Macroeconomic Dynamics and Monetary Economics

ECO 301: Money and Banking

Goals

- Specific Goals
  - Explain causes and consequences for changes in macroeconomic outcomes including real GDP, employment, and inflation.
  - Describe and illustrate how monetary policy affects interest rates, inflation, and real GDP in the short run and long run.
  - Evaluate an economy's performance and suggest appropriate monetary policy.
- Learning Objectives
  - LO7: Identify and analyze macroeconomic problems using graphical and computational models and prescribe appropriate monetary policy solutions.

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Reading and Exercises

- Aggregate demand Chapter 17, pp. 597-601
- Aggregate supply Chapter 17, pp. 601-609
- Equilibrium and market dynamics Chapter 17, pp. 609-616
- Monetary policy Chapter 17, pp. 616-625
- **Canvas Quiz due FRIDAY, APRIL 25, 11:59 PM**. Multiple-choice, 15 questions, unlimited attempts allowed, only best score counts
- **Homework/In-class Exercise due NEXT WEDNESDAY, APRIL 30 11:59 PM**. We will work together in class on TUESDAY.

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Aggregate Demand

- **Aggregate demand**: schedule or curve that shows the quantities of real GDP that buyers collectively desire to purchase at each price level.
- Aggregate demand is downward sloping in both short-run and long-run due to the *real balances effect* and the *foreign purchases effect*.
- **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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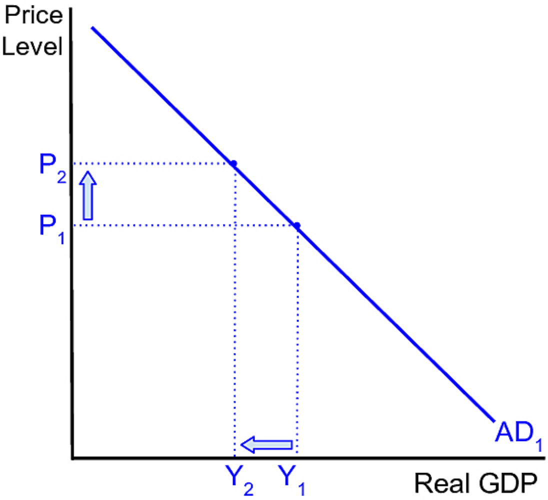

Determinants of Aggregate Demand

- 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.
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- Change in government purchases.
- Imports and Exports:
  - Foreign incomes: higher foreign incomes increase exports, shifts AD to the right.
  - Depreciation: Makes foreign currency more expensive for U.S. buyers, causes imports to decreases $\rightarrow$ AD shifts to the right
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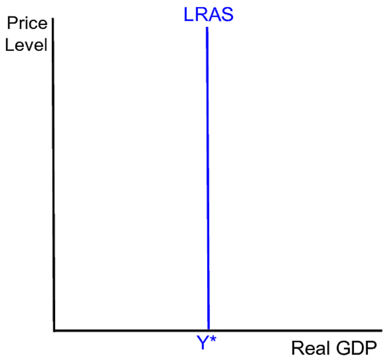
Long-Run Aggregate Supply

Long-run aggregate supply:
In the long run the economy uses all factors of production efficiently.

Vertical line at **potential GDP**.

Potential GDP: Maximum *sustainable* level of production *possible* when using all factors of production efficiently.

Price level does not affect production *possibilities*.



Short-Run Aggregate Supply

- In the short run, wages in labor markets are slow to adjust.
- Increases in price level lead to higher marginal revenues for firms
- Sticky wages: Biggest chunk of firms' marginal costs do not change
- Higher marginal revenue + sticky marginal costs $\rightarrow$ increase production
- Short-run aggregate supply curve is upward sloping.

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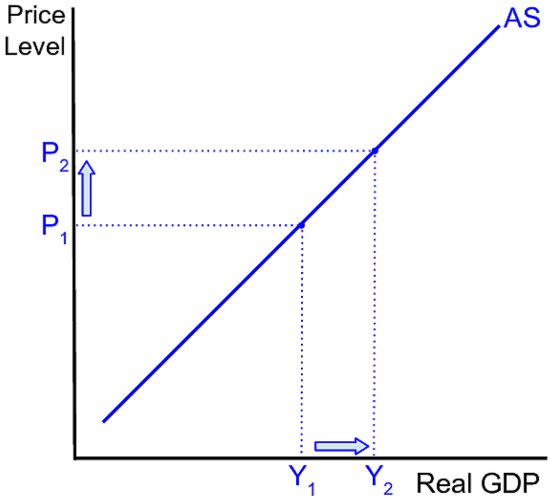

Determinants of Aggregate Supply

- 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.
- Business taxes can affect output decisions of firms and shift AS.
- Other government regulation on businesses:
  - Environmental regulations, occupational safety regulations, finance regulations, etc. can affect production costs.
  - Doesn't imply business regulations are bad (there are costs and benefits), but they usually do affect production costs.
- Improvements in technology: shift *both LRAS and SRAS* to the right.
  - This is not the most convenient model to use for increases in production possibilities

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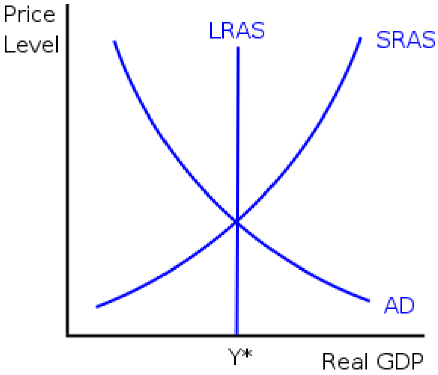
Equilibrium

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



Inflation

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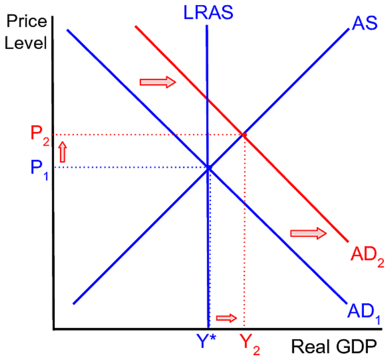
Demand-Pull Inflation

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



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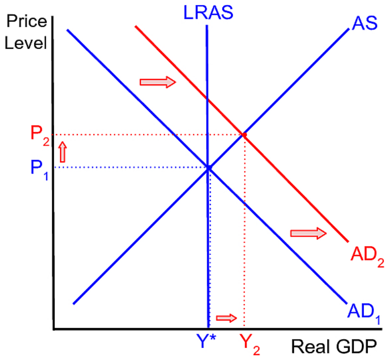

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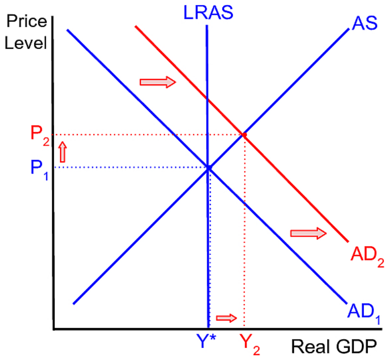

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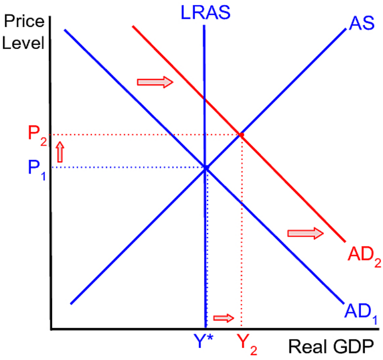
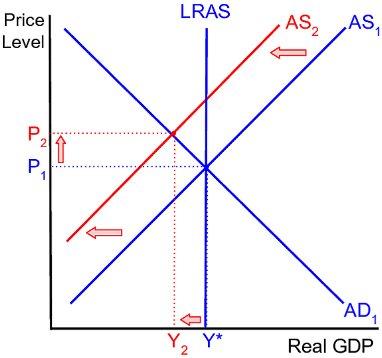


Cost-push Inflation

- 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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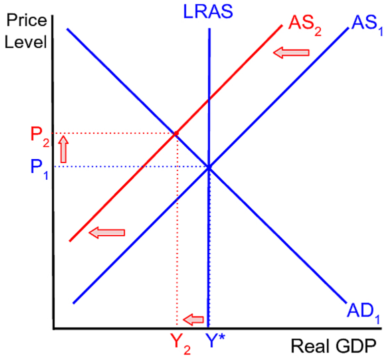

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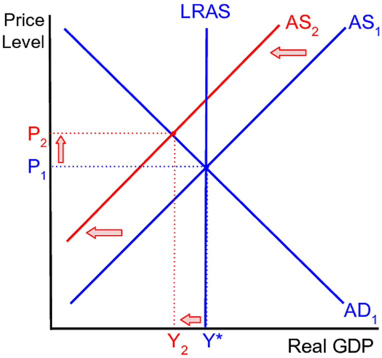

Durable Goods vs Services Explanation for Inflation

Monetary Policy in Times of Structural Reallocation

Prepared for the 2021 Jackson Hole Economic Policy Symposium

Stagflation in 2021

- During COVID, demand decreases for *services*, increased for *durable goods*
- *Downward sticky prices*: Unemployment increases in services sector
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- *Slow to increase production*: Shortages in durable goods
- Outcome: Unemployment & Inflation & Shortages

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Long-run equilibrium

- Aggregate supply curve is upward sloping because wages are sticky.
- 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.
- This shifts the SRAS curve to the left.

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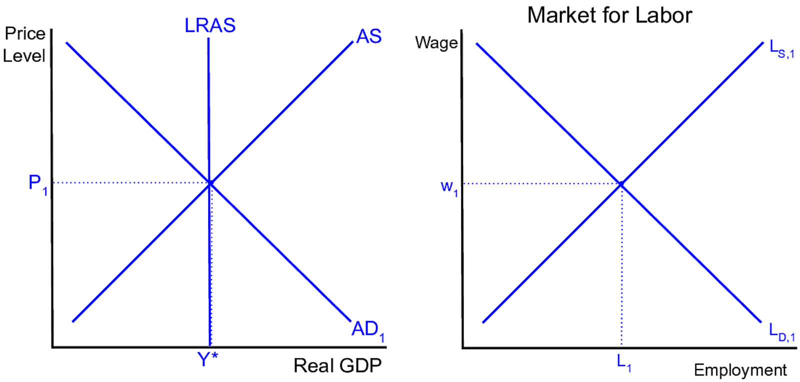
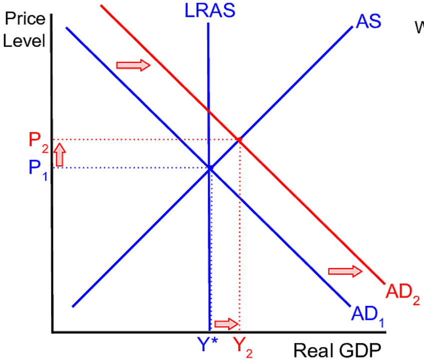
Example: Increase in Aggregate Demand

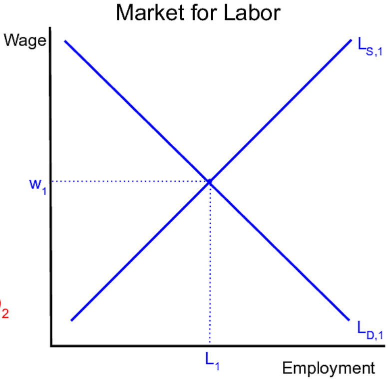


Suppose there is an improvement in consumer confidence

→ higher consumption demand

Example: Increase in Aggregate Demand





Aggregate demand shifts right

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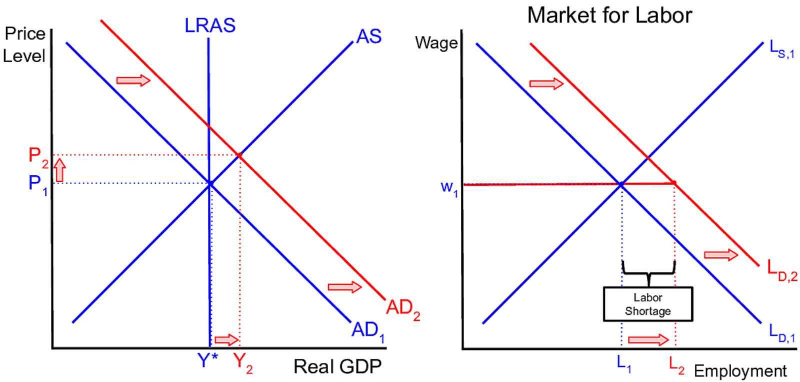

Businesses are producing more → labor demand shifts right
Sticky wages lead to labor market shortage

Short-run outcomes: ↑ real GDP, ↑ employment, ↑ price level

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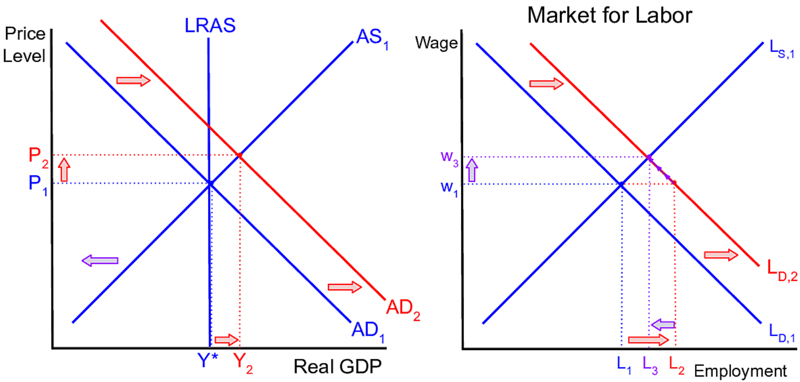

Wages increase over time, in transition from short-run to long-run

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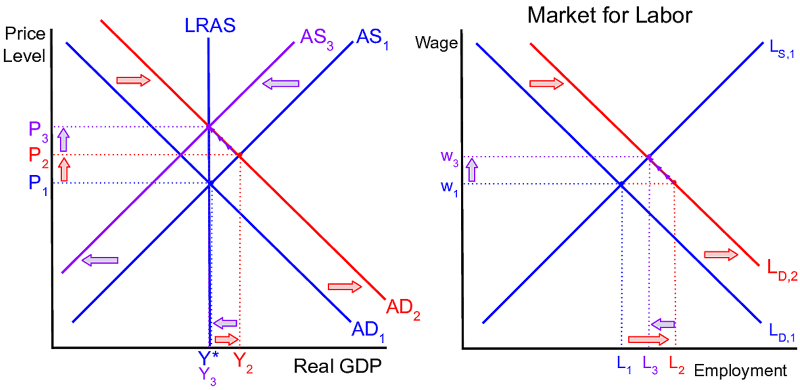

Increase in wages is an increase in production costs → Aggregate supply shifts left

Short-run outcomes: Real GDP at potential, ↑ wages, ↑ employment, ↑ price level

Market for Reserves and Aggregate Demand

Suppose the Fed decreases interest rates

1. Investment increases
2. Consumption increases
3. Net exports increase
   - Lower interest rates → lower return on financial investments in the U.S., decrease in demand for dollars.
   - Value of the dollar falls.
     - U.S. residents buy fewer foreign goods → decrease in imports.
     - U.S. goods become relatively less expensive → increase in exports.
4. All of these things cause AD to shift right

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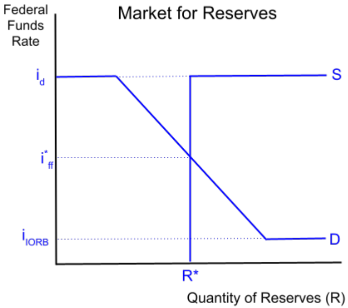
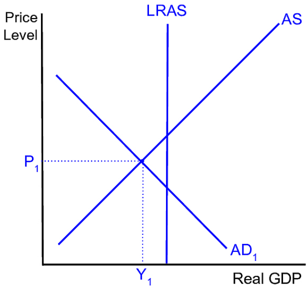
Monetary Policy to Counteract Recession

- Suppose the economy is in a recession with low inflation.





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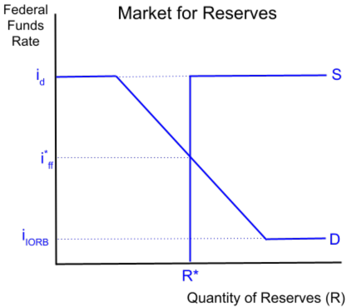

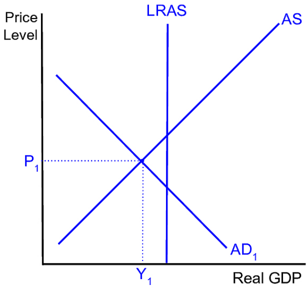

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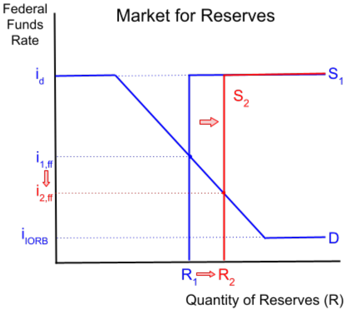
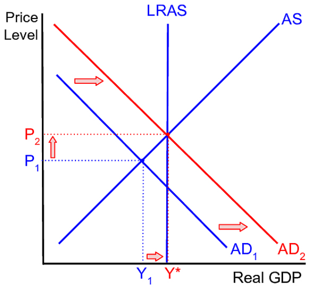
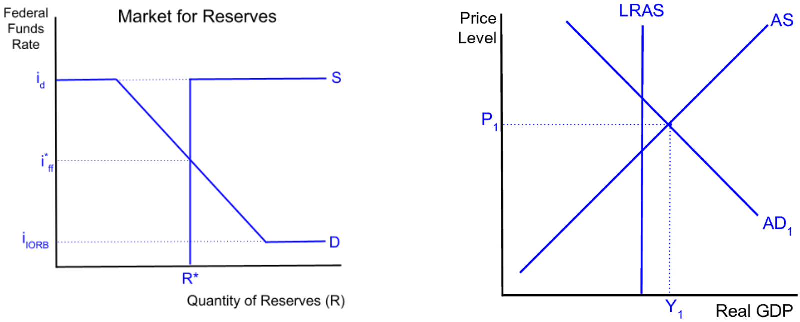




Controlling the Inflation Rate

- Suppose the economy is in an inflationary gap
- *Decrease* reserve supply by making an open market *sale* of bonds.



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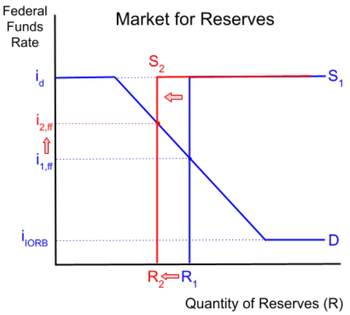

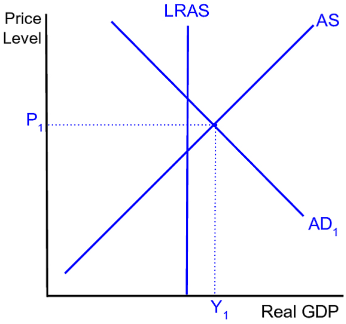

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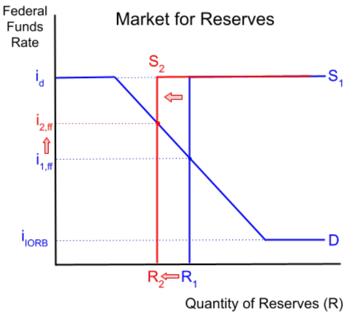
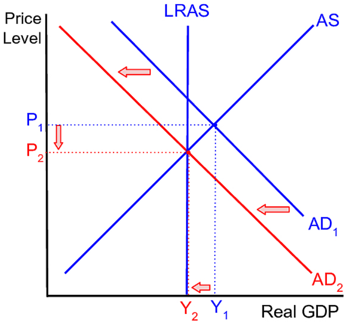
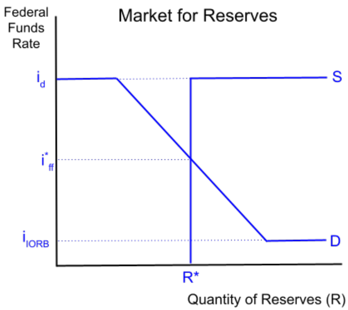
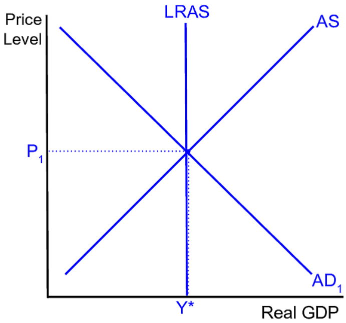




Long-Run Impact of Expanding Money Supply





Money Neutrality: In the long-run, an increase in the money supply leads to an only increase in the price level, no impact on real GDP.

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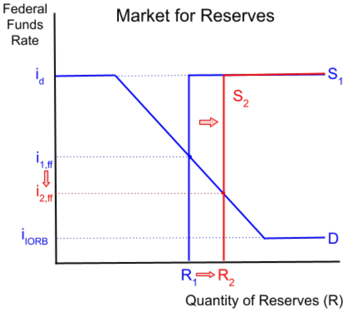

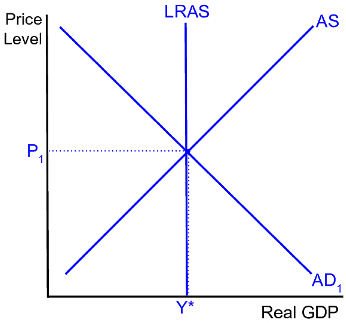

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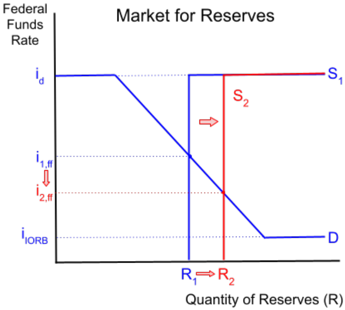

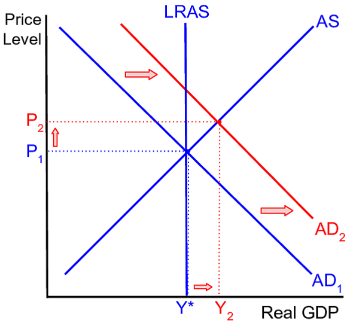

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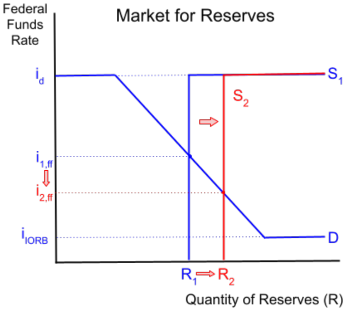

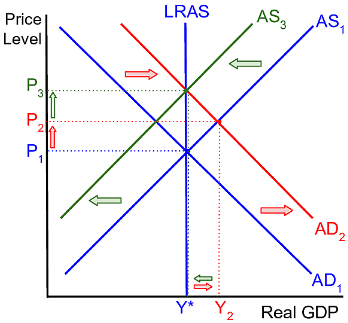

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Putting it all Together

- Suppose a liquidity crisis develops into a solvency crisis
- Describe and illustrate the impact on the market for corporate bonds
- What will be the impact on investment in capital?
- Describe and illustrate the impact on short-run outcomes for real GDP, price level, and employment
- Suggest a monetary policy response involving an open-market operation. Describe and illustrate the impact of the policy on the federal funds rate
- Describe and illustrate the impact of the change in interest rate on real GDP, price level, and employment