

# Chapter 20

## Money Growth, Money Demand, and Monetary Policy

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### Plan of the Chapter

1. Link between Monetary growth and Inflation (role of money in monetary policy)
2. Why focus on interest rates?

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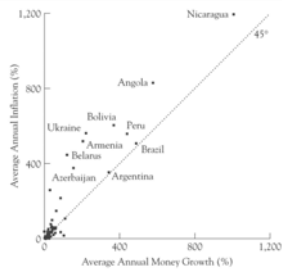
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### Monetary Aggregates

Figure 20.3 Inflation and Money Growth, All Countries, 1981-2003



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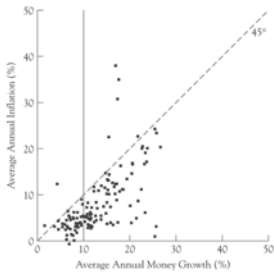
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## Monetary Aggregates

Figure 20.2 Inflation and Money Growth:  
Moderate-Inflation Countries, 1961-2003



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## Monetary Aggregates

Figure 20.3 Money Growth and Inflation



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## Monetary Aggregates

- To avoid sustained episodes of high inflation, a central bank must be concerned with money growth.

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## Monetary Aggregates

- It is impossible to have high, sustained inflation without monetary accommodation.
- Something beyond just differences in money growth accounts for the differences in inflation across countries.

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- Price of money is determined by its supply and demand
- A decrease in the price of money = inflation

Let's study the Quantity Theory of Money and the Velocity of Money

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## The Quantity Theory and the Velocity of Money

Velocity of money (V)

- The number of times each dollar is used (per unit of time).

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## The Quantity Theory and the Velocity of Money

$$\text{Quantity of Money}(M) \times \text{Velocity} = \text{Nominal GDP}$$

$$\text{Nominal GDP} = \text{Price Level}(P) \times \text{Output}(Y)$$

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## Equation of Exchange

$$MV = PY$$

or

$$\% \Delta M + \% \Delta V = \% \Delta P + \% \Delta Y$$

$$\text{Money Growth} + \text{Velocity Growth} = \text{Inflation} + \text{Real Output Growth}$$

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## The Quantity Theory and the Velocity of Money

The Quantity Theory of Money – Irving Fisher

- assume that  $\% \Delta V = 0$  and  $\% \Delta Y = 0$ .
- assume that the interest rate is constant, no financial innovation  $\% \Delta V = 0$  and in short-run  $\% \Delta Y = 0$
- doubling the quantity of money doubles the price level.
- Inflation is a monetary phenomenon (Milton Friedman).

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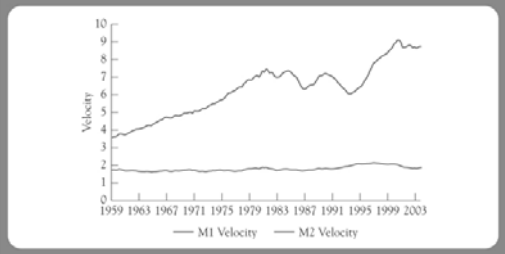
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## Facts about Velocity of Money

A. Velocity of M1 and M2 (on the same vertical scale)



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## Facts about Velocity of Money

B. Velocity of M2 (on its own vertical scale)



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## Velocity of Money

- These historical data confirm Fisher's conclusion that in the long run (half a century), the velocity of money is stable.
- Controlling inflation means controlling the growth of the monetary aggregates.

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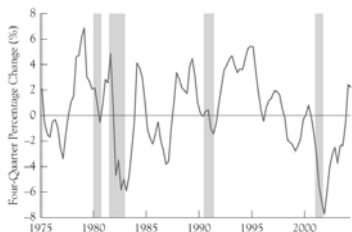
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## Velocity of Money (Short-Run)

Figure 20.6 Percentage Change in the Short-Run Velocity of M2, 1960-2004



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To understand the velocity need to understand the

1. Transaction Demand for Money
2. Portfolio Demand for Money

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## The Demand for Money

Transactions demand for money

- The quantity of money people hold for transactions purposes depends on their nominal income, the cost of holding money, and the availability of substitutes

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## The Demand for Money

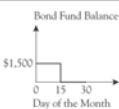
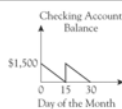
Figure 20.7 Two Alternatives for Managing Your Cash Balance

Strategy 1: Leave entire balance in checking account



Bond fund balance is zero throughout the month.

Strategy 2: Transfer half to bond fund, then transfer back at mid-month



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## The Demand for Money

### Transactions demand for money

- As the nominal interest rate rises, then, people reduce their checking account balances, shifting funds into and out of higher-yield investments more frequently

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## The Demand for Money

### Transactions demand for money

- The higher the nominal interest rate—that is, the higher the opportunity cost of holding money—the less money individuals will hold for a given level of transactions.
- High  $R \rightarrow$  Less  $M^d \rightarrow$  High  $V$

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# The Demand for Money

Table 20.1 Determinants of Money Demand: Factors That Cause Individuals to Hold More Money

## Transactions Demand for Money

Nominal income	The higher nominal income, the higher the demand for money.
Interest rates	The lower interest rates, the higher the demand for money.
Availability of alternative means of payment	The less available alternatives means of payment, the higher the demand for money.

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# The Demand for Money

## The portfolio demand for money

- As a store of value, money provides diversification when held with a wide variety of other assets, including stocks and bonds

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# The Demand for Money

Table 20.1 Determinants of Money Demand: Factors That Cause Individuals to Hold More Money

## Portfolio Demand for Money

Wealth	As wealth rises, the demand for money goes up.
Return relative to alternatives	As the return on alternatives falls, the demand for money goes up.
Expected future interest rates	As expected future interest rates rise, the demand for money goes up.
Risk relative to alternatives	As the riskiness of alternatives rises, the demand for money goes up.
Liquidity relative to alternatives	As the liquidity of alternatives falls, the demand for money goes up.

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## Targeting Money Growth in a Low-Inflation Environment

- In the long run, inflation is tied to money growth.
- In a high-inflation environment moderate variations in the growth of velocity are a mere annoyance.
- the only solution to inflation in a high inflation environment is to reduce money growth.

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## Targeting Money Growth in a Low-Inflation Environment

In a low-inflation environment, the ability to use money growth as a policy guide depends on the stability of the velocity of money (stable in long run, fluctuations in short run).

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## Targeting Money Growth in a Low-Inflation Environment

Two criteria for the use of money growth as a direct monetary policy target:

1. A stable link between the monetary base and the quantity of money (money multiplier)
2. A predictable relationship between the quantity of money and inflation (velocity)

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## Targeting Money Growth in a Low-Inflation Environment

These allows policymakers to

- (1.) predict the impact of changes in the central bank's balance sheet on the quantity of money
- (2.) translate changes in money growth into changes in inflation.

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- So using the Money Growth rate as an intermediate target boils down to one issue: Is money demand stable?
- If Money demand is stable, then changes in Velocity are predictable and money growth rates are to be used as targets.
- Money demand is function of nominal income PY and nominal interest rate R.
- $V = M^d / PY$  (PY is stable)
- Look at the relationship between V and R

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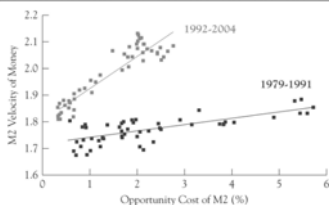
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## Targeting Money Growth in a Low-Inflation Environment

Figure 20.8 M2 Velocity and Opportunity Cost, Quarterly, 1979-2004

Data are quarterly. Velocity was computed as the ratio of Nominal GDP to M2. The opportunity cost of M2 was computed as the 3-month Treasury bill rate less the rate of return on M2, both from the Board of Governors of the Federal Reserve. The two solid lines are regression lines fitted to the separate samples. For 1979 to 1991, the regression constant is 1.71 and the slope is 0.024; for 1992 to 2004, the constant is 1.81 and the slope is 0.32.



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## Targeting Money Growth in a Low-Inflation Environment

- the relationship between money demand and interest rates that held in the 1980s broke down in the 1990s

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## Targeting Money Growth in a Low-Inflation Environment

- Possible explanations for the instability of U.S. money demand over the last quarter of the 20th century.
  - the introduction of financial instruments that paid higher returns than money.
  - changes in mortgage refinancing rates (equity cash out).

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## Targeting Money Growth in a Low-Inflation Environment

- The ECB and the Fed have both chosen interest rates as their operating target since interest rates are the link between the financial system and the real economy.

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## Targeting Money Growth in a Low-Inflation Environment

- By keeping interest rates stable, policymakers can insulate the real economy from disturbances that arise in the financial system.

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## Targeting Money Growth in a Low-Inflation Environment

- While inflation is tied to money growth in the long run, interest rates are the tool policymakers use to stabilize inflation in the short run.

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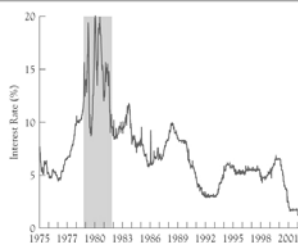
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## Targeting Money Growth in a Low-Inflation Environment

Figure 20.11 The Federal Funds Rate, 1975-2004

The shaded bar represents the period from October 1979 to October 1982, when the Federal Reserve targeted the quantity of money.



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# Chapter 20

**End of Chapter**

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