MACROECONOMICS 2

Lecture 1. Short run economic fluctuations.

The AD/AS model – a short reminder.

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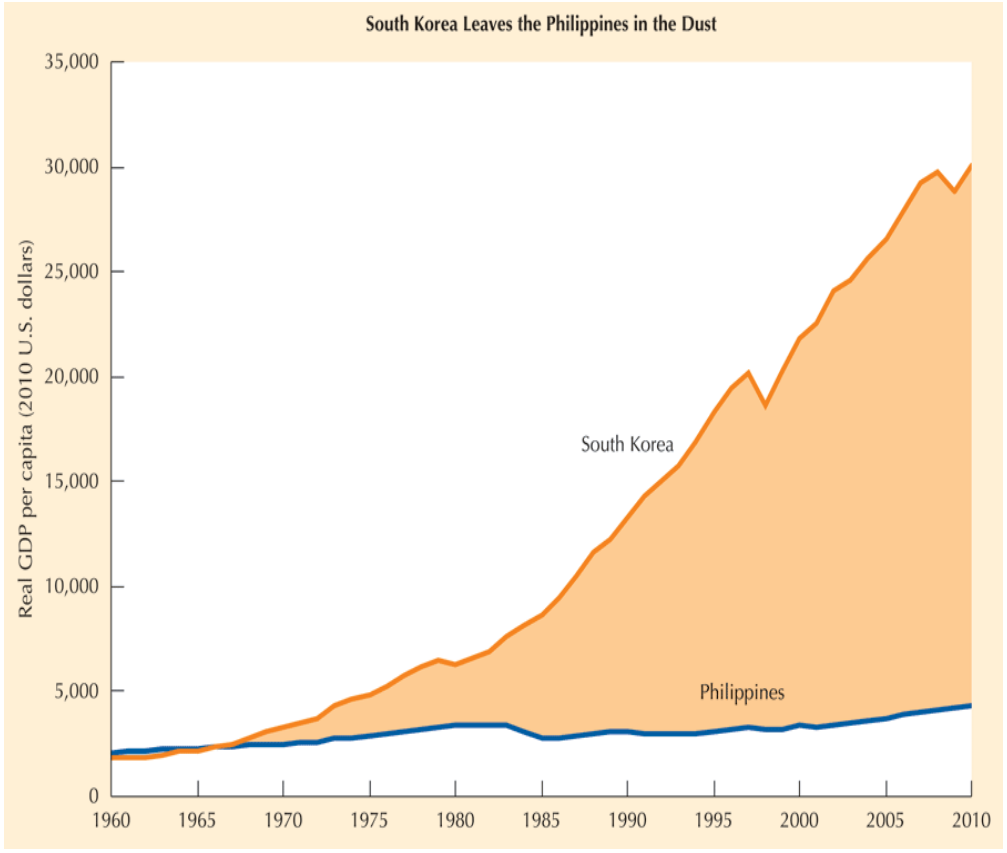
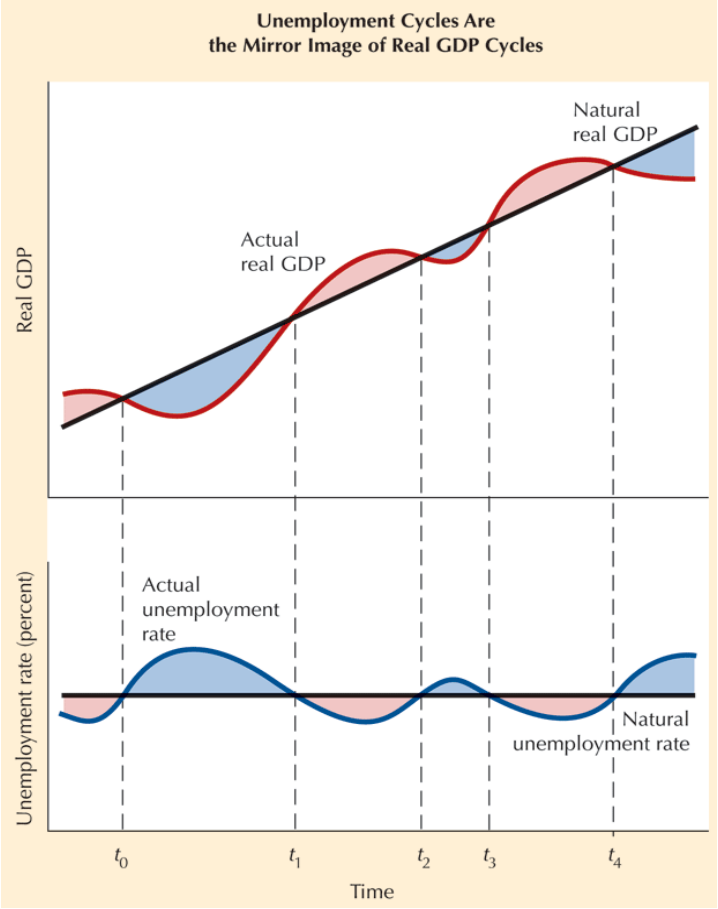
Overview of the course & grading rules

- See Syllabus & Grading rules

Time horizons in macroeconomics





Time horizons in macroeconomics

- Long run:
  Prices and wages are flexible, they respond to changes in supply or demand.
- Short run:
  Selected nominal variables – like prices and or/and nominal wages are “sticky” – they do not adjust immediately to changes in economic conditions.

The economy behaves much differently when prices (nominal wages) are sticky.

Time horizons in macroeconomics

The Long Run

- Assumes complete price and wage flexibility, whar implies that:.
- Output is determined by the supply side:
  - supplies of capital, labor & technology.
- Changes in demand for goods & services (***C***, ***I***, ***G***) only affect prices (and nominal wages), but not output.

The Short Run

- Prices (and/or nominal wages) are sticky, what implies that
- 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

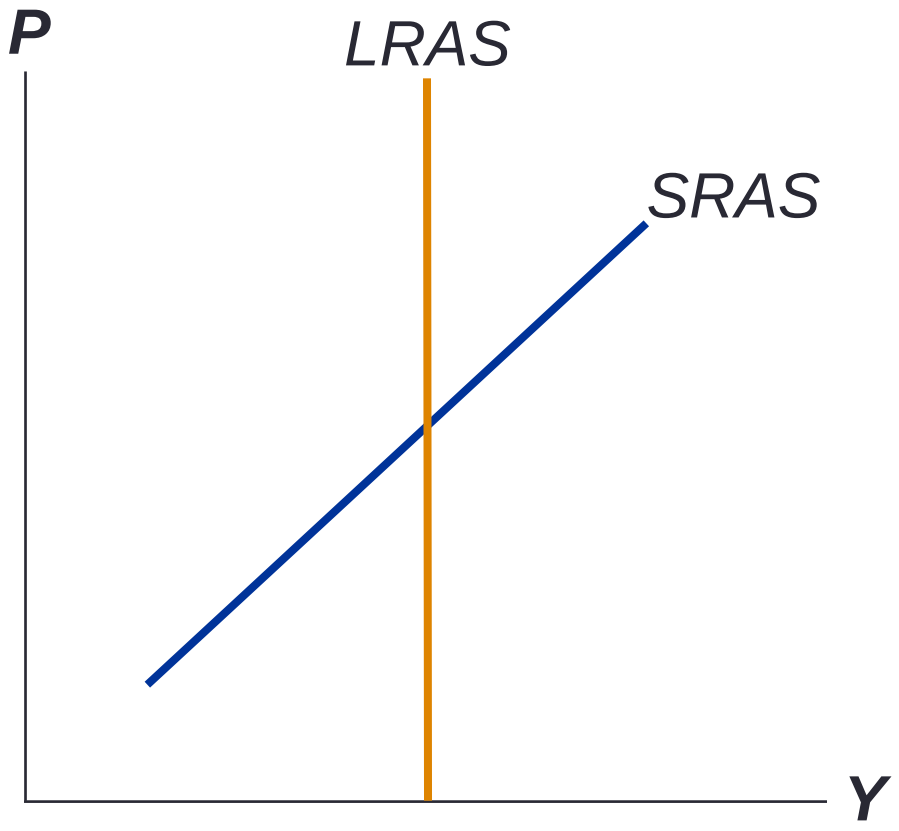
- the paradigm most mainstream economists and policymakers use to think about economic fluctuations and policies to stabilize the economy
- shows how the price level and aggregate output are determined
- shows how the economy's behavior is different in the short run and long run

The Aggregate-Supply (*AS*) Curves

The ***AS* curve** shows the total quantity of g&s firms produce and sell at any given price level.

AS is:

- upward-sloping in short run (SRAS)
- vertical in long run (LRAS)



Aggregate supply in the long run

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

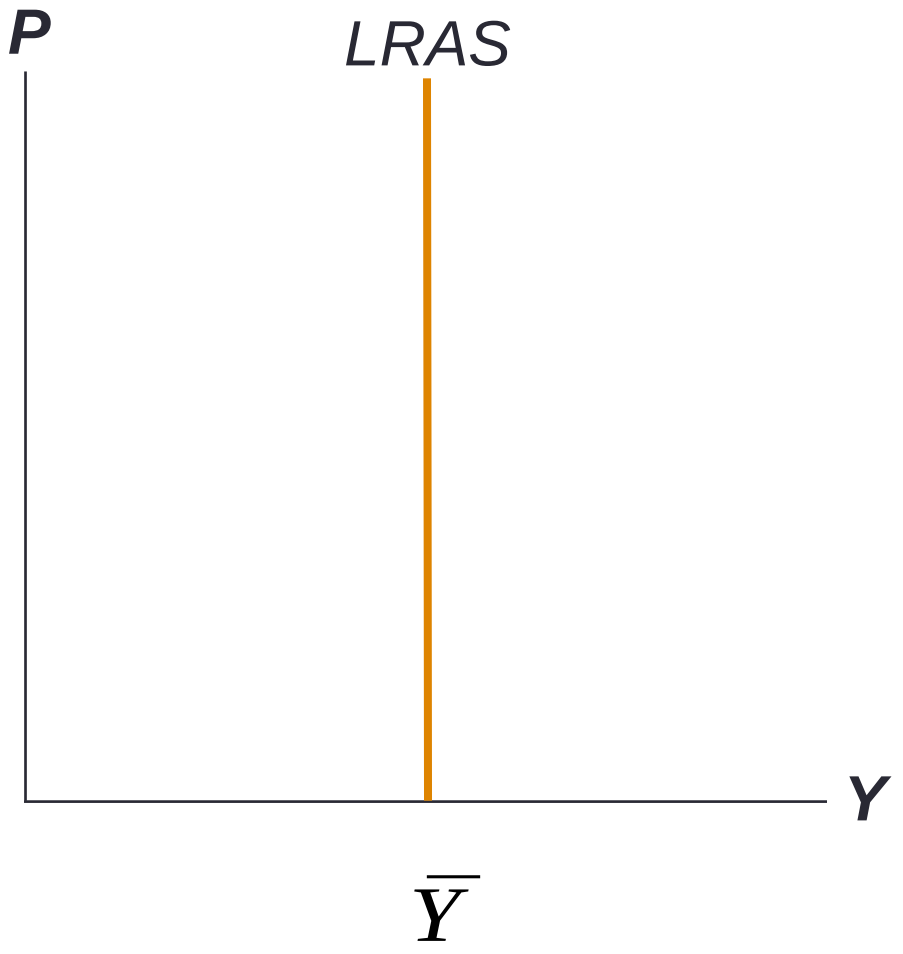
$$\bar{Y} = Y_N = F(A, K, L)$$

$\bar{Y}$ (or Y_N) is the **full-employment** or **natural** level of output, i.e. 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 (*LRAS*)

LRAS is a graphical representation of **potential output** or **full-employment output** (Y_N or $\overline{Y}$).



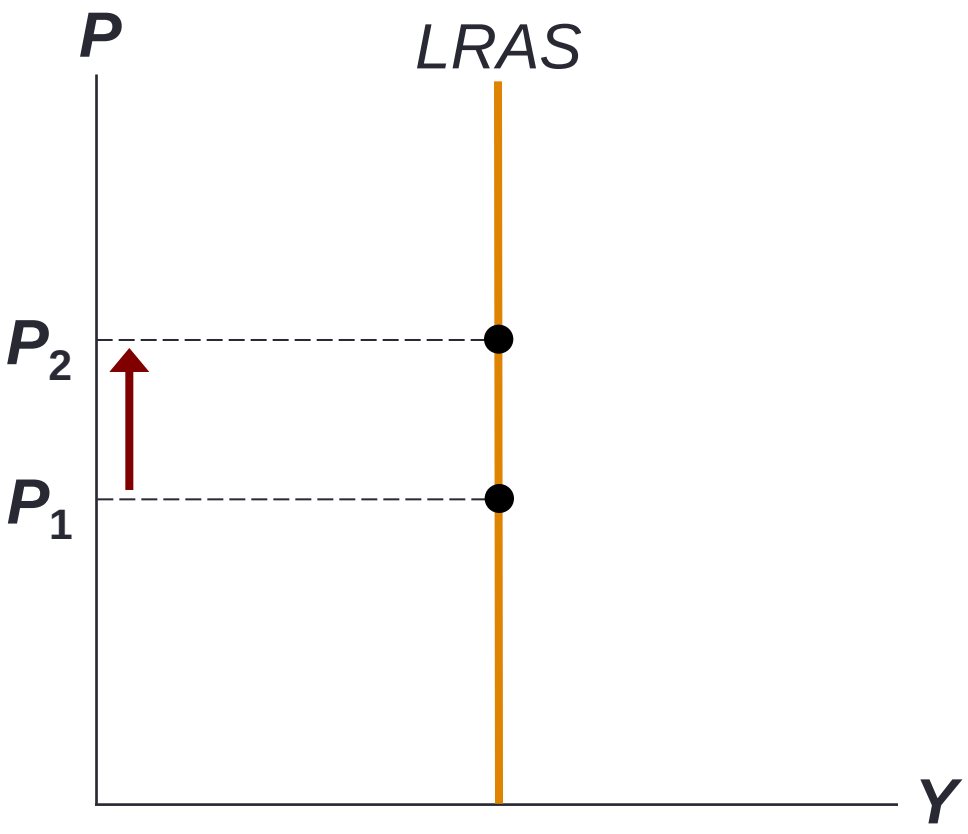
Why *LRAS* Is Vertical ?

LRAS is determined by the economy's stocks of labor, capital, and natural resources, and on the level of technology.

An increase in ***P***

does not affect any of these, so it does not affect ***potential output***

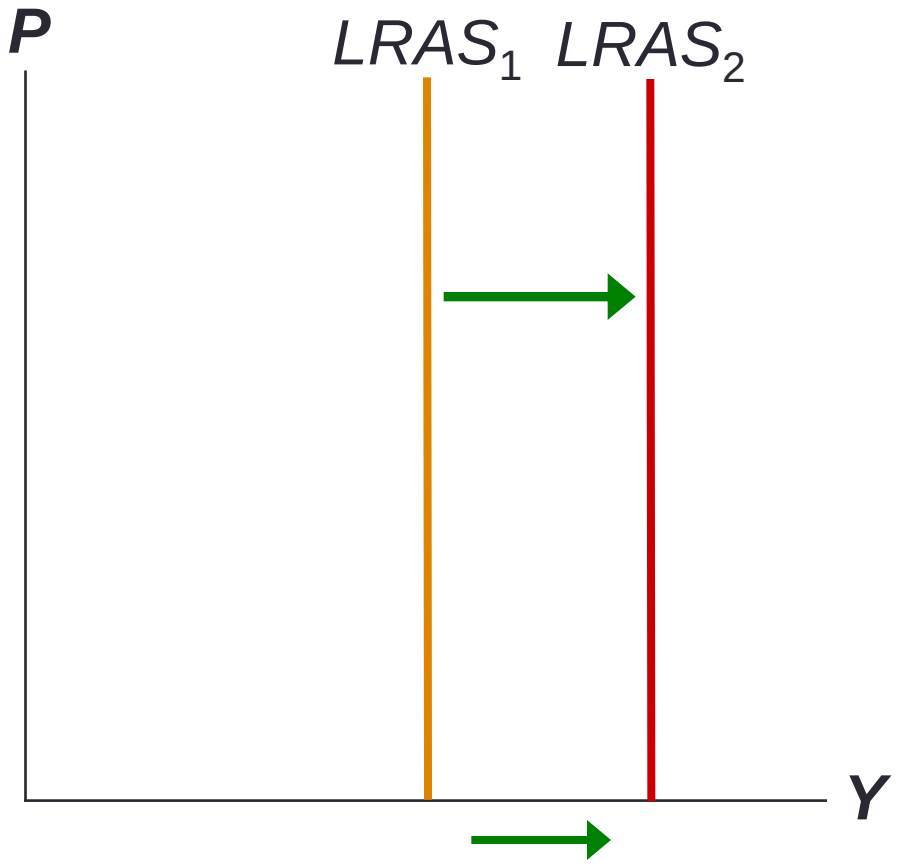
(Classical dichotomy)



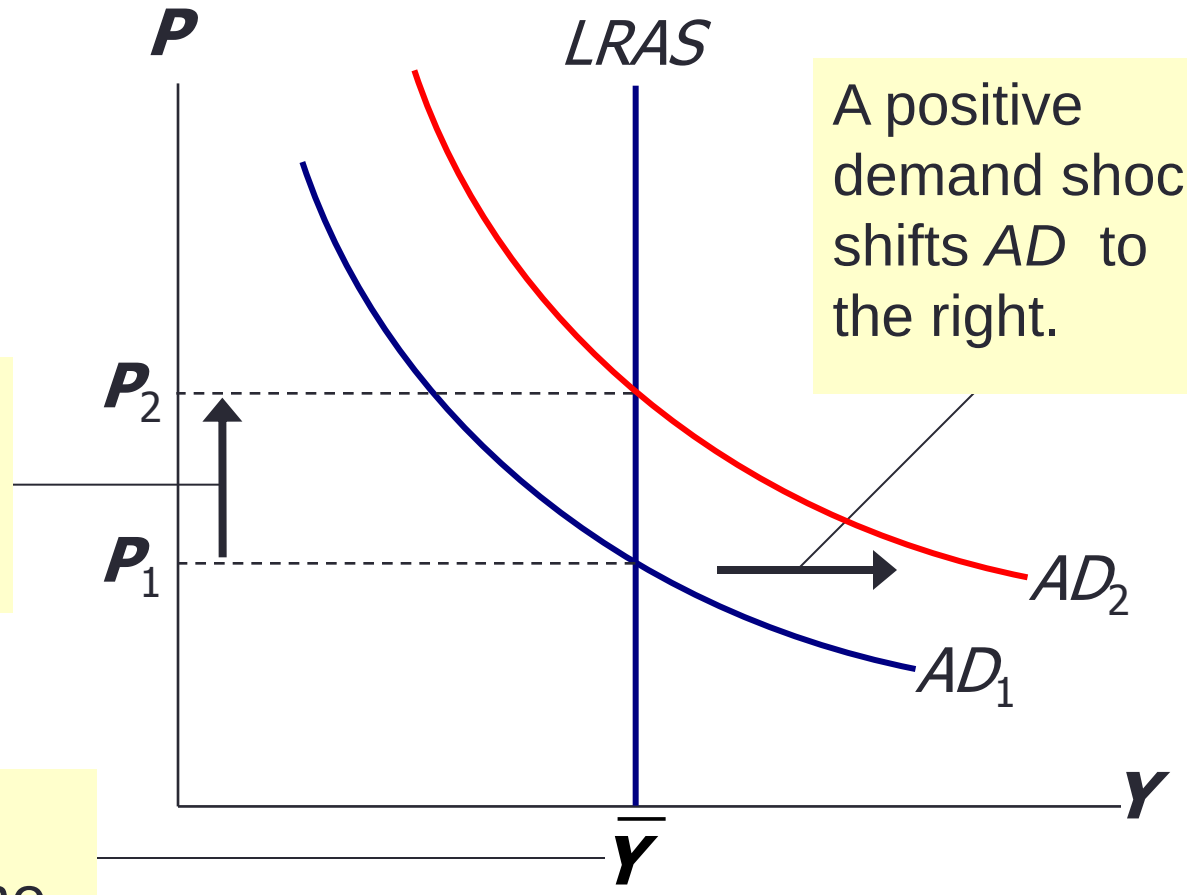
Why the *LRAS* Curve Might Shift ?

Any event that changes any of the determinants of $\boldsymbol{Y_N}$ will shift *LRAS*.

Example: Immigration increases ***L***, causing ***potential output*** to rise.



Long-run effects of a positive demand shock

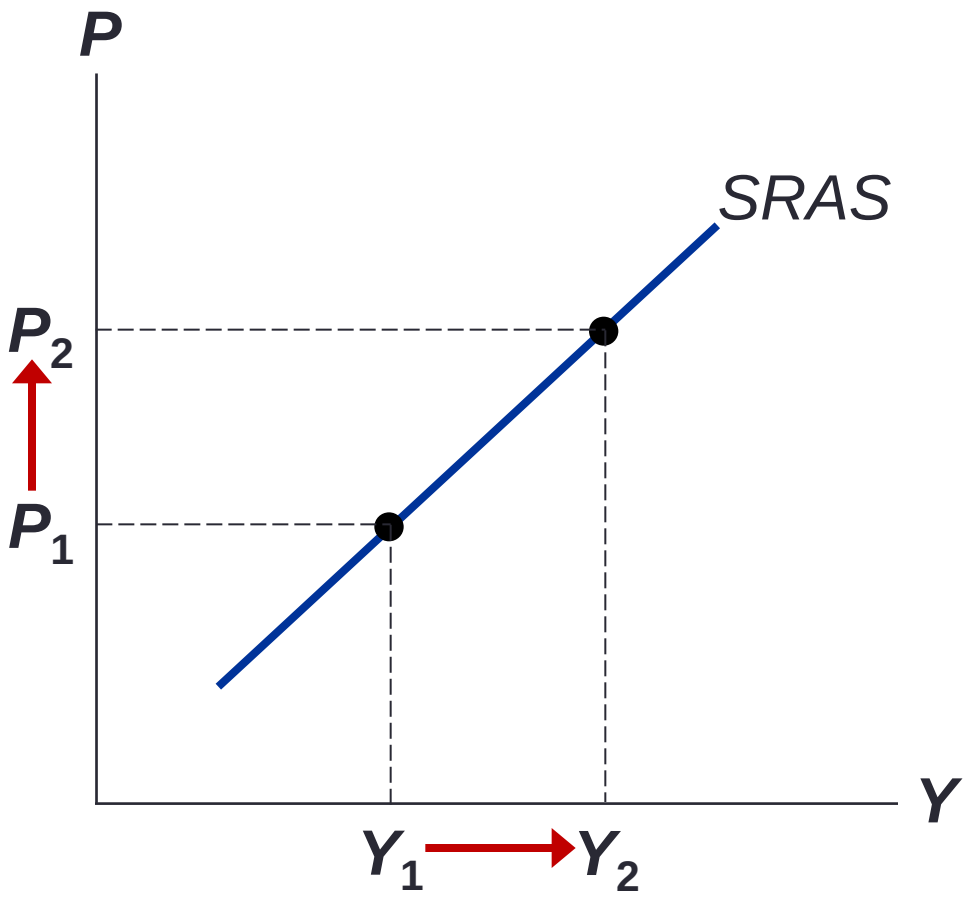


Short Run Aggregate Supply (*SRAS*)

The *SRAS* curve is upward sloping:

Over the period of 1–2 years, an increase in ***P***

causes an increase in the quantity of g & s supplied.

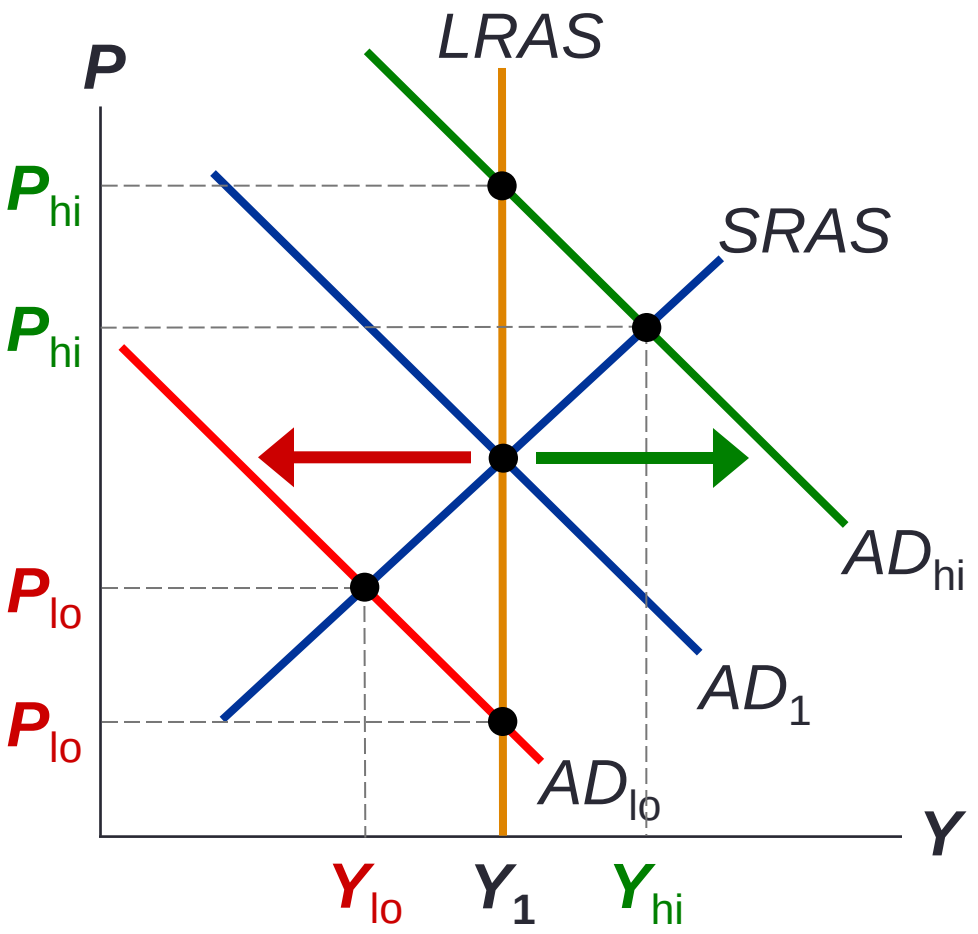


The positive slope of the SRAS is the key to understanding short-run fluctuations.

Why the Slope of *SRAS* Matters

If *AS* is vertical, fluctuations in *AD* do not cause fluctuations in output or employment.

If *AS* slopes up, then shifts in *AD* do affect output and employment.



Three Theories of *SRAS*

In each,

- some type of market imperfection (maybe better, some type of **confusion**)
- result:
  Output deviates from its natural rate when the actual price level deviates from the price level people expected.

1. The Sticky-Wage Theory

- Imperfection:
  Nominal wages are **sticky** in the short run,
  they adjust sluggishly. Due to labor contracts, social norms, firms and workers set the nominal wage in advance based on $\boldsymbol{P^e}$, the price level they expect to prevail.

The sticky-wage model

- Assumes that firms and workers negotiate contracts and fix the nominal wage before they know what the price level will turn out to be.
- The nominal wage they set is the product of a target real wage and the expected price level:

$$W = \omega \times P^e$$

Target real wage

$$\Rightarrow \quad \frac{W}{P} = \omega \times \frac{P^e}{P}$$

The sticky-wage model

$$\frac{W}{P} = \omega \times \frac{P^e}{P}$$

If it turns out that	then
$P = P^e$	Unemployment and output are at their natural rates.
$P > P^e$	Real wage is less than its target, so firms hire more workers and output rises above its natural rate.
$P < P^e$	Real wage exceeds its target, so firms hire fewer workers and output falls below its natural rate.

2. The Sticky-Price Theory

- Imperfection:
  Many prices are sticky in the short run.
  - Due to **menu costs**, i.e. the costs of adjusting prices (cost of printing new menus, the time and effort required to change price tags)
- Some firms set sticky prices in advance based on P^e.
- Firms operate in monopolistic markets

2. The Sticky-Price Theory

- Suppose the Central Bank increases the money supply unexpectedly. In the long run, ***P*** will rise.
- In the short run, firms without menu costs can raise their prices immediately.
- Firms with menu costs wait to raise prices. Meanwhile, their prices are relatively low, which increases demand for their products, so they increase output and employment.
- Hence, higher ***P*** (higher than expected price level P^e) is associated with higher ***Y***, so the ***SRAS curve slopes upward***.

3. The Misperceptions Theory

- Imperfection:
  Firms may confuse changes in ***P*** with changes in the relative price of the products they sell.
- If ***P*** rises above $\boldsymbol{P^e}$, a firm sees its price rise before realizing all prices are rising.

  The firm may believe its *relative* price is rising, and may increase output and employment.
- So, an unexpected increase in ***P*** can cause an increase in ***Y***, making the ***SRAS curve upward-sloping.***

What the 3 Theories Have in Common:

In all 3 theories, Y deviates from Y_N when P deviates from P^E.

$$Y_t = Y_N + \beta(P_t - P_t^E)$$

Output in period t

Natural rate of output (long-run)

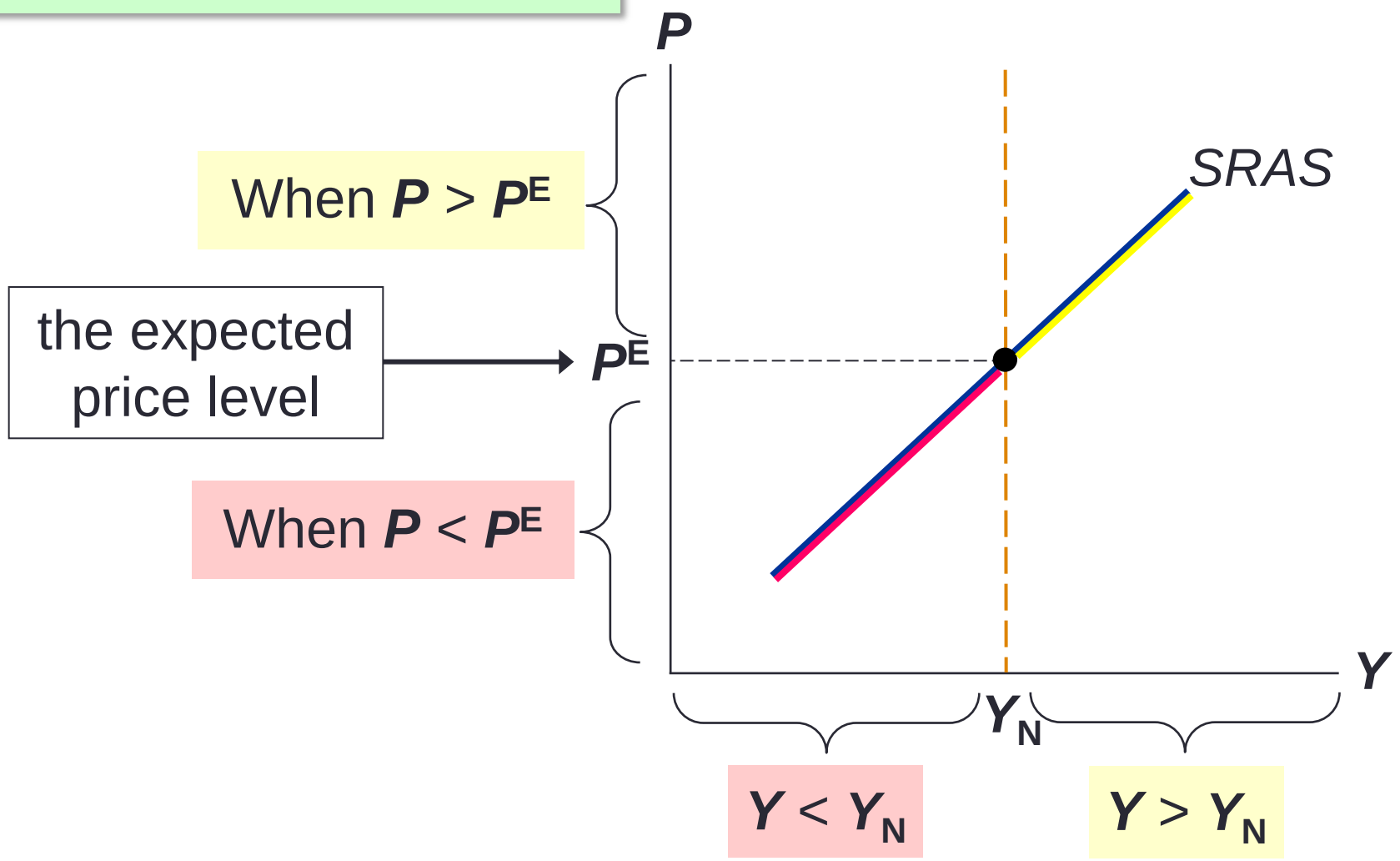
$\beta > 0$, measures how much Y responds to unexpected changes in P

Actual price level in period t

Expected price level in period t

What the 3 Theories Have in Common:

$$Y = Y_N + \beta(P - P^E)$$



SRAS and *LRAS*

- The imperfections that explain the slope of SRAS are temporary. Over time,
  - sticky wages and prices become flexible
  - misperceptions are corrected

- Over the LR:
  - $P^E = P$
- *AS* curve is vertical

SRAS and *LRAS*

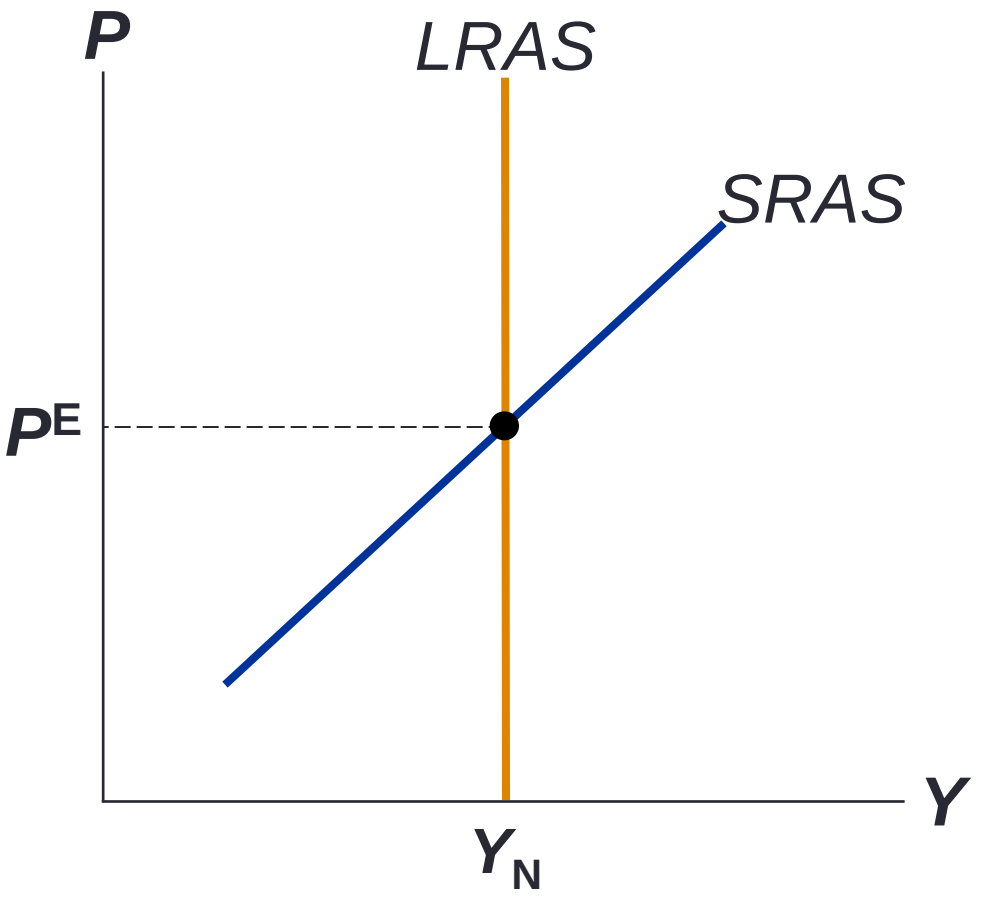
$$Y_t = Y_N + \beta(P_t - P_t^E)$$

In the long run,

$P^E = P$

and

$Y = Y_N$.



Short run aggregate supply – a summary

If :

$P=P^e$ production & unemployment are at the natural level;

$P>P^e$ firms increase production and employment (unemployment falls)

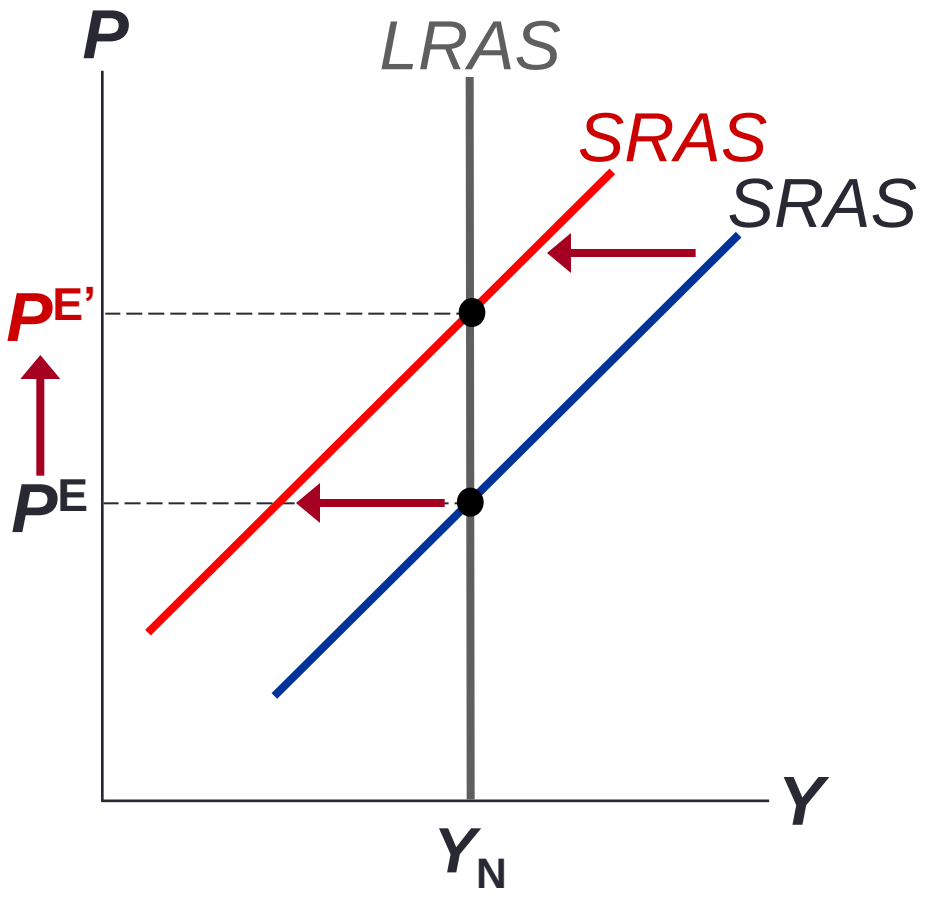
$P<P^e$ firms decrease production and employment (unemployment increases)

Why the *SRAS* Curve Might Shift

Everything that shifts *LRAS* shifts *SRAS*, too.

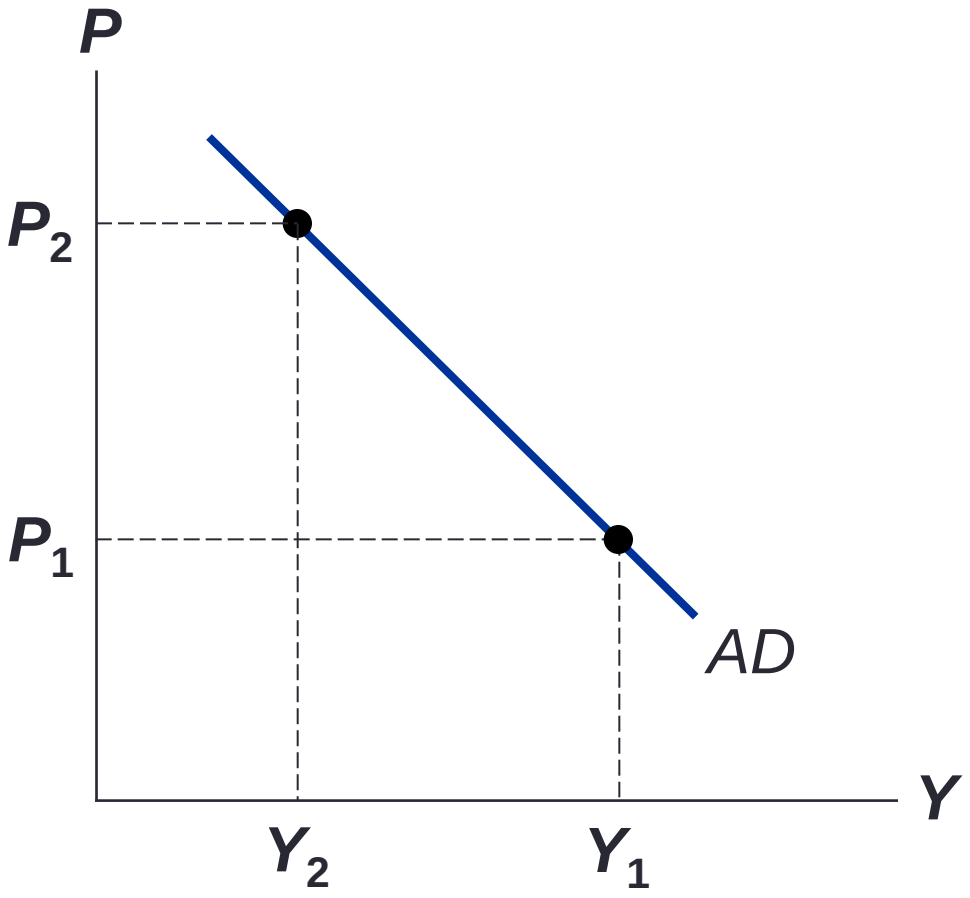
Also, P^E shifts *SRAS*:

If P^E rises, workers & firms set higher wages. At each *P*, production is less profitable, *Y* falls, *SRAS* shifts left.



The Aggregate-Demand (*AD*) Curve

The ***AD* curve** shows the quantity of all g&s demanded in the economy at any given price level.

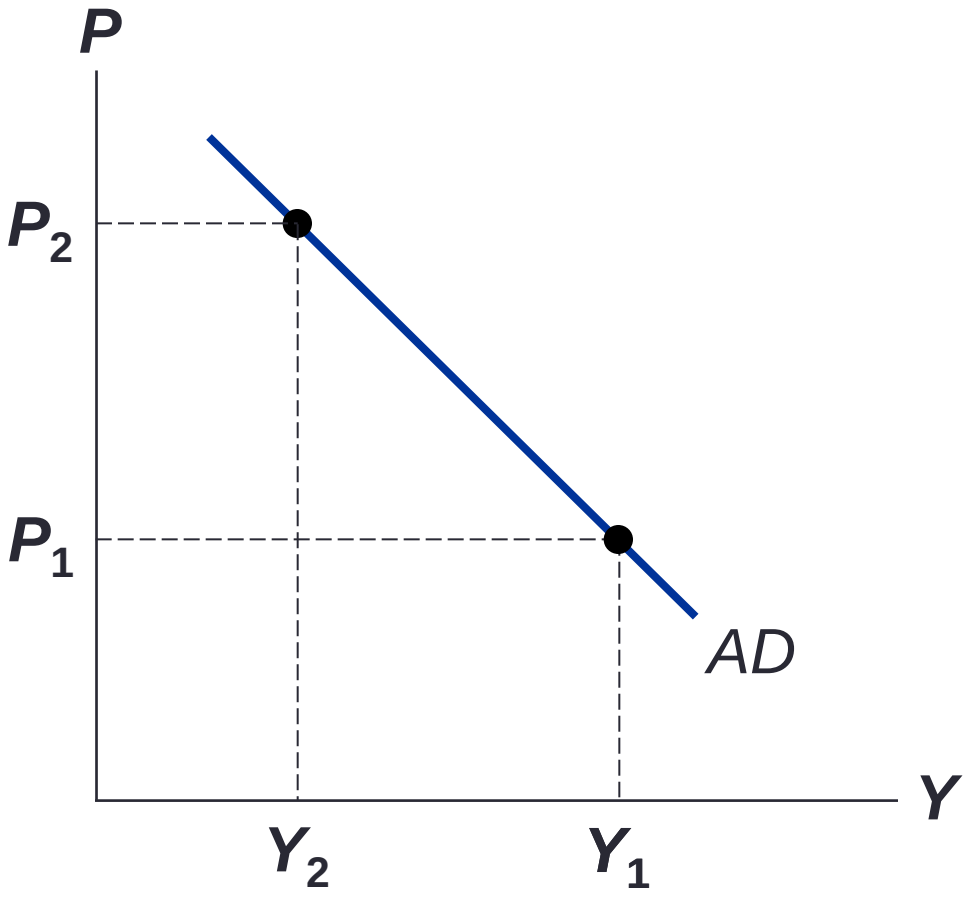


Why the *AD* Curve Slopes Downward

$Y = C + I + G + NX$

Assume ***G*** fixed by govt policy.

To understand the slope of *AD*, must determine how a change in ***P*** affects ***C***, ***I***, and ***NX***.



The Wealth Effect (*P* and *C*)

Suppose ***P*** rises.

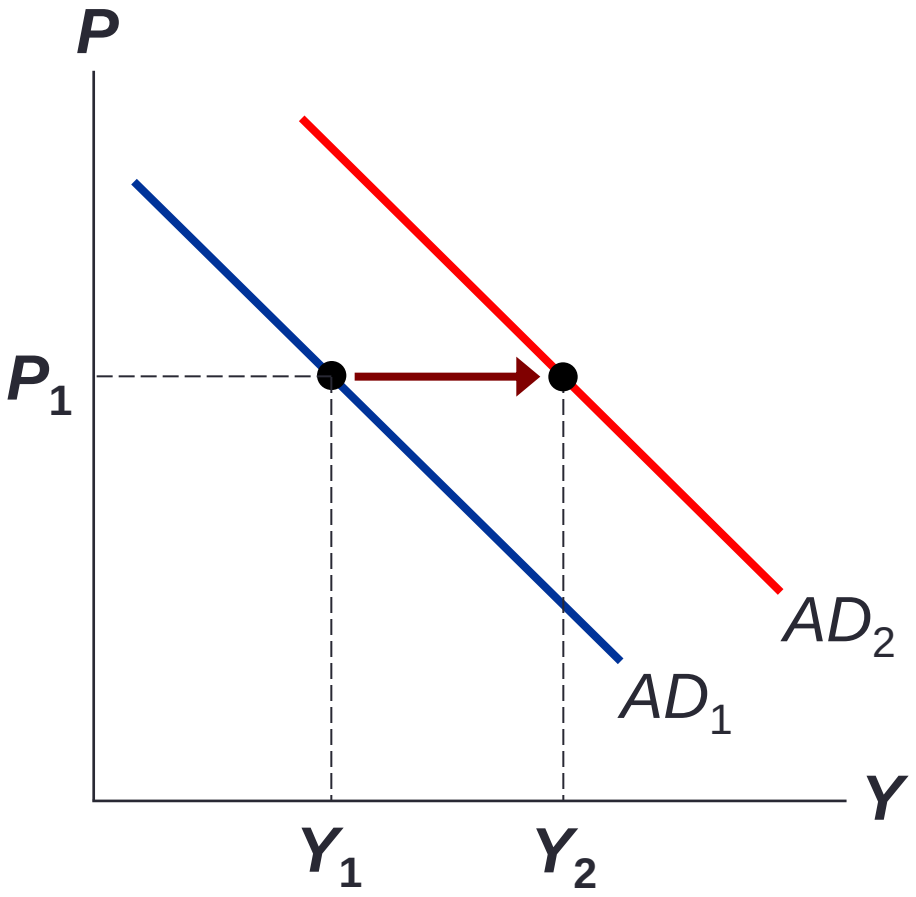
- The dollars people hold buy fewer g&s, so real wealth is lower.
- People feel poorer.

Result: ***C*** falls.

Why the *AD* Curve Might Shift

Any event that changes ***C***, ***I***, ***G***, or ***NX***—except a change in ***P***—will shift the *AD* curve.

Example:
A stock market boom makes households feel wealthier, ***C*** rises, the *AD* curve shifts right.



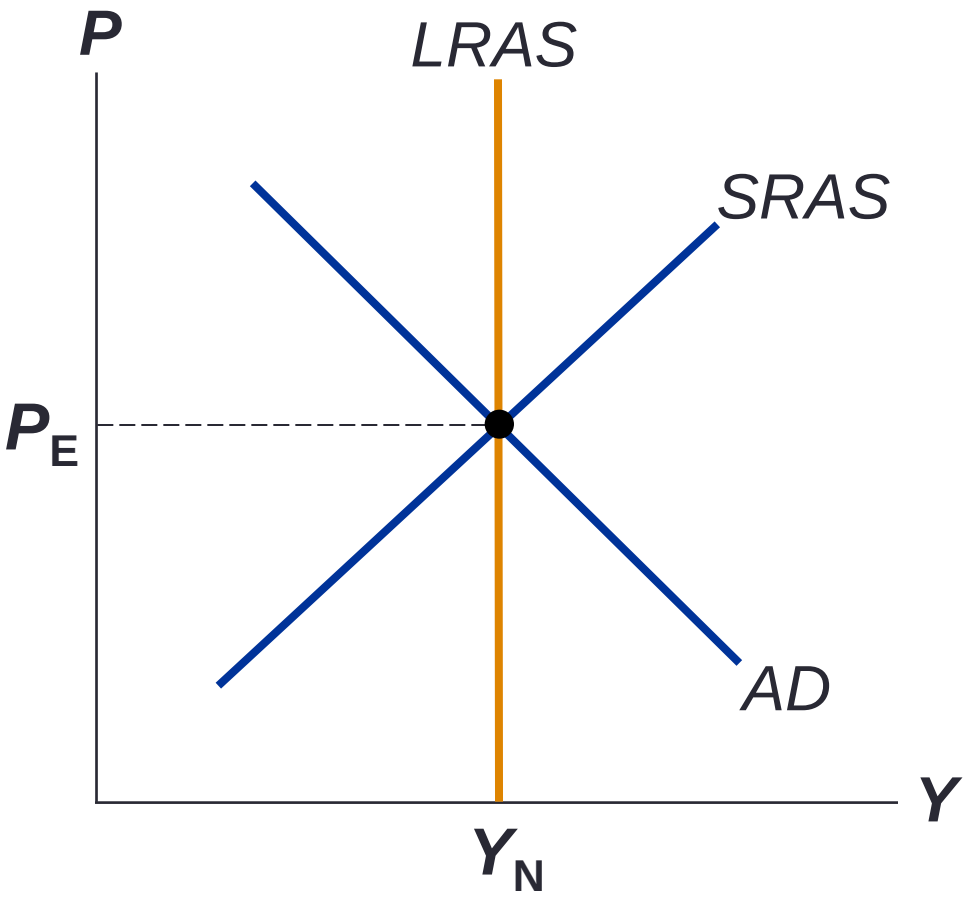
The Long-Run Equilibrium

In the long-run equilibrium,

$P^E = P$,

$Y = Y_N$,

and unemployment is at its natural rate.



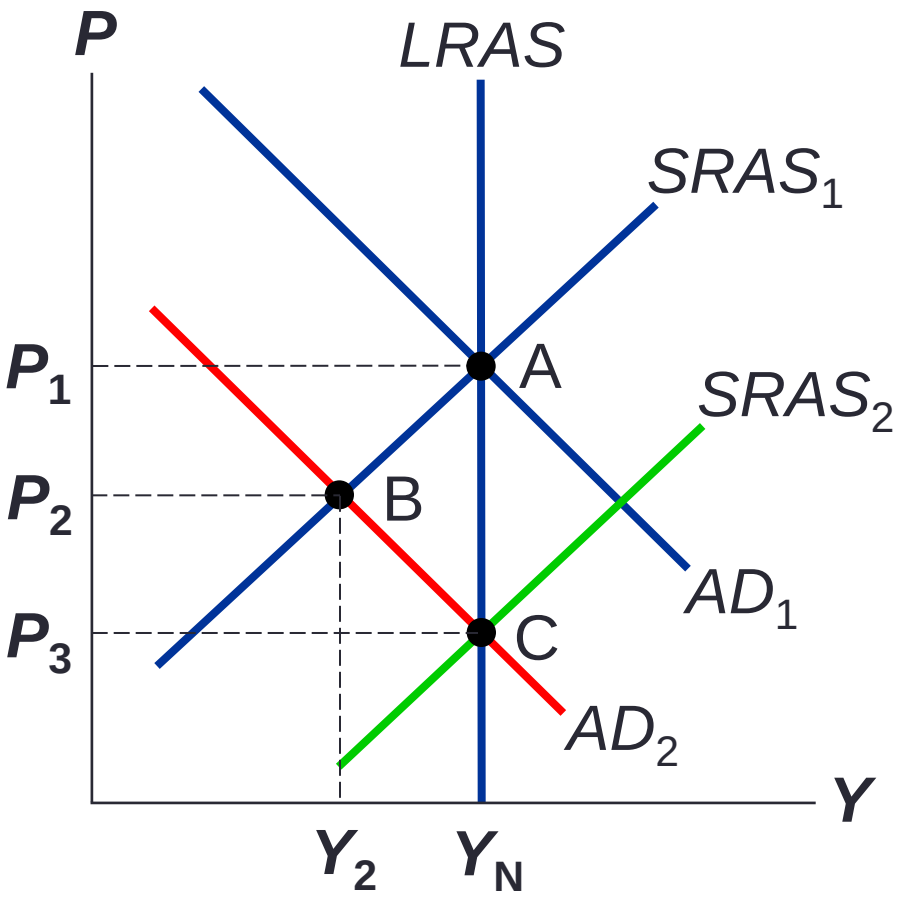
Economic Fluctuations

- Caused by events that shift the *AD* and/or *AS* curves.
- Four steps to analyzing economic fluctuations:
  1. Determine whether the event shifts *AD* or *AS*.
  2. Determine whether curve shifts left or right.
  3. Use *AD–AS* diagram to see how the shift changes ***Y*** and ***P*** in the short run.
  4. Use *AD–AS* diagram to see how economy moves from new SR eq'm to new LR eq'm.

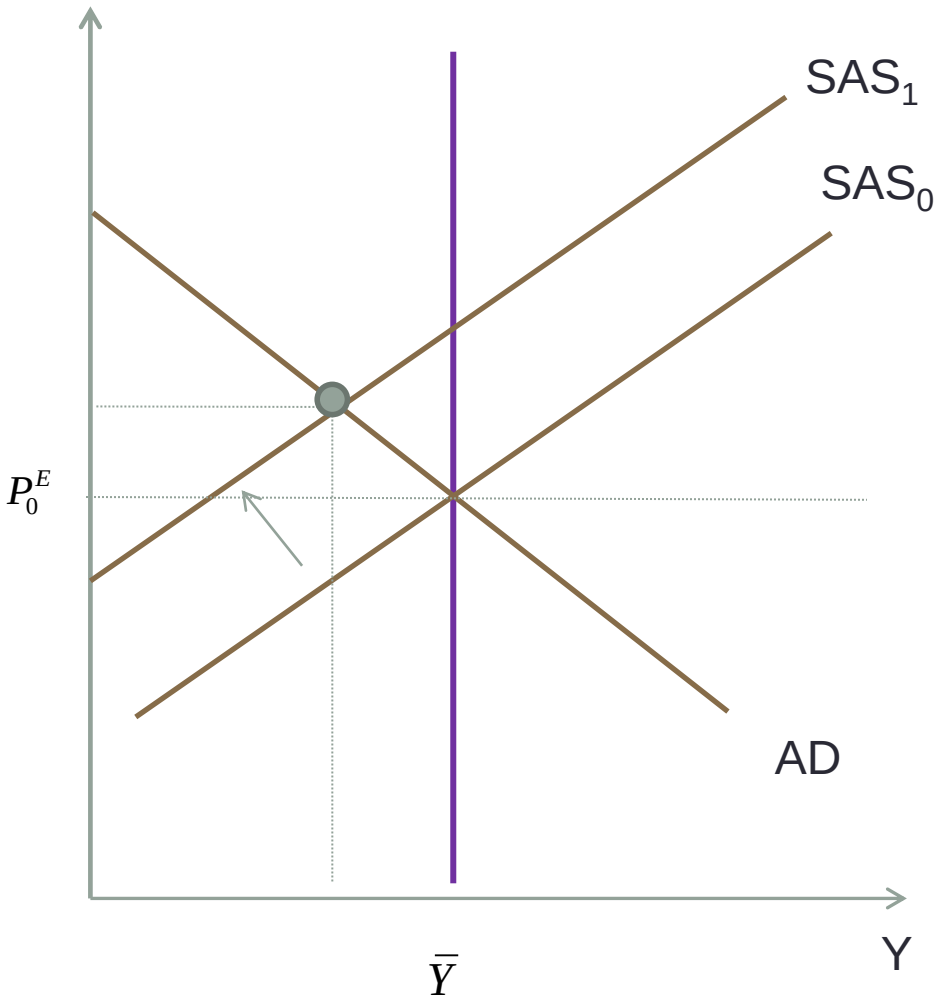
The Effects of a Shift in *AD*

Event: Stock market crash

1. Affects ***C***, *AD* curve
2. ***C*** falls, so *AD* shifts left
3. SR eq'm at B.
   P and ***Y*** lower,
   unemp higher
4. Over time, P^E falls,
   SRAS shifts right,
   until LR eq'm at C.
   Y and unemp back
   at initial levels.



Negative supply shock

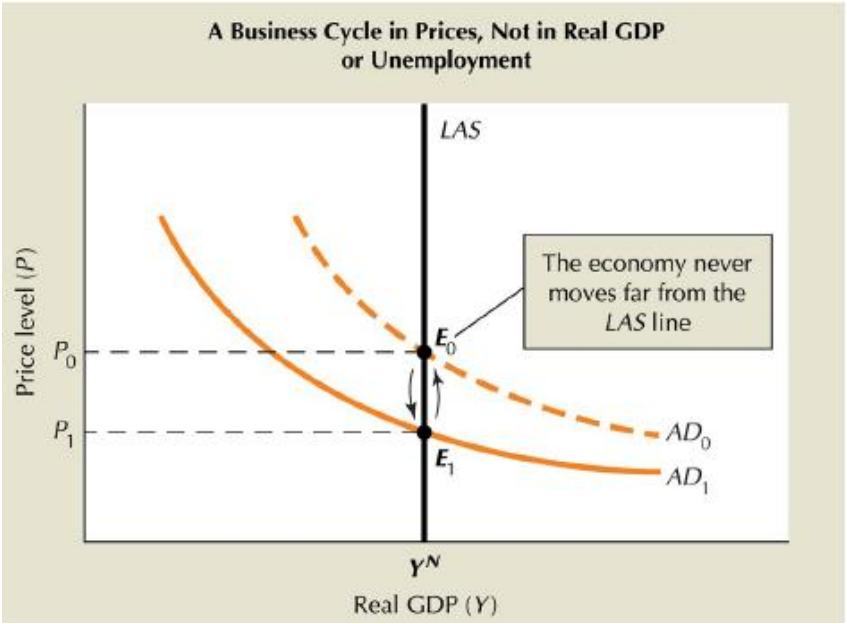


- Caused by an increase in the costs of production (an increase in oil prices) or reduction in production possibilities (natural disasters)
- Simultaneous increase in prices and a decrease in production – short run equilibrium.

Negative supply shock

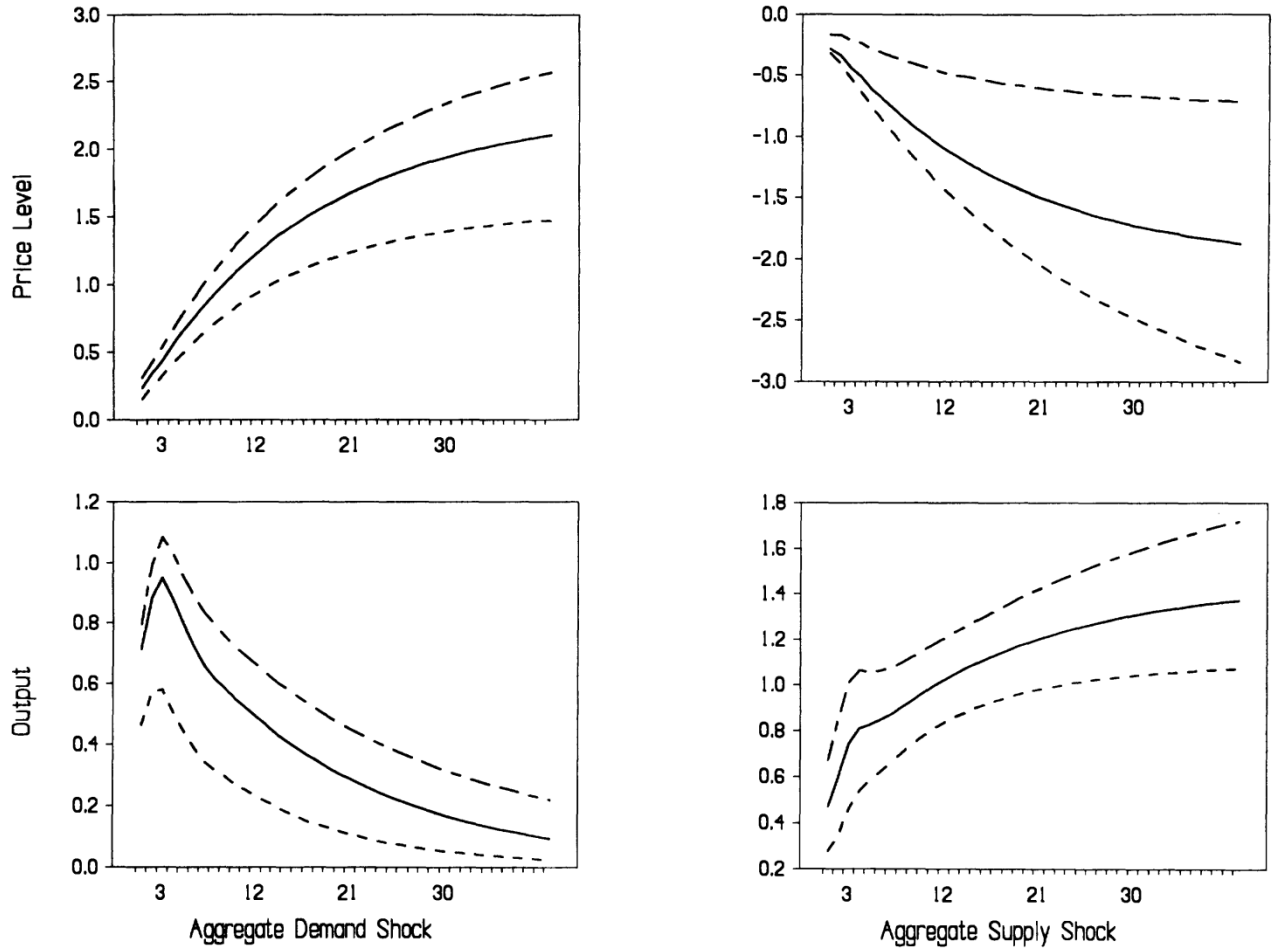
- A return to long run equilibrium – supply shocks are short lasting – SAS returns to its old position
- What if the the supply shock is permanent ? This implies a shift in LAS.

Full wage and price elastcity (and perfect information)



- The only supply line is the LAS
- Demand shocks will only change prices, not production.
- The only source of GDO volatility are the shocks to LAS

Demand and supply shocks in the US



Źródło: David E. Spencer, *Interpreting the Cyclical Behavior of the Price level in the U.S.*, Southern Economic Journal, Vol. 63, No. 1, July 1996, str. 101

ASAD Model

- A simple tool to analyze policy & other shocks
- Does not take into account:
  - Inflation
  - More complex dynamics
- That’s why during the next meetings we will develop an dynamic model: DAD/DAS model of economic fluctuations