

Chapter 7

The Asset Market, Money, and Prices



Chapter Outline



- Money and Macroeconomics
 - What Is Money?
 - The Supply of Money
 - Portfolio Allocation and the Demand for Money
 - Asset Market Equilibrium
 - Money Growth and Inflation

Asset Market Equilibrium



- Our model requires equilibrium in labor, goods, and asset markets
- This chapter concerns asset markets, especially the money market

Money and Other Assets



- By asset market, we mean all of the markets in which people buy and sell real and financial assets (gold, real estate, stocks, bonds)
- Our focus is on money, because money growth seems to affect both business cycle fluctuations and inflation rates
- In focusing on money, we will simplify our theory by lumping other assets together
 - I often refer to all non-money assets "bonds"

What is Money?



- In economics, money has a somewhat different meaning than in everyday usage
- Money has multiple functions, but the defining characteristic is that it is widely used and accepted as a means of payment in settling transactions
- Money is NOT the same thing as income or wealth
 - A person who earns a lot (of income), or a person who owns a lot (has much wealth), doesn't necessarily have lots of money

The Functions of Money



- Medium of Exchange
 - Money facilitates exchange when bilateral barter would be difficult.
- Unit of Account
 - We measure values in dollars-worth
- Store of Value
 - I can carry spending power from one time period to the next if I hold money

The Form of Money

- The form money takes can vary—it can be paper, gold, or rocks.
- While the conceptual definition is rather simple, in practice defining money may be difficult (next slide).

The Monetary Aggregates

- **M1**: Coin and currency (held by the non-bank public) and checking account balances, also travelers checks outstanding, and (some) other checkable deposits.
- **M2**: Consists of M1 plus savings deposits (paying interest, not directly checkable), individual-held money market mutual funds and money market deposit accounts (paying interest, limited checkability), small denomination time deposits (certificates of deposit).
- **M3**: No longer reported

Table 7.1 U.S. Monetary Aggregates (May 2006)

M1	1392.3
Currency	741.8
Travelers' checks	6.9
Demand deposits	327.0
Other checkable deposits	316.6
M2	6775.2
Components of M1	1392.3
Savings deposits, including MMDAs	3602.7
Small-denomination time deposits	1050.2
MMMFs (noninstitutional)	730.1

Note: Numbers may not add to totals shown owing to rounding.
Source: Federal Reserve Statistical Release H.6, June 22, 2006.
Data are not seasonally adjusted.

Is a Credit Card Money?

- No, a credit card is not, in and of itself, money.
- Technically, when you use a credit card to buy a good, the immediate consequence is that two loans are created:
 - You owe money to the bank who issued your credit card
 - The bank owes a payment to the merchant who sold you the good
- When, these loans are paid, they are ultimately paid via demand deposit transfers, i.e., with money.

The Money Supply

- The money supply refers to the amount of money available in an economy (for example, M1)
 - The money supply is a stock variable

Open Market Operations

- If the central bank prints currency and uses it to purchase a government bond held by a member of the public, the money supply increases (because a member of the public has exchanged a non-money asset for money).
- Conversely, central bank sales of bonds (open-market sales) reduce the supply of money.
 - Central bank purchases and sales of bonds are termed open market operations.

Controlling the Money Supply

- Because a central bank can make open market purchases and sales of government securities, it has control over the money supply
 - This control is imperfect, because some decisions made by banks and households affect exactly how open market operations ultimately affect the money supply
 - In theory, we regard the money supply as a variable that can be set by the central bank as it wishes

Money Demand

- The money supply is set by the central bank in our theory
- We must also consider money demand, which has to do with the willingness of the public to hold money
- The decision about how much money to hold is a part of a larger problem of portfolio allocation; the problem of deciding how one's wealth is to be apportioned across all many different types of assets

Portfolio Allocation

- Individuals have wealth, and wealth can be held in different forms
- Assets differ according to:
 - Expected Return
 - Risk
 - Liquidity
- In choosing how to allocate wealth to different assets, individuals must make trade-offs to obtain a desired portfolio in terms of return, liquidity, and risk

Asset Demand and Money Demand

- The term "asset demand" refers to the amount of an asset that an individual wishes to hold in her portfolio (given total wealth).
 - We are particularly interested in the demand for money (cash and demand deposits)
- For our macro model, we consider money demand to be desired holdings of money, adding up over all individuals and private firms (excluding banks).
 - So we now have defined both money demand and money supply—perhaps there is an equilibrium condition coming (eventually)?

What Determines Demand for Money?

- Since money is that asset that is used for making transactions, the amount that one holds depends on the need to make transactions, as well as the costs of holding money.
- Determinants of money demand include:
 - Price level: When prices are higher, one needs higher nominal money balances to support a given level of real transactions.
 - Real income: More income generally results in a need for more transactions.
 - Interest rates: The difference in the interest rates on non-money assets (i) and money (i^m).
 - Model ignores real-world multiplicity of interest rates

The Money Demand Function

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

M^d is the economy-wide demand for money (in nominal terms).

P is the average price level.

Y is real income (output)

i is the nominal rate of interest on non-money assets (the rate of interest on money does not vary much and is not explicitly included).

L is a function (the letter "L" is used to refer to "liquidity" preference).

Money Demand Function: Alternative Forms

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

as

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

We can also write the demand in "real" terms:

$$\frac{M^d}{P} = L(Y, r + \pi^e)$$

Other Factors Affecting Money Demand

- Some things not included in the L function explicitly:
 - Wealth
 - Risk of alternative assets
 - Liquidity of alternative assets
 - Payment technologies

Summary Table 9

Macroeconomic Determinants of the Demand for Money

An increase in	Causes money demand to	Reason
Price level, P	Rise proportionally	A doubling of the price level doubles the number of dollars needed for transactions.
Real income, Y	Rise less than proportionally	Higher real income implies more transactions and thus a greater demand for liquidity.
Real interest rate, r	Fall	Higher real interest rate means a higher return on alternative assets and thus a switch away from money.
Expected inflation, π^e	Fall	Higher expected inflation means a higher return on alternative assets and thus a switch away from money.
Nominal interest rate on money, i	Rise	Higher return on money makes people more willing to hold money.
Wealth	Rise	Part of an increase in wealth may be held in the form of money.
Risk	Rise, if risk of alternative asset increases	Higher risk of alternative asset makes money more attractive.
	Fall, if risk of money increases	Higher risk of money makes it less attractive.
Liquidity of alternative assets	Fall	Higher liquidity of alternative assets makes these assets more attractive.
Efficiency of payments technologies	Fall	People can operate with less money.

Asset Market Equilibrium

- At a moment of time, assume that quantities (the "supplies" of various assets) are fixed.
- The asset market is in equilibrium when the quantity of each asset demanded equals the fixed quantity available.
 - Here, we will assume that there are just two kinds of assets, money and non-money (or "bonds"). The non-money asset pays a nominal interest rate i .
- So asset market equilibrium occurs when:

$$M^d = M \quad \text{and} \quad NM^d = NM$$

Money Market Equilibrium

- Most importantly for us is the requirement that the money market be in equilibrium

$$M^d = M$$

Money, the Price Level, and Inflation

- Changes in the stock of money are closely related to changes in the average price level and the rate of inflation
- In the next few slides, we briefly consider why this is so

The Velocity of Money

- On average, how often does a dollar (in the money supply) turn over in final goods transactions in a year?
- The answer is given by the velocity of money, the ratio of nominal GDP to the money supply:

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

The Quantity Theory of Money

- The “Quantity Theory of Money” assumes that the money demand function takes this special form:

$$\frac{M^d}{P} = kY$$

- Further, assuming that the quantity of money demanded is equal to the quantity of money supplied, this equation becomes:

$$\frac{M}{P} = kY \quad \text{or} \quad \frac{1}{k} = \frac{PY}{M}$$

The Quantity Theory and the Price Level

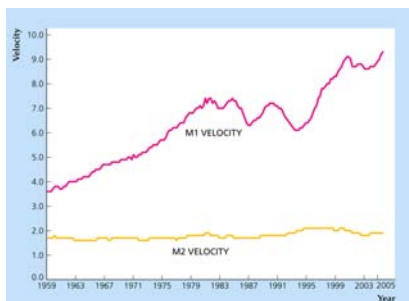
- But this equation (again shown below), implies that for a given value of Y , that P is simply proportional to M

$$\frac{M}{P} = kY$$

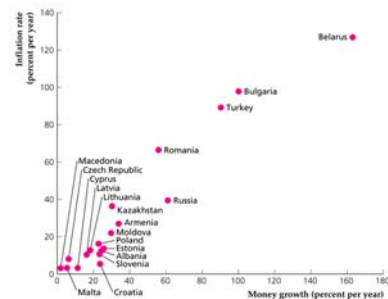
The Quantity Theory and Inflation

- The equation also implies that, for a given Y , the growth rate of the price level will equal the growth rate of the money supply
 - This provides us with a simple theory of inflation
- The exact equality of the money growth rate and the inflation rate depends on the special form of the money demand function and the assumption that output was fixed, but in the more general case, our model will always imply that money growth and inflation are closely related
 - The more general case is covered in section 7.5, but I will skip that section.

Figure 7.1 Velocity of M1 and M2, 1959-2005



The Relationship between Money Growth and Inflation



Equilibrium in all Sectors



- We have now described equilibrium conditions for three markets:
 - Labor
 - Output
 - Assets (Money)
- This completes our initial simple model of the macroeconomy!
 - So what do we do with it?

The End

