Aggregate Supply and Aggregate Demand

Econ 120: Global Macroeconomics

Goals

- Specific Goals
  - Define the expenditure multiplier and how to compute it.
  - Explain how recessions and expansions can occur using the expenditure multiplier.
  - Explain how real GDP and the price level are related in the short run.
  - Learn how to pronounce Keynes. It's like candy canes.
- Learning Objectives
  - LO5: Use the model of aggregate demand and supply to evaluate the short-run and long-run impacts of fiscal and monetary policy on production, employment, and the price level.
  - GELO1: Students will be able to use mathematical and logical methods to solve problems.
  - GELO2: Students will be able to construct and use models to analyze, explain, or predict phenomena.

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Reading

- Expenditure multiplier: Module 16, ignore pages 161-164.
- Aggregate demand: Module 17
- Aggregate supply: Module 18
- Equilibrium and policy: Modules 19 and 20.

Keynesian model background

- *Very* short-run model of expenditure *plans*.
- *Very short-run*: short enough so that prices stay fixed.
- Only expenditure plans (demand) determines real GDP - supply decisions is a longer-run consideration.
- **Aggregate expenditure (AE)**: C+I+G+X-M
- **Real GDP** is equal to aggregate expenditure *in equilibrium*.
  1. An increase in aggregate expenditure leads to an increase in real GDP.
  2. An increase real GDP is income for people: consumption and import plans increase.
  3. Go to step 1.

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Marginal propensity to consume

- **Marginal propensity to consume (MPC)**: fraction of an increase in disposable income that is consumed.
- Assume for simplicity that a change in disposable income is approximately equal to a change in real GDP.

$$\text{MPC} = \frac{\Delta C}{\Delta Y}$$

- **Marginal propensity to save (MPS)**: fraction of an increase in disposable income that is saved.

$$\text{MPS} = 1 - \text{MPC}$$

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Expenditure multiplier

- An exogenous increase in AE leads to an increase in real GDP *greater than* the initial increase in AE.
- Two ways to think about it:
  1. $\uparrow$ AE $\rightarrow \uparrow$ real GDP $\rightarrow \uparrow$ C $\rightarrow \uparrow$ AE $\rightarrow \uparrow$ real GDP ...
  2. Suppose the government buys more bombs. $\rightarrow$
     Defense contractors sales go up. $\rightarrow$
     Salaries and profits for defense contractor workers increases. $\rightarrow$
     They spend higher salaries and profits on consumption. $\rightarrow$
     The consumption lead to higher sales for other businesses. $\rightarrow$
     Workers at those businesses in turn consume more...

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- Suppose there is an increase in government spending.
- GDP will increase by the $\uparrow G$ plus the $\uparrow C$ minus the $\uparrow M$.

$$\Delta Y = \Delta C + \Delta G - \Delta M$$

$$\Delta C = \text{MPC}\ \Delta Y$$

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- Solve for the change in real GDP (ΔY):

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- The expenditure multiplier is given by,

$$m_e = \frac{1}{\text{MPS+MPM}}$$

- MPS + MPM = fraction of income *not spent* in the United States (saved or spent abroad).
- If economy is closed, or imports do not depend on income, then $MPM = 0$.
- Let ΔAE denote any single change in aggregate expenditure
- The impact on real GDP is,

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- Slightly longer, but still *short-run* model.
- Long enough so that the aggregate price level has time to adjust to changes in supply or demand.
- *Not long enough for wages* to adjust to new equilibrium levels in response to changes in labor demand or labor supply.
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- **Aggregate demand**: schedule or curve that illustrates C+I+G+X-M expenditure plans, taking into account aggregate price level.
- Aggregate demand is downward sloping - *but not for the same reason the demand curve for a single product is downward sloping*.
- Recall demand curves for single goods slope downward because of the substitution effect and the income effect.

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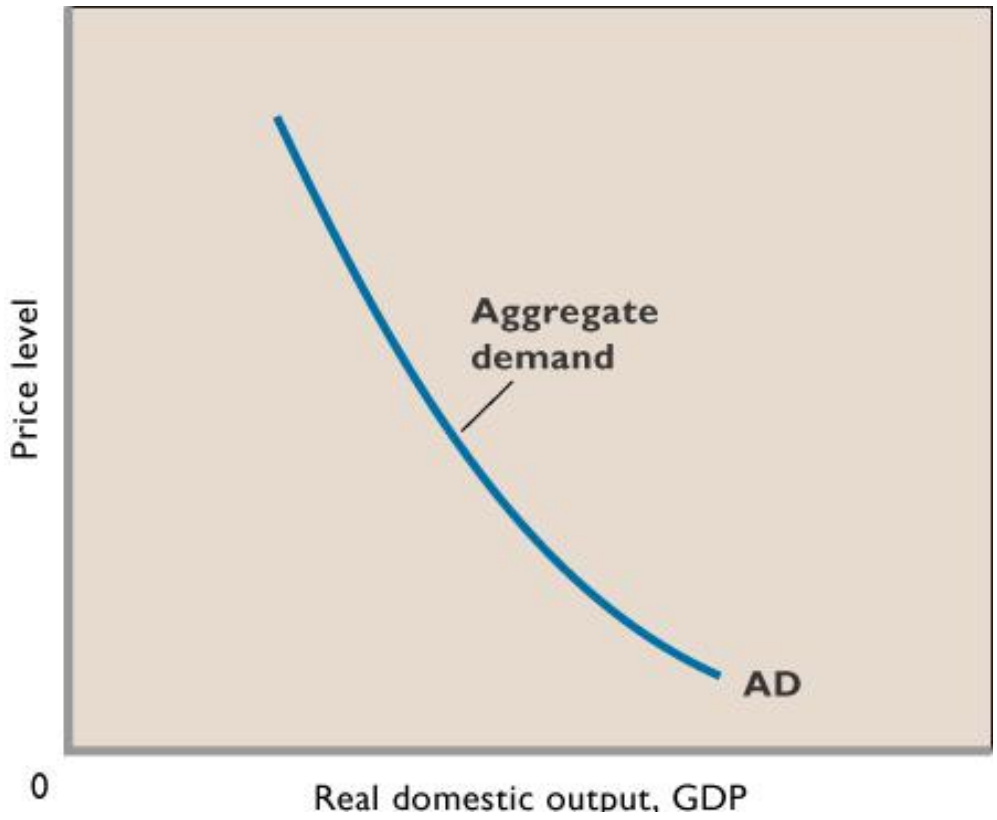

Downward sloping AD

- **Real balances effect**: when the price level increases, the purchasing power of the consumers' accumulated savings balances decreases.
  - With a lower real savings balance, consumers decrease consumption.
- **Foreign purchases effect**: When the price level rises relative to the price level in foreign countries, the foreign demand for U.S. products decreases. Similarly, the demand for imports increases.
  - This causes exports to fall and imports to rise.

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Determinants of AD

- When something *besides the price level* affects the AD, this causes the AD curve to shift.
- The following affect *consumption* and therefore shift AD.
  - Consumer wealth: financial assets such as savings accounts, stocks, and bonds, and physical assets that consumers can borrow against like houses and land.
    - When consumer wealth increases, aggregate demand increases, causing it to shift to the right.
  - Household indebtedness: if household debt increases, AD shifts to the left.
  - Taxes: Increase in taxes decreases consumption, AD shifts to the left.
  - Consumer expectations: expectations about future income or future taxes can shift AD.
  - Interest rate: an increase in the interest rate decreases consumption which shifts AD to the left.

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- The following affect *consumption* and therefore shift AD.
  - Consumer wealth: financial assets such as savings accounts, stocks, and bonds, and physical assets that consumers can borrow against like houses and land.
    - When consumer wealth increases, aggregate demand increases, causing it to shift to the *right*.
  - Household indebtedness: if household debt increases, AD shifts to the left.
  - Taxes: Increase in taxes decreases consumption, AD shifts to the left.
  - Consumer expectations: expectations about future income or future taxes can shift AD.
  - Interest rate: an increase in the interest rate decreases consumption which shifts AD to the left.

Determinants of AD

- The following affect investment and therefore shift AD.
  - Interest rate: increases the cost of borrowing to finance investment, therefore shifts AD to the left.
  - Expectations: expectations about the return on an investment shift investment demand and therefore shift AD.
- Change in government purchases.
- The following affect exports or imports and therefore shift AD.
  - Foreign incomes: higher foreign incomes increase exports, shifts AD to the right.
  - Exchange rates: when the value of U.S. currency depreciates, this causes imports to ____ and exports to _____.

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Short run aggregate supply

- In the short run, factor markets are slow to adjust. Wages are slow to adjust and there may unemployment or even excess employment.
- Therefore in the short run, the aggregate supply curve is upward sloping.
  - Increases in the price level without increasing wages create larger profits for firms, creates incentive to produce more.

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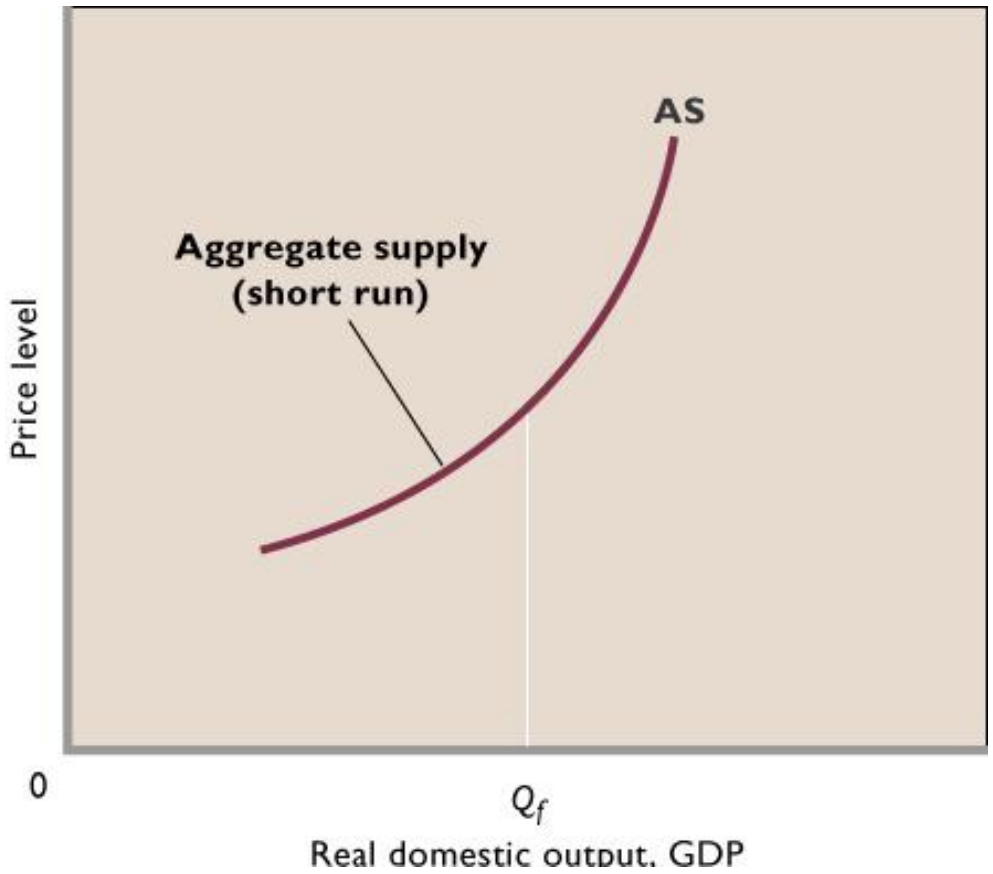

Determinants of AS

- When something *besides the price level* affects AS, this shifts AS.
- Prices of factors of production: when the price of labor, capital, or land increase, this shifts AS to the left.
- Exchange rate: if the value of the U.S. currency decreases, this increases the cost of importing foreign factors of production.
- Technology: an increase in technology shifts AS to the right.
- Business taxes can affect output decisions of firms and shift AS.
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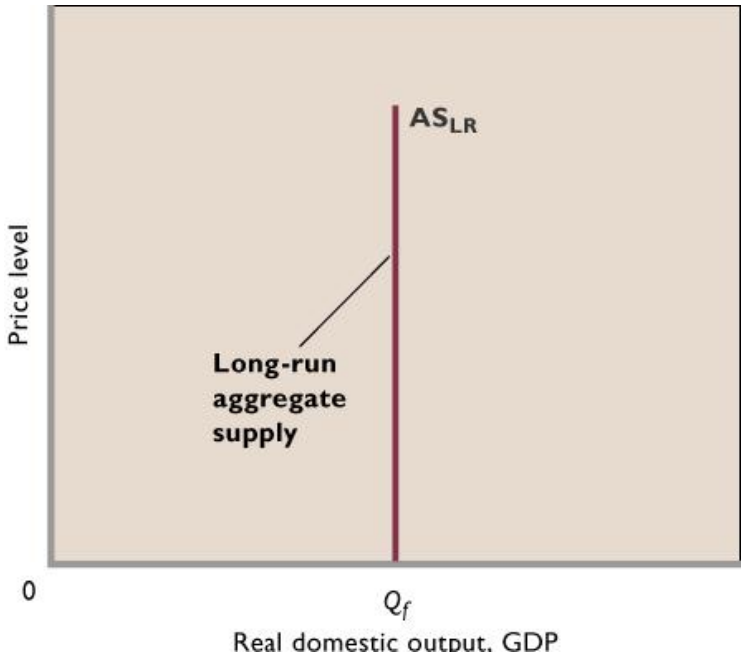
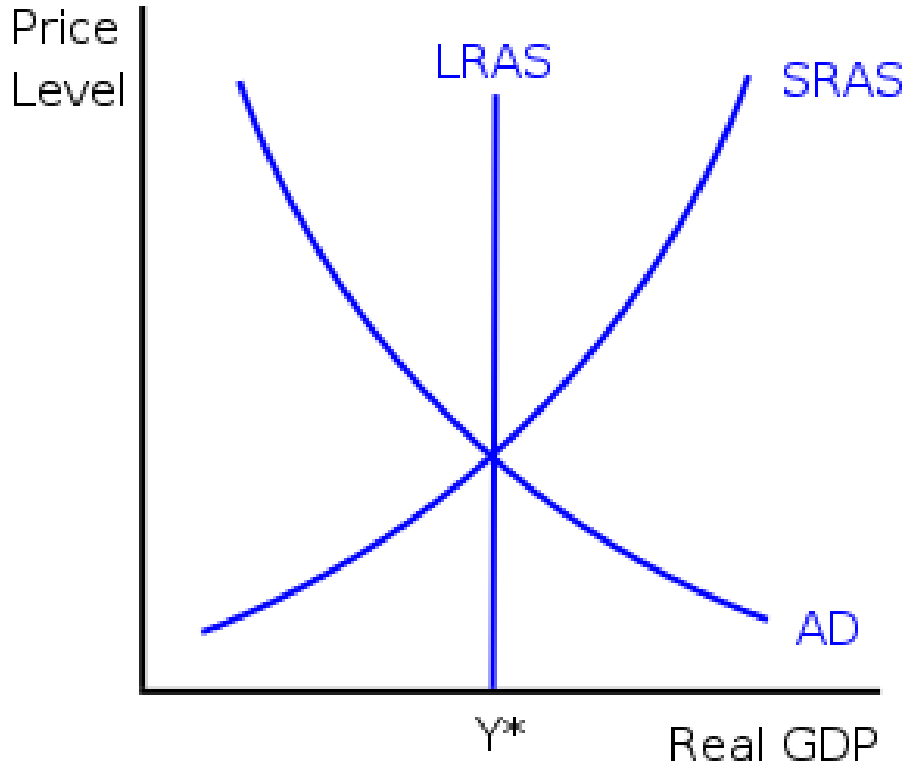
Long run aggregate supply

- **Long run aggregate supply**:
- In the long run, wages adjust so that the economy uses labor efficiently
- Long run aggregate supply is a vertical line at **potential GDP**
- Determined by production possibilities.



Equilibrium

In equilibrium, real GDP and the price level are determined by the intersection of AS and AD



Inflation

- Inflation can come from two sources, excess demand or increases in production costs.
- **Demand pull inflation**: when increases in demand cause inflation.
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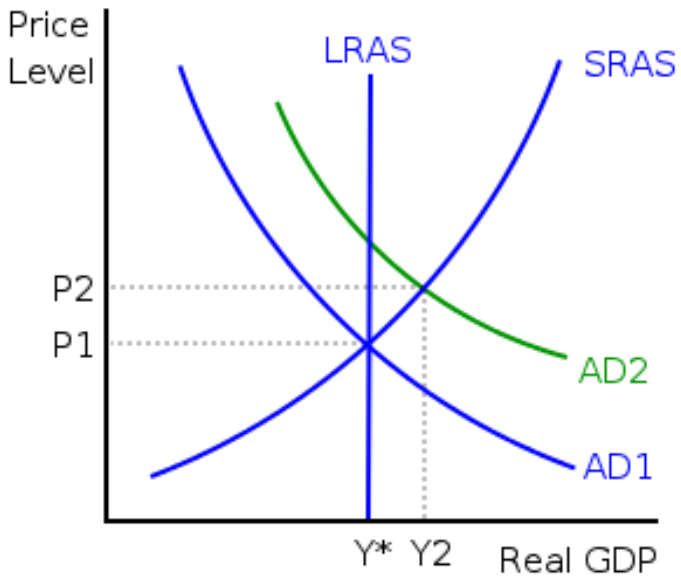
Demand pull inflation

- Demand pull inflation begins when AD increases.
- Causes real GDP to increase and the price level to rise.
- Recall: **inflationary gap**: when aggregate expenditures is equal to real GDP above potential GDP.



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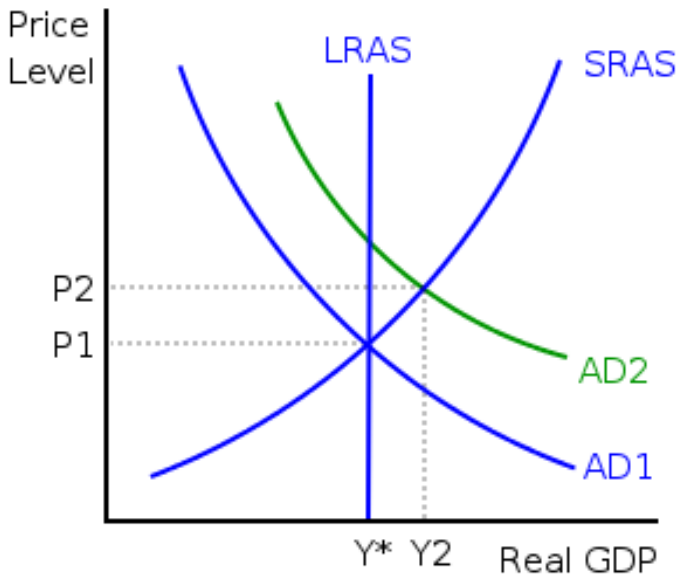

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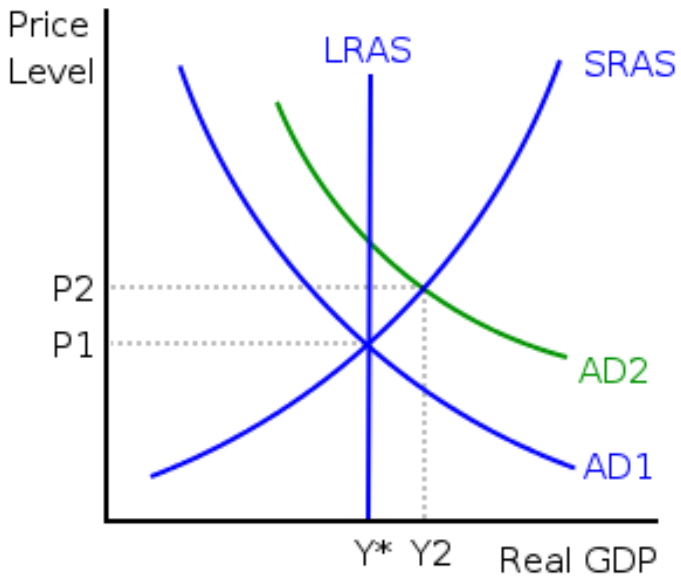
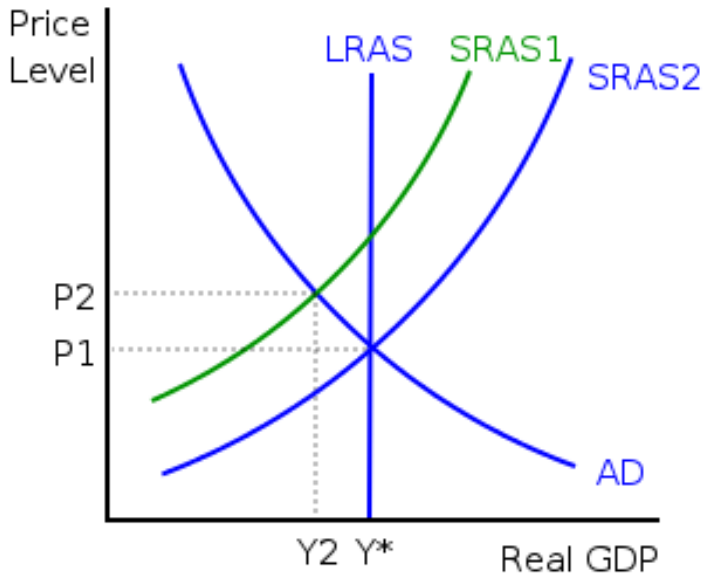


Cost push inflation

- Cost-push inflation begins when an increase in production cost shifts SRAS to the left.
- Causes real GDP to fall and price level to rise.
- **Stagflation**: when there is unemployment and high inflation at the same time.



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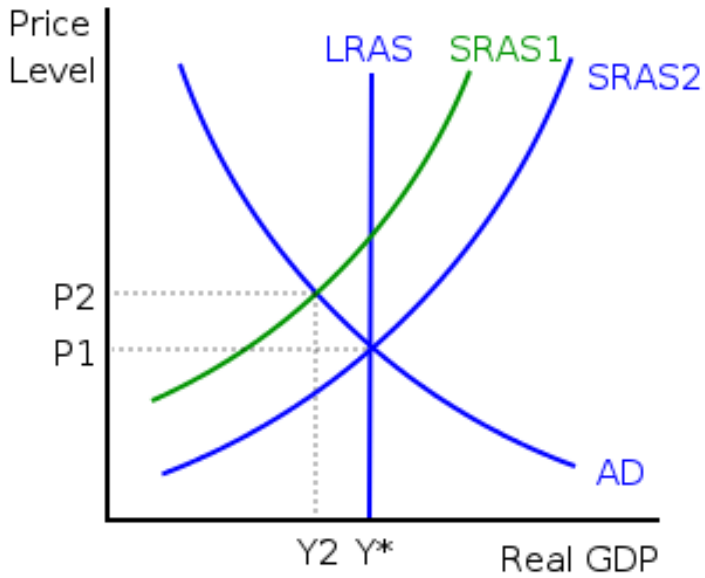

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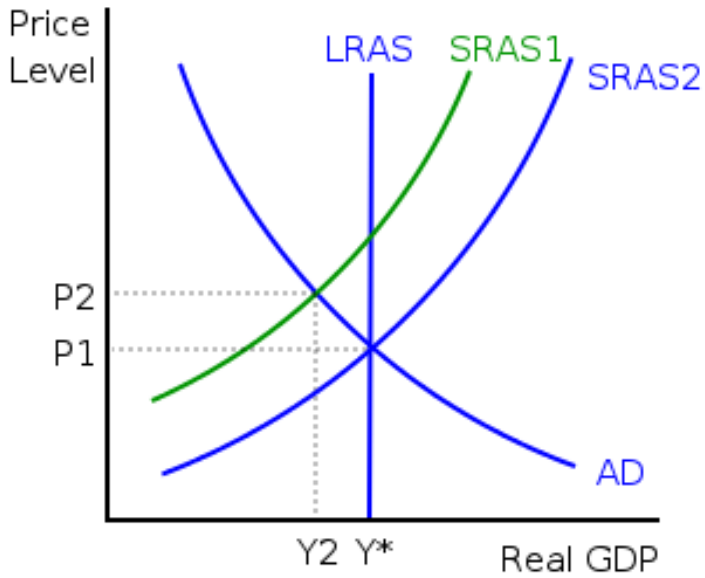

Long-run equilibrium

- Recall why the short run aggregate supply curve is upward sloping.
- Suppose AD shifts to the right.
- Firms will be able to sell more goods. Firms hire more labor and produce more goods.
- Firm's per-unit labor costs do not increase because wages are fixed in the short run.
- In the long run, there is an excess demand for labor, wages will increase.
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