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Modern Macroeconomics and Monetary Policy

Full Length Text — Part: 3 Chapter: 13
Macro Only Text — Part: 3 Chapter: 13

To Accompany "Economics: Private and Public Choice 12th ed."
James Gwartney, Richard Stroup, Russell Sobel, & David Macpherson
Slides authored and animated by:
James Gwartney, David Macpherson, & Charles Skipton


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Impact of Monetary Policy

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Impact of Monetary Policy

- Evolution of the modern view:
 - The Keynesian view dominated during the 1950s and 1960s.
 - Keynesians argued that the money supply did not matter much.
 - Monetarists challenged the Keynesian view during the 1960s and 1970s.
 - Monetarists argued that changes in the money supply caused both inflation and economic instability.
 - While minor disagreements remain, the **modern view** emerged from this debate.
 - Modern Keynesians and monetarists agree that monetary policy exerts an important impact on the economy. The following slides present this modern view.

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The Demand for Money

- The quantity of money people want to hold (the *demand for money*) is inversely related to the money rate of interest, because higher interest rates make it more costly to hold money instead of interest-earning assets like bonds.

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The Supply of Money

- The *supply of money* is vertical because it is established by the Fed and, hence, determined independently of the interest rate.

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The Demand and Supply of Money

- Equilibrium:** The money interest rate gravitates toward the rate where the quantity of money people want to hold (*demand*) is just equal to the stock of money the Fed has *supplied*.

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Transmission of Monetary Policy

- When the Fed shifts to a more expansionary monetary policy, it usually buys additional bonds, expanding the money supply.
- This increase in the money supply (shift from S_1 to S_2 in the market for money) provides banks with additional reserves.
- The Fed's bond purchases and the bank's use of new reserves to extend new loans increases the supply of loanable funds (shifting S_1 to S_2 in the loanable funds market) ... and puts downward pressure on real interest rates (a reduction to r_2).

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Transmission of Monetary Policy

- As the real interest rate falls, AD increases (to AD_2).
- As the monetary expansion was unanticipated, the expansion in AD leads to a short-run increase in output (from Y_1 to Y_2) and an increase in the price level (from P_1 to P_2) – **inflation**.
- The impact of a shift in monetary policy is transmitted through interest rates, exchange rates, and asset prices.

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Transmission of Monetary Policy

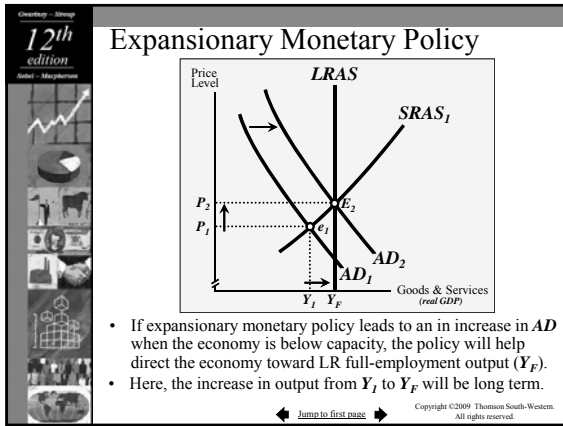
Unanticipated Expansionary Monetary Policy

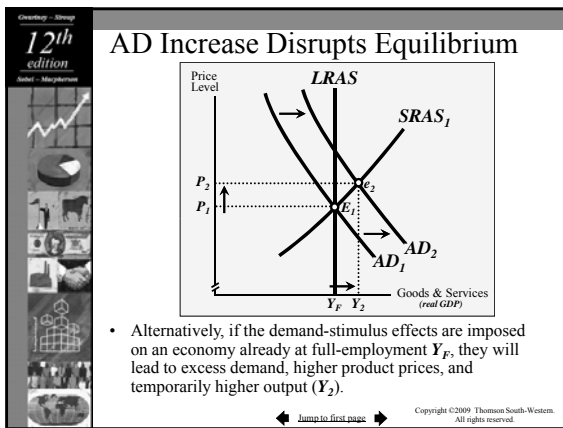
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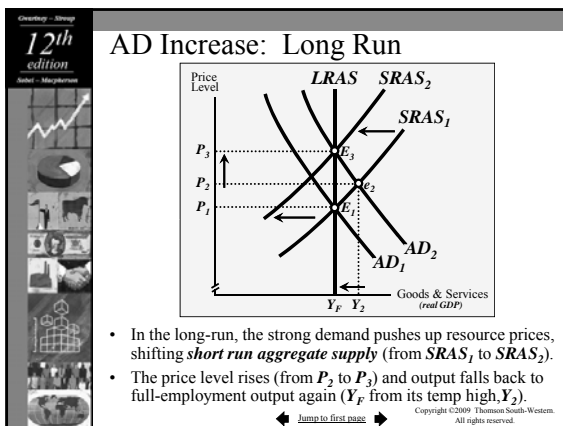
    graph LR
      A[Fed buys bonds] --> B[This increases money supply and bank reserves]
      B --> C[Real interest rates fall]
      C --> D[Increases in investment & consumption]
      C --> E[Depreciation of the dollar]
      C --> F[Increase in asset prices]
      E --> G[Net exports rise]
      F --> H[Increases in investment & consumption]
      D --> I[Increase in aggregate demand]
      G --> I
      H --> I
  
```

- Here, a shift to an **expansionary monetary policy** is shown.
- Of the Fed's three potential tools, let's assume the Fed buys bonds ... increasing the money supply and bank reserves ... pushing real interest rates down ... which leads to increased investment and consumption ... a depreciation of the dollar (leading to increased net exports) and ... an increase in the general level of asset prices (and with the increased personal wealth, increased investment and consumption).
- So, an **unanticipated** shift to a more expansionary monetary policy will stimulate **aggregate demand** and, thereby, increase both output and employment.

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A Shift to More Restrictive Monetary Policy

- The Fed institutes **restrictive monetary policy** by selling bonds, increasing the discount rate, or raising the reserve requirements.
- The Fed generally sells bonds, which:
 - depresses bond prices,
 - drains reserves from the banking system, which then,
 - places upward pressure on real interest rates.
- As a result, an unanticipated shift to a more restrictive monetary policy reduces **aggregate demand** and thereby decreases both output and employment.

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Short-run Effects of More Restrictive Monetary Policy

- A shift to a **more restrictive monetary policy**, will increase real interest rates.
- Higher interest rates decrease aggregate demand (to AD_2).
- When the reduction in AD is unanticipated, real output will decline (to Y_2) and downward pressure on prices will result.

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Restrictive Monetary Policy

- The stabilization effects of restrictive monetary policy depend on the state of the economy when the policy exerts its impact.
- Restrictive monetary policy will reduce **aggregate demand**. If the demand restraint occurs during a period of strong demand and an overheated economy, then it may limit or prevent an inflationary boom.

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AD Decrease Disrupts Equilibrium

- In contrast, if the reduction in *aggregate demand* takes place when the economy is at full-employment, then it will disrupt long-run equilibrium, and result in a *recession*.

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Proper Timing

- If a change in monetary policy is timed poorly, it can be a source of instability.
 - It can cause either recession or inflation.
- Proper timing of monetary policy is not easy:
 - While the Fed can institute policy changes rapidly, there will be a time lag before the change exerts much impact on output & prices.
 - This time lag is estimated to be 6 to 18 months in the case of output and perhaps as much as 36 months before there is a significant impact on the price level.
 - Given our limited ability to forecast the future, these lengthy time lags clearly reduce the effectiveness of discretionary monetary policy as a stabilization tool.

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Questions for Thought:

1. What are the determinants of the demand for money? The supply of money?
2. If the Fed shifts to more restrictive monetary policy, it typically sells bonds. How will this action influence the following?
 - a. the reserves available to banks
 - b. real interest rates
 - c. household spending on consumer durables
 - d. the exchange rate value of the dollar
 - e. net exports
 - f. the price of stocks and real assets like apartment or office buildings
 - g. real GDP

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Questions for Thought:

3. Timing a change in monetary policy correctly is difficult because
 - a. monetary policy makers cannot act without congressional approval.
 - b. it is often 6 to 18 months in the future before the primary effects of the policy change will be felt.
4. When the Fed shifts to a more expansionary monetary policy, it often announces that it is reducing its target federal funds rate. What does the Fed generally do to reduce the federal funds rate?

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Questions for Thought:

5. The demand curve for money:
 - a. shows the amount of money balances that individuals and business wish to hold at various interest rates.
 - b. reflects the open market operations policy of the Federal Reserve.

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**Monetary Policy
in the Long Run**

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The Quantity Theory of Money

- The *quantity theory of money*:

$$M \times V = P \times Y$$

M Money V Velocity P Price Y = Income

- If V and Y are constant, then an increase in M will lead to a proportional increase in P .

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Long-run Impact of Monetary Policy

-- *The modern View*

- Long-run implications of expansionary policy:
 - When expansionary monetary policy leads to rising prices, decision makers eventually anticipate the higher inflation rate and build it into their choices.
 - As this happens, money interest rates, wages, and incomes will reflect the expectation of inflation, and so real interest rates, wages, and real output will return to their long-run normal levels.
 - Thus, in the long run, money supply growth will lead primarily to higher prices (inflation) just as the quantity theory of money implies.

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Long-run Effects of a Rapid Expansion in the Money Supply

- Here we illustrate the long-term impact of an increase in the annual growth rate of the money supply from 3 to 8 percent.
- Initially, prices are stable (P_{100}) when the money supply is expanding by 3% annually.
- The acceleration in the growth rate of the money supply increases *aggregate demand* (shift to AD_2).

(a) Growth rate of the money supply.

(b) Impact in the goods & services market.

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Long-run Effects of a Rapid Expansion in the Money Supply

- At first, real output may expand beyond the economy's potential Y_F ... however low unemployment and strong demand create upward pressure on wages and other resource prices, shifting $SRAS_1$ to $SRAS_2$.
- Output returns to its long-run potential Y_F , and the price level increases to P_{105} (E_2).

(a) Growth rate of the money supply. (b) Impact in the goods & services market.

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Long-run Effects of a Rapid Expansion in the Money Supply

- If the more rapid monetary growth continues, then AD and $SRAS$ will continue to shift upward, leading to still higher prices (E_3 and points beyond).
- The net result of this process is sustained *inflation*.

(a) Growth rate of the money supply. (b) Impact in the goods & services market.

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Expansionary Monetary Policy

Recall: the nominal interest rate is the real rate plus the inflationary premium.

- With stable prices, supply and demand in the loanable funds market are in balance at a real & nominal interest rate of 4%.
- If rapid monetary expansion leads to a long-term 5% inflation rate, borrowers and lenders will build the higher inflation rate into their decision making.
- As a result, the nominal interest rate i will rise to 9%.

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Monetary Policy When Effects Are Anticipated

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Monetary Policy When Effects Are Anticipated

- When the effects of policy are anticipated prior to their occurrence, the short-run impact of an increase in the money supply is similar to its impact in the long run.
- Nominal prices and interest rates rise, but real output remains unchanged.

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Impact of Anticipated Money Growth

Price Level

P_3

P_1

E_2

E_1

$LRAS$

$SRAS_2$

$SRAS_1$

AD_2

AD_1

Goods & Services (real GDP)

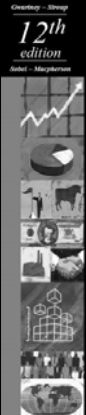
Y_F

Anticipated inflation leads to a rise in nominal costs, causing *SRAS* to shift left.

- When decision makers fully anticipate a monetary expansion, the expansion does not alter real output, even in the short-run.
- Suppliers build the expected price rise into their decisions, causing **aggregate supply** to decline (shift to *SRAS*₂).
- Nominal wages, prices, & interest rates rise, but their real values remain constant. Inflation results.

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Interest Rates and Monetary Policy

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Interest Rates and Monetary Policy

- While the Fed can strongly influence short-term interest rates, its impact on long-term rates is much more limited.
- Interest rates can be a misleading indicator of monetary policy:
 - In the long run, expansionary monetary policy leads to inflation and high interest rates, rather than low interest rates.
 - Similarly, restrictive monetary policy, when pursued over a lengthy time period, leads to low inflation and low nominal interest rates.

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The Effects of Monetary Policy: *A Summary*

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The Effects of Monetary Policy: A Summary

- An unanticipated shift to a more expansionary (*restrictive*) monetary policy will temporarily stimulate (*retard*) output and employment.
- The stabilizing effects of a change in monetary policy are dependent upon the state of the economy when the effects of the policy change are observed.
- Persistent growth of the money supply at a rapid rate will cause inflation.
- Money interest rates and the inflation rate will be directly related.
- There will be only a loose year-to-year relationship between shifts in monetary policy and changes in output and prices.

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Testing the Major Implications of Monetary Theory

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Monetary Policy and Real GDP

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Questions for Thought:

1. What impact will an unanticipated increase in the money supply have on the real interest rate, real output, and employment in the short run? What will be the impact in the long run?
2. The primary cause of inflation is
 - a. large budget deficits
 - b. rising oil prices
 - c. rapid expansion in the supply of money
3. "If a country wants to have low interest rates it should persistently follow a highly expansionary monetary policy."
-- Is this statement *true*?

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Questions for Thought:

4. As signs of economic weakness appeared during the first half of 2001, the Fed reduced its target federal funds rate several times. What was the Fed trying to do? What was the expected impact on output, employment, and the general level of prices? Did this policy contribute to the bubble in housing market prices during 2003-2006?
5. "An unanticipated shift to more expansionary monetary policy may temporarily stimulate output and employment, but if the policy persists it will merely lead to inflation."
-- Is this statement *true*?

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Questions for Thought:

6. "The more money there is in the economy, the more people spend. The more people spend, the higher the national income. Therefore, the larger the money supply, the better off people are."
Is this statement correct? Why or why not?

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