

Macroeconomics

Topic 4: “Explain that interest rates are determined in a market for loanable funds.”

Reference: Gregory Mankiw’s *Principles of Macroeconomics*, 2nd edition, Chapter 13.

Interest Rates and the Loanable Funds Framework

Some Economic Terms and Definitions:

- **Private Saving:** The income that a private citizen has left over after paying taxes and buying consumption goods.
- **Public Saving:** Government tax revenue left after spending. If the government spends more than it collects in taxes, the government runs a budget deficit. If the government collects more revenue than it spends, the government runs a budget surplus.
- **National Saving (Saving):** Total Saving of a nation or country, including both private and government saving. $\text{Saving} = \text{Private Saving} + \text{Government Saving}$
- **Investment:** Spending on new buildings, factories or equipment primarily from businesses in order to improve future productive capacity. For example, if a car company spends \$100 million to build a new factory, this would be investment spending.

Introduction to the Loanable Funds Market

The market for Loanable Funds is where borrowers and lenders get together. As with other markets, there is a supply curve and a demand curve. In the loanable funds framework, the supply represents the total amount that is being lent out at different interest rates or the amount being saved in the economy while the demand curve represents the total demand for borrowing at any given interest rate.

Lending in the loanable funds framework takes many forms. Any time a person saves some of his or her income, that income becomes available for someone to borrow. Money saved in a bank savings account is part of the supply of loanable funds. If you deposit money in a bank rather than spending it, the bank can then lend the money to a person or business that wants to borrow. In this way you are supplying funds into the loanable funds framework (and the business or person borrowing the funds is contributing to the demand for loanable funds).

For example, if a person has an income of \$20,000, spends \$18,000 on goods and services and puts \$2,000 into a savings account, the supply of loanable funds will increase by \$2000. This \$2000 is now available for someone else to borrow.

The quantity of loanable funds supplied increases as the interest rate increases. When deciding on how much to save, an individual looks at the benefit that they can get by saving. As the interest rate increases, the benefit that you get through saving increases (higher interest earnings) and this tends to encourage people to save more. In general, as the interest rate increases, the quantity of loanable funds supplied (the aggregate

willingness to save) will increase. This is why the supply curve in the loanable funds framework slopes upwards (in a graph with interest rates on the vertical axis and the quantity of loanable funds on the horizontal axis).

For example, if you have an extra \$5000 in your checking account and you see that interest rates are at 1%, you can only earn \$50 ($.01 * \$5000 = \50) in interest by saving the money for a year. You instead decide to spend the money now on a new computer and stereo system. On the other hand, if interest rates are at 15%, you can earn \$750 by saving the money for one year ($.15 * \$5000 = \750) and now you decide to save the money. The higher interest rates have encouraged you to save and the amount of loanable funds supplied has increased.

The demand for loanable funds represents a desire to borrow resources at different interest rates. Borrowing occurs mainly in order to meet Investment demand. For example, businesses borrow in order to build new factories or buy new machines for their workers and individuals borrow to houses.

The demand for loanable funds is decreasing as the interest rate increases. From the point of view of a borrower (the source of demand in the loanable funds framework), as interest rates increase, the cost of borrowing goes up and the person (or business) is less likely to borrow. Therefore, as interest rates increase, the quantity of funds demanded decreases. This is why the demand curve slopes downward.

Equilibrium in the Loanable Funds Market

In the loanable funds framework, the interest rate adjusts until supply is equal to demand. The supply and demand curves will cross at exactly one point, determining the equilibrium interest rate. At this equilibrium, the total amount that is being lent out (the quantity supplied) is equal to the total amount that is being borrowed (the quantity demanded). If the interest rate is higher or lower than this equilibrium point there will be either more demand than supply (excess demand) or less demand than supply (excess supply) in the market.

If interest rates are higher than the equilibrium where supply equals demand, there will be excess supply in the market. With high interest rates, a lot of people are encouraged to save rather than to spend, causing the quantity of loanable funds supplied to be larger. The high interest rates also mean that borrowers pay a high cost to borrow causing borrowing and the quantity demanded to be smaller. The interest rate will fall as lenders compete by offering funds at a lower rate.

Excess demand exists when interest rates are too low. A very low interest rate discourages savings (smaller quantity supplied) due to the low return that is earned. At the same time, a low interest rate tends to attract a lot of borrowing (larger quantity demanded) The interest rate will rise to equilibrium as borrowers compete for the loanable funds.

The Real Interest Rate and the Nominal Interest Rate

The nominal interest rate is the interest rate in terms of dollars. This is the interest rate that is usually reported in the newspaper. For example, if the nominal interest rate is 11%, saving \$1,000 for a year will earn you \$110 in interest (11% or \$1000). The nominal interest rate tells you what you will get (in terms of dollars) for saving your money.

The real interest rate is equal to the nominal interest rate adjusted for inflation. Suppose the nominal interest rate is again at 11%, but now inflation (the rate that prices increase) is at 10%. If you save your \$1000, you will end up with \$1110 at the end of the year (the \$1000 plus \$110 in interest payments). However, with an inflation rate of 10%, everything now costs 10% more than at the beginning of the year. A stereo that cost \$1000 last year will now cost \$1100 (a 10% price increase). Although you earned 11% (nominal) interest on your savings, that was barely enough to keep up with inflation. In real terms, your purchasing power only increased by 1% (the difference between the nominal interest rate and the inflation rate).

$$\text{Real Interest Rate} = \text{Nominal Interest Rate} - \text{Inflation}$$

For example, if the nominal interest rate is at 4%, and the inflation rate is at 2.5%, the real interest rate will be 1.5%, because $\text{real interest rate} = 4\% - 2.5\% = 1.5\%$.

The real interest rate is the interest rate that is determined in the loanable funds framework. It is the best measure of the cost of borrowing and the benefit to lending because it is adjusted for differences in inflation.

Examples using the Loanable Funds Market

1. Suppose the government provides tax incentives to increase saving. For example, they could reduce or eliminate taxes on interest earned on savings. The increased tax benefits derived from saving would encourage more people to reduce their current consumption levels and increase their saving. This will cause the supply of loanable funds to increase (shift to the right.) The equilibrium interest rate will fall. As the interest rate falls, people and businesses will have a greater incentive to borrow, moving along the demand curve to increase the equilibrium quantity of borrowing and lending in the market.

2. Suppose the government gives a tax credit to businesses to encourage investment. The tax credit will encourage businesses to spend more on new factories and machines. The demand for borrowing to finance this new capital expenditure will cause the demand curve in the loanable funds market to shift to the right. The result will be an increase in the equilibrium interest rate.

3. Suppose the government starts spending more, causing the government budget deficit to increase. The increase in government spending will reduce “Public Saving”. “National Saving” is equal to all the saving that goes on in a country. This includes all the “Private

Saving” that takes place when individuals consume less than their income and all of the “Public Saving” that occurs if the government collects more revenue than it spends. The fall in Public Saving will cause National Saving to fall, the supply of loanable funds will decrease and interest rates will go up. The higher interest rates will discourage private borrowing and tend to “crowd out” some private capital investment.

Summary

The interest rate is determined by the interaction of the demand and supply of loanable funds. (See the text for references to factors that will shift the demand and supply.)

1. Increases in demand will increase both the interest rate and the total amount of borrowing and lending. Decreases in demand will decrease both the interest rate and the total amount of borrowing and lending.

2. Increases in supply will decrease the interest rate and increase the total amount of borrowing and lending. Decreases in supply will increase the interest rate and decrease the total amount of borrowing and lending.