

Intermediate Macroeconomics

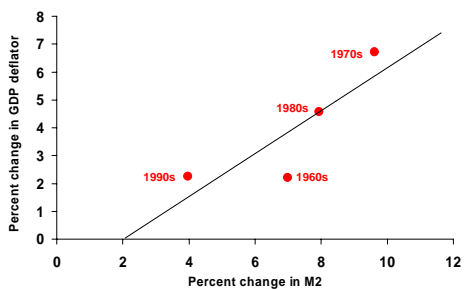
Chapter 8  
Money Supply

Money Supply

1. Classical Theory of Money
2. Short-run Keynesian View
3. Friedman and the Monetarists
4. Fiscal and Monetary Policy and the Great Depression

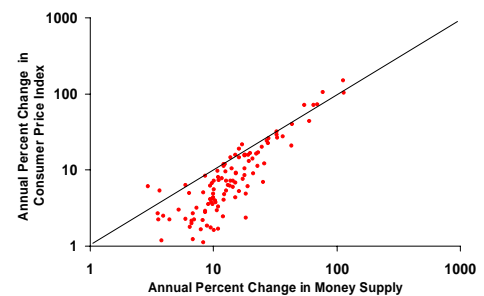
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1. Classical Theory of Money  
U.S. long-run relationship



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1. Classical Theory of Money  
International, 1993 - 2002



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1. Classical Theory of Money  
Quantity theory of money

$$M \cdot V = P \cdot Q$$

M = money supply (M2)

V = velocity of money

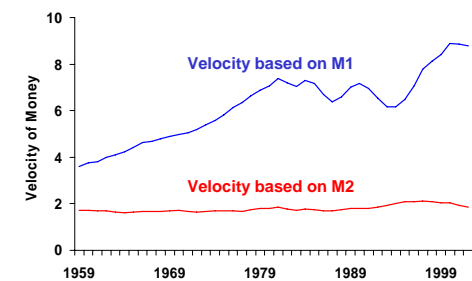
P = average price level

Q = real output

$P \cdot Q \equiv$  nominal GDP  $\equiv$  national income

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1. Classical Theory of Money  
Assumption 1: Velocity of money is constant



Source: Velocity of money = U.S. nominal GDP ([www.bea.gov](http://www.bea.gov)) divided by U.S. money supply ([www.federalreserve.org](http://www.federalreserve.org))

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1. Classical Theory of Money  
Assumption 2: Full-employment output

- Economy is always at full-employment output.
- $Q$  constant at full-employment output

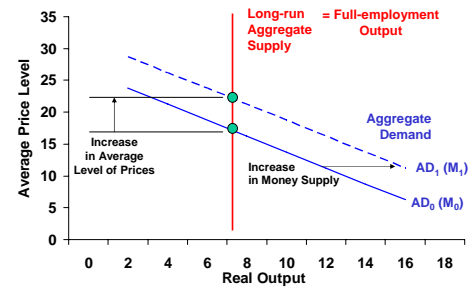
Since by assumption 1:  $V$  is constant:

$$M \cdot V = P \cdot Q$$

A 1% increase in money supply,  $M$ , leads to a 1% increase in the average level of prices,  $P$ .

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1. Classical Theory of Money  
Aggregate supply and aggregate demand



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2. Short-run Keynesian View  
Prices and Velocity

To escape the classical assumption that output was always at full-employment Keynes' assumed prices were "sticky".

But, the quantity theory of money then implies an increase in money supply with velocity constant would lead to an increase in output:

$$M \cdot V = P \cdot Q$$

Keynes also had to show that velocity was **not constant**.

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2. Short-run Keynesian View  
Real money demand

$\frac{M}{P}$  = Real money balances

= Purchasing Power

Quantity theory real money demand:

$$\frac{M}{P} = \frac{1}{V} Q$$

With velocity,  $V$ , constant, real money demand is a function output only – hence, classical quantity theory is also called **transactions demand for money**.

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2. Short-run Keynesian View  
Speculative demand for money

Keynes proposed real money demand is also a function of interest rates:

$$\frac{M}{P} = k \cdot Q - h \cdot i$$

Velocity of money no longer constant

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2. Short-run Keynesian View  
Liquidity trap

- When the interest rate is so low (and the price of bonds is high) people are willing to hold onto money expecting future interest rates to be higher (and bond prices lower).
- Changes in money supply have no effect on interest rates or the economy.

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### 3. Friedman and the Monetarists

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- Long and variable lags
- Policy rules versus discretion

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### 3. Friedman and the Monetarists Long and variable lags

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- Recognition lag
- Implementation lag
- Response lag

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### 3. Friedman and the Monetarists Long and variable lags

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Because of information problems and lags between the implementation of policies and their effects, the scope for monetary policy should be restricted.

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### 3. Friedman and the Monetarists Policy rules versus discretion

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- Monetarists - the Fed should be bound to fixed *rules*. In particular, a *money growth rule*: the growth rate of money supply should equal the long-run growth rate of real GDP, leaving the price level unchanged.
- Keynesians - the Fed should have *discretion* in conducting policy because of the instability of the velocity of money and the potential instability of markets.

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### 3. Friedman and the Monetarists Rules

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Under rules, the central bank is required to follow a simple predetermined rule for money supply

Benefits:

- Better household forecasting
- Increased monetary discipline

Costs:

- Monetary policy can not adjust to economic shocks

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### 3. Friedman and the Monetarists Discretion

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Under discretion, the central bank is expected to monitor the economy and use monetary policy to achieve macroeconomic goals

Benefits:

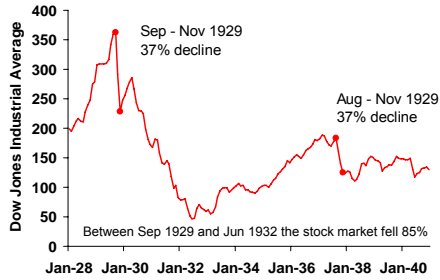
- Monetary policy can adjust be proactive, adjusting to economic shocks

Costs:

- Harder for households to make good forecasts
- Fed has incentives to deviate from announced policies

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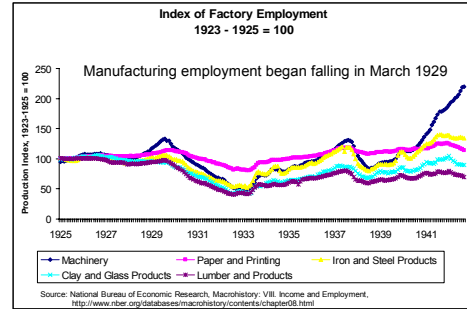
#### 4. Policy and the Great Depression Stock Market



Source: National Bureau of Economic Research, Macro History Database, <http://www.nber.org/databases/macroyhistory/contents/chapter11.html>

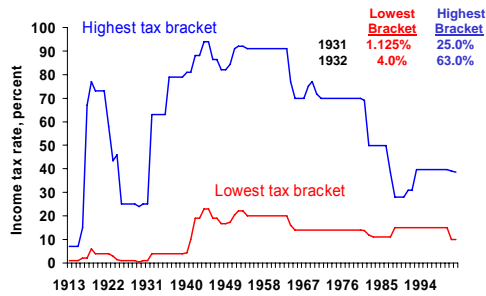
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#### 4. Policy and the Great Depression Factory Employment



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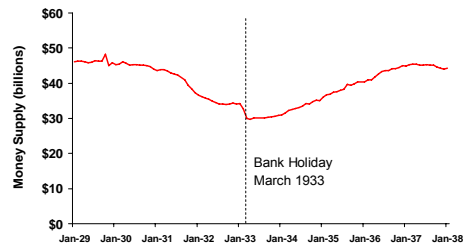
#### 4. Policy and the Great Depression Income tax rate on highest bracket



Source: Internal Revenue Service, Personal Exemptions and Individual Income Tax Rates, 1913-2002, <http://www.irs.gov/pub/irs-soi/02nptr.pdf>

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#### 4. Policy and the Great Depression Money Supply



Source: National Bureau of Economic Research, Macro History Database, series M1414a  
<http://www.nber.org/databases/macroyhistory/contents/chapter14.html>

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