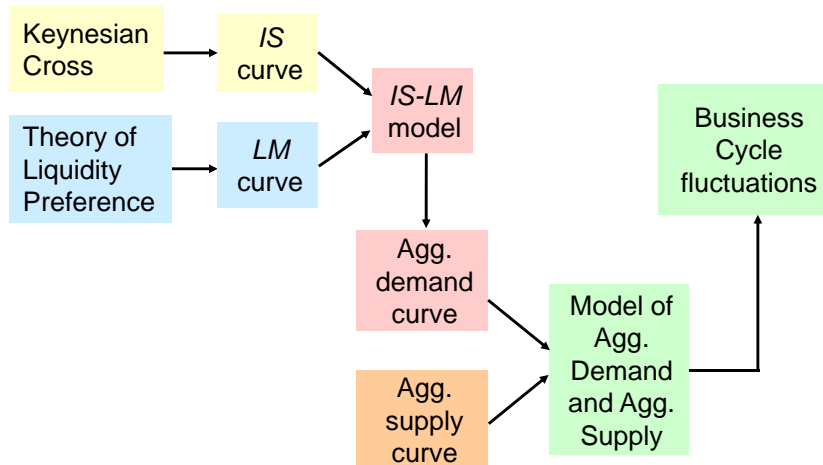
Big Concepts in this lecture...

- The Economy at Full Employment
- the *IS* curve, and its relation to
 - the Keynesian cross
 - the loanable funds model
- the *LM* curve, and its relation to
 - the theory of liquidity preference
- how the *IS-LM* model determines income and the interest rate in the short run when *P* is fixed

Note: These lecture notes are incomplete without having attended lectures



The Big Picture



Note: These lecture notes are incomplete without having attended lectures



Context

- Recall that in Macro, we break up our economy into the short run and the long run
- Long run
 - prices flexible
 - output determined by factors of production & technology
 - unemployment equals its natural rate
- Short run
 - prices fixed
 - output determined by aggregate demand
 - unemployment negatively related to output

Note: These lecture notes are incomplete without having attended lectures



Economy at Full Employment

- In the long run, output is determined by the supply side:
 - supplies of capital, labor
 - technology.
- Changes in demand for goods & services (C, I, G) only affect prices, not quantities.

Note: These lecture notes are incomplete without having attended lectures



Aggregate Supply in the long run

- In the long run, output is determined by factor supplies and technology

$$\bar{Y} = F(\bar{K}, \bar{L}, Z)$$

\bar{Y} is the **full-employment** or **natural** level of output, the level of output at which the economy's resources are fully employed.

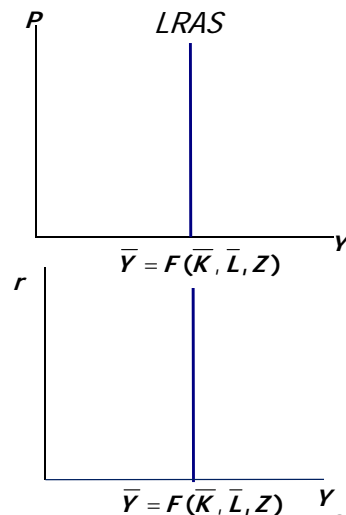
“Full employment” means that unemployment equals its natural rate (not zero).

Note: These lecture notes are incomplete without having attended lectures



The long-run aggregate supply curve

\bar{Y} does not depend on P or r , so LRAS is vertical in both (P, Y) and (r, Y) spaces



- Note: The LRAS is what Abel & Bernanke call the FE line!

Note: These lecture notes are incomplete without having attended lectures



Factors that Shift the LRAS/FE curve

- Since the full employment level of output is determined by resources in the economy, changes in those resources will shift the FE line, i.e.:

$$\bar{Y} = F(\bar{K}, \bar{L}, Z)$$

- Changes in capital
- Changes in full employment
- Changes in technology

Note: These lecture notes are incomplete without having attended lectures

Recall: The Keynesian Cross

- A simple closed economy model in which income is determined by expenditure.
(due to J.M. Keynes)
- Notation:
 - I = planned investment
 - $AE = C + I + G$ = planned expenditure
 - Y = real GDP = actual expenditure
- Difference between actual & planned expenditure = unplanned inventory investment

Note: These lecture notes are incomplete without having attended lectures

8

Elements of the Keynesian Cross

Consumption function: $C = C(Y - T)$

Govt policy variables: $G = \bar{G}, T = \bar{T}$

for now, planned

Investment is exogenous: $I = \bar{I}$

planned expenditure: $AE = C(Y - \bar{T}) + \bar{I} + \bar{G}$

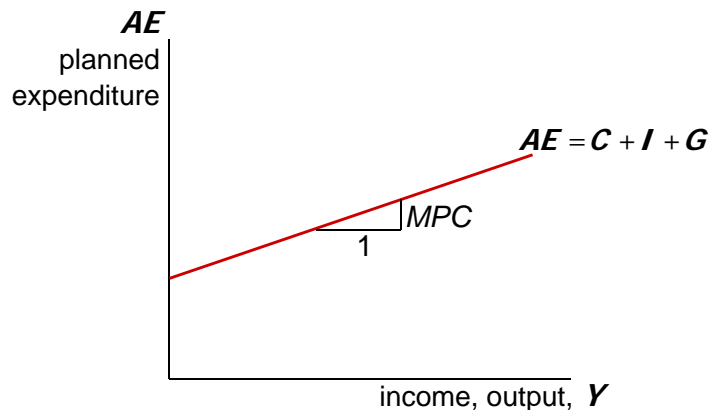
equilibrium condition: $Y = AE$

actual expenditure = planned expenditure

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9

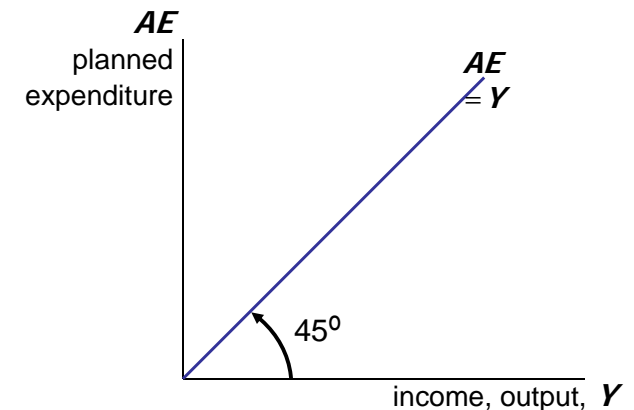
Graphing planned expenditure



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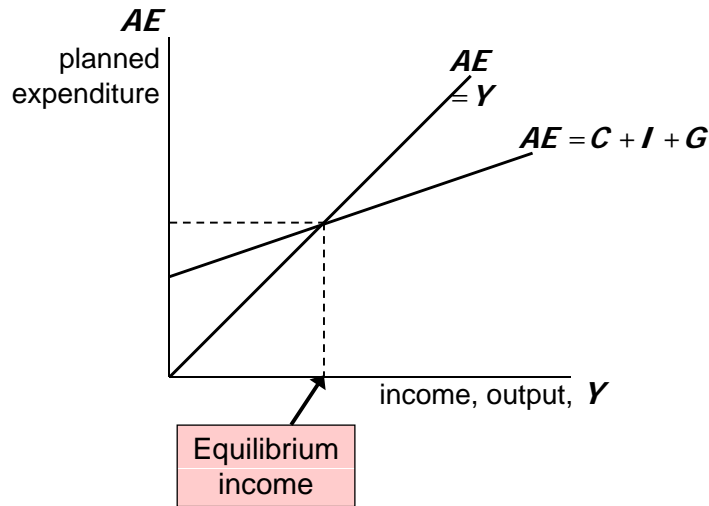
Graphing the equilibrium condition



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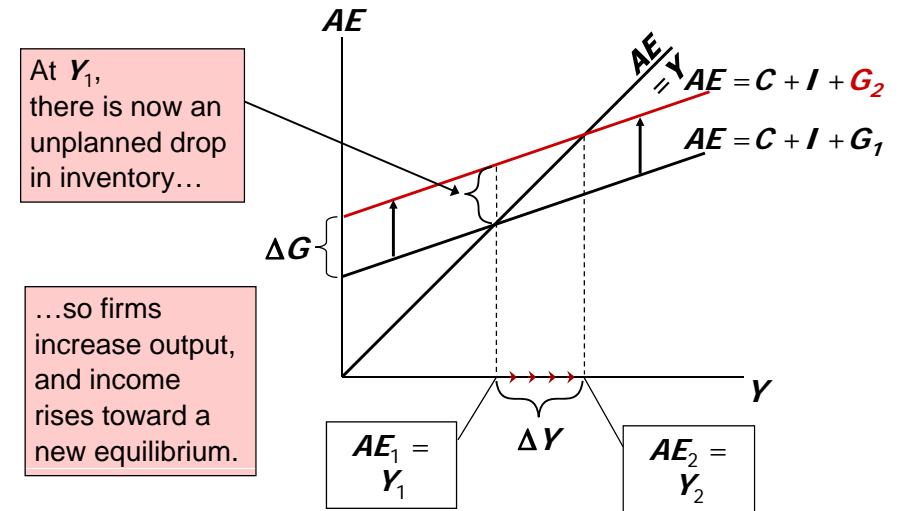
11

The equilibrium value of income



Note: These lecture notes are incomplete without having attended lectures

An increase in government purchases



Note: These lecture notes are incomplete without having attended lectures

Solving for ΔY

$$\begin{aligned}
 Y &= C + I + G && \text{equilibrium condition} \\
 \Delta Y &= \Delta C + \Delta I + \Delta G && \text{in changes} \\
 &= \Delta C + \Delta G && \text{because } I \text{ exogenous} \\
 &= MPC \times \Delta Y + \Delta G && \text{because } \Delta C = MPC \Delta Y
 \end{aligned}$$

Collect terms with ΔY on the left side of the equals sign:

$$(1 - MPC) \times \Delta Y = \Delta G$$

Solve for ΔY :

$$\Delta Y = \left(\frac{1}{1 - MPC} \right) \times \Delta G$$

Note: These lecture notes are incomplete without having attended lectures

The government purchases multiplier

Definition: the increase in income resulting from a \$1 increase in G .

In this model, the govt purchases multiplier equals $\frac{\Delta Y}{\Delta G} = \frac{1}{1 - MPC}$

Example: If $MPC = 0.8$, then

$$\frac{\Delta Y}{\Delta G} = \frac{1}{1 - 0.8} = 5$$

An increase in G causes income to increase 5 times as much!

Note: These lecture notes are incomplete without having attended lectures

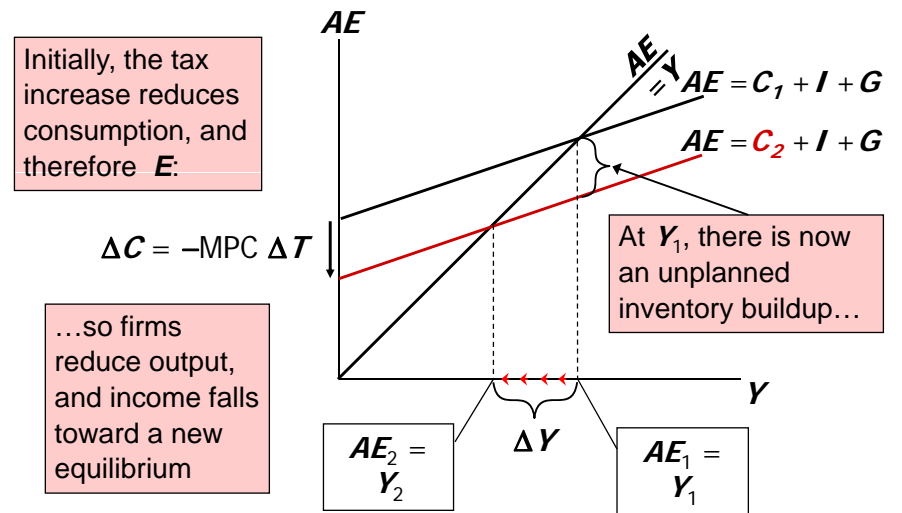


Why the multiplier is greater than 1

- Initially, the increase in G causes an equal increase in Y : $\Delta Y = \Delta G$.
- But $\uparrow Y \Rightarrow \uparrow C$
 - \Rightarrow further $\uparrow Y$
 - \Rightarrow further $\uparrow C$
 - \Rightarrow further $\uparrow Y$
- So the final impact on income is much bigger than the initial ΔG .



An increase in taxes



Solving for ΔY

$$\begin{aligned} \Delta Y &= \Delta C + \Delta I + \Delta G && \text{eq'm condition in changes} \\ &= \Delta C && I \text{ and } G \text{ exogenous} \\ &= MPC \times (\Delta Y - \Delta T) \end{aligned}$$

Solving for ΔY : $(1 - MPC) \times \Delta Y = -MPC \times \Delta T$

Final result:

$$\Delta Y = \left(\frac{-MPC}{1 - MPC} \right) \times \Delta T$$



The tax multiplier

Def: the change in income resulting from a \$1 increase in T :

$$\frac{\Delta Y}{\Delta T} = \frac{-MPC}{1 - MPC}$$

If $MPC = 0.8$, then the tax multiplier equals

$$\frac{\Delta Y}{\Delta T} = \frac{-0.8}{1 - 0.8} = \frac{-0.8}{0.2} = -4$$



The tax multiplier

...is *negative*:

A tax increase reduces **C**, which reduces income.

...is *greater than one* (in absolute value):

A change in taxes has a multiplier effect on income.



...is *smaller than the govt spending multiplier*:

Consumers save the fraction $(1 - MPC)$ of a tax cut, so the initial boost in spending from a tax cut is smaller than from an equal increase in **G**.



Walkthrough Example I:

Economic Scenario:

In the Keynesian Cross, assume that the consumption function is given by:

$$C = 475 + 0.75(Y - T)$$

Planned Investment, $I = 150$, $G = 250$, $T = 100$.

- Graph planned expenditure as a function of income
- What is the equilibrium level of income
- If government purchases increase by 125, what is the new equilibrium income?
- What level of government purchases is needed to achieve an income of 2600?



The IS curve

Def: a graph of all combinations of r and Y that result in goods market equilibrium

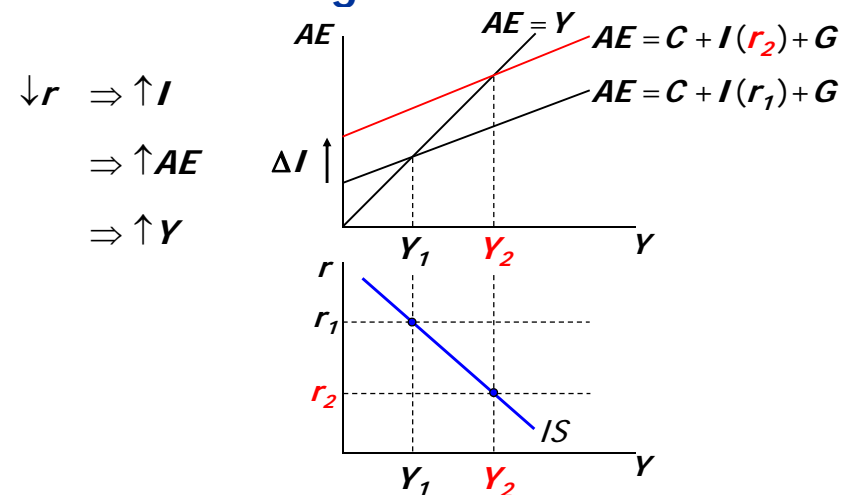
i.e. actual expenditure (output) = planned expenditure

The equation for the IS curve is:

$$Y = C(Y - \bar{T}) + I(r) + \bar{G}$$



Deriving the IS curve





Why the *IS* curve is negatively sloped

- A fall in the interest rate motivates firms to increase investment spending, which drives up total planned spending (**AE**).
- To restore equilibrium in the goods market, output (*a.k.a.* actual expenditure, **Y**) must increase.



Market For Loanable Funds – Closed Economy

Define $S_p \equiv Y - T - C(Y - T, r)$ and $S_g \equiv T - G$
 (+) (-)

$$\Rightarrow S \equiv S_p + S_g = Y - C(Y - T) - G = S(Y; G, T, r)$$

(+)(-)(+)(+)

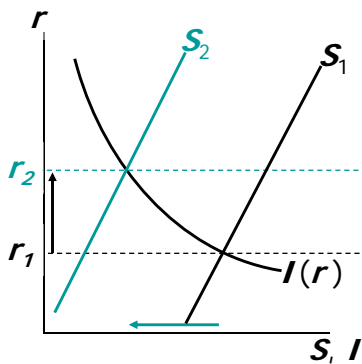
Capital Markets Equilibrium: $S(Y; G, T) = I(r)$
 (Loanable Funds) (-)

Or Equivalently: $Y = Y^d \equiv C(Y - T) + I(r) + G$

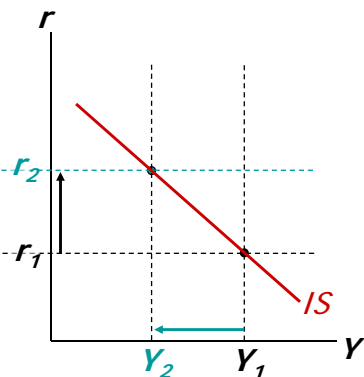


The *IS* curve and the loanable funds model

(a) The L.F. model



(b) The *IS* curve



Algebra Of The *IS* Curve

Suppose $C = c_0 + c_1(Y - T)$ and $I = I_0 - br$

(Note: We could also consider the effect of sales or the business cycle on Investment by incorporating Y , i.e. $I = b_0 + b_1Y - b_2r$)

Then $Y = C + I + G$

$$= c_0 + I_0 + G + c_1(Y - T) - br$$

If we collect like terms:

$$Y = \frac{c_0 + I_0 + G - c_1T}{1 - c_1} - \frac{b}{1 - c_1}r$$



Slope of the IS curve

$$Y = \frac{c_0 + I_0 + G - c_1T}{1 - c_1} - \frac{b}{1 - c_1} r$$

Hold everything except Y and r fixed:

$$\Delta Y = \frac{-b}{1 - c_1} \Delta r \Rightarrow \frac{\Delta r}{\Delta Y} = \frac{c_1 - 1}{b} < 0$$

Thus IS is relatively flat if either:

- (i) b is very large; or
- (ii) c close to unity.



Fiscal Policy and the IS curve

- We can use the IS-LM model to see how fiscal policy (**G** and **T**) affects aggregate demand and output.
- Let's start by using the Keynesian cross to see how fiscal policy shifts the IS curve...

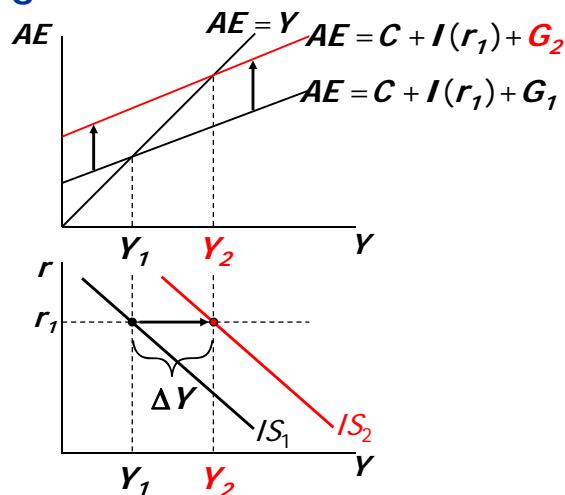


Shifting the IS curve: ΔG

At any value of r,
 $\uparrow G \Rightarrow \uparrow AE \Rightarrow \uparrow Y$
 ...so the IS curve shifts to the right.

The horizontal distance of the IS shift equals

$$\Delta Y = \frac{1}{1 - MPC} \Delta G$$



Factors That Shift the IS Curve

Factors That Shift the IS Curve		
An increase in	Shifts the IS curve	Reason
Expected future output	Up and to the right	Desired saving falls (desired consumption rises), raising the real interest rate that clears the goods market.
Wealth	Up and to the right	Desired saving falls (desired consumption rises), raising the real interest rate that clears the goods market.
Government purchases, G	Up and to the right	Desired saving falls (demand for goods rises), raising the real interest rate that clears the goods market.
Taxes, T	No change or down and to the left	No change, if consumers take into account an offsetting future tax cut and do not change consumption (Ricardian equivalence); down and to the left, if consumers don't take into account a future tax cut and reduce desired consumption, increasing desired national saving and lowering the real interest rate that clears the goods market.
Expected future marginal product of capital, MPK'	Up and to the right	Desired investment increases, raising the real interest rate that clears the goods market.
Effective tax rate on capital	Down and to the left	Desired investment falls, lowering the real interest rate that clears the goods market.



The Theory of Liquidity Preference

- Due to John Maynard Keynes.
- A simple theory in which the interest rate is determined by money supply and money demand.
- Money supply is exogenous – determined by Fed!
- People hold wealth in the form of either:
 - Money
 - Bonds
 Demand for money and demand for bonds!

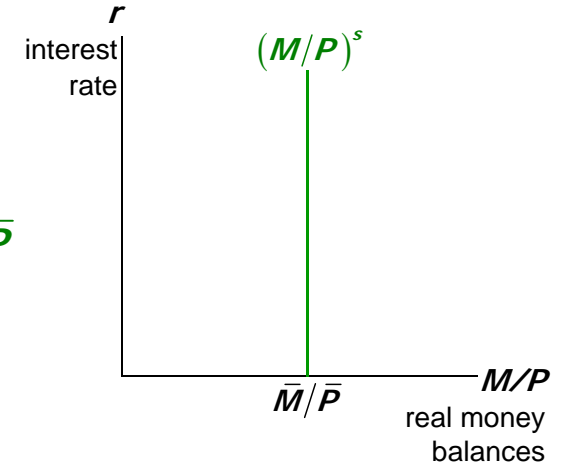
Note: These lecture notes are incomplete without having attended lectures



Money supply

The supply of real money balances is fixed:

$$(M/P)^s = \bar{M}/\bar{P}$$



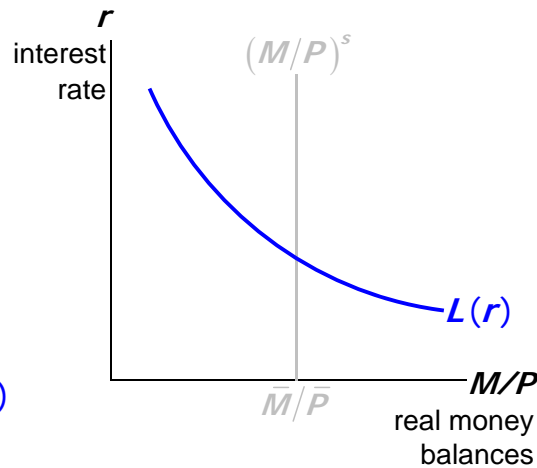
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Money demand

- People either hold:
 - Money
 - Bonds
- Demand for real money balances:

$$(M/P)^d = L(r)$$



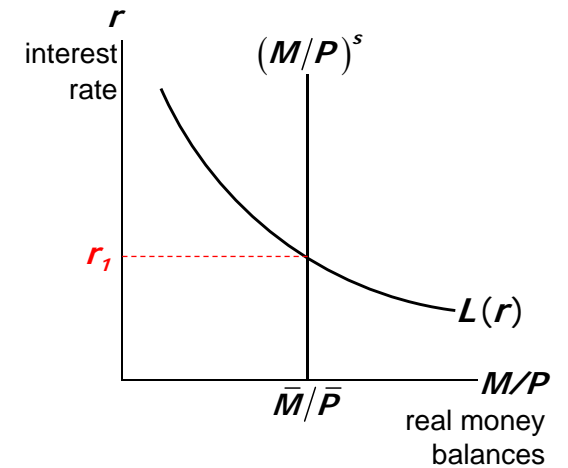
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Equilibrium

The interest rate adjusts to equate the supply and demand for money:

$$\bar{M}/\bar{P} = L(r)$$

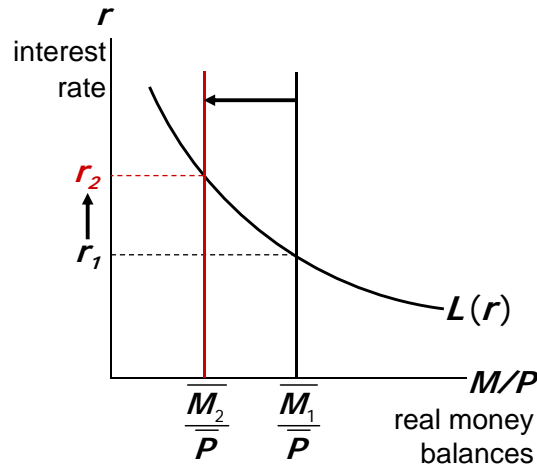


Note: These lecture notes are incomplete without having attended lectures



How the Fed raises the interest rate

To increase r ,
Fed reduces M



Note: These lecture notes are incomplete without having attended lectures



The LM curve

Now let's put Y back into the money demand function:

$$\left(\frac{M}{P}\right)^d = L(r, Y)$$

The **LM curve** is a graph of all combinations of r and Y that equate the supply and demand for real money balances.

The equation for the LM curve is:

$$\bar{M}/\bar{P} = L(r, Y)$$

Note: These lecture notes are incomplete without having attended lectures



Nominal or Real Rates in Money Demand?

Money Market Equilibrium: $\frac{\bar{M}}{P} = \left(\frac{M}{P}\right)^d = L(i, Y)$
(-)(+)

What is real return to saving \$1?

$$1+r = \frac{1+i}{1+\pi} \Rightarrow r + \pi \approx i$$

This is known as the **Fisher Equation**.

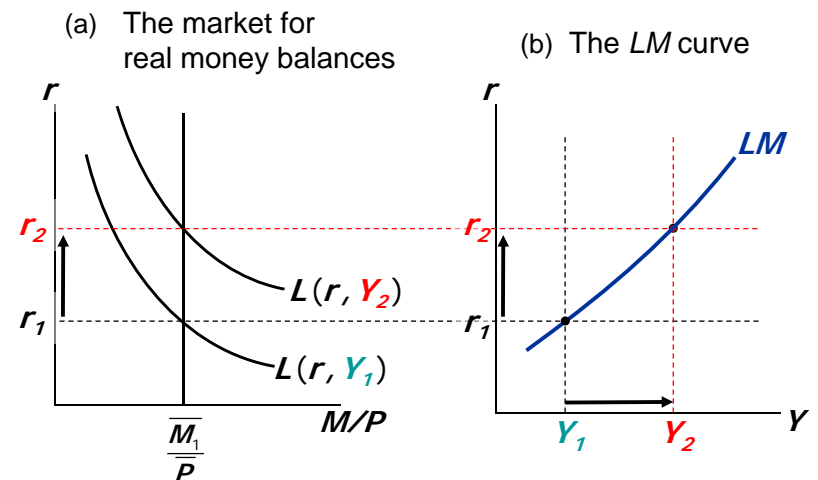
So: $\frac{\bar{M}}{P} = L(r + \pi, Y)$

Treat M^s as exogenous; for present set $\pi = 0$.

Note: These lecture notes are incomplete without having attended lectures



Deriving the LM curve



Note: These lecture notes are incomplete without having attended lectures



Why the LM curve is upward sloping

- An increase in income raises money demand.
- Since the supply of real balances is fixed, there is now excess demand in the money market at the initial interest rate.
- The interest rate must rise to restore equilibrium in the money market.



Equilibrium in the Bond Market?

There are two assets (money and bonds), but only one equilibrium condition. Do we need to worry about bond market equilibrium as well? Answer: No!

$$\frac{M^S}{P} + B^S = A = \left(\frac{M}{P}\right)^d + B^d$$

with A = real wealth.

$$\text{So: } \frac{M^S}{P} = \left(\frac{M}{P}\right)^d \Leftrightarrow B^S = B^d$$

This is an example of **Walras Law**.



Algebra of the LM Curve

$$\text{Write: } \left(\frac{M}{P}\right)^d = m_0 + kY - hr$$

With M and P fixed: $0 = k\Delta Y - h \Delta r$

$$\text{Slope of LM Curve: } \frac{\Delta r}{\Delta Y} = \frac{k}{h} > 0$$

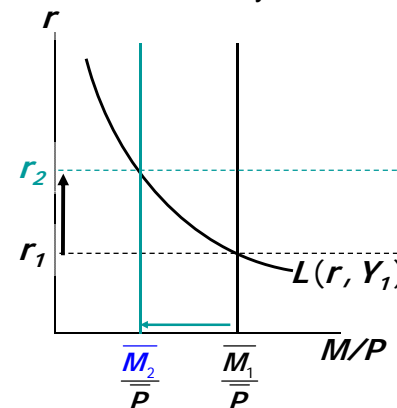
LM curve relatively flat if either:

- (i) k small; or
- (ii) h large ("Liquidity Trap")

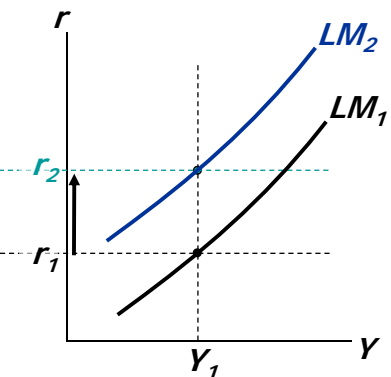


How ΔM shifts the LM curve

(a) The market for real money balances



(b) The LM curve





Shifts in LM curve (r fixed)

$$\frac{\Delta M}{P} = k\Delta Y \Rightarrow \frac{\Delta Y}{\Delta M} = \frac{1}{Pk}$$

What happens if $k = 0$?

Hold Y fixed:

$$\frac{\Delta M}{P} = -h\Delta r \Rightarrow \frac{\Delta r}{\Delta M} = -\frac{1}{Ph}$$

- So vertical shift is independent of k



Walkthrough Example II:

Economic Scenario:

Suppose that the money demand function is:

$$(M/P)^d = 1000 - 100r$$

where r is the interest rate (in percent). The money supply M is 1000, and the price level is 2.

- Graph the supply and demand for real money balances.
- What is the equilibrium interest rate?
- Assume that the price level is fixed. What happens to the equilibrium interest rate if the supply of money is raised from 1000 to 1200?
- If the Fed wishes to raise the interest rate to 7 percent, what money supply should it set?



Factors that Shift the LM Curve

Factors That Shift the LM Curve		
An increase in	Shifts the LM curve	Reason
Nominal money supply, M	Down and to the right	Real money supply increases, lowering the real interest rate that clears the asset market (equates money supplied and money demanded).
Price level, P	Up and to the left	Real money supply falls, raising the real interest rate that clears the asset market.
Expected inflation, π^e	Down and to the right	Demand for money falls, lowering the real interest rate that clears the asset market.
Nominal interest rate on money, i^m	Up and to the left	Demand for money increases, raising the real interest rate that clears the asset market.

In addition, for constant output, any factor that increases real money demand raises the real interest rate that clears the asset market and shifts the LM curve up and to the left. Other factors that increase real money demand (see Summary table 9, p. 260) include

- an increase in wealth;
- an increase in the risk of alternative assets relative to the risk of holding money;
- a decline in the liquidity of alternative assets; and
- a decline in the efficiency of payment technologies.



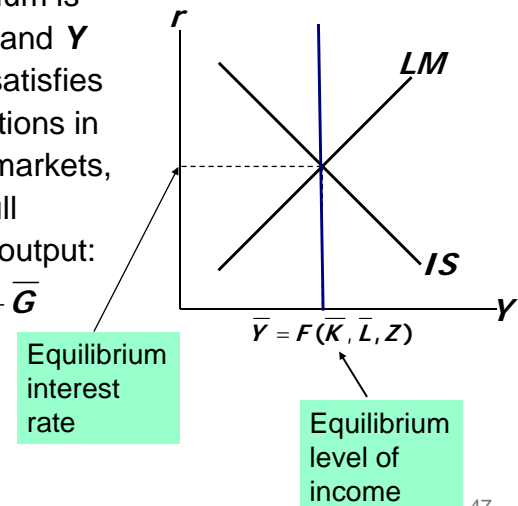
Macroeconomic equilibrium

The long run equilibrium is the combination of r and Y that simultaneously satisfies the equilibrium conditions in the goods & money markets, consistent with the full employment level of output:

$$Y = C(Y - \bar{T}) + I(r) + \bar{G}$$

$$\bar{M}/\bar{P} = L(r, Y)$$

$$\bar{Y} = F(\bar{K}, \bar{L}, Z)$$



Equilibrium With Fixed Prices

IS Curve

$$S(Y;G,T)=I(r) \quad \left(\text{or } Y = \frac{c_0 + I_0 + G - c_1 T}{1 - c_1} - \frac{br}{1 - c_1} \right)$$

(+)(-)(+)

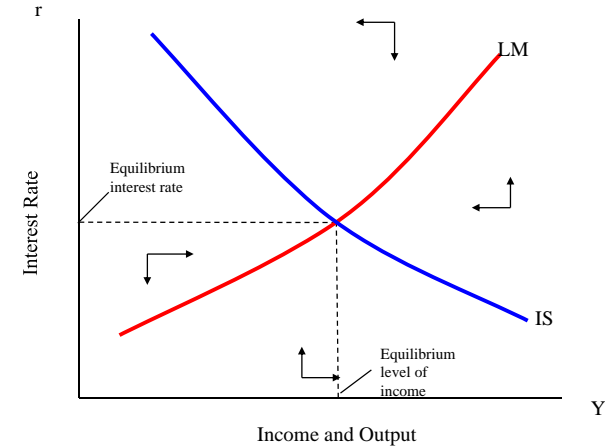
LM Curve

$$\frac{M}{P} = L(r, Y) \quad \left(\text{or } \frac{M}{P} = m_0 + kY - hr \right)$$

(-)(+)

Solve for Y and r in terms of G, T, M and P.

Equilibrium in the IS-LM Model



Convergence to Equilibrium

- Is there any reason to expect it to converge to this equilibrium from arbitrary r and Y?
- If there is an excess demand for money (excess supply of bonds) this should drive the return on bonds up, and vice versa.
- If savings exceeds planned investment, then consumers must be spending less and producers will be accumulating unwanted inventories. So they will cut back production, and vice versa.
- Hence the system should converge.

Practice Question

- Consider the following IS-LM model:
 - $C = 200 + 0.25Y_D$
 - $I = 150 + 0.25Y - 1000i$
 - $G = 250; T = 200$
 - $\left(\frac{M}{P}\right)^d = 2Y - 8000i$
 - $\frac{M}{P} = 1600$
- a. Derive the IS equation
- b. Derive the LM equation
- c. Solve for equilibrium output
- d. Solve for the equilibrium value of the real interest rate
- e. Solve for the equilibrium values of C and I and verify the value that you obtained for Y by adding up C, I and G



General Equilibrium

Applying the *IS-LM* framework: A temporary adverse supply shock

- Suppose the productivity parameter in the production function falls temporarily
- The supply shock reduces the marginal productivity of labor, hence labor demand
 - With lower labor demand, the equilibrium real wage and employment fall
 - Lower employment and lower productivity both reduce the equilibrium level of output, thus shifting the *FE* line to the left

Note: These lecture notes are incomplete without having attended lectures

52



General Equilibrium

Applying the *IS-LM* framework: A temporary adverse supply shock

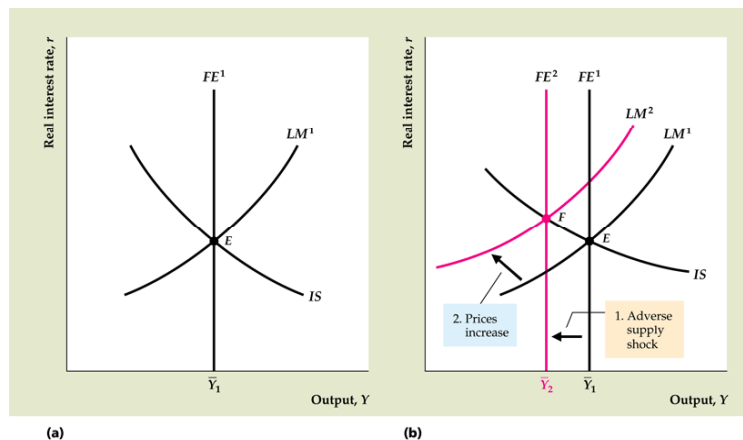
- There's no effect of a temporary supply shock on the *IS* or *LM* curves
- Since the *FE*, *IS*, and *LM* curves don't intersect, the price level adjusts, shifting the *LM* curve until a general equilibrium is reached
 - In this case the price level rises to shift the *LM* curve up and to the left to restore equilibrium

Note: These lecture notes are incomplete without having attended lectures

53



Effects of a temporary adverse supply shock



Note: These lecture notes are incomplete without having attended lectures

54



General Equilibrium

Applying the *IS-LM* framework: A temporary adverse supply shock

- The inflation rate rises temporarily, not permanently
- Summary: The real wage, employment, and output decline, while the real interest rate and price level are higher
 - There is a temporary burst of inflation as the price level moves to a higher level
 - Since the real interest rate is higher and output is lower, consumption and investment must be lower

Note: These lecture notes are incomplete without having attended lectures

55



General Equilibrium

Application: Oil price shocks revisited

- Does the *IS-LM* model correctly predict the results of an adverse supply shock?
- The data from the 1973–1974 and 1979–1980 oil price shocks shows the following
 - Output, employment, and the real wage declined
 - Consumption fell slightly and investment fell substantially
 - Inflation surged temporarily
 - All the above results are consistent with the theory

Note: These lecture notes are incomplete without having attended lectures

56



General Equilibrium

Application: Oil price shocks revisited

- The real interest rate did not rise during the 1973–1974 oil price shock (though it did during the 1979–1980 shock)
 - It could be that people expected the 1973–1974 oil price shock to be permanent
 - In that case the real interest rate would not necessarily rise
 - If so, people's expectations were correct, since the 1973–1974 shock seems to have been permanent, while the 1979–1980 shock was reversed quickly

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57



General Equilibrium

Econometric models and macroeconomic forecasts

- Many models that are used for macroeconomic research and analysis are based on the *IS-LM* model
- There are three major steps in using an economic model for forecasting
 - An *econometric model* estimates the parameters of the model (slopes, intercepts, elasticities) through statistical analysis of the data
 - Projections are made of *exogenous variables* (variables outside the model), like oil prices and changes in productivity
 - The model is solved for the values of *endogenous variables*, such as output, employment, and interest rates

Note: These lecture notes are incomplete without having attended lectures

58



General Equilibrium

Econometric models and macroeconomic forecasts

- The Federal Reserve Board's FRB/US model, introduced in 1996, improves on the old model by better handling of expectations, improved modeling of reactions to shocks, and use of newer statistical techniques
- The FRB/US model is the workhorse for policy analysis by the Fed's staff economists
- Board of Governor's staff adjust the FRB/US forecasts with their judgment; the subsequent forecasts reported in the Greenbook have been found to be superior to private-sector forecasts

Note: These lecture notes are incomplete without having attended lectures

59



Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- An increase in money supply shifts the *LM* curve down and to the right
- Because financial markets respond most quickly to changes in economic conditions, the asset market responds to the disequilibrium
 - The *FE* line is slow to respond, because job matching and wage renegotiation take time
 - The *IS* curve responds somewhat slowly
 - We assume that the labor market is temporarily out of equilibrium, so there's a short-run equilibrium at the intersection of the *IS* and *LM* curves



Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- The increase in the money supply causes people to try to get rid of excess money balances by buying assets, driving the real interest rate down
 - The decline in the real interest rate causes consumption and investment to increase temporarily
- Output is assumed to increase temporarily to meet the extra demand



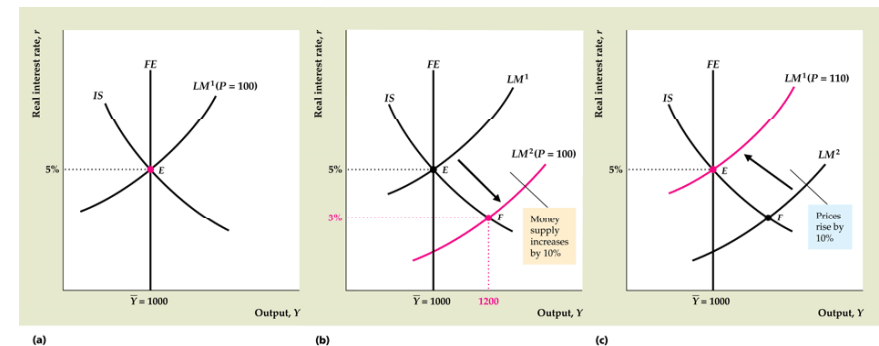
Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- The adjustment of the price level
 - Since the demand for goods exceeds firms' desired supply of goods, firms raise prices
- The rise in the price level causes the *LM* curve to shift up
- The price level continues to rise until the *LM* curve intersects with the *FE* line and the *IS* curve at general



Effects of a monetary expansion



Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- The result is no change in employment, output, or the real interest rate
- The price level is higher by the same proportion as the increase in the money supply
- So all real variables (including the real wage) are unchanged, while nominal values (including the nominal wage) have risen proportionately with the change in the money supply

Note: These lecture notes are incomplete without having attended lectures

64

Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- Trend money growth and inflation
 - This analysis also handles the case in which the money supply is growing continuously
 - If both the money supply and price level rise by the same proportion, there is no change in the real money supply, and the *LM* curve doesn't shift
 - If the money supply grew faster than the price level, the *LM* curve would shift down and to the right

Note: These lecture notes are incomplete without having attended lectures

65

Price Adjustment and the Attainment of General Equilibrium

The effects of a monetary expansion

- Trend money growth and inflation
 - Often, then, we'll discuss things in relative terms
 - The examples can often be thought of as a change in *M* or *P* relative to the expected or trend growth of money and inflation
 - Thus when we talk about “an increase in the money supply,” we have in mind an increase in the growth rate relative to the trend
 - Similarly, a result that the price level declines can be interpreted as the price level declining relative to a trend; for example, inflation may fall from 7% to 4%

Note: These lecture notes are incomplete without having attended lectures

66

Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- There are two key questions in the debate between classical and Keynesian approaches:
 - How rapidly does the economy reach general equilibrium?
 - What are the effects of monetary policy on the economy?

67

Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- Price adjustment and the self-correcting economy
 - The economy is brought into general equilibrium by adjustment of the price level
 - The speed at which this adjustment occurs is much debated

68

Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- Classical economists see rapid adjustment of the price level
 - So the economy returns quickly to full employment after a shock
 - If firms change prices instead of output in response to a change in demand, the adjustment process is almost immediate

69

Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- Keynesian economists see slow adjustment of the price level
 - It may be several years before prices and wages adjust fully
 - When not in general equilibrium, output is determined by aggregate demand at the intersection of the *IS* and *LM* curves, and the labor market is not in equilibrium

70

Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- Monetary neutrality
 - Money is neutral if a change in the nominal money supply changes the price level proportionately but has no effect on real variables
 - The classical view is that a monetary expansion affects prices quickly with at most a transitory effect on real variables

71

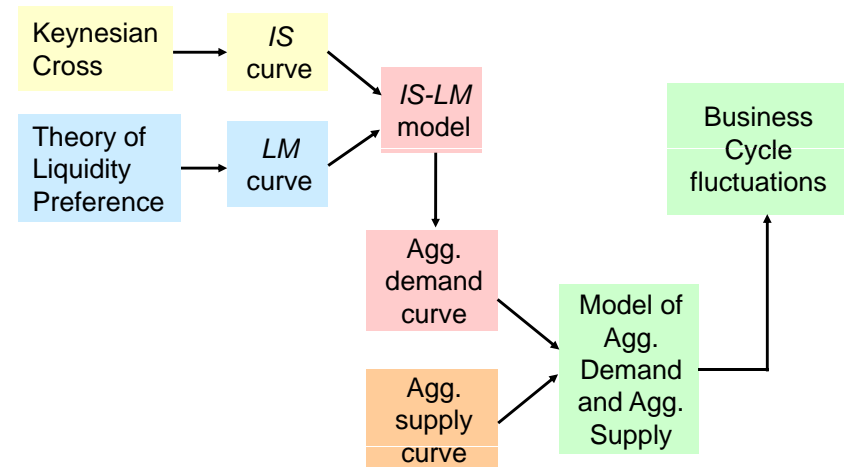
Price Adjustment and the Attainment of General Equilibrium

Classical versus Keynesian versions of the *IS-LM* model

- Monetary neutrality
 - Keynesians think the economy may spend a long time in disequilibrium, so a monetary expansion increases output and employment and causes the real interest rate to fall
 - Keynesians believe in monetary neutrality in the long run but not the short run, while classicals believe it holds even in the relatively short run

72

Back to The Big Picture



Note: These lecture notes are incomplete without having attended lectures

73

Summary

1. Keynesian cross
 - basic model of income determination
 - takes fiscal policy & investment as exogenous
 - fiscal policy has a multiplier effect on income.
2. *IS* curve
 - comes from Keynesian cross when planned investment depends negatively on interest rate
 - shows all combinations of r and Y that equate planned expenditure with actual expenditure on goods & services

slide 74

Summary

3. Theory of Liquidity Preference
 - basic model of interest rate determination
 - takes money supply & price level as exogenous
 - an increase in the money supply lowers the interest rate
4. *LM* curve
 - comes from liquidity preference theory when money demand depends positively on income
 - shows all combinations of r and Y that equate demand for real money balances with supply

slide 75

Summary

5. *IS-LM* model

- Intersection of *IS* and *LM* curves shows the unique point (Y, r) that satisfies equilibrium in both the goods and money markets.