

ECON 1a
Saving and Investment
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We engage in **saving** when we forgo some present consumption for the sake of increased future production. Something that we could have consumed currently is instead used for future production.

Saving can either be direct or indirect.

- **Direct saving** is illustrated by the fictional character Robinson Crusoe who is alone on a desert island. At first he survives by picking berries and catching fish with his hands. Then one day he decides to make a net to increase his future production of fish. Because he diverts some of his time away from catching and eating berries and fish, he has less to consume in the present. But if his net proves successful, he will catch a lot more fish in the future.
- **Indirect saving** is the most common form of saving in a modern economy. If we spend less than we earn in a given period of time, we usually entrust the excess money to someone else in the hope and expectation that we will get that money back, and more, at some time in the future. We forgo the consumption that money could have provided in the present in the hope and expectation of increasing future consumption.

People who save money can either invest it or keep it. Keeping money usually means increasing one's checking account balance or keeping extra cash. This sort of saving isn't generally significant because of the opportunity costs of holding extra cash. We will ignore this form of saving and focus on saving that is used for **investment**.

Equity versus debt

Investments are classified as either equity or debt

- You own an **equity investment** when you become owner or part owner of a business. The most common form of equity investment is **shares of stock**. When you buy shares of stock in a corporation you become part owner of that corporation. For example, IBM has issued approximately 1.3 billion shares of stock. If you buy 100 shares you own approximately 0.0000077% of the company. You enjoy limited ownership rights, mainly the right to vote in shareholder elections (one vote per share).
- You own a **debt security** if you have made a loan which is to be paid back to you according to specific terms.
 - The **principal** amount is the amount that was loaned and must be paid back.
 - The **maturity** date is the date when it is to be paid back.

- The **interest** rate is the annual percent of the principal amount that is paid to you as interest each year.

IBM, for example, issued shares of stock some 100 years ago. IBM may have issued additional shares on one or more occasions since then. But now anyone who wants to buy shares of IBM stock must acquire them from someone who wants to sell.

IBM also acquires capital by issuing bonds. In 1985 IBM issued a 30-year bond with a 10.5% interest rate. If you had bought one of these bonds in the amount of \$100,000, you would have been getting 10.5% per year (actually 5.25% every six months, or \$5,250) in interest. In 2015, the bond will mature and you would get your \$100,000 back.

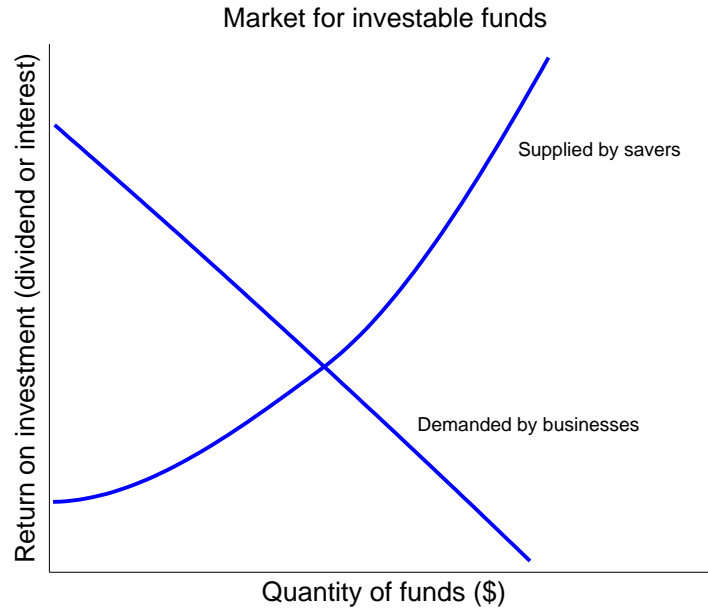
Each form of investment has advantages and disadvantages. Equity investments offer unlimited potential increases in the share price but a risk of total loss. In other words, there is no limit on the future market price of IBM shares. Nor is there any limit on the amount of dividends IBM might pay to its shareholders. But if IBM should get into serious trouble, your shares could become worthless.

Bonds cannot never return more than their face value, nor can their interest payments increase. These drawbacks are offset by lower risk. If IBM should get into serious trouble, you have a claim to IBM's assets that takes priority over the claims of stockholders.

Investable funds

We can lump all money that people want to invest as “investable funds.” The market for investable funds can be analyzed with a supply/demand diagram. Savers are the suppliers of investable funds and businesses are demanders of investable funds. The price of investable funds is the return they generate, whether in the form of interest or dividends.

The law of demand and the law of supply apply in this market like every other market. The demand for investable funds is the amount businesses want to acquire in exchange for bonds or shares of stock. They demand less when it costs them more (higher return in the form of interest or dividends). This is the law of demand. And in accordance with the law of supply, savers offer more funds when the returns are higher.



Secondary markets

Companies first issue stock to the public in initial public offerings (IPOs). Google, for example, had its IPO in 2005. The shares were sold for \$85 each and are now worth over \$500 each.

Most people don't buy stock in IPO's. Instead they buy "used" stocks or bonds through stock exchanges. Brokers such as Charles Schwab provide access to the stock and bond markets through exchanges such as the New York Stock Exchange. If you have an account with a broker you can go online and buy whatever you want. You won't know the identity of the person who sells you the stock or bond, but it is someone who for some reason wants to sell.

Determinants of bond interest rates when issued

The interest rate on bonds, when they are initially offered, is determined by

1. The perceived **risk** of default. The safest bonds are those issued by the U.S. Treasury, and consequently they offer lower interest rates than other bonds with the same maturity. Corporate bonds issued by financially stable companies are rated "investment grade" and offer only slightly higher interest rates than Treasuries. Bonds that are perceived as very risky are usually called "junk bonds" and they provide the highest interest rates, as compensation for risk.
2. The duration of the bond, or its **maturity**. Normally longer maturities

command higher interest rates, because buyers want to be compensated for the lack of flexibility in a longer-dated bond.

3. The taxability of the interest paid to lenders:
 - (a) Interest on corporate bonds is fully taxable.
 - (b) Interest on U.S. Treasury securities is subject to federal income tax but not state income tax.
 - (c) Interest on bonds issued by state or local governments is fully tax-free to residents of the state of issue.

Because investors care about their after-tax return, municipal bonds pay lower interest rates than comparable Treasury or corporate bonds. However, California bonds are now rated lower than the bonds of any other state. Because of the high risk of default, California bonds actually pay higher interest than other bonds of the same maturity, notwithstanding the tax exemption.

Fluctuation of stock prices

People buy stocks because they hope to benefit from a rising stock price (so they can sell at a profit) and because they hope or expect to receive dividends (periodic payments to stockholders). IBM, for example, pays a dividend of \$0.55 per quarter per share (\$2.20 per year). The current price of IBM stock is about \$128 per share so the dividend yield is $\$2.20/\$128 = 1.9\%$ per annum.

Stock prices rise and fall with changing expectations of profits and dividends. In addition to these fundamental factors, investors in IBM stock are trying to guess how other investors will assess the stock. Mass psychology can sometimes influence share prices more strongly than fundamental factors.

Fluctuation of bond prices

Although a bond may pay \$10,000 on maturity, its market price may fluctuate above or below that number during its lifetime.

1. A bond price will fall if adverse effects cause investors to increase their estimate of the risk of default.
2. A bond price will fall if interest rates on comparable bonds rise. For example, in 1983 my mother bought a \$10,000 bond from Cleveland Electric Illuminating Co. yielding an astonishing 14.375% per annum, meaning the interest payments were \$1,437.50 per year. Interest rates were very high at that time because people were not yet convinced that the inflation of the late 1970's was subsiding. Five years later, in 1988, the bond had five years remaining until maturity. By that time new five-year bonds of comparable quality were yielding about 8%. She could have sold the bond

for a higher price, such that its yield would be about 8%. The price she could have gotten can be determined approximately from this equation

$$\frac{\text{interest payment}}{\text{market price}} = \frac{1437.5}{P} = 0.08$$

$$P = \frac{1437.5}{0.08} = \$17,968$$

But she chose to hold the bond to maturity and enjoy the high interest payments.