Aggregate Demand and Aggregate Supply

CHAPTER 33

Economic activity fluctuates from year to year. In most years, the production of goods and services rises. Because of increases in the labor force, increases in the capital stock, and advances in technological knowledge, the economy can produce more and more over time. This growth allows everyone to enjoy a higher standard of living. On average, over the past half century, the production of the U.S. economy as measured by real GDP has grown by about 3 percent per year.

In some years, however, instead of expanding, the economy contracts. Firms find themselves unable to sell all the goods and services they have to offer, so

Aggregate Demand Curve Shifters

- **An increase in any component of GDP (C, I, G, and $X - M$) can cause the AD curve to shift rightward.**
- **Conversely, decreases in C, I, G, or X – M will shift AD leftward.**

Consumption patterns=> Shift of *AD* to the right can occur with

Shift of *AD* to the left can occur

Aggregate Demand Curve Shifters

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- **Conversely, decreases in *C*, *I*, *G*, or X – *M* will shift *AD* leftward.**

Consumption patterns=> Shift of *AD* to the right can occur with

An increase in consumer confidence.

An increase in wealth.

A tax cut.

An increase in population.

Shift of *AD* to the left can occur

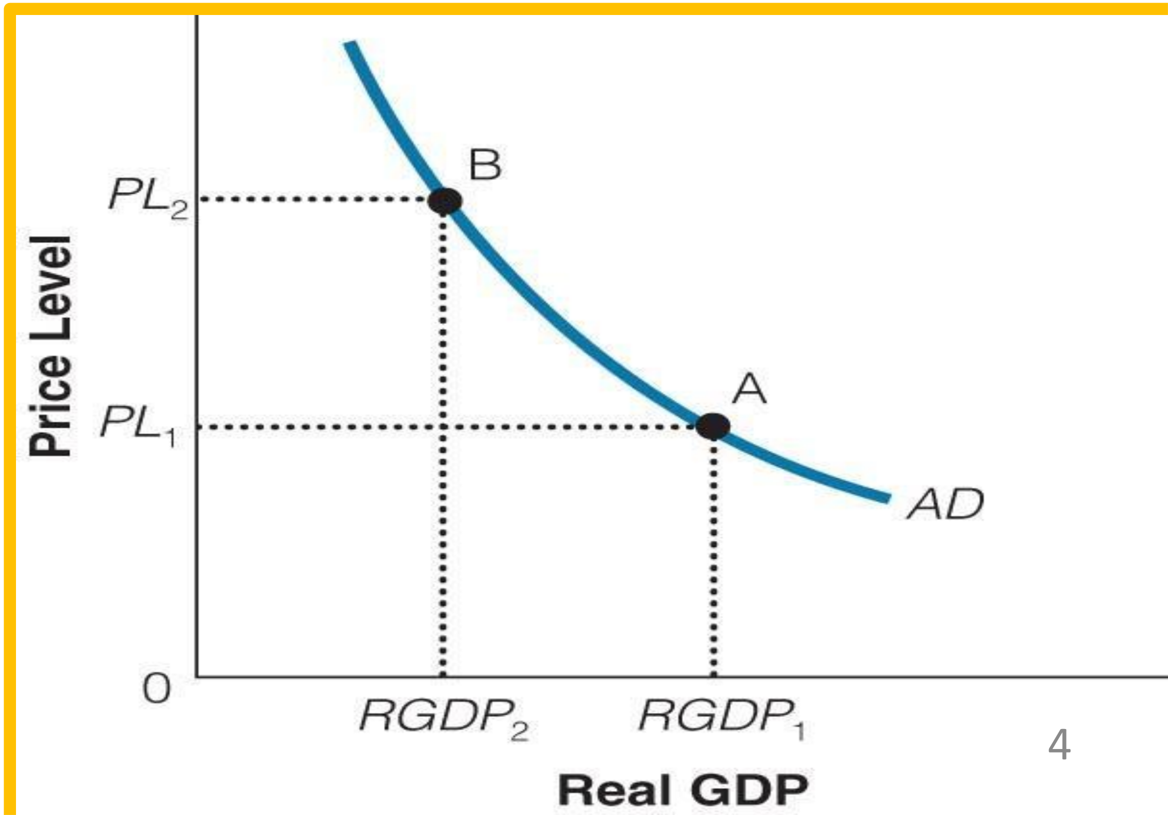
When consumers expect a recession.

A tax increase.

Since consuming less is saving more, an increase in savings, ceteris paribus, would shift AD to the left.

How is the Quantity of Real GDP Demanded Affected by the Price Level?

- The *AD* curve slopes downward, which means an inverse (or opposite) relationship exists between the price level and real gross domestic product (RGDP) demanded.
- An increase in the price level causes RGDP demanded to fall.
- Conversely, if there is a reduction in the price level, the quantity of RGDP demanded rises.



OVERALL PICTURE

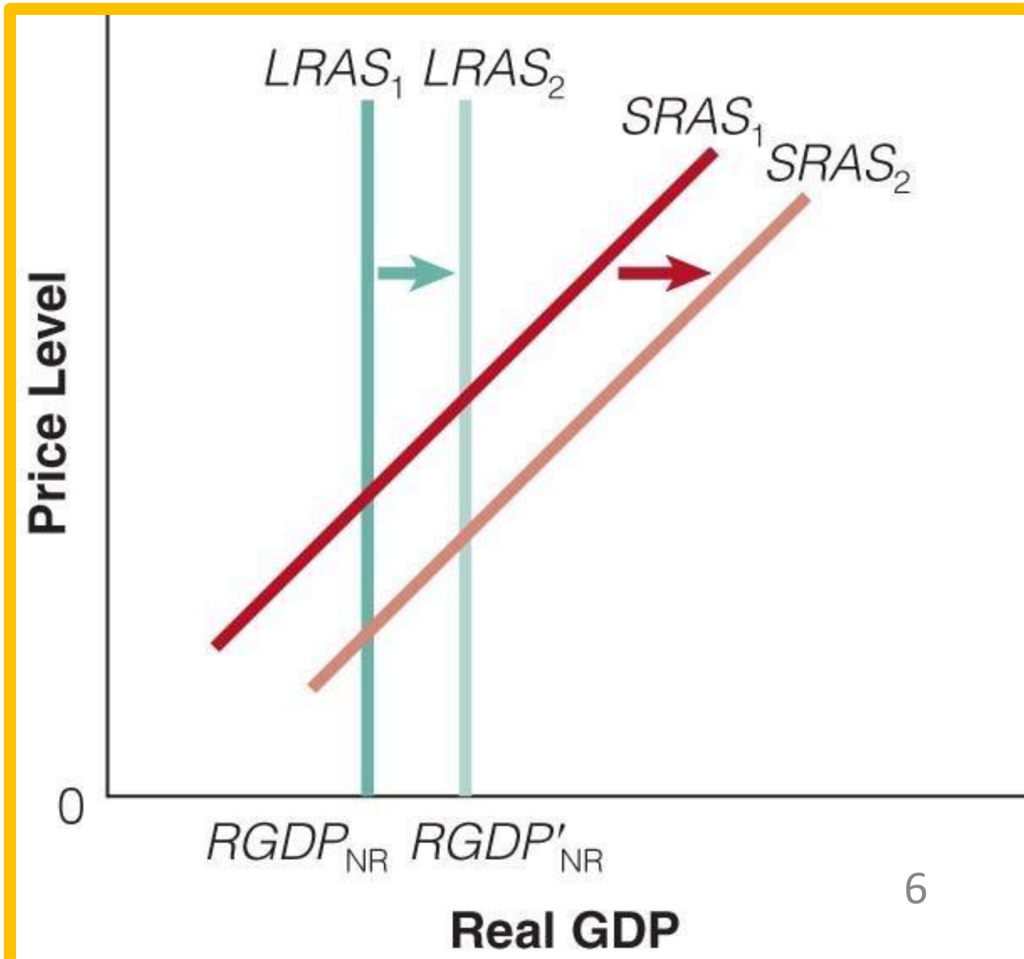
INCREASES IN AGGREGATE DEMAND (RIGHTWARD SHIFT)	DECREASES IN AGGREGATE DEMAND (LEFTWARD SHIFT)
Consumption (*C*)	Consumption (*C*)
— lower personal taxes	— higher personal taxes
— a rise in consumer confidence	— a fall in consumer confidence
— greater stock market wealth	— reduced stock market wealth
— an increase in transfer payments	— a reduction in transfer payments
Investment (*I*)	Investment (*I*)
— lower real interest rates	— higher real interest rates
— optimistic business forecasts	— pessimistic business forecasts
— lower business taxes	— higher business taxes
Government purchases (*G*)	Government purchases (*G*)
— an increase in government purchases	— a reduction in government purchases
Net exports ($X - M$)	Net exports ($X - M$)
— income increases abroad, which will likely increase the sale of domestic goods (exports)	— income falls abroad, which leads to a reduction in the sale of domestic goods (exports)

24.5 Shifts in the Aggregate Supply Curve: (Long-Run)

- Any change in the quantity of any factor of production available (capital, land, labor or technology) can cause a shift in **both** the long-run and short-run aggregate supply curves.

- 1. Capital Stock (+human capital)
- 2. Technology and Entrepreneurship
- 3.Land (Natural Resources)
- 4.Labor Force (Japan/China)
- 5.Government Regulations

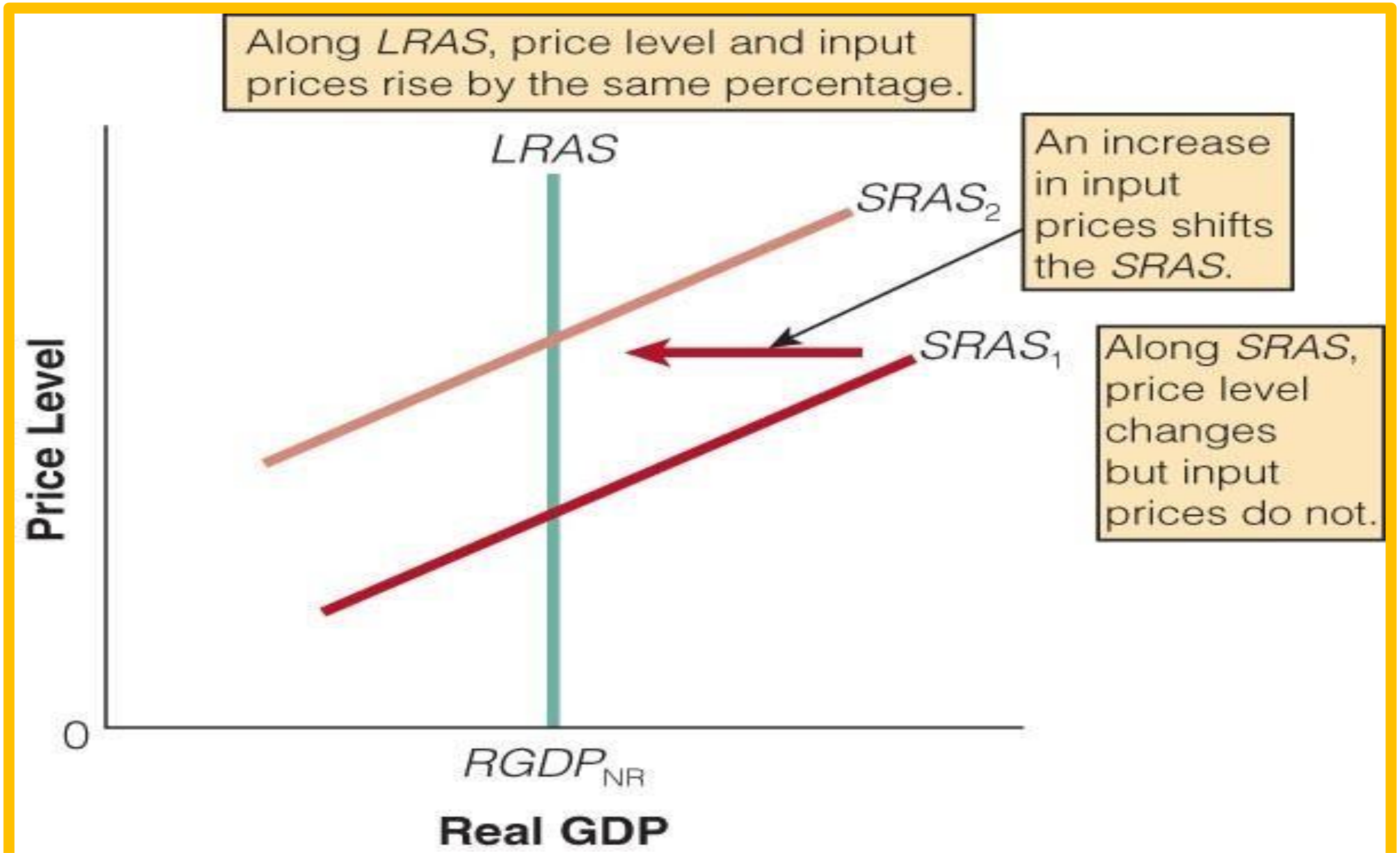
Shifts in Both Short-Run and Long-Run Aggregate Supply



Aggregate Supply and Demand

What Factors Shift (Short-Run) Aggregate Supply Only?

- Wages and Input Prices (Only Short-Run)
- Temporary Supply Shocks (earthquakes, natural disasters, droughts)



Aggregate Supply and Demand

section 24.5
exhibit 4

Factors That May Shift the Aggregate Supply

An Increase in Aggregate Supply (Rightward Shift)

Lower costs
- lower wages
- other input prices fall

Government policy
- tax cuts
- deregulation
- lower trade barriers

Economic growth
- improvements in human and physical capital
- technological advances
- an increase in labor

Favorable weather

A Decrease in Aggregate Supply (Leftward Shift)

Higher costs
- higher wages
- other input prices rise

Government policy
- overregulation
- waste and inefficiency
- higher trade barriers
- stagnation
- a decline in labor productivity
- capital deterioration

Unfavorable weather

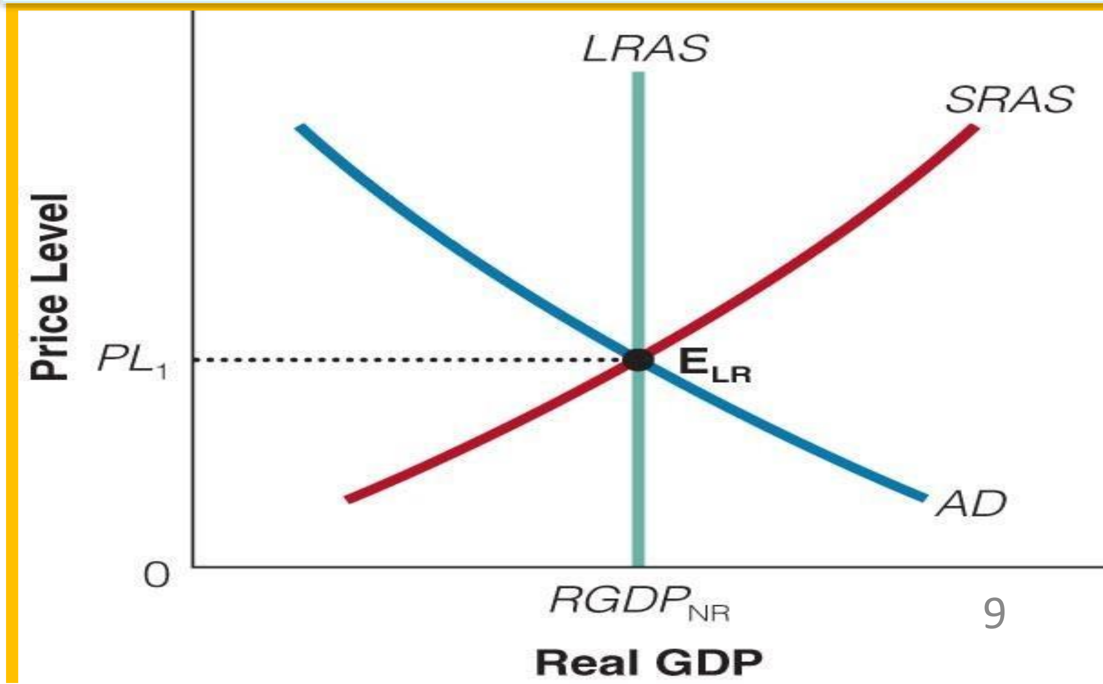
Natural disasters and war

These factors can shift the short-run aggregate supply curve, the long-run aggregate supply curve, or both, depending on whether the effects are temporary or permanent.

24.6 Macroeconomic Equilibrium

- The **short-run equilibrium level** of real output and the price level are determined by the **intersection of the aggregate demand curve and the short-run aggregate supply curve.**
- When this equilibrium occurs at the potential output level, on the **long-run aggregate supply curve**, the economy is operating at **full employment.**

Long-Run and Short-Run Macroeconomic Equilibrium

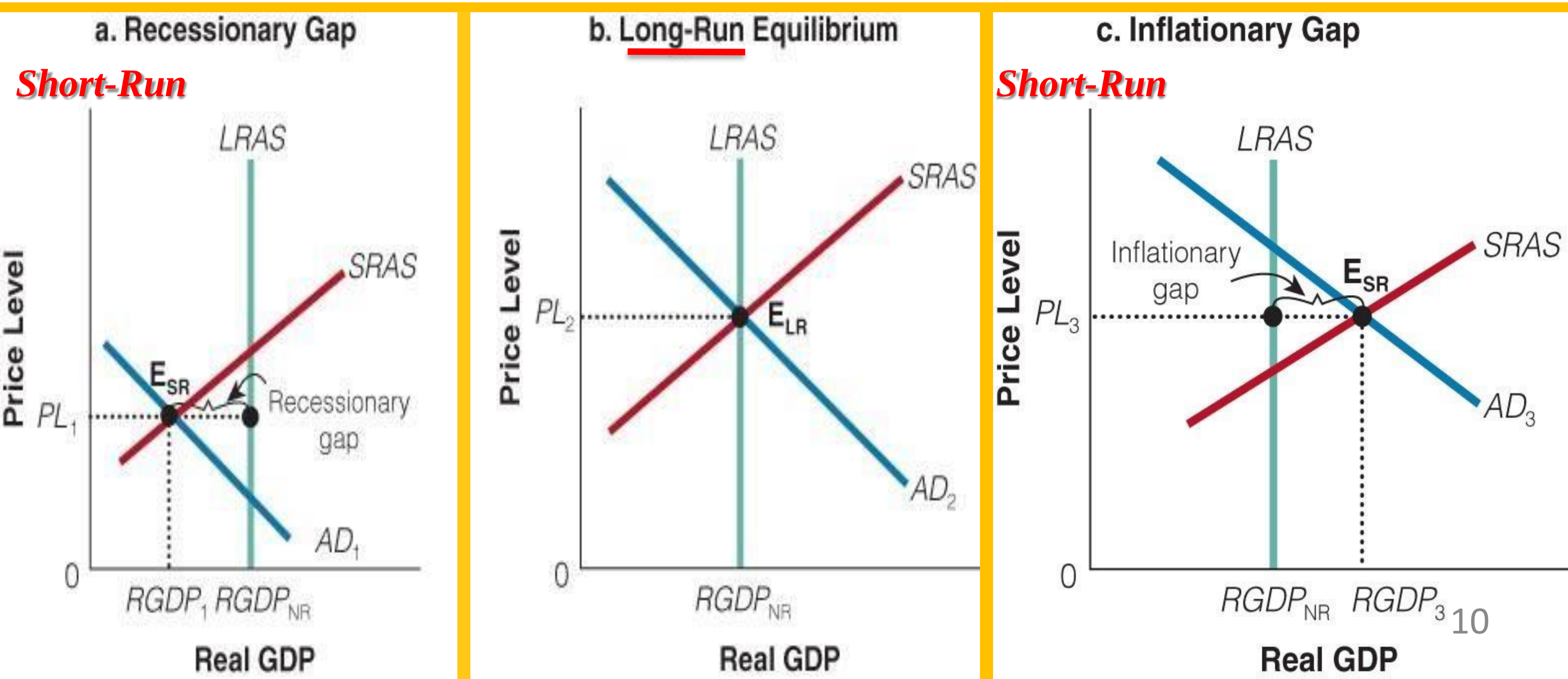


- **Short-Run Equilibrium**
  Change when **(SRAS&AD)**

- **Long-Run Equilibrium**
  LRAS&AD

Recessionary and Inflationary Gaps

- Equilibrium can occur at less than the potential output of the economy – ***recessionary gap*** ($RGDP_{NR}$).
- Or it can temporarily occur beyond potential output – ***inflationary gap***.
- Or it can occur at potential GDP.

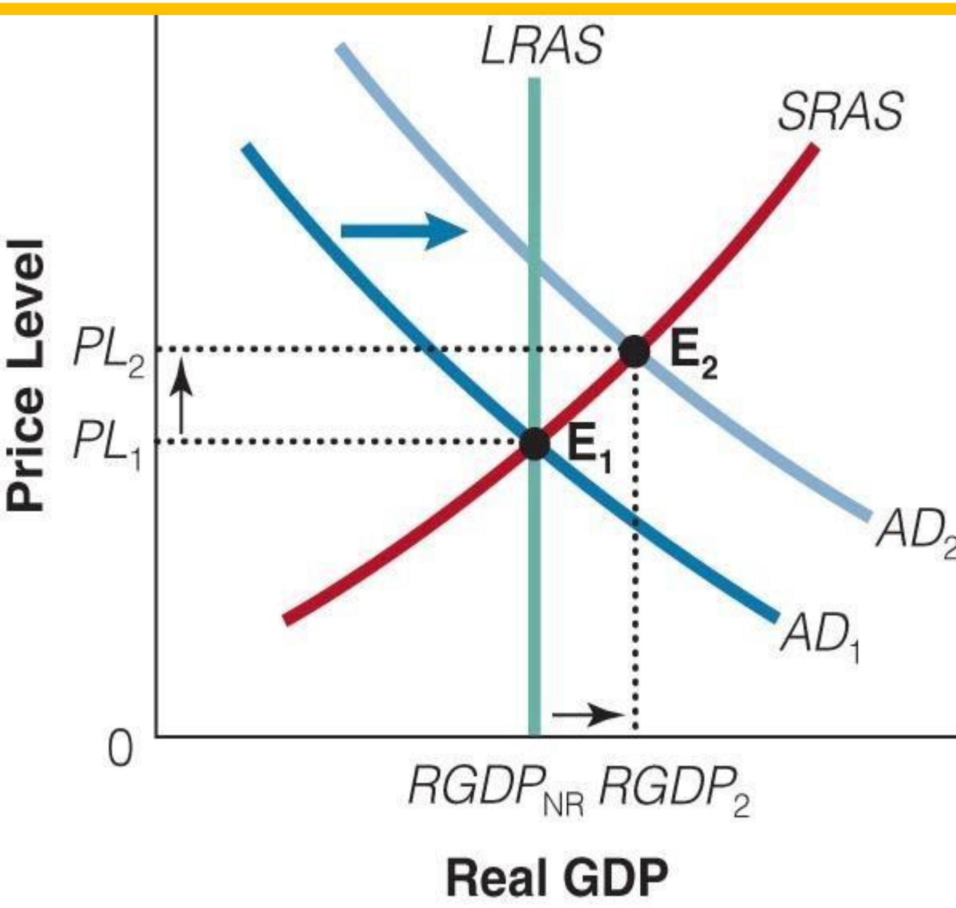


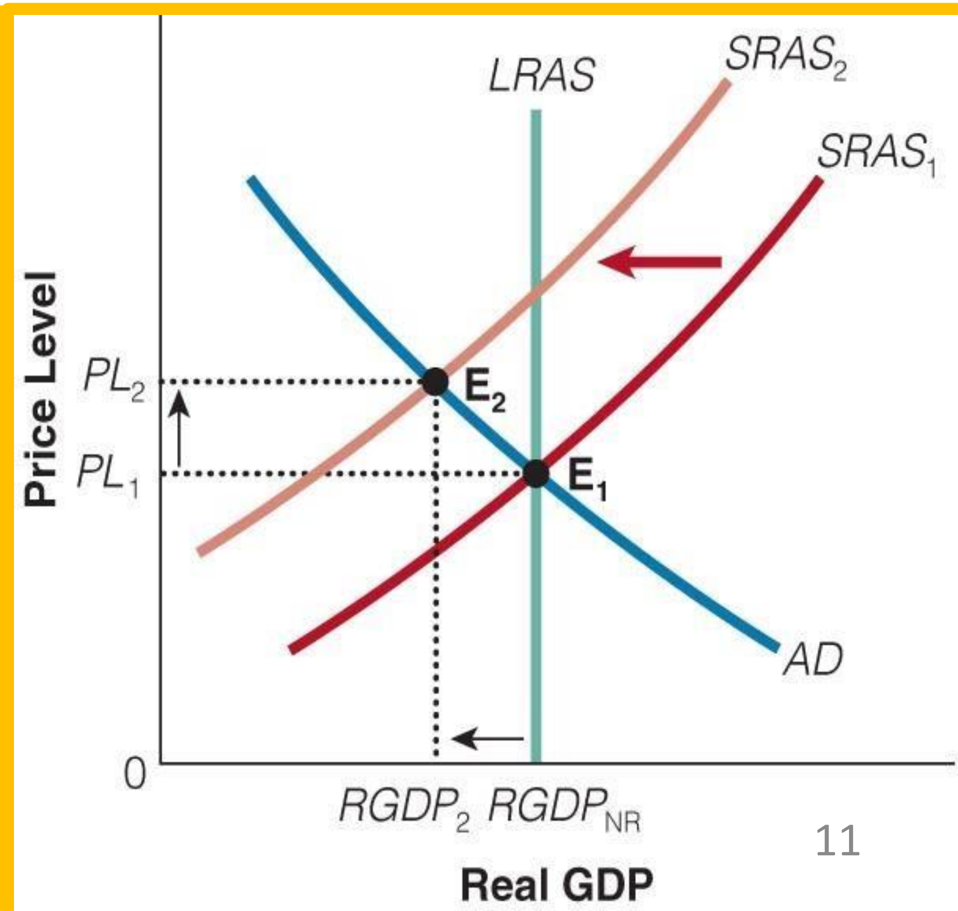
Aggregate Supply and Demand

- Encourage workers to work overtime.
- Extend the hours of part time workers.
- Hire recently retired employees.
- Reduce frictional unemployment through more extensive searches for employees.

Stagflation (stagnation+inflation): Lower Growth and Higher Prices

Demand-Pull Inflation and Cost-Push Inflation





A Decrease in Aggregate Demand and Recessions

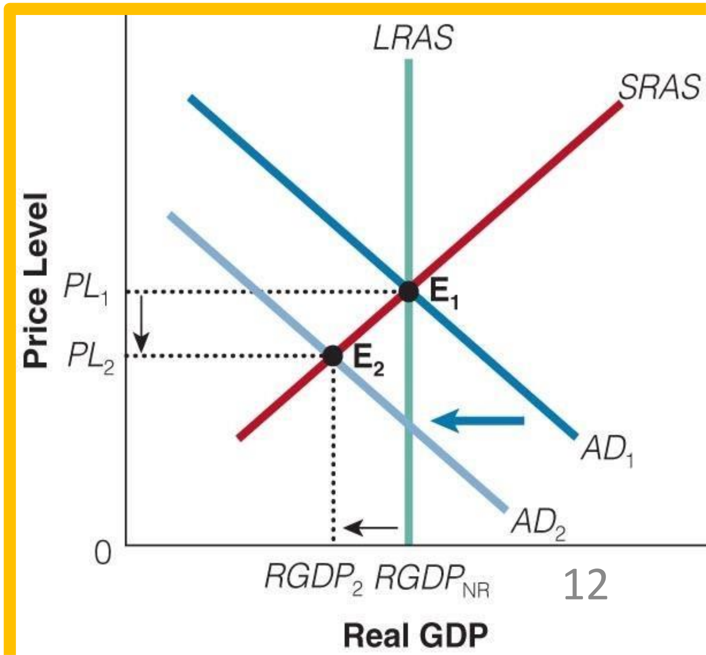
- Just as cost-push inflation can cause a recession, so can a decrease in *AD*.
- Households, firms, and governments buy fewer goods and services at every price level.
- In response, output and price levels fall.
- Thus, in the short run, a fall in AD causes higher unemployment and reduction in output—a **recessionary gap**.

- **Evidence: 2001 US Recession** (September 11, stock market boom).
- Corrective measures:

  ✓ Continued **lower interest rates** by the Federal Reserve, stimulating the economy by encouraging investment, and consumption spending.

  ✓ **Tax cut** passed by Congress in 2001, and increased government spending to help rebuild New York City and provide financial assistance to the ailing airline industry.

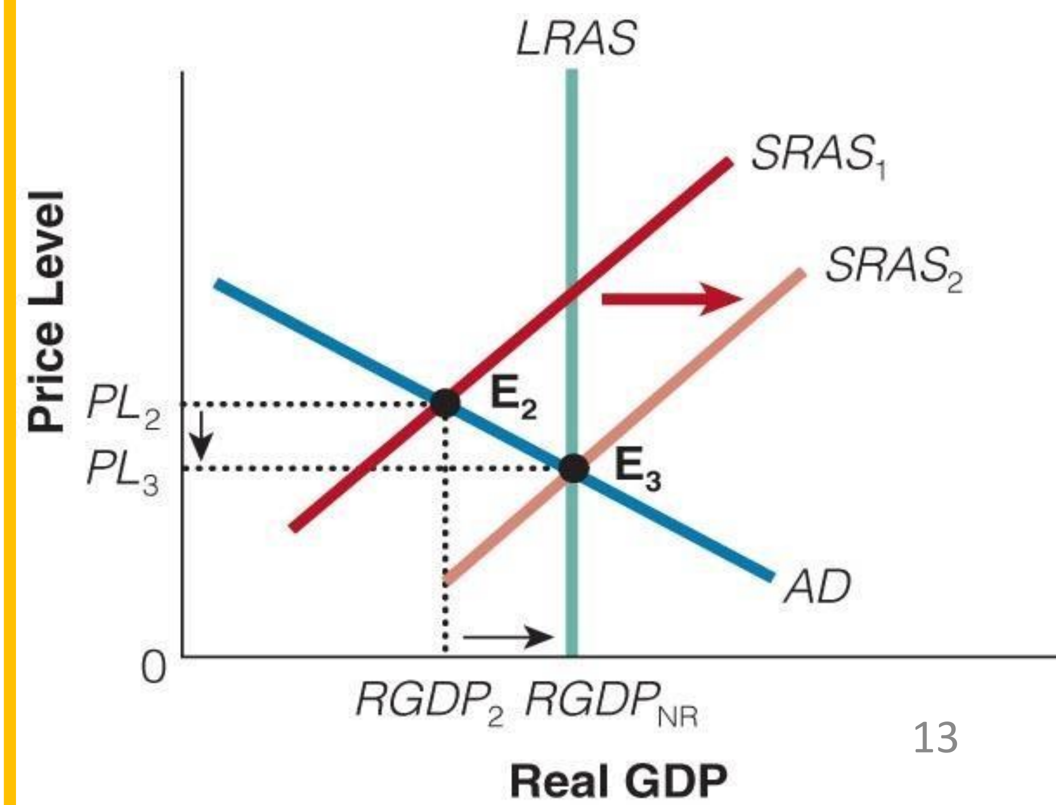
Result: Both these policies shifted the aggregate demand curve to the right, reducing the magnitude of the 2001 recession.



Adjusting to a Recessionary Gap

- It is possible that the economy would ***self-correct*** through **declining wages and prices**. In a recession
  - ✓ Firms **lay off(dismiss) workers** to avoid inventory accumulation.
  - ✓ Firms may **cut prices** to increase demand for their products.
  - ✓ Unemployed workers and other input suppliers will bid down wages and prices.

- The resulting reduction in production costs shifts the short-run aggregate supply curve to the right.
- Eventually, the economy returns to a long-run equilibrium at potential output and a lower price level.



The Covid Story

- Factors: Supply chain disruptions, demand shifts, fiscal stimulus, labor market issues, supply shocks (e.g., Russian invasion of Ukraine).
- Outlook: Inflation may persist for a couple of years but unlikely to spiral out of control in the long term. Historical trends suggest manageable inflation outcomes.
- Historical Response: Central banks historically adopt anti-inflationary policies. Challenges include response effectiveness influenced by labor market conditions, supply chain disruptions, and geopolitical events.
- Post-Pandemic Challenges: Factors include potential changes in central banks' responses, effectiveness of policy tools, and bond market confidence in government debt repayment.
- Future Inflation Trends: Determined by central banks' actions and bond market confidence in government debt repayment. Beyond 2025, trends hinge on these factors.

- *Source:* https://www.imf.org/en/Publications/fandd/issues/2022/03/Future-of-inflation-partI-Agarwal-kimball

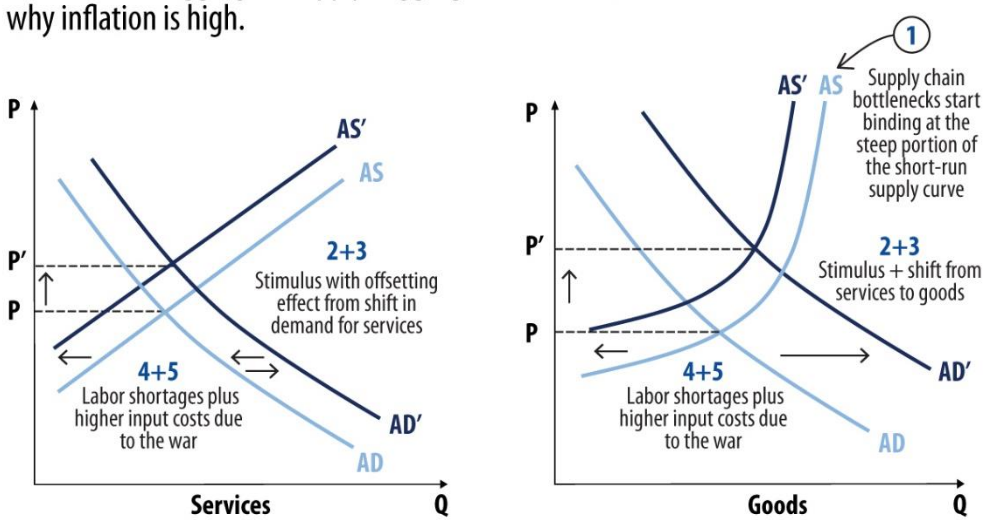
Aggregate Supply and Demand

The Covid Story

Chart 2

Why is inflation high?

An old-school aggregate supply–aggregate demand (AS-AD) curve illustration of why inflation is high.



Five factors behind high inflation now

1. Supply chain bottlenecks binding for various products
2. Shift in demand for goods from services, opposite effects on demand for services and goods
3. Stimulus + Recovery shifts out demand curve
4. Labor shortages leading to leftward shift in supply curve
5. Supply shocks to energy and food due to the War in Ukraine

Source: Authors.

Slow Adjustments to a Recessionary Gap

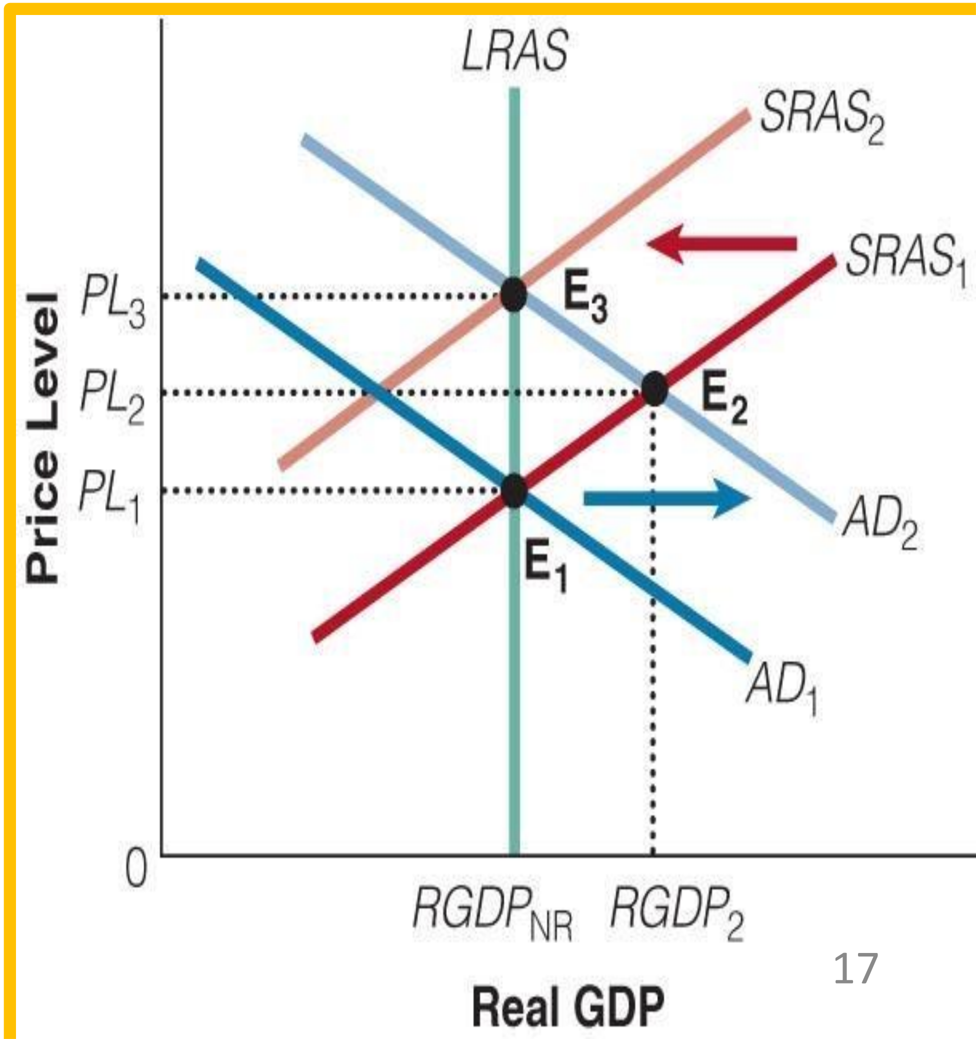
- Many economists believe that wages and prices may be very slow to adjust, especially downward.
- This downward ***wage and price inflexibility*** may lead to prolonged periods of a recessionary gap.
- If wages and other input prices are sticky, the economy's adjustment mechanism may take months to self-correct.

What Causes Wages and Prices to be Sticky Downward?

- Long-term labor contracts (especially with union workers).
- A legal minimum wage.
- Employers paying **efficiency wages.**
- Menu costs.

Adjusting to an Inflationary Gap

- Lower Purchasing Power of Wages. So,
- **Real wages fall.**
- *Consequently, workers and other suppliers demand higher prices to be willing to supply their inputs, shifting the short-run aggregate supply to the left, until they reach the long-run equilibrium at potential output.*
- **Input suppliers' purchasing power is restored at the long-run equilibrium, and a new higher price level.**



REVISION SLIDES FROM THE LECTURE

Aggregate Supply and Demand

- The long-run aggregate supply curve is **insensitive** to the **price level**, where level of **RGDP producers** are willing to supply **is not affected** by changes in the **pricelevel**.

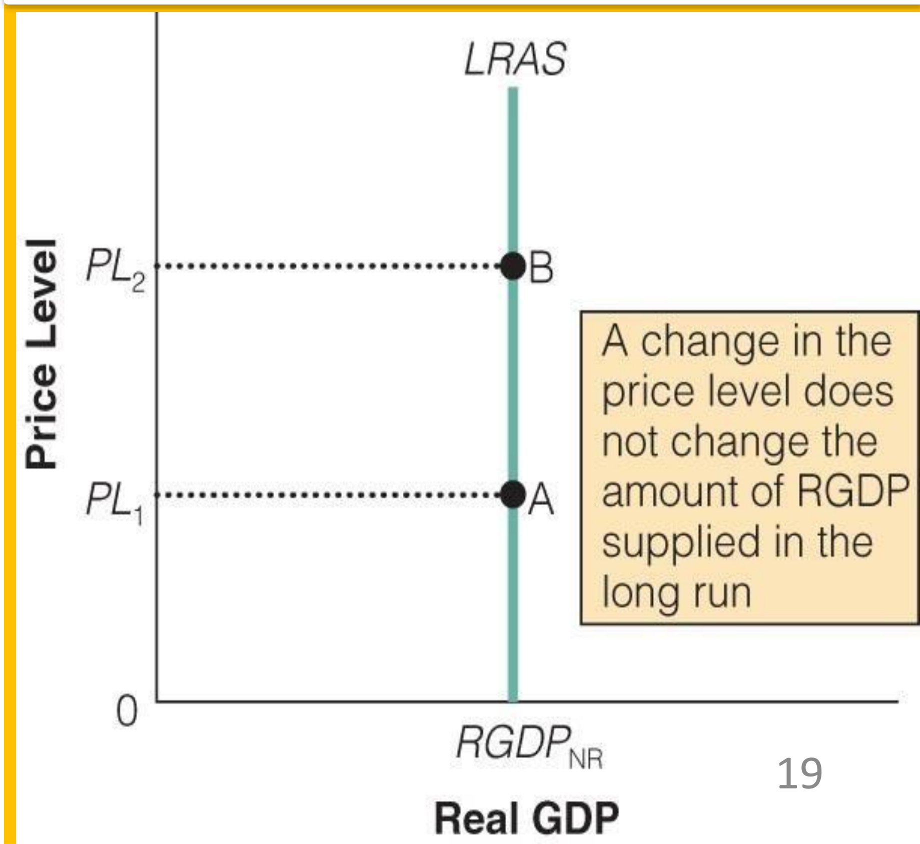
- The vertical *LRAS* curve will **always be positioned at the natural rate** of output, where **<u>all resources are fully employed</u>** ($RGDP_{NR}$).

- Max.use of **production functions.** *(by firms)*

- The economy **will always be at the intersection** of *AS* and *AD* but that will **<u>not always be at the natural rate of output</u>** $\underline{\mathbf{RGDP_{NR}}}$**<u>.</u>**

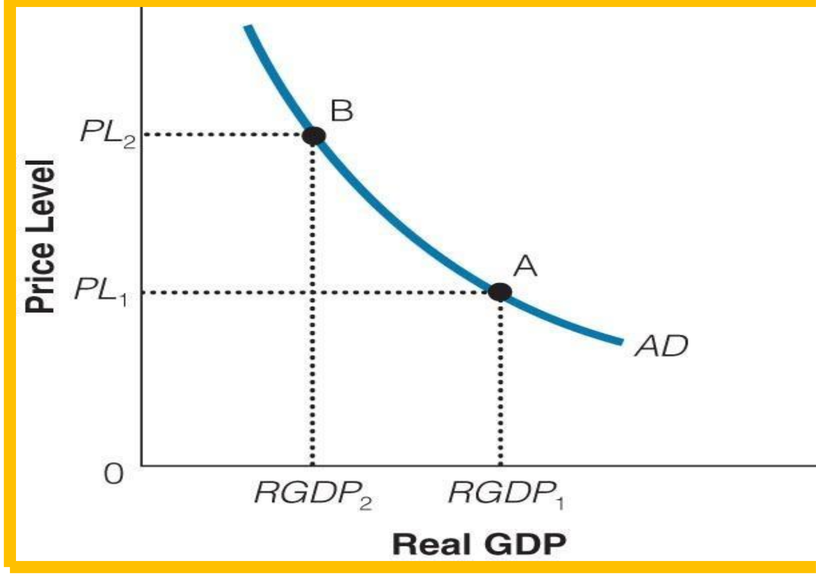
- But, Long-run **equilibrium** will <u>only occur</u> where *AS* and *AD* intersect along the long-run aggregate supply curve at the natural, or potential, rate of output.

The Long-Run Aggregate Supply Curve



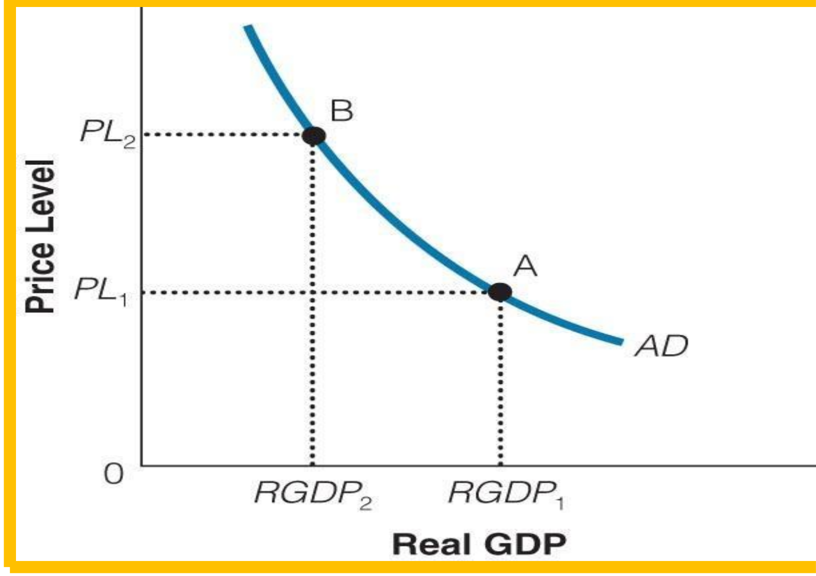
Why is the Aggregate Demand Curve Negatively Sloped?

- ✓ Three complementary explanations :
  - ✓ **The real wealth effect.**
  - ✓ **The interest rate effect.**
  - ✓ **The open economy effect.**



Real Wealth

Why is the Aggregate Demand Curve Negatively Sloped?



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Real Wealth

- ❑ ↑ Price level ➲ ↓ Real wealth ➲ ↓ Purchasing power ➲ ↓ RGDP demanded
- ❑ ↓ Price level ➲ ↑ Real wealth ➲ ↑ Purchasing power ➲ ↑ RGDP demanded.

The interest rate effect.

If Price Level Falls

- At a lower price level, households and firms will shift their "excess" money into bonds or saving accounts, increasing the supply of funds to the loanable funds market, resulting in the fall of interest rates.
- **As interest rates fall, households will borrow more and buy more goods and services, thus the quantity of RGDP demanded will increase.**

The interest rate effect

If Price Level Rises

↑Price level ⇒ Households and firms increase their holdings of money ⇒ Demand for loanable funds increases ⇒ Interest rates rise ⇒ Households and firms are discouraged from borrowing and spending ⇒ RDP demanded decreases

- At **higher interest rates** consumers may give up plans to buy new cars or houses and firms may delay investments in plant and equipment.
- That is, as households and firms are discouraged from borrowing RGDP demanded decreases.

Open Economy Effect

Open Economy Effect

- If the price level in the United States rises relative to those in global markets, U.S. exports will become relatively **more expensive. So,** Some foreign consumers will stop buying U.S. goods. U.S. **exports will fall, and imports will rise.**
- <u>Net exports will fall, thereby reducing the amount of RGDP purchased in the United States.</u>

- A lower price level makes U.S. exports less expensive and foreign imports **more expensive.**
- Thus, **U.S. consumers will buy more domestic goods**, and <u>foreign consumers will buy more **U.S. goods.**</u>

➢ **This will increase net exports, <u>thereby increasing the amount of RGDP purchased in the United States.</u>**

- ✓ Increases in demand for **investment goods**, occur for a variety of reasons. AD will shift to the right when
  - ***Business investment will increase if business confidence increases, or real interest rates fall.***
  - ***Business taxes reduce.***
- ✓ AD will shift to the left when
  - ***Interest rates increase.***
  - ***Business taxes rise.***

✓**Government purchases**

An increase in government purchases, *other things equal*, shifts *AD* to the right, while a reduction shifts *AD* to the left.

✓ Net Exports

- Global markets are also important in a domestic economy.
- If major trading partners are experiencing economic slowdowns, then they will demand fewer U.S. imports.
- This causes net exports ($X - M$) to fall, shifting AD to the **left.**
- Alternatively, an economic boom in the economies of major trading partners may lead to an increase in our exports to them, causing net exports ($X - M$) to rise and AD to increase.
- **Economic Boom**

24.4 The Aggregate Supply Curve

- The ***aggregate supply (AS) curve*** is the relationship between the total quantity of final goods and services that suppliers are ***willing*** **and** ***able*** to produce and the overall price level.
- The aggregate supply curve represents ***how much RGDP suppliers will be willing to produce at different price levels***.
- ***Short-run aggregate supply (SRAS)***
- ***Long-run aggregate supply (LRAS)***

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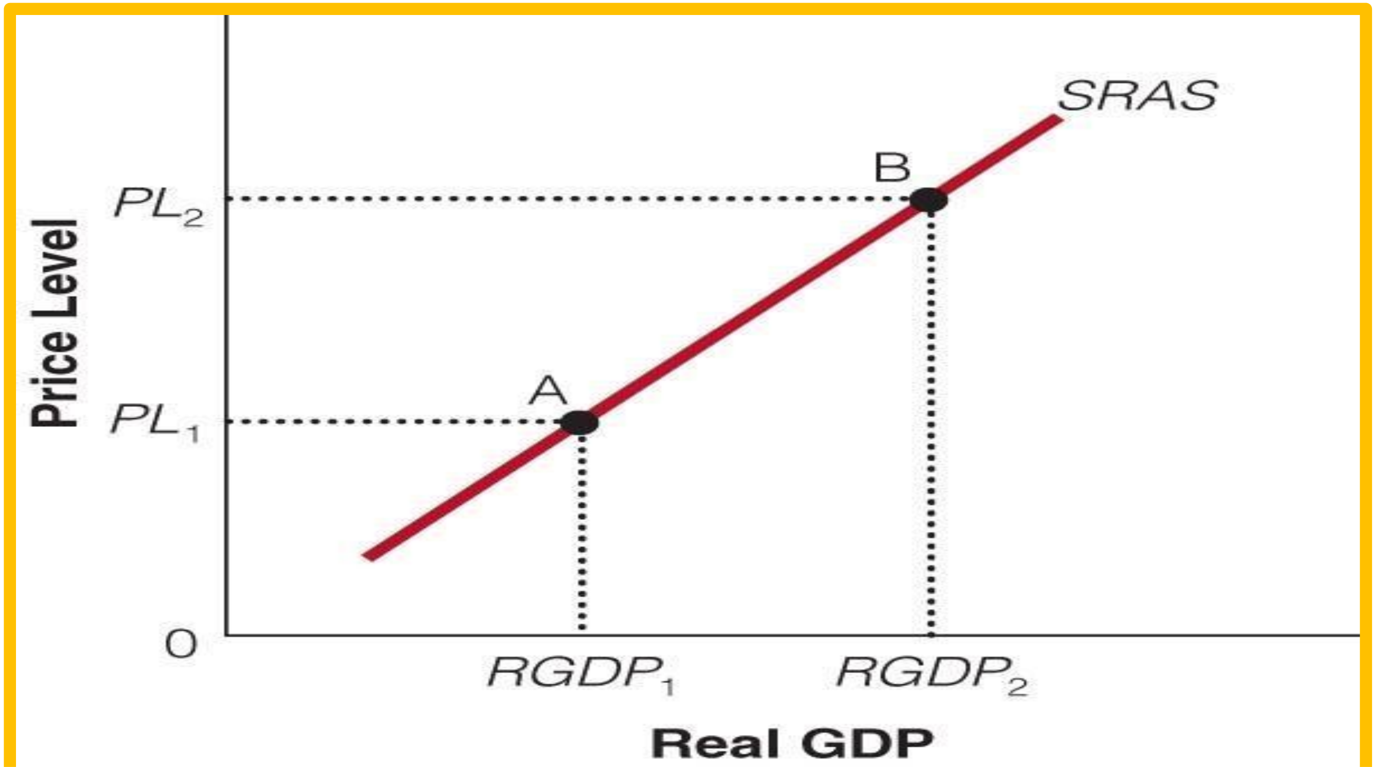
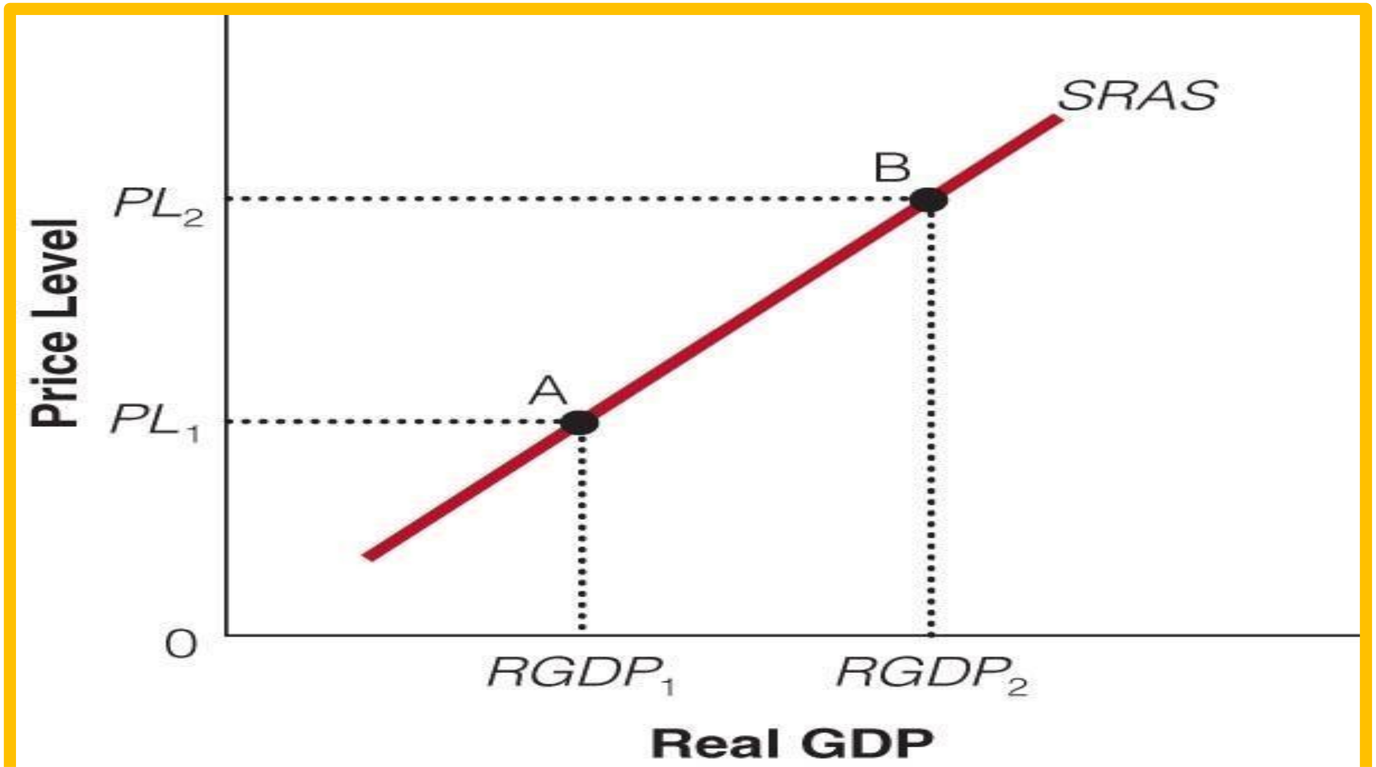
- The aggregate supply curve represents ***how much RGDP suppliers will be willing to produce at different price levels***.
- ***Short-run aggregate supply (SRAS)***
  - **A period when output can change in response to supply and demand, but input prices have not yet been able to adjust.**
  - For example, nominal wages are assumed to adjust slowly in the short run.
- ***Long-run aggregate supply (LRAS)***
  - A period long enough for the prices of outputs and all inputs to fully adjust to changes in the economy.

Why is the Short-Run AS Curve Positively Sloped?



Why is the Short-Run AS Curve Positively Sloped?

- In the **short run**, the aggregate supply curve is **upward sloping.**
- At **higher price levels**, producers are willing to supply more real output.
- At **lower price levels**, they are willing to supply less real output.



- ***Why would producers be willing to supply more output just because the price level increases?***
- There are two possible explanations.
  - ❑ **Profit effect. (sticky wage & price theories)**
  - ❑ **Misperception effect.**

❖ **Profit Effect:**

- *To many firms*, input costs like wages and rents are relatively ***constant in the short run.***

- The slow adjustments of input prices are due to the ***longer-term input contracts*** that do not adjust quickly to output price level changes.

➢ **So when the price level rises**, ***output prices rise relative to input prices (costs),*** **raising producers' short-run profit margins.**

- If the price level falls (output prices), then *producers' profits tend to fall then, producers find it more difficult to cover their input costs, and thus, will reduce their level of output.*

❑ Misperception Effect:

- If a producer sees the price of his output rising and thinks that the only *relative price of his output is rising* (i.e., that his product is becoming more valuable in real terms), he will supply more.
- **It might be that it was not just for his goods that prices were rising; the prices of many other goods and services could also be rising at the same time as a result of an increase in the price level.**
- The relative price of his output, then, was not actually rising, although it appeared so in the short run.
- In this case, the producer was fooled into supplying more based on his short-run misperception of relative prices.

Why is the Long-Run Aggregate Supply Curve Vertical?

- Along the short-run aggregate supply curve, we assume that wages and other input prices are constant.
- This is **not the case in the long run**, which is a period long enough for the price of all inputs to fully adjust to changes in the economy.
- the prices of **outputs** and the price of **inputs** are changing: a 10 percent increase in the price of **goods and services** is matched by a 10 percent increase in the price of **inputs**.