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**ECON 312**  
**Intermediate Macroeconomics**

Chapter Outline for “Chapter 4—Money and Inflation,” N. Gregory Mankiw,  
*Macroeconomics*, Sixth edition (New York, N.Y.: Worth Publishers, 2007)

Inflation

Hyperinflation

#### **4-1 What is Money?**

##### **The Functions of Money**

Store of value

Unit of account

Medium of exchange

##### **The Types of Money**

Fiat money

Commodity money

Gold standard

CASE STUDY: Money in a POW Camp

##### **How Fiat Money Evolves**

CASE STUDY: Money and Social Conventions on the Island of Yap

##### **How the Quantity of Money is Controlled**

Money supply

Monetary policy

Central bank

Federal Reserve

Open-market operations

### How the Quantity of Money is Measured

Currency

Demand deposits

See [Table 4-1](#)

FYI: How do Credit Cards and Debit Cards Fit into the Monetary System?

## 4-2 The Quantity Theory of Money

### Transactions and the Quantity Equation

Quantity equation

Money  $\times$  Velocity = Price  $\times$  Transactions

$$M \times V = P \times T$$

Transactions velocity of money

$$V = PT / M$$

### From Transactions to Income

Money  $\times$  Velocity = Price  $\times$  Output

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

Income velocity of money

### The Money Demand Function and the Quantity Equation

Real money balances

Money demand function

$$(M / P)^d = kY$$

$$M / P = kY$$

$$M(1 / k) = PY$$

$$MV = PY, V = 1 / k$$

## The Assumption of Constant Velocity

Quantity theory of money

$$M\bar{V} = PY$$

## Money, Prices, and Inflation

% Change in  $M$  + % Change in  $V$  = % Change in  $P$  + % Change in  $Y$

*The quantity theory of money states that the central bank, which controls the money supply, has ultimate control over the rate of inflation. If the central bank keeps the money supply stable, the price level will be stable. If the central bank increases the money supply rapidly, the price level will rise rapidly.*

CASE STUDY: Inflation and Money Growth

See [Figure 4-1](#)

See [Figure 4-2](#)

## 4-3 Seigniorage: The Revenue From Printing Money

Seigniorage

CASE STUDY: Paying for the American Revolution

## 4-4 Inflation and Interest Rates

### Two Interest Rates: Nominal and Real

Nominal interest rate

Real interest rate

$$r = i - \pi$$

## The Fisher Effect

Fisher equation

$$i = r + \pi$$

Fisher effect

*According to the quantity theory, an increase in the rate of money growth of 1 percent causes a 1 percent increase in the rate of inflation. According to the Fisher equation, a 1 percent increase in the rate of inflation in turn causes a 1 percent increase in the nominal interest rate.*

CASE STUDY: Inflation and Nominal Interest Rates

See [Figure 4-3](#)

See [Figure 4-4](#)

### Two Real Interest Rates: *Ex Ante* and *Ex Post*

*Ex ante* real interest rate

*Ex post* real interest rate

$$i = r + \pi^e$$

CASE STUDY: Nominal Interest Rates in the Nineteenth Century

## 4-5 The Nominal Interest Rate and the Demand for Money

### The Cost of Holding Money

$$(M / P)^d = L(i, Y)$$

### Future Money and Current Prices

$$M / P = L(i, Y)$$

$$M / P = L(r + \pi^e, Y)$$

See Figure 4-5

## 4-6 The Social Cost of Inflation

### The Layman's View and the Classical Response

CASE STUDY: What Economists and the Public Say About Inflation

## The Costs of Expected Inflation

Shoeleather cost

Menu costs

## The Costs of Unexpected Inflation

CASE STUDY: The Free Silver Movement, the Election of 1896, and the Wizard of Oz

## One Benefit of Inflation

## 4-7 Hyperinflation

### The Costs of Hyperinflation

CASE STUDY: Life During the Bolivian Hyperinflation

### The Causes of Hyperinflation

CASE STUDY: Hyperinflation in Interwar Germany

See [Figure 4-6](#)

## 4-8 Conclusion: The Classical Dichotomy

Real variables

Nominal variables

Classical dichotomy

Monetary neutrality

Questions for Review: 1, 2, 3, 7, 9

Problems and Applications: 1, 3, 5, 7