**VALUATION OF SECURITIES (VALUATION MODELS)**

The objective of financial management is to maximize the market value of the firm’s equity shares. The finance manager therefore needs to understand how shares are valued and how the interaction between financing, investment and dividend decisions influence this value. The total firm’s value is the value of equity plus the value of equity (share capital) plus the value of non-equity claims (debt). The finance manager needs to also understand how the non-equity claims are valued.

The knowledge of valuation of securities is also important to investors (shareholders) and debt holders as this helps them in deciding whether they should buy or sell securities at the prevailing market prices.

What are financial securities? These are documents which represent or acknowledge the firm’s indebtness to investors e.g. the holders of ordinary shares, preference shares, corporate bonds, commercial paper, treasury bonds and treasury bills have all purchased the relevant documents from corporations as well as the government. Financial securities are traded in the capital market. The market price for such securities is determined by the forces by the forces of demand and supply. However, the forces of demand and supply are also influenced by non- economic factors such as rumors, and speculation on the part of investors. Consequently it is necessary to value these securities using established or fundamental formulae known as valuation models.

**REASONS FOR VALUATION OF SECURITIES/ BUSINESS**

* 1. **For liquidation purposes**

When the company is to be liquidated, its assets will be valued in order to determine the amount to be realized from the sale of the assets.

* 1. **For mergers and acquisitions**

When the mergers and acquisitions take place, there is a need to determine the value of each company in order to establish whether there will be any additional benefits (Synergy) that will be realized from the merger.

* 1. **In order to use securities as collateral**

There is need to value securities when the security holder invests or uses the security as collateral to obtain loans from banks.

* 1. **For sale of the security**

Investors could require valuation of their securities when they want to sell them in the market in order to determine whether the security is over-valued or undervalued or efficiently priced by the market forces.

* 1. **For quotation or listing of the companies**

The company has to value its securities when it is being listed in the stock exchange for the first time.

* 1. **For insurance or taxation purposes**

Assets of the company will have to be valued for tax purposes especially when granting capital allowances and when they are to be insured in order to ensure that the assets are not under-valued.

* 1. **For sale of branch or subsidiary**

The company will value its securities when there is a sale of a branch or subsidiary to external parties.

**THEORIES OF VALUATION**

There are three theories of valuation namely:

1. The fundamental theory.
2. The technical or chartist theory.
3. The random walk theory.
4. **The fundamental theory**

It states that the theoretical or intrinsic value of a security equals the present value (PV) of all the expected future benefits to be realized from the securities.

1. **The technical (Chartist) theory**

The theory is based on the belief that history repeats itself. It states that past price movements will be repeated in future. Thus if past price movements are plotted or charted on a graph it is possible to estimate the future price of the security. This theory identifies three price patterns:

* **The primary trend**

This is the price movement which has been observed, charted or plotted for a period of more than one year.

* **The secondary trend**

These are price movements which have been observed or charted for a period of less than one year.

* **The tertiary trend**

These are price movements observed or charted over very short periods of time- weekly or daily.

1. **The random walk theory**

It is based on the importance of information in the valuation of securities. It states that the security prices will behave in a random manner depending on the information that has been released into the market. The information released into the market will attract different reaction from investors. Because of this, the random walk theory states that the theoretical value of a security will never be an exact figure due to the random receipts and reaction to such information. This theory leads to the efficient market hypothesis which states that information whether good or bad, once released into the market will quickly reflected in the security prices.

**THE CONCEPT OF VALUE**

The term value is often used in different concepts as follows:

* **Book value**

This is the value of the firm’s balance sheet. It often represents a historical rather than a measure of the current worth. Thus the net book value of a firm represents the depreciated value of assets less outstanding liabilities. From the accounting perspective, this net book value represents the amount of owners’ equity in the firm.

Criticism

* It is based on accounting conventions policies and estimates that are subject to a great deal of subjectivity.
* Historical balance sheet figures of which the book values are based are often very divergent from economic values. They do not reflect a firm’s earnings power. Hence book values cannot be regarded as good estimates of true investment values.
* **Liquidation/ disposal value**

This is the value that could be realized if an asset(s) were sold individually and not as part of a going concern e.g. If a product line is discontinued, the machinery used in its production might be sold. The sale price would be its disposal value and would be determined independently of the firm’s value. Similarly, if a firms operations were discontinued and all its assets were sold as a separate as a separate collection and then used to repay liabilities, the total net sales proceeds would represent the firms liquidation value. Hence the liquidation valuation model involves the computation of the liquidation value per share (LVPS).

**Criticism**

Although the LVPS appears better than BVPS, it has several limitations, namely:

* It is often difficult to estimate what amount would be realized from the liquidation of the various assets.
* It does not reflect the firm’s earnings capability. LVPS only makes sense for those firms that are better dead than alive. Such firms are not viable and their intrinsic values cannot be determined.
* **Going concern value**

This is the amount realized if the firm is sold as a going concern rather than on the basis of liquidating its assets. The buyer is willing to pay a price on the basis of the expectations of the firm’s future profits/ cash flows.

* **Substitution value**

This is the amount of money that could be paid to purchase the next available substitute for the production process. It involves determining the value of a security by looking at the value of a similar security of a

competitor company in the same industry. The problem arises when the competitor in question has much higher (or lower) earnings capacity that makes comparison faulty e.g. EABL vs. Keroche

Criticism

* Firms do not have similar productive assets for the purpose of using one security as a substitute of another.
* No two firms are identical operating characteristics. Even firms in the same industry have different operating policies, management styles, different sizes, different sizes of diversification, technology, e.t.c.
* **Replacement value**

Replacement value is based on the cost of replacing the existing assets. This is the amount that will be needed in order to purchase an asset with the same productive capacity like the one being replaced. However, only productive fixed assets can be replaced at a go since current assets are circulating assets.

Criticism

* Based only on a portion of the assets.
* Replacement value can be subjectively determined.
* **Intrinsic value**

This is the theoretical value of the asset (security) and can be defined as the present value of the expected future cash flows. It is the value as perceived by investors given the amount, timing, and riskiness of future cash flows. Given the riskiness, uncertainty of future cash flows, the investor determines an appropriate discount rate to use in computing the present (intrinsic) value of the asset. Once the investor has determined the intrinsic value of the security, it is compared with the market value. If intrinsic value is greater than market value, then the security is undervalued and vice versa.

Criticism

* Is based on historical data.
* Different models may provide different intrinsic values.
* **Market values**

This is the observable value of an asset/ security in the market place. It the market price of a security that is influenced by market forces i.e. demand and supply. Other factors, however, do affect the market value of securities, namely economic factors, political factors, nature or quality of management, the firms earnings power (both current and expected), rumors and speculations on the part of investors, the industry in which the company operates, the investors required rate of return e.t.c.

**VALUATION MODELS**

Valuation models are classified into the following categories:

* 1. The general/ basic valuation model.
  2. The bond valuation model.
  3. The equity valuation models.
* Dividend valuation model.
* Earnings capitalization model.
* Liquidation valuation model.
* Book valuation model.
  + 1. **THE GENERAL VALUATION MODEL**

The model states that the value of any real asset or financial security equals the present value of the benefits (expressed as cash flows) expected from it, discounted at a given rate of return. In other words the value of a security is equivalent to the present value of a capital project.

The value of a security, therefore, depends on two factors, namely:

* The expected cash flow from the security.
* The appropriate discounting rate: if the discounting rate used is that of an individual investor or a group of investor, then the obtained value is known as intrinsic, fair or true value of the security to a particular investor or group of investors. However if the discounted rate used is the market rate, then the value obtained value is called the market value of a security. It is important to determine the intrinsic value of a security so that the investor can make correct judgment as to whether the security is over-valued or under-valued by the market.

Is the value of the assets now.

Is the cash flow expected from asset j in year t.

Is the required rate of return on the assets.

Is the useful life of the assets.

The general valuation model is applied in bond valuation.

**BOND VALUATION**

A bond/ debenture is an instrument of debt issued either by a business or a government. Valuation model of bonds depend on whether it is redeemable or perpetual. The value of a redeemable debt is the total present value of all expected future cash flows discounted at a given rate of return.

**Redeemable bonds**

+

Vo is the value of the bond today.

I is the periodic interest payment based on the par value.

T is the tax rate.

F is the fixed redemption value of the bond.

Kd is the cost of the bond.

n is the maturity period of the bond.

**Example 1**

Suppose you buy Ksh. 1,000,000 worth of 10% 10 year bonds with a Ksh. 1000 par value per bond. If your required rate of return is 12%, what is the most that you would pay for this bond? For simplicity, assume interest is payable once a year. Take tax rate of 30%.

**Solution**

+

+

There is an annuity of Ksh. 100 (1-0.3) per bond per year for 10 years, and a final payoff of Ksh. 1000 per bond in the 10th year.

100(1-0.3) x PVIAF (10, 12%) + 1000 x PVIF (10, 12%)

70 x 5.65 + 1000 x 0.322= Ksh. 717.50 per bond.

In reality interest on bonds is paid more than once in a year. In Kenya, for example, the government and corporations pay interest twice per annum, with each payment being half of the annual coupon.

+

**Example 2**

We shall evaluate the above example 1, where coupons are paid semi-annually.

+

There is an annuity of Ksh. 35 per bond per half year for 20 periods. At the 20th period, there is a lump sum payment of Ksh. 1000 per bond. Note that the discount rate will now be 12%/2= 6%.

35 x PVIAF (20, 6%) + 1000 x PVIF (20, 6%)

35 x 11.47 + 1000 x 0.312

Ksh. 713.45 per bond.

This is the actual value of the bond.

**Example 3**

You plan to buy a 12%, 5 year bond with a par value of Ksh. 1000. Coupons are payable semi-annually. What is the most you would pay for the bond given that your required rate of return is 12 %?

= Ksh. 1,177.00 you would be willing to pay a premium on the bond (Show your workings).

**IMPORTANT NOTE: The Interest Tax Shield**

An interesting element introduced into the capital structure decision is the reduction of taxes due to the payment of interest on debt. We refer to the benefit from interest deductibility as the ***interest tax shield***, since the interest expense *shields* income from taxation. The tax shield from interest deductibility is:

Tax shield = (Tax rate) (Interest expense)

If Firm L has Ksh.10, 000 of 10% debt and is subject to a tax of 30% on net income, the tax shield is:

Tax shield = 0.30 [Ksh. 10,000(0.10)] = 0.30(Ksh. 1,000) =Ksh. 300. A Ksh. 1,000 interest expense means that Ksh. 1,000 of income is not taxed at 30%.

How does this tax shield affect the value of the firm? The tax shield reduces the net income of the firm that goes to pay taxes. This is the reason why, in bond valuation, taxes are considered. Note that on the contrary, ordinary and preferred dividends are not allowable for tax purposes. As a result, they generate no tax shield.

**Irredeemable bonds**

The value of a perpetual/ irredeemable bond is given by:

Where i is annual interest.

Kd is the cost of debt/ RRR of bondholder.

**EQUITY VALUATION MODELS**

* + 1. **The dividend capitalization model (The Gordon Sharpone Model) (The Gordon Dividend Growth Model)**

The value of an equity share is equal to the present value of dividends expected from its ownership plus the present value of the proceeds from its sales.

***Single period model***

Po= + =

D1 is the dividend expected at the end of year 1.

P1 is the price expected at the end of year 1.

Ks is the cost of equity or RRR by investor.

Po is the value of a share now.

Suppose that the price is expected to increase at a constant rate, g, annually.

Po=

Po=

**NB**: D1= Do (1+g)

**Example 1**

ABC Company LTD has a cost of equity of 16%. The company has just paid a dividend of Ksh. 0.75 per share, and dividends are expected to grow at 8% p.a. Determine the value of a share of ABC Company LTD.

**Example 2**

H Company LTD has a cost of equity of 16%. The company expects to pay a dividend of Ksh. 0.75 per share in its next payout (Year end), and dividends are expected to grow at 8% p.a. Determine the value of a share of H Company LTD.

**Example 3**

The table below shows the dividend payout for Harbin LTD for 5 years.

|  |  |
| --- | --- |
| YEAR | DIVIDEND PER SHARE (KSH) |
| 2006 | 0.20 |
| 2007 | 0.25 |
| 2008 | 0.35 |
| 2009 | 0.50 |
| 2010 (Latest dividend) | 0.60 |

* 1. What is the worth of a share of Harbin LTD given a cost of equity of 35%?
  2. Suppose, instead, that YOU as an individual investor have an interest in the stock and your required rate of return is 12%. If the share is currently selling at Ksh. 60 per share, is it overvalued or undervalued? Why? Show all your workings.

1. **Equity valuation using the book value model**

This involves the computation of the book value per share (BVPS).

BVPS= net worth/ number of shares outstanding

Net worth= share capital + All reserves

BVPS is fundamentally rooted in financial accounting. Hence it can be established relatively quickly from published sources. The proponents of this measure also argue that it is an objective measure of value. However, critics argue that BVPS is based on accounting conventions and policies which are characterized by a great deal of subjectivity. The balance sheet figures on which BVPS is based are often very divergent from economic values. They do not earnings power. Hence BVPS cannot be regarded as a good proxy or good estimate of true investment values.

1. **Equity valuation- the liquidation valuation model**

This involves the computation of liquidation value per share (LVPS).

LVPS =

**VALUATION OF REDEEMABLE PREFERENCE SHARES**

These are preference shares issued that has a definite maturity period. A holder of preference shares is entitled to a fixed return on his/ her investment known as the preference dividend (Do). The annual preference dividend is based on:

* The par value of the security (Po).
* The dividend rate.

Annual preference dividend (Do) = coupon rate x par value.

Valuation of preference shares is based on the general valuation model. The value of a preference share is arrived at by discounting the annual dividend to be received over the life of the security and the par value to be received back on maturity. Since the dividend received is constant, then for redeemable preference shares, it is an annuity: thus----

MVp= Do x PVIAF n, i% + Po x PVIF n, i%

**Example 1**

ABC LTD issued Ksh. 10, 10% preference shares on January 1, 2010. The shares will be redeemable on 31st December, 2013. If your required rate of return is 16%, what is the worth of this share to you?

**VALUATION OF IRREDEEMABLE PREFERENCE SHARES**

These are preference shares that are perpetual. Holders of these shares expect to earn a constant or fixed annual dividend per annum in perpetuity. The model used to determine their value is similar to the one used in valuing perpetuities.

MVp = Dp/ Kp

Dp is the annual preference dividend based upon the coupon rate and par value.

Kp is the cost of preference share capital or the minimum required rate of return by preference shareholder.

MV is the market value.

**APPLICABILITY OF VALUATION MODELS IN DEVELOPING COUNTRIES**

Most of the valuation models we have discussed are based on several limiting assumptions.

* + 1. Perfect capital markets
* No transaction costs.
* No taxation.
* No restrictions on trading.
* Borrowing and trading at risk free rates.
* Many investors such that no one investor can influence the market price.
  + 1. Efficient capital markets
* Information is freely available to all market participants.
* Share prices quickly adjust to incorporate all the new information in an unbiased manner.
* The operational efficiency- low operational costs.
* Pricing efficiency.
* Allocative efficiency.

Most of the developing capital markets do not satisfy the assumptions underlying both perfect and efficient markets. Hence the applicability of many financial models based on these assumptions are doubtful.