

Chapter 10A: Advanced Investing – Pricing Financial Assets

So you've set some money aside and are ready to invest in the stock market, whether individual stocks or stock mutual funds. Before you take the plunge, you'd like to know what is the right price for a stock. Well, you're not alone! There are no clear and simple answers and even the greatest experts struggle with this question. Let's try and guide you through the maze...

The most basic answer is that the price of a stock or of any asset is determined by the interaction of **SUPPLY AND DEMAND** in the market. The price is the level at which demand and supply are in balance. In other words: the price is what others are willing to pay for the stock and are willing to sell it for.

But stocks and other investments also have a fundamental value that can be estimated. Different investors will use different assumptions and expectations, resulting in different estimates of value. This is where the market comes in: all participants can express their views by offering to buy or sell at a certain price; the resultant market price represents the majority estimate of the value of the asset at any point in time.

In the short and medium run, prices can deviate substantially from their fundamental value; in the long run, however, they tend to revert to it.

NET PRESENT VALUE

In theory, the price of any asset depends on the cash inflows and outflows it generates, the timing of these cash flows, and the risks attached to them. It is calculated by:

1. *Predicting the **CASH INFLOWS** and **OUTFLOWS** generated at different moments of time*
2. *Determining the **DISCOUNT RATE**, i.e., the rate of return that investors in the asset expect to earn every year*
3. *The discount rate has two components: the **RISK-FREE RATE**, e.g., interest rate on government bonds; and a **PREMIUM**, which depends on the riskiness of the investment*
4. *Dividing future cash flows by a factor which depends on the discount rate and the number of **YEARS** in the future when they occur*
5. *The resultant net, discounted yearly cash flows are added up to make up the **NET PRESENT VALUE (NPV)***

If you're confused, here's some good news: you don't need to understand the details, as any financial calculator or spreadsheet can handle them for you. And you can be a successful investor without ever calculating a Net Present Value! But it is helpful to understand the principle to deal with more advanced finance topics, and it is good to know the lingo so you can your hold you own in discussions with professionals!

For stocks, there are some specific valuation methods that are commonly used and widely quoted in the media and by analysts:

1. **PRICE-EARNINGS RATIO (PER)**: price of the stock divided by earnings (profits) per share.

The PER can be historic or forward looking. There are no firm rules as to what an appropriate PER is. Historically, the average for the US and UK stock markets has been around 15. In general, the lower the risk and the better the growth prospects of a firm, the higher the value that the market assigns to its profits, i.e., the higher its PER. Stocks in similar industries and with similar characteristics tend to have broadly similar PERs.

2. **CYCLICALLY-ADJUSTED PER (CAPE):** price of the stock divided by average, inflation-adjusted earnings over the last 10 years. By smoothing out yearly fluctuations, the CAPE gives a better indication of the underlying level of profits and, therefore, the PER.
3. **FREE CASH FLOW:** cash flow is the net profit earned by the company before non-cash charges such as depreciation. In addition to cash flow from operations, some analysts include the investing and working capital needs of the company to derive Free Cash Flow: the cash that the company earns from its operations after meeting investment and working capital needs, and that it is free to distribute to its owners or creditors.
4. **PRICE-BOOK RATIO:** price of the stock divided by its book value per share. Book value is an accounting concept: it is the difference between the value of the assets of a firm and its debts. It is also called shareholders' equity as it represents what is owned by shareholders after all debts have been paid. Profits are more important than asset values in determining the price of a stock; also, book value is based on historical rather than current market prices of assets. Nevertheless, price-book, especially compared to other firms in the same industry and to past figures for the same firm, can be an indicator of changed business prospects or point to unusually high or low valuations.
5. **DIVIDEND DISCOUNT MODEL:** this applies the NPV formula to the dividends distributed by a

company. It thus values stocks according to the cash flows received by its shareholders rather than the company itself. Dividends are an important factor in the long run as profits earned by a company are only accounting concepts; they ultimately benefit shareholders only if they are paid out in cash.

BEWARE: Figures like earnings and book value are based on the financial statements of companies. These are typically audited by major accounting firms; nevertheless, accounting errors or fraud can occur, and even fair statements include an element of judgment. You may defer to investment professionals for these analyses, but should be aware that figures are subject to some degree of uncertainty.

The NPV formula applies to all investments, including bonds, real estate, etc. as well as stocks.

A bond is characterized by several features:

1. **FACE or PAR VALUE:** the price at which the bond is issued and will be redeemed (i.e., repaid by the borrower)
2. **COUPON:** the periodic interest payments, expressed in money or as a percentage of face value
3. **MATURITY:** length of time until the bond is repaid (measured either from now or the date when it was issued)
4. **SPECIAL PROVISIONS:** for example, call provisions allowing the issuer to redeem the bond before maturity at a specified price

The **YIELD** of the bond is the discount rate which equalizes future interest and principal payments to the current price of the bond. It is roughly equal to the coupon payment divided by the current price of the bond. Without entering into detailed calculations, there are two things that everybody should know: (a) the relationship between bond prices and interest rates and (b) what determines the interest rate of a bond.

Bond prices **VARY INVERSELY** with interest rates: the higher the level of interest rates in the market, the lower the price of existing bonds. If a £100 bond pays 3% interest and current market rates for similar bonds are 5%, you would be able to buy or willing to sell the bond at a price lower than £100.

The interest rate on any bond consists of two elements:

1. **RISK-FREE RATE:** interest rate on short-term government bonds; they are considered risk-free in most countries, though not in countries that do not have their own central bank or that borrow in foreign currency. The risk-free rate has two components: (a) real interest rate, which goes up when the demand for funds by investors exceeds the supply of funds by savers, which is normally the case when growth is strong, and vice versa; and (b) inflation premium, which tends to rise when growth is strong and the central bank boosts money supply.
2. **SPREAD:** the premium paid by each bond above the risk-free rate. It depends on 3 characteristics of the bond:
 - Riskiness: the higher the risk that the borrower will not repay the full amount due on time, the higher the spread demanded by lenders
 - Maturity: the longer the remaining period until repayment, the higher the spread
 - Liquidity: a bond that cannot be easily sold in a market requires a higher spread.

Real estate prices are covered in the chapter on Housing. The same pricing principles apply, with rents, interest rates, and taxation being critical factors.

What about **FOREIGN INVESTMENTS**? Shouldn't I think beyond the boundaries of my country in a globalized economy and financial system?

The first thing to do is to distinguish between the **COUNTRY** of an investment and the **CURRENCY** in which it is denominated. Stocks are generally denominated in the currency of the country where their headquarters and bulk of operations are located and their stock is traded; however, some stocks are listed in markets outside their home country, and many companies have operations spanning multiple countries. Many businesses also export a large share of their production, hence stocks in one country can reflect the fortunes of many different markets.

Bonds can be issued by foreign borrowers or denominated in foreign currencies; these often go hand in hand though not always: for example, a Japanese firm can issue dollar-denominated bonds traded in Europe. Foreign currency accounts can also be held at banks in different countries.

For foreign investments, **EXCHANGE RATE** fluctuations must be taken into account. Exchange rate forecasting is a fiendishly difficult field and should be left to experts. In general, the currencies of countries that have high growth and interest rates tend to appreciate, though foreign exchange markets can move for all sorts of reasons. In the long run, exchange rates tend to equalize the prices of similar goods in different countries, though there are many exceptions here as well.

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In general, exposure to foreign stocks or bonds is best achieved via a diversified portfolio of mutual funds. Your portfolio should be tied to your home base: a person living in the UK should use the pound as a reference currency and avoid excessive exposure to other currencies.

