



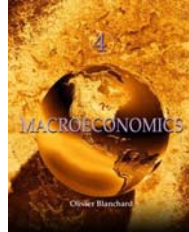
# Intermediate Macroeconomics

ECON 302

Professor Yamin Ahmad

## Lecture 3:

- Introduction to Aggregate Demand and Aggregate Supply



## Key Concepts in this Lecture

- Aggregate Demand
- Long Run Supply
- Short Run Supply
- Equilibrium
- Effects of Shocks

Note: These lecture notes are incomplete without having attended lectures

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## Time horizons in macroeconomics

- **Long run**  
Prices are flexible, respond to changes in supply or demand.
- **Short run**  
Many prices are “sticky” at some predetermined level.

***The economy behaves much differently when prices are sticky.***

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## Classical Macro Theory

- 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.
- Assumes complete price flexibility.
- Applies to the long run.

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## When prices are sticky...

...output and employment also depend on demand, which is affected by

- fiscal policy ( $G$  and  $T$ )
- monetary policy ( $M$ )
- other factors, like exogenous changes in  $C$  or  $I$ .



## The Model of Aggregate Demand and Supply

- the paradigm most mainstream economists and policymakers use to think about economic fluctuations and policies to stabilize the economy
- shows how the price level and aggregate output are determined
- shows how the economy's behavior is different in the short run and long run



## Aggregate Demand

- The aggregate demand curve shows the relationship between the price level and the quantity of output demanded.
- For this chapter's intro to the  $AD/AS$  model, we use a simple theory of aggregate demand based on the quantity theory of money.
- We will develop the theory of aggregate demand in more detail later



## The Quantity Equation as Aggregate Demand

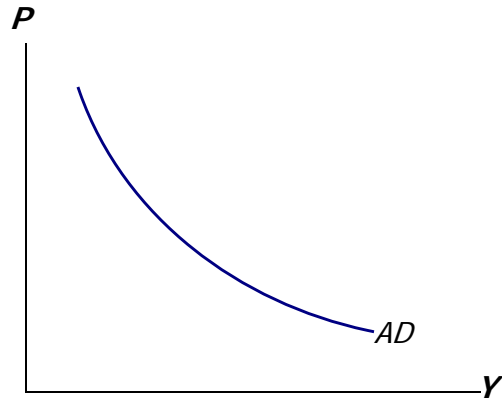
- Consider the following equation of exchange: **The Quantity Equation**  

$$MV = PY$$
- For given values of  $M$  and  $V$ , this equation implies an inverse relationship between  $P$  and  $Y$
- In general, the  $AD$  curve will be derived from the  $IS/LM$  Model



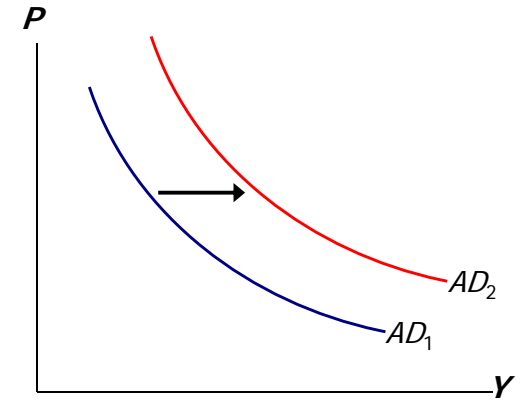
### The downward-sloping AD curve

An increase in the price level causes a fall in real money balances ( $M/P$ ), causing a decrease in the demand for goods & services.



### Shifting the AD curve

An increase in the money supply shifts the AD curve to the right.



### Aggregate Supply in the long run

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

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

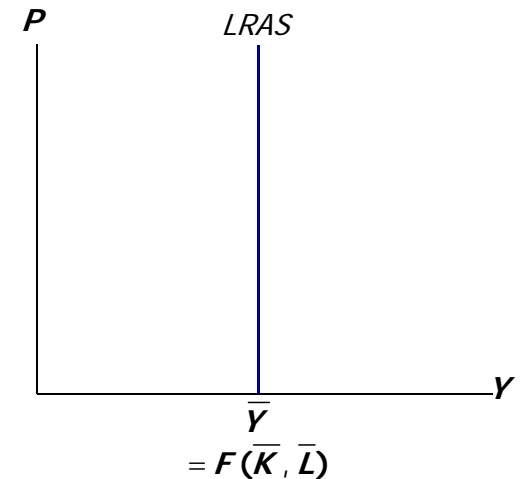
$\bar{Y}$  is the **full-employment** or **natural** level of output, the level of output at which the economy's resources are fully employed.

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

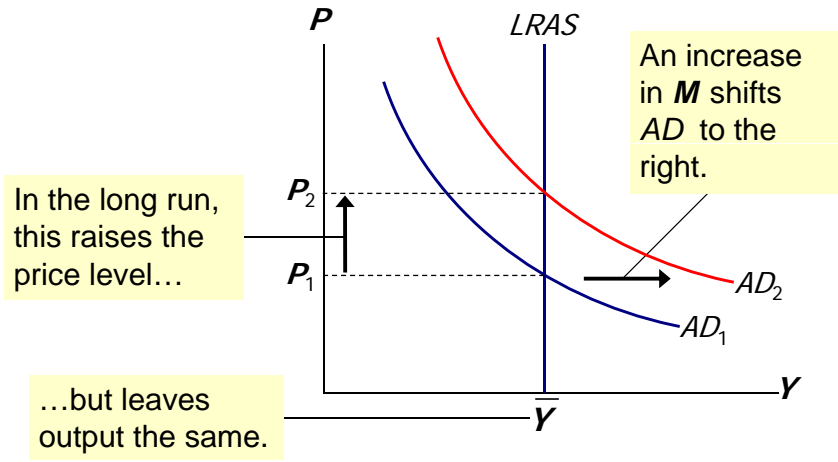


### The long-run aggregate supply curve

$\bar{Y}$  does not depend on  $P$ , so LRAS is vertical.



### Long-run effects of an increase in $M$



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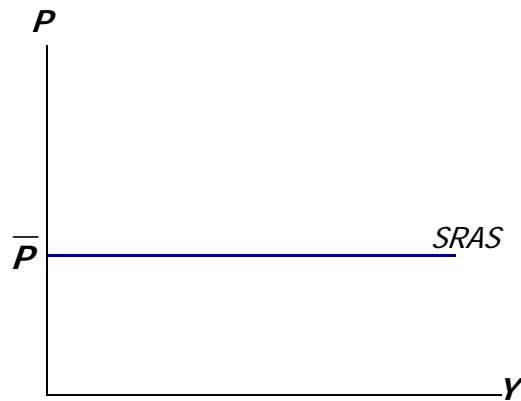
### Aggregate Supply in the short run

- Many prices are sticky in the short run.
- For now we will assume
  - all prices are stuck at a predetermined level in the short run.
  - firms are willing to sell as much at that price level as their customers are willing to buy.
- Therefore, the short-run aggregate supply (SRAS) curve is horizontal:

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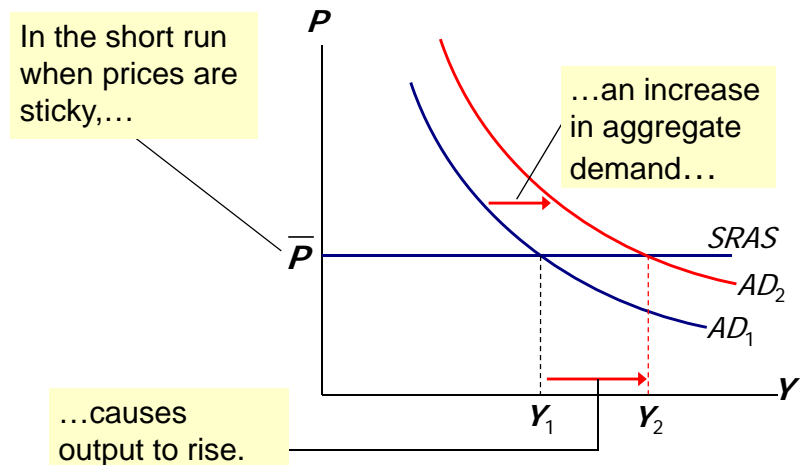
### The short-run aggregate supply curve

The SRAS curve is horizontal: The price level is fixed at a predetermined level, and firms sell as much as buyers demand.



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### Short-run effects of an increase in $M$



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### From the short run to the long run

Over time, prices gradually become “unstuck.” When they do, will they rise or fall?

In the short-run equilibrium, if	then over time, $P$ will...
$Y > \bar{Y}$	rise
$Y < \bar{Y}$	fall
$Y = \bar{Y}$	remain constant

*The adjustment of prices is what moves the economy to its long-run equilibrium.*

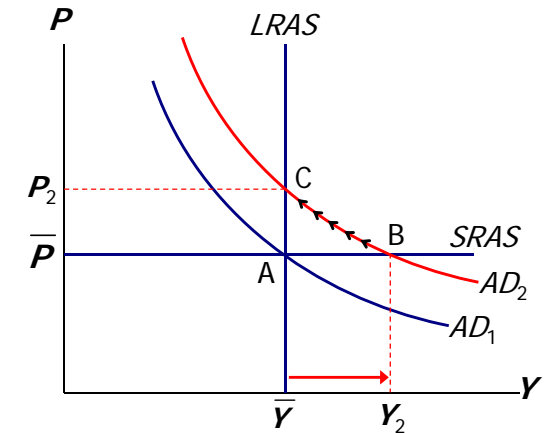


### The SR & LR effects of $\Delta M > 0$

A = initial equilibrium

B = new short-run eq'm after Fed increases  $M$

C = long-run equilibrium



### Shock!!!

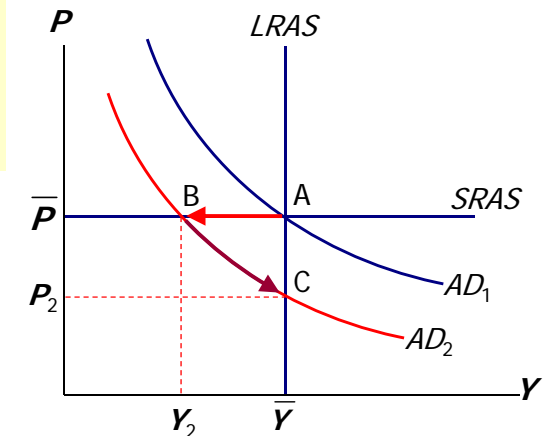
- **Shocks:** exogenous changes in agg. supply or demand
- Shocks temporarily push the economy away from full employment.
- Example: *exogenous decrease in velocity*  
If the money supply is held constant, a decrease in  $V$  means people will be using their money in fewer transactions, causing a decrease in demand for goods and services.



### The Effects of a Negative Demand Shock

AD shifts left, depressing output and employment in the short run.

Over time, prices fall and the economy moves down its demand curve toward full-employment.





## Supply shocks

- A **supply shock** alters production costs, affects the prices that firms charge. (also called **price shocks**)
- Examples of *adverse* supply shocks:
  - Bad weather reduces crop yields, pushing up food prices.
  - Workers unionize, negotiate wage increases.
  - New environmental regulations require firms to reduce emissions. Firms charge higher prices to help cover the costs of compliance.
- *Favorable* supply shocks lower costs and prices.

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## CASE STUDY: The 1970s oil shocks

- Early 1970s: OPEC coordinates a reduction in the supply of oil.
- Oil prices rose
  - 11% in 1973
  - 68% in 1974
  - 16% in 1975
- Such sharp oil price increases are supply shocks because they significantly impact production costs and prices.

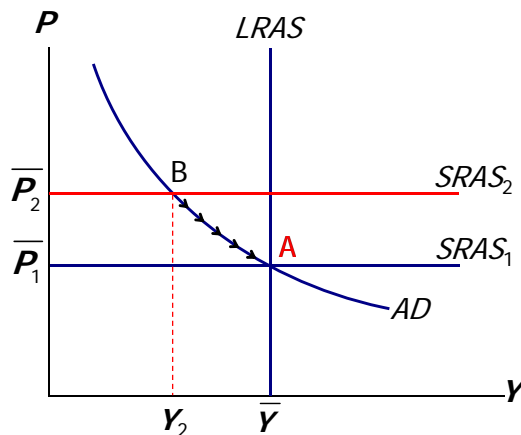
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## CASE STUDY: The 1970s oil shocks

The oil price shock shifts *SRAS* up, causing output and employment to fall.

In absence of further price shocks, prices will fall over time and economy moves back toward full employment.



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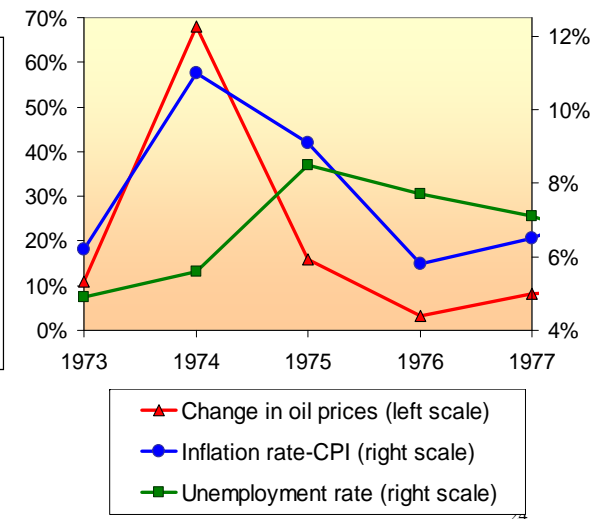


## CASE STUDY: The 1970s oil shocks

Predicted effects of the oil shock:

- inflation ↑
- output ↓
- unemployment ↑

...and then a gradual recovery.

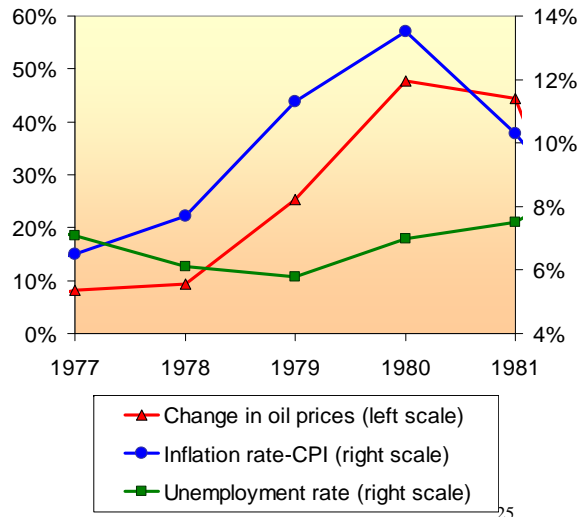


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### CASE STUDY: The 1970s oil shocks

Late 1970s:  
As economy was recovering, oil prices shot up again, causing another huge supply shock!!!

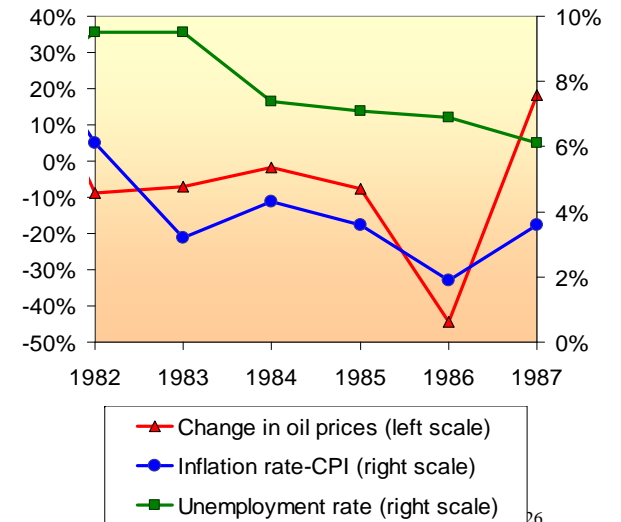


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### CASE STUDY: The 1980s oil shocks

1980s:  
A favorable supply shock-- a significant fall in oil prices. As the model predicts, inflation and unemployment fell:



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### Stabilization policy

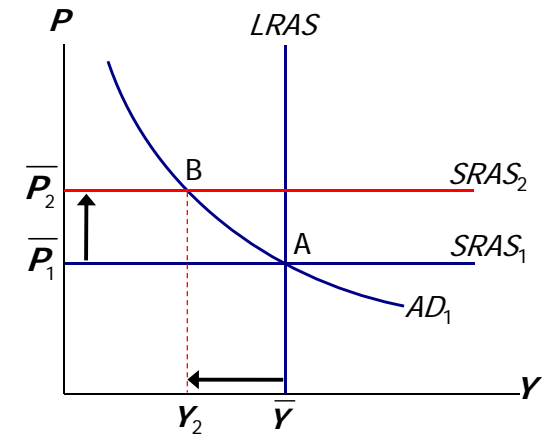
- Def:** policy actions aimed at reducing the severity of short-run economic fluctuations.
- Example:** Using monetary policy to combat the effects of adverse supply shocks:

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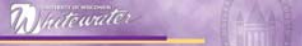


### Stabilizing Output with Monetary Policy

The adverse supply shock moves the economy to point B.



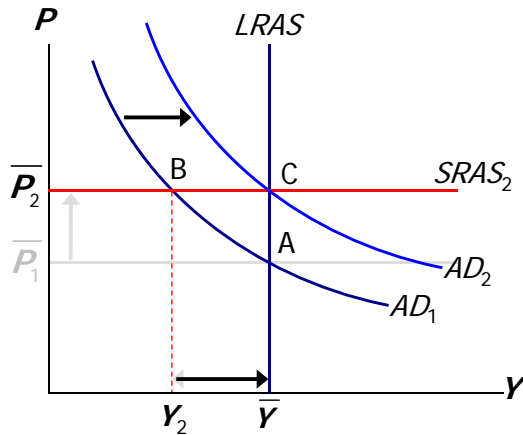
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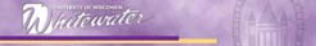
## Stabilizing Output with Monetary Policy

But the Fed accommodates the shock by raising agg. demand.

results:  
**P** is permanently higher, but **Y** remains at its full-employment level.



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## Alternative Approaches

	Market Clearing	Source of shocks	Role for Policy?
Keynesian	No	AD(IS)	Yes
New Classical	Yes	AD(LM)	No
Real Business Cycles	Yes	AS	No

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## Summary

1. Long run: prices are flexible, output and employment are always at their natural rates, and the classical theory applies.  
 Short run: prices are sticky, shocks can push output and employment away from their natural rates.
2. Aggregate demand and supply:  
 a framework to analyze economic fluctuations

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## Summary

3. The aggregate demand curve slopes downward.
4. The long-run aggregate supply curve is vertical, because output depends on technology and factor supplies, but not prices.
5. The short-run aggregate supply curve is horizontal, because prices are sticky at predetermined levels.

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## Summary

6. Shocks to aggregate demand and supply cause fluctuations in GDP and employment in the short run.
  
7. The Fed can attempt to stabilize the economy with monetary policy.