

Appendix - A General Glossary of Terms

A-2. Debt and Finance

Annuities. An annuity is a sequence of payments made at regular intervals. It may be an open-ended series, called a perpetual annuity, or it may be a fixed sum paid over time. Mortgages, pensions, and the interest payments and principal repayment of a bond are all forms of annuities to one party in such financial transactions.

The key mathematical issue is the evaluation of a series of payments at a point in time subject to discount to account for the time value of money. In discussing annuities, the number of periods for which the payments are made is denoted n and the rate of interest used to represent the time value of money is r . The annuity formulas are often simplified by replacing $1/(1+r)$ with v .

Annuity Due. In an annuity due, the payment is made at the start of each interval. A five-year lease in which rent is due at the beginning of each month would constitute an annuity due. The present value of a series of payments of 1 over n periods in an annuity due is

$$\begin{aligned}\ddot{a}_{n|r} &= 1 + (1+r)^{-1} + (1+r)^{-2} + (1+r)^{-3} + \dots + (1+r)^{-(n-1)} \\ &= 1 + v^1 + v^2 + v^3 + \dots + v^{(n-1)}\end{aligned}$$

which, as a geometric series, reduces to

$$= \frac{1-v^n}{rv}$$

Ordinary Annuity (or Annuity Immediate). In an ordinary annuity, the payment is made at the end of each time interval. For the same number, n , of periods then, the present value of an ordinary annuity is equal to the value of an annuity due discounted by one period.

$$\begin{aligned}a_{n|r} &= (1+r)^{-1} + (1+r)^{-2} + (1+r)^{-3} + \dots + (1+r)^{-n} \\ &= v^1 + v^2 + v^3 + \dots + v^{(n)}\end{aligned}$$

or

$$= \frac{1-v^n}{r}$$

Note that for the same number, n , of periods then, the present value of an ordinary annuity is equal to the value of an annuity due discounted by one period.

Perpetual Annuity. A perpetual annuity is an ordinary annuity which goes on forever. Since the value of v^n goes to zero as n increases, the present value of a perpetual annuity is $1/r$. This is a clear and simple demonstration of the inverse relationship between the yield on a security paying a regular return and the interest rate.

Arbitrage. This is the simultaneous completion of the sale and purchase of an asset or related assets under a price spread for profit. This is possible for a single asset if that asset trades in separate markets such that it may exhibit different prices in those markets. It is possible within a single market if two assets have established terms of exchange between them.

Assets. An asset is anything of value that a person or organization may buy. Assets can be physical claim to some form of property, a claim to indebtedness (e.g., liens), or a right (e.g., copyrights and patents.) Assets may be characterized as liquid, that is, easily or readily converted to cash, or illiquid. Liquid assets are generally thought to be more useful than illiquid assets.

Bond. A bond is a fixed income investment in which an investor lends money to an entity (typically corporate or governmental) which borrows the funds for a defined period of time at a variable or fixed interest rate. Bonds are used by companies, municipalities, states and sovereign governments to raise money and finance a variety of projects and activities. Owners of bonds are debtholders, or creditors, of the issuer.

Callable feature. A provision of a bond at issue that grants the issuer the option to retire the bond in advance of maturity defines a callable bond. The specific terms under which it is exercised by the borrower may specify schedules or varying prices under which the call takes place.

Capital Asset Pricing Model - CAPM. The capital asset pricing model (CAPM) is a model that describes the relationship between systematic risk and expected return for assets, particularly stocks. CAPM is widely used throughout finance for the pricing of risky securities, generating expected returns for assets given the risk of those assets and calculating costs of capital.

Debt Instruments A debt instrument is an obligation that enables the issuing party to raise funds by promising to repay a lender in accordance with terms of a contract. Types of debt instruments include notes, bonds, debentures, certificates, mortgages, leases or other agreements between a lender and a borrower.

Mark to Market. This is also called “fair value” accounting. In mark to market accounting, an asset one holds (for example, a security) is evaluated by the current price at which that asset, or similar, is trading in the market. This practice is to be contrasted with accounting for assets at acquisition cost or par value. These latter approaches may lead to irrational decision making based upon values that are far from actual market conditions.

Maturity. The maturity of a financial instrument is the date on which payment of a financial obligation is due. In the case of a bond, the maturity date is the one on which the issuer must retire the bond by paying the face value of the bond to its owners.

Net Present Value. Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting to analyze the profitability of a projected investment or project.

Note. A note is a debt instrument with an initial maturity longer than one year and shorter than 10 years that promises to pay interest during the term that the issuer has use of the money, and to repay the principal on or before the maturity date.

Promissory Note. A promissory note is a written promise to pay a specific sum of money on a certain date. They are often short-term obligations.

Rates of Return.

Compound Annual Growth Rate - CAGR. The compound annual growth rate (CAGR) is the mean annual growth rate of an investment over a specified period of time longer than one year.

Internal Rate of Return. Internal rate of return (IRR) is a metric used in capital budgeting to estimate the profitability of potential investments. Internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

Return on Investment. Return on Investment (ROI) is a performance measure, used to evaluate the efficiency of an investment or compare the efficiency of a number of different investments. ROI measures the amount of return on an investment, relative to the investment’s cost. To calculate ROI, the benefit (or return) of an investment is divided by the cost of the investment. The result is expressed as a percentage or a ratio.

Rollover, A rollover is the reinvestment of funds from a maturing security into a new issue of the same or a similar security. It may also be the transfer of a forex position to the following delivery date.

Tariff. A tariff is a tax imposed on imported goods and services. The tax is paid by the importer or other purchasers of the goods or services. A tariff may be enacted as a source of national revenue; it has the impact, however, of increasing the price of imported goods relative to domestic production. This impact, when it is chosen deliberately, often is justified as a means of protecting domestic industries. It does so at the risk of distorting trade patterns.

Yield Curve. The yield curve is a graphical display that illustrates the relationship - at a single point in time - between the market interest rates then current among a collection of securities of equal credit quality and the maturity dates of those individual securities. It illustrates the term structure of interest rates and its most common shape is one of rising rates at longer maturities. A common pool of securities to use in constructing a yield curve is that of sovereign government securities because these should be of equal credit quality and they should represent the most secure credit instruments in the economy.

Flat Yield Curve. A flat yield curve is an interest rate environment in which long-term debt has no greater yield than short-term debt of the same credit quality. It is a likely occurrence during transition periods between normal and inverted yield curves.

Inverted Yield Curve. An inverted yield curve is an interest rate environment in which long-term debt instruments have a lower yield than short-term debt instruments of the same credit quality. This type of yield curve is the rarest of the three main curve types and is considered to be a predictor of economic recession.