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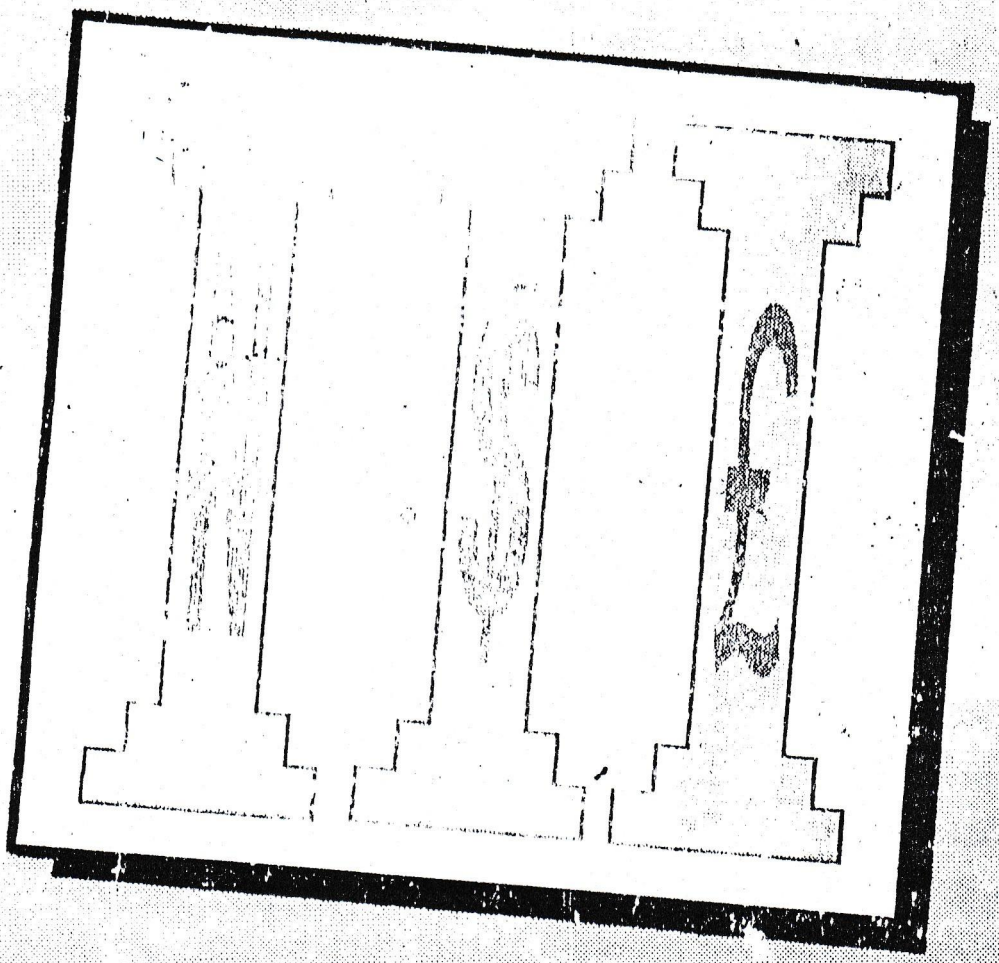

FOUNDATIONS OF FINANCE AND FINANCIAL MANAGEMENT

CHAPTER TEN

INVESTMENT IN FINANCIAL ASSETS

BY
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1.0 INTRODUCTION

Economists recognised human beings as an insatiable economic agents, always seeking means and ways of satisfying the numerous wants using limited scarce resources. There is always conflicting decisions on what to consume now and what to 'keep' for the rainy day. The choice of the appropriate decision depends on the attitude of the individual, his comparism/between current and future consumption, his perception about life, his income, economic environment, objectives etc. These factors notwithstanding, there is a general consensus to always provide for the rainy day which helps not only to hedge against the vicissitudes of the future but also as a security against the variations of times. Surely, investment is one of the most tested and reliable ways of assuring for the rainy day. There is a global acceptance of the use of investment as a good means of ensuring greater consumption now and in the future.

Essentially, investment involves the commitment of scarce resources with the sole aim of receiving n return higher benefits. Okafor (1983) defined investment as any economic activity designed to increase, improve or maintain the productive quality of the existing stock of capital. Okereke (1995) sees it as the profitable postponement of consumption or the process of postponing immediate (current consumption in the expectation of greater consumption n the future. Thus, current consumption is the opportunity cost in investment. Generally, investment acts as catalysts in economic development, and has the objective(s) of profit maximization, wealth maximization and/or social optimization. Two major forms of investment can be identified namely real Asset (tangible) investment and financial Asset investment. These can be distinguished n terms of definition, analytical approach, type of income derived, control, currency denomination, method of assessment and divisibility (Okereke, 1995). These distinguishing factors notwithstanding, they always provide a means of growth in the individual investors and the economy at large and require indebt knowledge of their concept and characteristic operations. But for the purpose of this chapter, we are concerned with investment in financial assets.

1.1 FINANCIAL ASSETS: AN OVERVIEW:

Treatment of Investment in real assets generally looked at the financial manager within a productive business as one who has to make decisions about where to rase his funds and how to deploy and use it, but investment in financial assets, which forms our focus here will look at the financial manager (investor) as the provider of funds who is eager to take decision on where to place his funds. The reason for this is that the financial manger will sometimes be investing on securities rather than in directly productive assets and he will need to know how to evaluate the opportunities which are available to him. Also it will be very helpful if he acquaints himself with impulses which govern the providers of his funds. This will enable him to make an

objective comparism between making unattractive and therefore unsuccessful offers and making ones which are attractive but unnecessarily expensive. Thus, the study of investment in financial asset is good not only to the financial manager but for the growth of the economy at large.

Principally, financial assets are clams against real (tangible) assets. It simply means 'I owe you' (IOU) which creates automatic obligations to the issuers and authorises the holders to have clam over the real assets of the issuer. It represents the rights to future income prospects for the holders. Financial assets are securities traded in organised money and capital (stock) markets. They are made up of riskless and highly risky ones with different maturity periods and yields.

Financial assets can be divided into money market instruments and capital market instruments. Money market instruments are debt securities with short term maturities and are characterised by little default risk and are highly marketable (liquid). They can be discounted or traded for fund prior to maturity in the secondary money market. Example, Treasury Bills, Treasury certificates, commercial papers, Bankers Acceptance, stabilization securities, call money, etc. Capital Market instruments on the other hand are debt securities with long term maturities and varying degrees of risk and marketability. Thus, they are characterised by high default risk, low degree of marketability, higher yield than money market securities more than one year maturity, etc. Examples of capital market instruments include, bonds, stocks, shares, debentures, etc.

Okereke (1995) observed that the growth of investment in financial assets has been very sluggish partly because of the ignorance of the exitance of the investment opportunity or partly because of the under-developed characteristics of financial markets especially among third world countries including Nigeria. He however, identified a comparative increased awareness of investment opportunities in financial assets in Nigeria especially in the wake of compendium of economic policy measures. Essentially, three major types of investments in financial assets can be identified. They are: Direct Investment, Indirect Investments and varied multiple investment.

Direct investments are investments involving commitment of resources to fixed-income (eg. bonds) variable-income (eg Ordinary shares) and hybrid financial assets (securities) (eg preferred shares) as classified and discussed below. While indirect investments are investments involving the commitment of resources to such schemes like life insurance policies, pension funds, etc. Varied investments are the combination of direct and indirect investments, commonly called "basket of investment". This means a collection, bundle or basket of different financial assets (securities) popularly referred to as Portfolio of financial assets. Thus, an investor can invest in a single financial asset and/or in a set of interrelated and inter dependent financial assets (Portfolio investment). The choice of either depends on the investor, his income and other factors. However, for the purpose of this chapter, we are going to consider investment in a single assets called security investment and in variety of securities called portfolio investment. Before we go into detail on the management, analysis and selection of security/portfolio investments let us briefly look at the classification of financial assets.

1.2 CLASSIFICATION OF FINANCIAL ASSETS

Financial assets can be classified into three categories divided basically from the nature of income expected from the assets. Hence, we have, fixed-income, variable-income and hybrid securities.

Fixed income financial assets are securities which guarantees a fixed income, in form of interest, at e maturity period of the security in question. The income accruing to the security holders is constant over period of time except in extreme case of technical or absolute insolvency of the issue, income can be gotiated. Examples, stocks, debentures, savings deposit, and the deposit accounts, money market instruments e Banker's Acceptances (BAs), Commercial Papers (CPs), Certificates of Deposits (CDs), government curities like treasury bills, treasury certificates and stabilization securities, etc. Fixed-income securities nerally earn low income and has very low risk level with government securities ascribed as being risk-free. his is actually in line with the principle of risk-return rule Holders of fixed income securities enjoy when ere is rising value of their currency and lose when there is inflation. Example, a 10% bond means that a ed rate of income of 10% of the type of bond accrues to the holders and they invariably enjoy if there is ing value of money and suffer in the face of inflation.

As the name implies, variable-income financial assets are securities that have no fixed income but vary rding to the performance of the corporate body issuing the security. Income accruable to the holders of security depends on the performance of the company, which is also an outcome of whether business ndition is favourable or not. Thus, they enjoy high income when business is good and vice versa. nsequently, the holders of variable-income securities, are exposed to higher level of risk than the fixed-ome holders. Because of this, high level of risk exposure, they are reserved certain ownership rights in the uing company. Okafor (1983) identified such rights in the voting rights, protective rights in terms of ssible transfer of ownership interest, right to first consideration in subsequent issues of corporate stock, ht to inspect corporate books of accounts, rights to residual income receipts and right to a pro-rate share assets in event of winding up. A typical example of variable-income security is ordinary shares-issued by porate firms.

Hybrid financial assets are securities that combine some characteristics of variable income securities ome of the fixed-income securities. A typical example is the preference shares of companies. These s are in principle issued at a fixed income of say 10% preference shares but it is not binding on the mpany to pay this amount except the company is operating at a profit. This makes this class of security ker than the first two classes.

PORTFOLIO INVESTMENT AND MANAGEMENT

Portfolio investment is simply the commitment of resources (funds) to a collection, bundle or basket securities - stocks, bonds, money market instruments, etc. There has been a fundamental argument on ether investments in single securities are better than that of portfolio investment. Interestingly, it has been ically established (in fact in practice) that portfolio investment pays off better than single security es ent. This is because the risk/return combination of securities (portfolio) is by far better than that of single security.

Portfolio investment decision is facilitated through a body of knowledge called portfolio theory. This ory attempts to predict and explain financial markets phenomena as well as provide guiding rules that will rm optimum portfolio investment decision. It is a theory of diversification and desired efficiency. By this, theory tries to collate securities into a basket' return for a given level to return.

Essentially, the decision to anticipate in portfolio investment is accentuated in its effective management which involves the planning, directing, organising analysing selection and controlling of the optimum portfolio in order to maximise the aggregate portfolio returns and utility therefrom and at the same time minimize the associated risks. From this, we can decipher that portfolio management attempts to:

1. Identify goals and objectives of portfolio which according to Corney (1986) in Ezirim (1995) summarised them to include

   (a) Maximum immediate income receipt with accompanying 'quick' and ready dividend or interest receipts

   (b) Maximum investment value appreciation with potentials for future capital gains.

   (c) Steady net cash flow with safety of investment outlay.

2. Analyse individual securities and portfolio and making appropriate selection.

3. Control which involves a revisitation on the performance of the selected portfolio and fine tuning where necessary.

It is important to stress here that the success of any investor/analyst investing in financial assets depends significantly on how effective such investments are managed. It requires proper knowledge understanding and practise of the 'secrets' of valuating and selecting investments in financial assets (securities) Therefore, we will, in the rest of this chapter, concern ourselves with a detailed treatment of both the traditional and modern method of valuating securities as well as expose readers to the criteria for an objective portfolio analysis and selection and the issue of porfaudit exercise in financial assets' investments.

1.4 SECURITY ANALYSIS AND SELECTION

Security analysis and selection is the mainstay of security valuation which attempts to achieving following objectives:

(*i*) To determine the appraised value of a security through a rigorous analysis of its value parameters.

(*ii*) To determine whether the security is mispriced (overvalued or undervalued) by the market (Okafor 1983).

(*iii*) To select security that yield optimum return. It is also the core of portfolio management, as it forms the first step in portfolio analysis and selection. Basically, the analysis of individual securities informs the collation of 'basket' of securities (portfolio) upon which selection can be effectively accomplished.

Security analysis is undertaken through two major approaches namely traditional approach consisting of the fundamental and technical approaches and the modern approach consisting of the efficient market approach and multiple analytical approach. Before we go into a detailed discussion of these approaches, let us highlight some fundamental issues that constitute security valuation. They include (Ibid).

(a) The value of any security depends on three key variables; the expected return, the price and risk level of the security.

(b) Securities, that are expected to have high returns and/or low risks would normally command high market prices and vice versa, provided that the participants in the capital market are rational. This assumes that the market is efficient and dominated by rational investors who are influenced solely by economic consideration.

(c) Market rationality therefore implies that the price of the security would represent the consensus or at least the dominant market evaluation of its worth.

(d) Independent assessment securities could of course, differ from market assessment which always creates disagreement between privately assessed securities and its market price.

(e) The appraised value of a security is its value as ascertained by individual investors.

(f) Due to the discrepancy arising from (d) above, there is the tendency to misprice a security, which may take the form of over-valuation or under-valuation. A security is over-valued when the market value is greater than the appraised value and under-valued when the reverse is the case.

Accordingly, a rational investor will prefer to buy and hold under-valued securities and sell off over-valued securities, as he hoped to maximise total returns by these decisions.

1.5 APPROACHES TO AN OBJECTIVE SECURITY ANALYSIS

One of the fundamental issues in Security Analysis is mispricing of securities in the capital market. It is a basic rule in security management that investors will naturally buy undervalued securities while over-valued ones are sold off. Incidentally, the process of accomplishing this rule is rather complicated thereby creating greater challenge to the market mispricing of security and generating conflict among investment analysts. In resolving this conflict they (analysts) have taken different approaches to security analysis. Thus,

two broad groups can be identified as follows:

1. Traditional Approaches which comprises of

   (a) Fundamental Approach
   (b) Technical Approach

2. Modern Approach made up of:

   (a) Efficient Market Approach
   (b) Multiple Analytical Approach (MAA)

1.5.1 Fundamental Approach

Fundamental approach is one of the investment appraisal scene. The basic tenet of this approach is that every security has an intrinsic long term worth different from any transitory value that is placed on it currently by the market. In other words, the price of a security must reflect its aggregate market opinion which is based on a detailed analysis of information about security. Essentially, if the intrinsic value of a security is above its current market value, it is a pure signal to buy the security and vice versa. But if the security is already held by the investor, it should be sold off.

The workability of the fundamental approach is based on a number of assumptions. These are.

(*i*) That every security has an intrinsic value.
(*ii*) That the intrinsic value of any security can be determined by their generated financial data.
(*iii*) That the intrinsic value of every security is reflected by its market price.
(*iv*) That the intrinsic value of every security may go unrecognised by the market in the shortrun but will eventually be recognised by the market in the longrun.

The intrinsic value assumed by the fundamentalists can be predicted by using some performances indicators like some index of risk, discounted conversion rate for funds and record of earnings per share for the security held. Thus, inter and intra-company factors which influence general company performance are employed. This involves four interelated analysis.

1 Economic Analysis which examines the general economic condition in order to determine the past, present and future direction of the aggregate economy. The analysis will give an indication of growing or retarding economy.

2 *Industry Analysis:* This analysis looks at industry factors that influence company's profit performance. Such factors include rates of growth, technological changes, major features that make the industry preferred, opportunity for future investment, etc.

3. *Company Analysis:* This analysis helps the fundamentalist to provide information concerning the company. This analysis looks at those features that make the company unique. They include the nature and demand of a company's goods and services it offers, its product and its corporate management.

4. *Financial Analysis:* The above three analyses are quantified and summarised in financial analysis which attempts an evaluation of the past, present and future corporate finance performance of the company. This is further summarised in various financial statement (Balance sheet, income statements), from which the calculation and interpretation of a financial ratios are done. Some of the ratios which a fundamental analyst might calculate and interpret include earnings per share, price earnings Ratio, Earnings Yield, Dividend Yield, Dividend cover, and Gearing. These calculated ratios are compared with what is obtainable in the market in order to determined the under-pricing or over-pricing of securities.

1.5.2 Technical Approach

Like the fundamentalist, the technical analyst does not believe in the intrinsic value content of a security rather he believes that price movement of securities is based on market forces of demand and supply. Accordingly, they strongly believe that history tends to repeat itself such that with an identifiable and recurring market behavioural pattern of a security, an investment decision rule can be established. The technicians established this market pattern using charting techniques like point and figure charts, Bar charts, Pie charts and Line charts. With these charts, movement of market price of securities are known but ignoring the causes of the movement. Technicians can also be called market analysts or chartists.

Apart from the charting techniques mentioned above, other famous tools are also available for the technicians. They are moving averages, Dow Theory, etc. Dow theory sees the market as having three movements (primary, secondary and minor) all going at the same time.

1.5.3 The Efficient Market Approach

The basic tenet of this approach is the efficiency of the capital market theory which states that in an efficient market, the price of securities is a function of relevant information concerning those securities. The prices of securities are affected with the entrance of any new and relevant information about the security. The capital market theory has always been said to be epitomised by the Randon Walk (Efficient Market) Hypothesis which maintains that:

(a) Security prices in the market fully reflect all available and relevant information about such security.
(b) Successive changes in security prices are independent and hence,
(c) There is no specific and recurring pattern in the behaviour of market prices of securities on the basis upon which a reliable trading rules could be formulated (Okereke 1995).

The Randon Walk Hypothesis simply states that stock price movements are random and, therefore, unpredictable. This, consequently, makes the chartists' techniques invalid and unworkable. It can also be

called the weak form.

Two other reforms are complimentary to the Random Walk Hypothesis (The 'weak' form). They are the 'semi-strong' form and the 'strong' form.

(a) The 'semi-strong' form: This states that the current market price for a security has been determined by a market which has assimilated not only historic information but all publicly available information about the security under consideration. Thus, it will be a futile, exercise for an analyst to sort for another information concerning the security either from the company's annual reports or the general economic condition or from other sources. This implies that for a semi-strong efficient market, neither a technician nor a fundamentalist can make more than normal profit from share dealing activities but an insider having access to confidential information might do so.

(b) The 'Strong' Form: The strong form has no regard for any information whether public or private, as the market prices of securities are determined taking into account those information abi initio. This implies that those who have inside information concerning the security will be unable to achieve a more than normal return.

1.5.4 Multiple Analytical Approach

As the name implies, this approach is multidimensional involving the application of both the technical, fundamental and efficient market approaches. Thus, the multiple analysts should be able to combine the features of the fundamentalists, the chartists and the market analysts. This is an attempt to underscore the shortcomings of the individual approaches.

In practise, investment analysts employ this approach because it tends to capture the whole techniques needed for an objective investment decision. While technicians, the fundamentalist and the market analysts, ignore the approach of each other, the multiple analyst accommodates every one of them by integrating their positive attributes upon which an informed and desired investment result is achieved. This makes this approach very unique and most result oriented. However, its application in security analysis is not very popular among practitioners and students even when they are applied in ignorance.

1.6 VALUATION OF FINANCIAL ASSETS (SECURITIES)

The intrinsic value of a security is determined by the monetary benefits expected from such security. This monetary benefits is further ascertained by valuating the security using appropriate security valuation models. This implies that non-financial consequences have no direct bearing in the valuation process.

Essentially, the value of financial assets (securities) is the present value of the expected cash inflows from that asset(s) (security) over its holding life span. But the present value is the discounted value of the expected future income. Thus investment in financial assets must be accompanied by a stream of cash inflow throughout their time holding life and discounted using a required rate of return (discount rate). From this, two main valuation variables can be identified.

(a) The stream of cash inflows
(b) the required rate of return (discount rate).

These two variables form the basis for the valuation of a security as shown in the model expressed thus

$$V_{xi} = I_0 + \frac{CF}{(i+r)} + \frac{CF_2}{(irr)} + \ldots + \frac{CF_n}{(i\ r_{xi})}$$

$$= \sum_{t=0}^{n} \frac{CF_{xi}^{t}}{(i+r_{xi})^{t}}$$

where

V_{xi} = Value of security X_1

I_0 = Value of investment

$CF_1 \ldots CF_n$ = Cash inflows from investing in Security X_1 over the time n

r_{xi} = Appropriate rate of discount for the security X_1

This is the basic valuation model, other variations are applicable to the individual financial assets like bonds, equity stock (shares), dividend, debentures, etc. Hence, we have bond valuation model, equity stock valuation model with its variations like Asset valuation model, Dividend valuation model, Earnings valuation model, capitalization approach and Growth and decay models. (Okafor 1993). Francis (1980) identified three of these as being more popular. They are the cash flow approach, the stream of earnings approach, the dividend approach. We are going to look at some of these models and see how they are used in determining the value attached to a security.

1.6.1 *Bond Valuation Model*

Fixed income securities are typically exemplified by bonds which are valuated using our basic valuation model above. Thus, the value of bond is determined by relating expected net cash-flows to the investment value of the security which is the rate of return or the yield. Therefore, the true value of a bond is its yield. Different bond yields can be identified. They include nominal yield, current yield, yield to maturity, Holding period Yield, Bond Equivalent Yield and Bank Discount Basis yield.

Nominal Yield

This is the bond's coupon rate, usually and printed boldly in front of the bond certificate. This serves as a descriptive term on the bond. It is the percentage of the face value of the bond as contained in the certificate. It is also expressed as the total naira payment on the bond divided by its par value. This can be expressed thus:

$$\text{Nominal Yield} = \text{Coupon Rate} \times \text{Face Value of Bond}$$

$$\text{Coupon Rate} = \frac{\text{Total Naira Payment to the Bond holder (Nominal Yield)}}{\text{Par Value of the Bond}}$$

Example, A 5 percent coupon rate on a N150 JESCO Int'l bond 1998

payable annually.

Nominal yield = 05 x 150 = 7.5

If interest is said to have been paid semi-annually or quarterly, this amount (7.5) will be divided by 2 or 4. This bond owned by JESO Int'L is only redeemable in 1998.

Current Yield

This is a one period rate of return on a bond, otherwise called market yield. Current yield or Market Yield attempts to measure annual cashflow of a bond based on its current market price. It is expressed as the percentage of par value of a bond divided by its current market price.

Thus, $$Y_c = \frac{ip}{cp} \times 100$$

or

$$Y_c = \frac{ACI}{Cp} \times 100$$

where

Yc = Current Yield
P = Par Value (Face Value)
ip = Cash Interest payment
cp = Current Market price
ACI = Annual cash Income = Face Value x Interest

ample, consider a 6% PZ bond with annual par value of N100.

It is later sold for N120 on the stock exchange.
Determine the current yield of the bond.

$$Yc = \frac{ip \times 100}{Cp} = \frac{6 \times 100}{120} = 5\%$$

or

$$Yc = \frac{\text{Annual Cash Income} \times 100}{\text{Current Market Price}}$$

$$= \frac{.06 \times 100}{120} \times 100 = 5\%$$

Note: If the current market price falls to say, N90, the current yield would rise to 6.6%. Therefore, an increase in the market price results in a decrease in current yield and vice versa.

Yield to Maturity

This is also the effective annualised yield to maturity and it is the rate of return on a bond if it is held aturity. It is the discount rate that equates the discounted value of all income from the bond with the ase price. it is highly sophisticated and complex and mostly preferred by institutional investors as well essionals. It usually follows the trial and error approach commonly associated with I R R as well as its ecision rule. Thus, if the calculated yield for maturity (yield rate) is greater than the coupon rate (nominal eld), the price will be less than the face value (ie sold at a discount) and vice versa. However, a short-cut has been devised to calculate yield to maturity (YTM) just as is the case with internal rate of return.

$$Yr = \frac{iPo - (Po - Vo)/n}{Po + Vo/2}$$

where

Yr	=	Yield rate or Yield to Maturity
iPo	=	Cash interest payment
Po	=	Par Value (Face Value)
Vo	=	Market price of the bond (Redemption Value)
N	=	Number of years to maturity

Example, consider a 12 percent annual coupon interest for Lever Brothers Plc bond which has a par value of N110 and will mature in the year 2001 from now. The bond is currently selling at a discount at N100. Determine

(a) The Nominal Yield
(b) Current Yield and
(c) Yield to maturity

Given a nominal rate of 12%, therefore Nominal Yield

$$.12 \times 110 = \underline{N13.20}$$

$$\text{Current Yield (Yc)} = \frac{\text{Annual Cash Income}}{\text{Current Market Price}} \times 100$$

$$= \frac{.12 \times 110}{100} \times 100 = \frac{1.32}{10} \times 100$$

$$= \underline{13\%}$$

$$\text{Yield to Maturity (Yr)} = \frac{iP + Po - Vo/n}{Po + Vo/2}$$

$$= 13.20 + (110 - 100)/5$$
$$= 13.2 + 2$$

$$= \underline{15.20\%}$$

The above example is calculated from the point of view of the holder. Bond issuers will view i differently by looking at the competitive yields of their bonds. Therefore, given the yield rate, the issuer no finds the market price (Redemption Value) of the bond by substituting and making market price (Vo) th subject of the formula and solving therefrom.

Holding Period Yield

This is similar to the yield to Maturity but differ in terms of period of maturity. While Yield f Maturity is calculated on maturity, holding period yield is calculated before maturity. That is, at the period t bond is disposed and not at maturity.

Holding Period Yield is calculated suing this model

$$Vhp = \frac{iP + (Po - V_1)/n}{Po + \frac{V_1}{2}}$$

where

Vhp = Holding Period Yield
Vt = Market Value of the bond as at time (t) of its disposal.

All other expression remain the same.

From this mode, we see that it is similar to Yield to maturity but differ in V_t (disposal time) and V_o (maturity time). This type of yield is used mainly for securities that do not have predetermined maturities.

Bank Discount Basis Yield

This type of yield is used for financial assets that do not possess any coupon and are consequently sold at a discount. It is expressed as

$$Y_{bdb} = \frac{d}{P_o} \times \frac{360}{tn} \times 100$$

where

Y_{bdb} = Bank discount Basis Yield
d = Discount (in cash)
P_o = par Value of the bond
n = Number of days to maturity (this must be specified).

Bond Equivalent Yield

This is similar to Bank Discount Basis Yield but differ in their denominator while the Bank Discount Basis yield uses par value and 360 as denominators, the Bond Equivalent Yield uses market price of the bond and 365.

bond Equivalent Yield is expressed as

$$Y_{be} = \frac{d}{V_o} \times \frac{365}{n} \times 100$$

where

Y_{be} = Bond Equivalent Yield
d = Discount
V_o = Market price of bond
n = Number of days to maturity (to be specified)

'd' is calculated by subtracting the market price (selling price) of bond from its face value (par value).

Common Stock Valuation

Common stock is one of the most popular financial assets among investors and it is attracting greater attention for investment more than any other financial asset. The reason for this is that apart from the income yields potentials of the asset, the pride of ownership among investors makes investment in equity stock most attractive.

Common or Equity Stock Valuation is based on the same principle of discounting future returns and can be accomplished through a number of models, as pointed out earlier. The use of any one of them depends on the investor, analyst's income perception, his investment objective, the circumstances of the issuing firm etc. Let us briefly look at the applicability of some of these models.

Earnings Valuation Model

Some investors see earnings as the critical variable that determines the true worth of equity stock investment. This model assumes to be most suitable for an investor with long term horizon and having minority shareholding. To the economists, true definition of earnings is profit after tax minus, all internal investments (retained earnings). Therefore,

$$V_o = \sum_{t=(i+k)^t} \frac{E_t - I_t}{}$$

where

E_t = Earnings in period t
I_t = Extra internal investment (retained earnings) in period t.
K = Appropriate discount rate
V_o = Appraised value per share

If the earnings is growing or decaying at a constant rate g, the valuation model becomes

$$V_o = \frac{E_t - I_t}{K - g}$$

This is called constant Growth (Gordon) Model and it is commonly used by investors in valuing preferred stock. Generally, dividends paid to preferred stockholders remain unchanged throughout the life of the stock and so form a perpetuity. This implies that you can use the model with growth = 0.

Therefore

$$V_o = \frac{Div_o (1+g)}{K - g}$$

$$= \frac{DiVo\ (1+0)^1}{K-g}$$

$$= \frac{Div}{k}$$

where

Div = Dividend expected at the end of one year and annually after that (Div = Div = Div).
K = Annual rate of return an investor requires on an investment in preferred stock.

Example, preferred stock of Convenant services trades over the counter at N14.50. What is the intrinsic value of the stock of the investor expects the company to pay an annual dividend of N2.10 per share and requires a 12% annual rate of return.

$$V_p = \frac{Div}{K}$$

$$= \frac{12.10}{.12} = \underline{\underline{N17.50}}$$

The investor should buy the stock because 'convenants preferred stock' at N14.50 is underpriced under this circumstance, the investor accumulates more wealth (3.00) by investing in the stock than by investing in real asset of the risk yielding 12%.

Dividend Valuation Model

This model prefers the use of dividend in determining the value of shares. Accordingly, the model views the discounted value of the dividend coming to a given equity stock to be equal to the value of that stock. In other words, the appraised value of an equity stock is the discounted value of the stream of dividend accruing to the stock over its life span. The discount rate used is the rate at which the firm is capitalised (capitalization rate).

The model can be expressed as:

$$V_o = \frac{d_1}{1+r} + \frac{d_2}{(1+r)^2} + \ldots + \frac{d\omega}{(1+r)^\omega}$$

V_o = Appraised value per share
d = Dividend for years 1 and 2
r = Capitalization rate

$d\omega$ = Infinite dividend arising from common stock held infinite.

The above assumes that stock is held in perpetuity but if it is definite, the model will be

$$V = \frac{d_1}{(1+r)^1} + \frac{d}{(1+r)} + \ldots + \frac{E(P)^n}{(1+r)^n}$$

where

$E(P)^n$ = The expected price of stock at period n which is the time the common stock is disposed of. Here it is two years.

Therefore expected price is the expected future dividends after the period.

$$E(P) = \frac{d_n + 1}{(1+r)^{n+1}} + \frac{d_n + 2}{(1+r)^{1+2}} \ldots + \frac{d\omega}{(1+r)^{\omega}}$$

PORTFOLIO ANALYSIS AND SELECTION

Introduction

As stated earlier in this chapter there are two ways of approaching investment decision in financial assets.

(1) Analysing and selecting individual assets
(2) Analysing and selecting a group of assets (Portfolios)

The first we have treated, the second is concerned with this part. Incidentally, there have been serious augments on whether to assess securities individually or as a group by investors/analysts. The truth is that both approaches are scientifically good but the choice of any one of them should depend on the circumstances surrounding the investor especially, his income potentials. However, the proponents of portfolio analysis argued that the shift to this approach is necessary because the major concern of an investor is to ensure that portfolio risk is minimized and return on the portfolio maximized. They also believed that the portfolio performance is not par say a straightforward summation of the risk-return features of the individual assets in the portfolio. Again, according to them, since the assessment is on the portfolio performance, the assessment of the individual securities must be in line with their contribution to the overall performance of the portfolio. These reasons in favour of portfolio analysis are arguable but we will not be concerned with such augment here because of our objective of unveiling the technique for an objective portfolio analysis and selection.

PORTFOLIO ANALYSIS

Principally, risk and return on portfolio is directly related to the risk and return of the individual securities that make up the portfolio. It means therefore that portfolio analysis must begin with the determination of the expected return and risk of the individual securities using appropriate decision models as follows:

(1) Expected Return on security is

$$E(X_i) = \Sigma X_i P_i \ldots X_n P_n$$

where

$E(X_i)$	=	Expected value on security X_j
X_i	=	Cash inflow (return on security in year one
P_i	=	Associated Probability in year one
X_n	=	Return on security for period n.
P_n	=	probability for period n.

(2) Rate of Return on security

$$R_j = \frac{C_{pj} - P_{oj} + D_j}{P_{oj}}$$

where

R_j	=	Rate of return on security j
C_{pj}	=	Current market price on security j
P_{oj}	=	Par Value of security j (Purchase price)
D_j	=	Dividend income received for holding security j.

(3) Standard Deviation which is an index of measurement of risk associated with a financial asset and it is the square root of the variance.

$$\delta = \sqrt{(X_i - E(X)^2 P_i)}$$

where

δ	=	Standard Deviation
n	=	Number of possible returns
X_i	=	ith Outcome (cashflow)
E(X)	=	Expected return
P_i	=	Associated probability of the ith outcome

But Variance (δ^2) = $(X_i - E(X)^2 P_i$

(4) Conveyance (Cov)

$$Cov = \frac{\delta j}{E(X_j)}$$

where

δj	=	Standard Deviation for asset j
$E(X_j)$	=	Expected return for asset j

Portfolio Return

From the above, we can determine portfolio return and risk.

According to Okafor (1983) portfolio return is the weighted average of returns on the component securities. Accordingly, it is the expected return of individual securities aggregated together. Thus:

$$E(R_p) = W_1 E(R) + W_2 E(R) + \ldots W_n E(R_n)$$

$$= \sum_{j=1}^{n} WjE(Rj)$$

where

$E(R_p)$	Expected Return on the portfolio
n	Number of securities in the portfolio
W_j	Relative weight of the security j in the portfolio.
$E(R_j)$	Expected return on security j

Therefore, for a three-asset portfolio, namely Bond (B) Ordinary Share (O) and Preference share (Ps), the expected Return on the Portfolio would be

$$E(RP) = W_B E(R_B) + W_O E(R_O) + W_{Ps} (R_{Ps})$$

$$W_{BOPs} EB^{OPs})$$

This simply means that this three asset portfolio is the weighted (using their respective values) average of returns on asset B, Asset O and asset Ps.

Portfolio Risk

Ordinarily, one would expect the calculation of portfolio risk to take similar, the approach to portfolio returns. But, it does not follow. While portfolio returns is the weighted average of the individual securities in the portfolio, portfolio risk, is not only the weighted average of risk of individual securities in the portfolio but also the relationship of conveyance or correlation coefficient between the returns of the securities. Thus, portfolio risk is a function of each individual security's risk and the conveyance between the returns on the individual securities. It is the standard deviation of portfolio returns. The risk of a portfolio will be affected to the extent that the securities in the portfolio are incorrelated. By implication, portfolio risk for three assets (P_{BOPs}) can take the values O, - 1 and + 1. When portfolio risk is + 1 (ie $P_{BOPs} = +1$) it shows a perfect positive correlation, the investor is most comfortable and does not require any diversification but when it is - 1 (ie $P_{BOPs} = -1$), diversification is the best strategy to eliminate some of the risks, if not, all risk. According to

Sharpe (1984), the former produces at best risk averaging while in the latter, it is possible for an investor to make a combination of securities in such a manner as to eliminate almost, if not, all risk. Markowitz (1959) provided the basic theoretical framework for a systematic portfolio analysis and selection. He applied the complex mathematics of quadratic programming to the question of how to select from among hundreds of individual securities, given certain basic information to be supplied by Security Analysts and Portfolio Manager and how to weight these selections in composing portfolios.

Markowitz (1959) in Okafor (1983) expressed a two-asset portfolio risk as:

$$S_p = W_x S_x + W_y^2 S_y^2 + 2W_x W_y Cov_{xy}$$

S_p = Portfolio risk is standard deviation of portfolio expected returns.

W_x = Proposition of portfolio invested in X
W_y = Proportion of portfolio invested in Y
S_x = Risk of security x ( )
S_y = Risk of security Y ( )
Cov_{xy} = Convey of X and Y.

But

$$Cov_{xy} = R_{xy} S_y S_x$$

where

R_{xy} = Return on assets X and Y

PORTFOLIO SELECTION

As pointed out above, Harry M. Markowitz laid the scientific foundation for not only portfolio analysis but also for selection. In his study, he advocated determining efficient portfolio in terms of the expected return and variance (risk measurement) of that return and how an investor should select an efficient portfolio from the universe of possible alternatives, Francis and Archer (1971). Portfolio is the end result of an objective portfolio selection process which according to Okafor (1983) involves a four stage operation: security analysis, generation of opportunity set, identification of efficient portfolios and selection of preferred portfolios. The selection of the preferred portfolios is founded on the dominance principle which states that given all investments with certain level of expected returns, the security that by the least degree of risk is most preferred and given all assets in the same risk class, the asset that has the highest expected return is the most preferred (dominate others).

Markowitz portfolio model is no doubt the basis for every portfolio analysis and selection. The capability of the model in determining prices of financial assets upon which selection can be based has been in question

because of the specific loophole of the model in providing a definite framework for determining the values of individual assets or portfolios. Consequently, Sharpe (1964) developed a testable model called capital asset pricing model (CAPM). This model is used for determining the prices of financial assets (securities) and is based on a number of assumptions. Essentially, the model states that the expected one-period return on any security or portfolio would be determined by three variables: the risk-free return, the market return, and the market sensitivity of the asset. This is expressed as

$$E(R_i) = R_f + B_i[E(B_m) - R_f]$$

where

$E(R_i)$ = Expected return on asset i
R_f = Rate of return of Risk-free asset for portfolio
B_i = beta coefficient of the asset of portfolio
$E(B_m)$ = Expected return on the market portfolio

The Beta coefficient, which is a measure of the risk of an asset or portfolio relative to the risk of the market portfolio, is expressed as

$$B_i = \frac{Cov\ (R_i\ R_m)}{Var\ (Rm)}$$

where

$Cov(R_i, R_m)$ = Coveniance of portfolio, and the marker portfolio, m,

$Var\ (R_m)$ = Variance of the Market portfolio

CAPM is a good model for the determination of financial assets prices but has been criticised because of its unrealistic underlying assumption. Example, the model assumed homogenous return expectations and a single borrowing and lending rate, no taxation costs, etc. These criticisms notwithstanding, analysts and/or investors have found the model usual. However, it has been argued that it is most useful in postaudit exercise

POSTAUDIT EXERCISE IN FINANCIAL ASSETS INVESTMENT

Just like in tangible assets investments, postaudit exercise should also be conducted in financial assets investments. As the name implies, it is an exercise to be undertaken after a security or portfolio has been selected for investment Postaudit is, therefore, a one-time exercise which compares actual performance vis-a-vis planned performance. Thus, it is a performance measurement exercise involving control, monitoring reappraisal, and fine-tuning. The actual potentials of the portfolio is known after this exercise. Treynor

developed a performance measurement model called Reward-to-volatility ratio (RVOL). This model shows the relationship of excess return the investor achieves on any portfolio or asset holdings to the amount of risk assumed. It is expressed as:

$$RVOL = \frac{pr}{Bi}$$

where

RVOL = Reward-to-[volatility ratio
pr = Risk Premium
Bi = Beta Coefficient

But Risk premium is the difference between the return on a security or portfolio and return on its risk-free assets (these are assets without any inherent risk eg. government stock). This implies that the value of risk premium of an asset depends on its beta coefficient. Thus, an asset with zero beta coefficient would have no risk premium. It can be expressed as

$$Pr = Bi(E(Rj) - Rf)$$

where

Pr = Risk premium
E(Rj) = Expected Return on asset j
Bi = Beta coefficient
Rf = Risk-free asset

Substitution risk premium in the equation, we have

$$RVOL = \frac{Pi\,(E(Rj) - Rf)}{Bi}$$

Jenson (1968) concluded that any asset or portfolio which yields the highest risk premium-to-risk ratio ranks the highest than other assets or portfolios.

Jenson (1968) concluded that any asset or portfolio which yields the highest risk premium-to-risk ratio ranks the higher than other assets or portfolios. We should note that the asset or portfolio that yields the highest risk premium-to-risk may not necessarily be the best option when the analysis and selection was initially done. Essentially the economy is dynamic, money and capital market operations are always changing with economic circumstance. All these may make an investment decision invalid. The need for an objective periodic reviews and follow-ups (postaudit) become not only relevant but necessary.

SUMMARY AND CONCLUSION

This chapter defined investment and identified two forms namely Real Asset (Tangible) investment and Financial Asset investment with a focus on the latter. An overview of financial assets was undertaken defining financial assets as claims on real (tangible) assets and comprising of money market and capital market instruments. These assets were classified to include fixed-income, variable-income and hybrid-income securities. Investments in financial assets has been identified as Direct Investment, indirect investment and varied (multiple) investment.

Portfolio investment is seen as investment in a basket of securities and its management attempts to identify goals and objectives of portfolio, analyse individual securities and portfolio and making appropriate selection and control. The analysis of individual securities involves two major approaches namely Traditional approach made up of Fundamental and Technical approaches and modern approach made up of Efficient Market and Multiple Analytical Approaches. These analyses lay a strong foundation upon which valuation of securities are based. Thus, the value of financial assets is determined using valuation models depending on the type of security e.g. Bond valuation model, stock (Equity) valuation model, dividend valuation model, etc. The choice of anyone of the models depends not only on the type of investment but also on the investment objective of the analyst.

Portfolio investment and management also involves the analysis of portfolio and its selection. Portfolio analysis commences with the determination of the expected risk and return of individual securities and the the determination of portfolio risk and return. portfolio return is the weighted average of returns (expected return) on the component securities while portfolio risk is not only the weighted average of individual securities in the portfolio but also the relation of covariance or correlation coefficient between the returns of the securities. Portfolio analysis preceeds portfolio selection which involves four-stage operation: security analysis, generation of opportunity set, identification of efficient portfolios and selection of preferred portfolios. H. Markowitz developed a model called Markowitz portfolio model which provided the basic theoretical framework for a systematic portfolio analysis and selection.

Postaudit exercise, which is a performance measurement exercise concluded in this chapter.

CONCLUSION

Investment in financial assets is attracting greater attention among investors/analysts in response to the economic dictates of the times. Economic crunch with its attendant liquidity crisis, especially in developing countries including Nigeria, has made investment in tangible assets very difficult because of its huge initial investment cost outlay. Consequently, investment in financial assets has come to assume the best investment option in the circumstance. In order to achieve the best financial investment option and realise the investment goals, the investor/analyst should be able to formulate an investment strategy. This must start with the identification of investment goals and plans to attaining them. The investor must also be conscious of timing of investment in order to take advantage of changes in the money and capital markets.

Sometimes, it may be difficult itemising all possible investment goals but it is crucial to establish such goals and develop financial plans consistent with them. For example, an investor's goal can be "To earn a

15% after-tax return by investing in a portfolio evenly split between fixed-income earning assets and variable income earning assets". This forms a proper focus of his investment direction. It is also good to specify the WHEN of investment and HOW of expected return (ie mode of receiving returns on investment). All these, make it easier to select the security consistent with the set goals. Considerations should be given to both quantifiable and unquantifiable investment parameters.

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