**Investment Defined**

An **investment** is the current commitment of cash for a period of time in order to derive future payments that

Will compensate the investor for

1. The time the funds are committed,
2. The expected rate of inflation, and
3. The uncertainty of the future payments.

Investment could also be defined as the employment of funds on assets with the aim of earning income or capital gain. Every investment has 2 aspects, time and risk. Present consumption is sacrificed to get a return in future. The sacrifice that is to be made is certain, but the expected returns are uncertain. This attribute of investment indicates the risk factor.

To an economist, the term investment refers to net addition to wealth made to the nation’s capital stock- the goods and services used in the production process.

The rate of return that will be adequate to compensate the investor against 1, 2 and 3 above is called the REQUIRED RATE OF RETURN.

The “investor” can be an individual, a government, a pension fund, or a corporation. Similarly, this definition includes all types of investments, including investments by corporations in plant and equipment and investments by individuals in stocks, bonds, commodities, or real estate. Our emphasis will be on investments done by individual investors. Our main focus in this course, however, is financial investment- the allocation of money to assets that are expected to yield some gain over a period of time. i.e. the exchange of financial claims such as stocks and bonds.

**SPECULATION**

Speculation means taking up business risk in the hope of getting short term gain. It involves buying and selling activities with the expectation of getting profit from the price fluctuations.

|  |  |
| --- | --- |
| **INVESTOR** | **SPECULATOR** |
| 1. Time horizon: plans for a long time horizon from one year and over. | Time horizon: plans for a short time horizon from below one year. |
| 1. Assumes moderate risk. | Assumes higher risk. |
| 1. Likes moderate return associated with moderate risk. | Likes high return associated with high risk. |
| 1. Considers fundamental factors and evaluates company performance regularly. | Considers inside information, heresay, prior market behaviour (Chartists) |
| 1. Uses own funds and avoids borrowing | Uses borrowed funds to supplement personal resources. |

**GAMBLING**

Gambling is a very short term investment in a game of chance. It’s mainly done for entertainment, by creating an artificial risk (as opposed to commercial risk experienced by speculators and investors).

**INVESTMENT OBJECTIVES**

1. **Return**

Investor s always expects a good rate of return from their investments. The rate of return is the total income the investors receives during the holding period stated as a percentage of the purchasing price at the beginning of the purchasing period.

1. **Risk**
2. **Liquidity**

Marketability of investments provides liquidity to the investment.

1. **Hedge against inflation**

**MEASURES OF RETURN AND RISK**

**Measures of Historical Rates of Return**

If you commit Ksh. 200,000 to an investment at the beginning of the year and you get back Ksh. 220,000 at the end of the two years, what is your return for the period? The period during which you own an investment is called its holding period, and the return for that period is the **holding period return (HPR)**. In this example, the HPR is 1.10, calculated as follows:

HPR = Ending Value of Investment =220,000= 1.1

Beginning Value of Investment 200,000

.

To calculate the annualised holding period return, where n is the holding period. In the above example, the annual HPR will be:

HPR= = 1.048.

This value will always be zero or greater—that is, it can never be a negative value. A value greater than 1.0 reflects an increase in your wealth, which means that you received a positive rate of return during the period. A value less than 1.0 means that you suffered a decline in wealth, which indicates that you had a negative return during the period. An HPR of zero indicates that you lost all your money. Although HPR helps us express the change in value of an investment, investors generally evaluate returns in percentage terms on an annual basis. This conversion to annual percentage rates makes it easier to directly compare alternative investments that have markedly different characteristics. The first step in converting an HPR to an annual percentage rate is to derive a percentage return, referred to as the holding period yield (HPY). The HPY is equal to the HPR minus 1.

**THE INVESTMENT PROCESS**

The investment process involves a series of activities leading to the purchase of securities or other investment alternatives. This process can be divided into 5 stages.

1. Framing the investment policy.
2. Investment/ security analysis.
3. Valuation.
4. Portfolio construction.
5. Portfolio evaluation.
6. Framing the investment policy

The investor, before proceeding to investment formulates the investment policy. The policy has the following ingredients.

1. *Investible funds*

Investment revolves around the availability of investible funds. These can be generated from savings or borrowings.

1. *Objectives*

Investment objectives are framed on the premise of the required rate of return, the need for regular income, risk perception and the need for liquidity.

1. *Knowledge about alternative investments*

The knowledge about alternative investments and markets plays a key role in policy formulation. The alternatives range from real estate to securities, each with a different risk- return combination.

1. Security analysis

After formulating the investment policy, the securities to be bought have to be scrutinized through the market/ economic – industry- company analysis.

1. Valuation

Valuation helps the investor to determine the risk and return to be expected from the investment. The intrinsic value is measured through the book value. The future value could be estimated using statistical techniques.

1. Construction of a portfolio

A portfolio is a combination of securities. The portfolio is constructed in such a manner that the investor’s objectives are met. The investor’s desires to maximise returns with minimum risk, and to achieve this diversifies his portfolio. Diversification significantly reduces risk, as compared to having a portfolio with only one class of assets. Diversification can be achieved using a variety of means:

1. Debt and equity diversification (Shares and bonds).
2. Industry diversification.
3. Company diversification.
4. Evaluation

The portfolio has to be managed efficiently. This calls for appraisal. The return and risk performance of a portfolio may vary from time to time. The variability of returns of the various securities making up the portfolio is computed and compared against set benchmarks. The revision of the portfolio is done depending on the results of the appraisal- with the low yielding securities with high risk being replaced with higher yielding securities with comparatively lower risk.

**THE ROLE OF FINANCIAL MARKETS IN THE ECONOMY**

1. Consumption timing

In high earnings periods, one can invest in financial assets such as stocks and bonds. In low earnings periods, one can sell these assets to provide funds for consumption. Thus financial markets allow individuals to separate decisions concerning current consumption from the constraints that would otherwise be imposed by current earnings.

1. Allocation of risk

The capital markets allow the risk that is inherent to all investments to be borne by investors willing to bear that risk.

1. Separation of ownership from management

Financial assets and the ability to buy/ sell these assets in financial markets allows for easy separation of ownership from management. This separation enhances a firm’s stability but gives rise to the agency conflict.

**THE PLAYERS IN FINANCIAL MARKETS**

* 1. Firms
  2. Households.
  3. The government.
  4. Financial intermediaries.
  5. Investment banks.

**MARKETS AND MARKET STRUCTURES**

We can differentiate between four types of markets:

1. **Direct search market**

This is the least organized market. Buyers and sellers must seek each other directly. Such markets are characterised by sporadic participation and low priced, non-standard goods.

1. **Brokered market**

In this market, trading in goods is active. Brokers find it profitable to offer search services to buyers and sellers e.g. the real estate market.

1. **Dealer market**

This is a market where traders specialize in particular assets, buy and sell for their own account. The spread between the dealer buying price and the sale price are the source of profit. The over the counter market is an example of a dealer market.

1. **Auction market**

In an auction market, traders converge at one place to buy and sell assets. The advantage of this market over dealer markets is that one nee d not search across dealers to find the best price for an asset.

**RECENT TRENDS IN INVESTMENT FINANCE**

There are some emerging trends that have changed the face of the contemporary investment environment.

1. **Globalization**

There is a tendency towards a worldwide investment environment and the integration of national markets. In the assessment of the investment environment, the investor has to also assess the international market for securities.

1. **Securitization**

Increasingly, loans are being pooled into standardized securities backed by those loans which can be traded like any other security.

1. **Financial engineering**

This refers to the creation of new securities by unbundling, the breaking up and allocating the cash flows from one security to create several new securities. Bundling, the combining of more than one security into a composite security is also done.

**An Introduction to Portfolio Management**

One of the major advances in the investment field during the past few decades has been the recognition that the creation of an optimum investment portfolio is not simply a matter of combining a lot of unique individual securities that have desirable risk-return characteristics. Specifically, it has been shown that you must consider the relationship among the investments if you are going to build an optimum portfolio that will meet your investment objectives. The recognition of what is important in creating a portfolio was demonstrated in the derivation of portfolio theory.

**Some background assumptions**

Before presenting portfolio theory, we need to clarify some general assumptions of the theory. This includes not only what we mean by an optimum portfolio but also what we mean by the terms risk aversion and risk.

1. One basic assumption of portfolio theory is that as an investor you want to maximize the returns from your investments for a given level of risk. To adequately deal with such an assumption, certain ground rules must be laid. First, your portfolio should include all of your assets and liabilities, not only your stocks or even your marketable securities but also such items as your car, house, and less-marketable investments, such as coins, stamps, art, antiques, and furniture. The full spectrum of investments must be considered because the returns from all these investments interact, and this relationship between the returns for assets in the portfolio is important. Hence, a good portfolio is not simply a collection of individually good investments.
2. **Risk Aversion:** Portfolio theory also assumes that investors are basically risk averse, meaning that, given a choice between two assets with equal rates of return, they will select the asset with the lower

level of risk. Evidence that most investors are risk averse is that they purchase various types of

Insurance, including life insurance, car insurance, and health insurance. Buying insurance basically

Involves an outlay of a given amount to guard against an uncertain, possibly larger outlay

In the future. When you buy insurance, this implies that you are willing to pay the current known

Cost of the insurance policy to avoid the uncertainty of a potentially large future cost related to

A car accident or a major illness. This does not imply that everybody is risk averse or that investors are completely risk averse regarding all financial commitments. The fact is, not everybody buys insurance for everything. Some people have no insurance against anything, either by choice or because they cannot afford.

**DEFINITION OF RISK**

Although there is a difference in the specific definitions of risk and uncertainty, for our purposes and in most financial literature the two terms are used interchangeably. In fact, one way to define Risk is the uncertainty of future outcomes. An alternative definition might be the probability of an adverse outcome. Subsequently, in our discussion of portfolio theory, we will consider several measures of risk that are used when developing the theory.

**Markowitz Portfolio Theory**

In the early 1960s, the investment community talked about risk, but there was no specific measure for the term. To build a portfolio model, however, investors had to quantify their risk variable. The basic portfolio model was developed by Harry Markowitz, who derived the expected rate of return for a portfolio of assets and an expected risk measure. Markowitz showed that the variance of the rate of return was a meaningful measure of portfolio risk under a reasonable set of assumptions, and he derived the formula for computing the variance of a portfolio. This portfolio variance formula indicated the importance of diversifying your investments to reduce the total risk of a portfolio but also showed how to effectively diversify. The Markowitz model is based on several assumptions regarding investor behaviour:

1. Investors consider each investment alternative as being represented by a probability distribution

of expected returns over some holding period.

2. Investors maximize one-period expected utility, and their utility curves demonstrate diminishing

Marginal utility of wealth.

3. Investors estimate the risk of the portfolio on the basis of the variability of expected

returns.

4. Investors base decisions solely on expected return and risk, so their utility curves are a

function of expected return and the expected variance (or standard deviation) of returns

Only.

5. For a given risk level, investors prefer higher returns to lower returns. Similarly, for a

Given level of expected return, investors prefer less risk to more risk.

Under these assumptions, a single asset or portfolio of assets is considered to be efficient if

no other asset or portfolio of assets offers higher expected return with the same (or lower) risk,

or lower risk with the same (or higher) expected return.

**ALTERNATIVE MEASURES OF RISK**

One of the best-known measures of risk is the variance, or standard deviation of expected returns. It is a statistical measure of the dispersion of returns around the expected value whereby a larger variance or standard deviation indicates greater dispersion. The idea is that the more disperse the expected returns, the greater the uncertainty of future returns.

Another measure of risk is the range of returns. It is assumed that a larger range of expected returns, from the lowest to the highest return, means greater uncertainty and risk regarding future expected returns

**INTRODUCTION TO ASSET PRICING MODELS**

**THE CAPITAL ASSET PRICING MODEL (CAPM)**

**MULTIFACTOR MODELS OF RISK AND RETURN**

**THE ARBITRAGE PRICING MODEL**

Tests of the CAPM indicated that the beta coefficients for individual securities were not stable but that portfolio betas generally were stable assuming long enough sample periods and adequate trading volume. There was mixed support for a positive linear relationship between rates of return and systematic risk for portfolios of stock, with some recent evidence indicating the need to consider additional risk variables or a need for different risk proxies. In addition, several papers criticized the tests of the model and the usefulness of the model in portfolio evaluation because of its dependence on a market portfolio of risky assets that is not currently available.

The **arbitrage pricing theory (APT)**, which was developed by Ross in the mid-1970s has three major assumptions:3

1. Capital markets are perfectly competitive.

2. Investors always prefer more wealth to less wealth with certainty.

3. The stochastic process generating asset returns can be expressed as a linear function of a set of *K* risk factors (or indexes).

The theory assumes that the stochastic process generating asset returns can be represented as a *K* factor model of the form:

*Ri* *E*(*Ri*) *bi*11 *bi*22 . . . *bik**k* *i* for *i* 1 to *n,* where:

Ri = the actual return on asset i during a specified time period, i = 1, 2, 3, . . . n

E(Ri) = the expected return for asset i if all the risk factors have zero changes

bij = the reaction in asset i’s returns to movements in a common risk factor j

δk = a set of common factors or indexes with a zero mean that influences the returns on all assets

εi = a unique effect on asset i’s return (i.e., a random error term that, by assumption, is completely diversifiable in large portfolios and has a mean of zero)

n = number of assets

Similar to the CAPM model, the APT assumes that the unique effects (εi) are independent and will be diversified away in a large portfolio. Specifically, the APT requires that in equilibrium the return on a zero-investment, zero-systematic-risk portfolio is zero when the unique effects are diversified away. This assumption (and some theoretical manipulation using linear algebra) implies that the expected return on any asset *i* (i.e., *E*(*Ri*)), can be expressed as:

*E* (*Ri*) λ0 λ1*bi*1 λ2*bi*2 . . . λ*kbik* (APT) where:

**k0 = the expected return on an asset with zero systematic risk**

**k*j* = the risk premium related to the *j*th common risk factor**

***bij* = the pricing relationship between the risk premium and the asset; that is, how responsive**

**asset *i* is to the *j*th common factor. (These are called factor betas or factor loadings.)**

**Security Valuation with the APT: An Example**

Suppose that three stocks (A, B, and C) and two common systematic risk factors (1 and 2) have the following relationship (for simplicity, it is assumed that the zero-beta return (0) equals zero):

*E*(*R*A) (0.80)λ1 (0.90)λ2

*E*(*R*B) (–0.20)λ1 (1.30)λ2

*E*(*R*C) (1.80)λ1 (0.50)λ2

If 1 4% and 2 5%, then the returns expected by the market over the next year can be expressed:

*E*(*R*A) (0.80) (4%) (0.90) (5%) 7.7%

*E*(*R*B) (–0.20) (4%) (1.30) (5%) 5.7%

*E*(*R*C) (1.80) (4%) (0.50) (5%) 9.7%

which, assuming that all three stocks are currently priced at Ksh. 35 and will not pay a dividend over the next year, implies the following expected prices a year from now:

*E*(*P*A) Ksh. 35 (1.077) Ksh.37.70

*E*(*P*B) Ksh. 35 (1.057) Ksh. 37.00

*E*(*P*C) Ksh. 35 (1.097) Ksh. 38.40

Now, suppose you “know” that in one year the actual prices of stocks A, B, and C will be Ksh. 37.20, Ksh. 37.80, and Ksh. 38.50. How can you best take advantage of what you consider to be a market mispricing?

The first thing to note is that, according to your forecasts of future prices, Stock A will not achieve a price level in one year consistent with investor return expectations. Accordingly, you conclude that at a current price of Ksh.35 a share, Stock A is *overvalued.* Similarly, Stock B is *undervalued* and Stock C is (slightly) *undervalued.* Consequently, any investment strategy designed to take advantage of these discrepancies will, at the very least, need to consider purchasing Stocks B and C while short selling Stock A.

Assignment: Discuss strengths and weaknesses of CAPM, APT. Which do u think is superior and why.

**BOND FUNDAMENTALS**

**Bond valuation**

**Bond Terminology**

|  |  |
| --- | --- |
| *Coupon rate ...* | ... is another name for interest rate. This term comes from when interest was paid by clipping a coupon from the bottom of the bond certificate. |
| *Notes ...* | ... refer to shorter-term debt instruments, with maturities typically less than five years; bills refer to shorter-term debt instruments issued by governments, the most famous being GoK Treasury bills. |
| *Par value ...* | ... is the bond's face value (or principal); under older corporate law, it refers to the uniform price all investors must pay for the bond. |
| *Maturity...* | ... .is the date the firm promises to repay the par value of the bond. The bond ceases to exist at the maturity date. |
| *Indenture...* | ...is the debt contract that includes the details of the issue such as the repayment provisions and restrictive covenants. |
| *Debt ratings ...* | .....are the "grades" assigned to a bond issue reflecting an assessment of that issue's risk. The most prevalent rating agencies are Moody's and Standard and Poor's. For example, Moody's rates issues from Aaa (the best) to C, which means the issue has "an extremely poor prospect of ever attaining any real investment standing." |

Bonds are long-term debt instruments used by business firms and governments to raise money. Most bonds pay interest *semi-annually* at a stated *interest* *rate* with an initial *maturity* of 10 to 30 years with a *face value* of Ksh. 1,000 that must be repaid at maturity.

A company sells its bonds, in the sense that it gives a promise of future payments in return for current cash.

**Private issues** are sold to a small group of investors, often big institutional investors like mutual funds and insurance companies. These bonds can trade among institutional investors in private markets. Under the federal securities laws, formal disclosure is not required for privately-issued bonds.

**Public issues** are sold to dispersed investors, usually through an underwriting syndicate of securities firms. These bonds often trade in public markets, such as the NYSE. The federal securities laws require that publicly-issued bonds be registered with the SEC, and issuers must provide investors an extensive disclosure document known as a "prospectus".

There are different types of bonds:

* **Mortgage bonds** are backed by real assets pledged as security.
* **Debentures** are not backed by any security.
* **Subordinate bonds** can only be paid after senior obligations are satisfied.
* **Convertible bonds** offer the investor the option to convert bonds to shares of the firm's equity.
* **Income bonds** are so named because interest payments are only made if the company generates sufficient income.
* **Zero coupon bonds** pay no coupons, and their return is purely from purchasing at a discount.
* **Floating rate bonds** are so named because the coupon rate is tied to some basic rate such as T-bill rates. These provide protection against inflation and interest rate risk and keep bonds selling close to their par values.
* **Puttable bonds** offer the option of returning the bonds at face value.
* **Junk bonds** are high risk, high return bonds. Typically, these are issued by lower-rated entities and are often tied to mergers or leveraged buyouts.

**Nature of corporate bonds.** Most bonds state that the issuer (sometimes called the “borrower” or “seller”) agrees to pay the buyer (sometimes called the “investor” or “lender”) a series of fixed interest payments. Usually these payments are to be made every six months (semi-annually) until the bond matures. To determine the amount of interest that a bond pays, simply multiply its coupon rate times the bond’s par value (sometimes called its “face value” or "principal”).This par value is usually Ksh.1,000 and is printed on the bond. The coupon rate is also printed on the bond and does not change during the bond’s life.

For example, if KCB issues a bond whose coupon rate is 10%, this means that the bond pays the buyer 0.10 × 1,000 or Ksh. 100 per year. Because the interest payment is made semi-annually, the buyer actually receives Ksh.50 every six months. Despite the fact of semi-annual payment, the coupon rate is always stated on annual basis.

The bond will also state its maturity date. On that date the issuer will make the last interest payment and also pay the buyer the par value or principal. If the KCB bond matures in 10 years and has a 10% coupon rate, the company will pay the buyer Ksh. 50 every six months for 10 years plus Ksh. 1,000 at the end of the tenth year (or 20th period).

What price will the buyer pay for this stream of interest payments and single principal payment? Don’t assume that price will be the par value. Rather, the bond will be sold for the prevailing market price—that is, how much the buyer is willing to pay for the particular issuer’s promise to make the bond payments. This will be a present value calculation, and its determination will depend on several factors, primarily the risk of the investment as perceived by the bond purchasers. General Electric, with its long history of profitability and quality management, will have a better credit rating than the newly founded “Jack’s Light Bulb and Jet Engine Company.” Because bricks and mortar booksellers are currently more profitable and stable than online booksellers, Barnes & Noble will be seen as a safer investment than Amazon. Accordingly, the buyer will likely value GE’s and Barnes & Noble’s bonds more highly than Jack’s or Amazon’s bonds.

**Government bonds.** The same comparisons can be made in the public sector. Governments that are fiscally disciplined and well managed are seen as better credit risks. This is why you’ll often hear elected officials touting their government’s “AAA” or otherwise high credit rating. They’re simply referring the power of their city, state, or other entity to raise public money through bonds on the most favourable terms.

**BOND VALUATION**

1. Value of a bond is the PV of all coupon payments plus the principal repayment, discounted at the *opportunity cost* for similar bonds. This is the price that the market will pay for the bond. It may be less than, equal to or even higher than the face value.

Example: for the Bond with the following features (Ksh.1000 face value, 9%, due 4/1/2022, issued 4/1/2002, with interest payable each April 1 and October 1;

If the market rate of interest is 12% (opportunity cost), then the price, or PV, is:

PV = [Ksh.45] 1-[1/(1+.06)40] + Ksh.1000.00 = Ksh.774.00

.06 (1+.06)40

This price (Ksh.774) gives a yield to maturity of 12%

NB: Coupons are being paid semi- annually i.e. 6% per half year.

The Yield to Maturity- YTM (the basis for bond pricing)

1. YTM- The discounted rate of return on a bond – this is the discount rate, r, that equates the PV of the expected bond cash flows to the current price, P0

P0 = int1 + int2 + … + intn + face valuen

(1+r)1 (1+r)2 (1+r)n (1+r)n

Example: a 9%, 10-year bond with a face value of Ksh.1000 sells at Ksh.920. What is its yield to maturity? For simplicity, assume interest is payable only once per year.

P0 = Ksh.920 = Ksh.90.00 + Ksh.90.00 + … + Ksh.90.00 + Ksh.1000

(1+r)1 (1+r)2 (1+r)10 (1+r)10

or

P0 = Ksh.920 = Ksh.90 x 1 - [1/(1+r)10] + Ksh.1000 , solve for r

r r

YTM for a Zero Coupon Bond

In several instances, we have discussed the existence of zero coupon bonds that only have the one cash inflow at maturity. This single cash flow means that the calculation of YTM is substantially easier as shown by the following example. Assume a zero coupon bond maturing in 10 years with a maturity value of Ksh.1,000 selling for Ksh.311.80. Because you are dealing with a zero coupon bond, there is only the one cash flow from the principal payment at maturity. Therefore, you simply need to determine what the discount rate is that will discount Ksh.1,000 to equal the current market price of Ksh.311.80 in 20 periods (10 years of semiannual payments). The equation is as follows:

You will see that *i* 6 percent, which implies an annual rate of 12 percent. For future reference, this yield also is referred to as the 10-year spot rate, which is the discount rate for a single cash flow to be received in 10 years.

The Price-Yield Curve

When you know the basic characteristics of a bond in terms of its coupon, maturity, and par value, the only factor that determines its value (price) is the market discount rate—its required rate of return. As we increase the required rate, the price declines. It is possible to demonstrate the specific relationship between the price of a bond and its yield by computing the bond’s price at a range of yields as shown below. A graph of this relationship between the required return (yield) on the bond and its price is referred to as the price-yield curve. Besides demonstrating that price moves inverse to yield, it shows three other important points:

* + 1. When the yield is below the coupon rate, the bond will be priced at a **premium** to its par value.
    2. When the yield is above the coupon rate, the bond will be priced at a **discount** to its par value.

3. The price-yield relationship is not a straight line; rather, it is *convex.* As yields decline, the price increases at an increasing rate; and, as the yield increases, the price declines at a declining rate. This concept of a convex price-yield curve is referred to as *convexity*

*PRICE-YIELD RELATIONSHIP FOR A 20-YEAR, 8 PERCENT COUPON BOND*

*(Ksh. 1,000 PAR VALUE)*

REQUIRED YIELD PRICE OF BOND

2 Ksh. 1,985.09

4 1,547.12

6 1,231.19

8 1,000.00

10 828.36

12 699.05

14 600.07

16 522.98

* Bond Prices

Bonds will sell at *Face Value*, at a *Discount*, or at a *Premium*.

1. Face Value: Bonds sell at face value when market interest rates for similar bonds are the same as the coupon on the bond.

Example: A Ksh.1000, 10-year bond with a 9% coupon rate, will sell at Ksh.1000 when similar bonds are yielding 9%

1. Discount: Bonds sell at a discount to face value when similar bonds have higher yields.

Example: The bond in the example above will sell at Ksh.939 when market yields on similar bonds are 10%. The bond is selling at a Ksh.61 discount to face value and its yield to market is 10%

1. Premium: Bonds sell at a premium when similar bonds in the current market have lower yields.

Example: Again, in the example above, the bond will sell for Ksh.1067 when similar bonds are yielding 8%. The bond is selling at a Ksh.67 premium to face value and its yield to market is 8%

**Bond characteristics**

A bond can be characterized based on (1) its intrinsic features, (2) its type, (3) its indenture provisions, or (4) the features that affect its cash flows and/or its maturity.

* + 1. **Intrinsic Features**

The coupon, maturity, principal value, and the type of ownership are important intrinsic features of a bond.

**The coupon** of a bond indicates the income that the bond investor will receive over the life (or holding period) of the issue. This is known as *interest* *income, coupon income,* or *nominal yield.*

**The term to maturity** specifies the date or the number of years before a bond matures (or expires). There are two different types of maturity. The most common is a **term bond**, which has a single maturity date. Alternatively, a **serial obligation bond** issue has a series of maturity dates, perhaps 20 or 25. Each maturity, although a subset of the total issue, is really a small bond issue with generally a different coupon. Municipalities issue most serial bonds.

**The principal**, or **par value**, of an issue represents the original value of the obligation. This is generally stated in Ksh.100 increments. Principal value is *not* the same as the bond’s market value. The market prices of many issues rise above or fall below their principal values because of differences between their coupons and the prevailing market rate of interest. If the market interest rate is above the coupon rate, the bond will sell at a discount to par. If the market rate is below the bond’s coupon, it will sell at a premium above par. If the coupon is comparable to the prevailing market interest rate, the market value of the bond will be close to its original principal value.

Finally**, bonds differ in terms of ownership**. With a **bearer bond**, the holder, or bearer, is the owner, so the issuer keeps no record of ownership. Interest from a bearer bond is obtained by clipping coupons attached to the bonds and sending them to the issuer for payment. In contrast, the issuers of **registered bonds** maintain records of owners and pay the interest directly to them.

* + 1. **Types of Issues**

In contrast to common stock, companies can have many different bond issues outstanding at the same time. Bonds can have different types of collateral and be senior, unsecured, or subordinated (junior) securities.

**Secured (senior) bonds** are backed by a legal claim on some specified property of the issuer in the case of default. For example, mortgage bonds are secured by real estate assets; equipment trust certificates, which are used by railroads and airlines, provide a senior claim on the firm’s equipment.

**Unsecured bonds (debentures)** are backed only by the promise of the issuer to pay interest and principal on a timely basis. As such, they are secured by the general credit of the issuer.

**Subordinate (junior) debentures** possess a claim on income and assets that is subordinated to otherdebentures. Income issues are the most junior type because interest on them is paid only if it isearned.

Although income bonds are unusual in the corporate sector, they are very popular municipalissues, where they are referred to as **revenue bonds**.

Finally, **refunding issues** provide fundsto prematurely retire another issue.The type of issue has only a marginal effect on comparative yield because it is the credibilityof the issuer that determines bond quality. A study of corporate bond price behavior found thatwhether the issuer pledged collateral did not become important until the bond issue approacheddefault. The collateral and security characteristics of a bond influence yield differentials onlywhen these factors affect the bond’s quality ratings.

* + 1. **Indenture Provisions**

The *indenture* is the contract between the issuer and the bondholder specifying the issuer’s legal requirements. A trustee (usually a bank) acting on behalf of the bondholders ensures that all the indenture provisions are met, including the timely payment of interest and principal. All the factors that dictate a bond’s features, its type, and its maturity are set forth in the indenture. Features Affecting Bond’s Maturity Investors should be aware of the three alternative call option features that can affect the life (maturity) of a bond.

One extreme is a *freely callable* provision that allows the issuer to retire the bond at any time with a typical notification period of 30 to 60 days.

The other extreme is a *non callable* provision wherein the issuer cannot retire the bond prior to its maturity.

Intermediate between these is a *deferred call* provision, which means the issue cannot be called for a certain period of time after the date of issue (e.g., 5 to 10 years). At the end of the deferred call period, the issue becomes freely callable.

Callable bonds have a **call premium**, which is the amount above maturity value that the issuer must pay to the bondholder for prematurely retiring the bond.

A *non refunding provision* prohibits a call and premature retirement of an issue from the proceeds of a lower-coupon refunding bond. This is meant to protect the bondholder from a typical refunding, but it is not foolproof. An issue with a non refunding provision can be called and retired prior to maturity using other sources of funds, such as excess cash from operations, the sale of assets, or proceeds from a sale of common stock.

Another important indenture provision that can affect a bond’s maturity is the **sinking fund**, which specifies that a bond must be paid off systematically over its life rather than only at maturity. There are numerous sinking-fund arrangements, and the bondholder should recognize this as a feature that can change the stated maturity of a bond. The size of the sinking fund can be a percentage of a given issue or a percentage of the total debt outstanding, or it can be a fixed or variable sum stated on a dollar or percentage basis.

**Term Structure of Interest Rates**

The term structure of interest rates (or the *yield curve,* as it is more popularly known) is a static function that relates the term to maturity to the yield to maturity for a sample of bonds at *a given* *point in time.*16 Thus, it represents a cross section of yields for a category of bonds that are comparable in all respects but maturity. Specifically, the quality of the issues should be constant, and ideally you should have issues with similar coupons and call features within a single industry category. You can construct different yield curves for Treasuries, government agencies, prime grade municipals, AAA utilities, and so on. The accuracy of the yield curve will depend on the comparability of the bonds in the sample.

All yield curves do not have the same shape.

The rising yield curve is the most common and tends to prevail when interest rates are at low or modest levels. The declining yield curve tends to occur when rates are relatively high. The flat yield curve rarely exists for any period of time. The humped yield curve prevails when extremely high rates are expected to decline to more normal levels. Note that the slope of the yield curve tends to level off after 15 years.

Why does the term structure assume different shapes? Three major theories attempt to explain this: the expectations hypothesis, the liquidity preference hypothesis, and the segmented market hypothesis.