VALUATION OF BUSINESS SECURITIES

Valuation is the process of determining the worth of security using financial information available.

→ the value attached to the security is known as real value or theoretical value or intrinsic value

→ the intrinsic value of a security is equal to total present value of all the expected future benefit to be realised from the security.

Intrinsic value = present value of future expected benefits.

Intrinsic value forms the basis of determining whether the security is correctly valued, undervalued or overvalued.

a) If the market price of the security is greater than intrinsic value of the security, then the security is said to be overvalued by market forces.
b) If the market price of the security is less than intrinsic value of the security, then the security is said to be undervalued by mkt forces
c) If the market price is equal to intrinsic value, the the security is said to be correctly valued.

Reasons for valuation of securities

1. For liquidation purposes
When the company is to be liquidated, its asset will be valued in order to determine the amount to be realised from sale of securities.
2. Listing / Quotation in the security exchange
A company which is listed on the NSE for the first time will have to value its security.
3. Incase of selling the securities
In order to determine whether the security is over valued, or undervalued by market forces, there is a need to value them.
4. For tax and insurance purposes
The assets of the company will be valued for the tax purposes especially when the asset is being insured.
5. For Mergers and Acquisition
When this takes place, there is a need to value each company inorder to determine whether there will be any benefit (additional) which will be realised.
6. In order to use security as collateral.
When the company wants to borrow from financial institutions, normally requires the securities in form of collateral in order to secure the loan.

Theories of valuations

There are normally 3 theories or views of valuation.

a) Fundamental theory of valuation.
b) Technical theory of valuation.
c) Random walk theory

a) Fundamental theory of valuation.

This theory states that the theoretical value of the security is equal to the total present value of all the expected future benefits to be realized from the security.

Theoretical value = Present value of annuity + Present value of Maturity value.

Illustrations

Dec 2009 q4b

Ushindi ltd has recently issued a sh 1000, 9% convertible bond. The bond can be converted into 10 ordinary shares at the end of five years. The current market price of the shares of Ushindi ltd is sh 25. The price is expected to grow at the rate of 10% per annum. The investors required rate of return is 12%.

Required:
The current value of the bond.

Solution

Intrinsic value = PV of annuity (interest) + PV of maturity value.

Interest = $9\% \times 1000 = 90$

PV of interest p.a = $90 \times PVIFA^{5}_{12\%}$

$90 \times 3.6048 = 324.432.$

Maturity value

MPS after 5 year = $MPS_0(1+g)^n$

$25(1+0.1)^5 = 40.26.$

Bond value upon conversion = $10 \times 40.26 = 402.6.$

PV = $402.6 \times PVIF^{5}_{12\%}$

$402.6 \times 0.5674 = 228.435$

Value of bond = $324.432 + 228.435$

$= 552.867$

June 2005 q1b

Akichi ltd has issued a debenture whose par value is sh 1000. The debenture can be redeemed at par after after 4 years or converted to ordinary shares at a conversion rate of sh 100 per share. The projected market price of the share after the four year period could either be sh 90 or sh 120 based on the

company's performance.
The investors required rate of return is 10%

Required
The value of the debenture based on each of the expected share prices. (8 mks)

Solution

Interest = 10% × 1000 = 100 × PVIFA$^{4}_{10\%}$
100 × 3.1699 = 316.99.

Redeemable value
No of shares = Sh1000 / 100 = 10 shares

price of sh 90 ⇒ 90×10 = 900 × PVIF$^{4}_{10\%}$ ⇒ 900 × 0.6830 = 614.7
price of sh 120 ⇒ 120×10 = 1200 × PVIF$^{4}_{10\%}$ ⇒ 1200 × 0.6830 = 819.6.

Theoretical value = PV of annuity + PV of maturity value

price of sh 90 ⇒ 316.99 + 614.7 = 931.69
price of sh 120 ⇒ 316.99 + 819.6 = 1136.59

Assg June 2005 Q1c

May 2015 Q2c

Solution

(i) Market value of the bond
Interest = 9% × 100 = 9 × PVIFA$^{5}_{7\%}$
9 × 4.1002 = 36.9

Maturity value
MPS$_0$(1+g)^n ⇒ 4.45(1+0.065)^5 = 6.1
= 20 × 6.1 = 122 ⇒ 122 × 0.7130 = 86.986
value = 36.9 + 86.986 = 123.886

(ii) Floor value of the bond
This is the value of the bond when the redeemable value is at par value.
Interest = 9% × 100 = 9 × 4.1002 = 36.9
Maturity value = 100 × 0.7130 = 71.3
108.2

(iii) Conversion premium per share

Conversion premium = Mkt value of the bond − Current Conversion value

Current Conversion value = No of share × current MPS
20 × 4.45 = 89

Conversion premium = 123.886 − 89 = 34.886

Assign May 2012 Q2b

(b) Technical / chartist theory

This theory states that the price pattern of the past could repeat itself in the future. It uses graphs and charts as its main tool of control

In this case, the past price pattern are observed and recorded with the expectation that they could repeat in future.

The theory identified 3 levels of price pattern trend.

(i) primary pattern / trend
This is a price pattern which have been observed and plotted for a period of more than one year.

(ii) Secondary pattern
This is a price pattern which have been observed and plotted for a period of less than one year.

(iii) Tertially pattern
This is a price pattern which have been observed and recorded for a short period of time eg weekly, daily.

(c) Random walk theory

This theory states that, its not possible to produce the theoretical value of the security i.e the value of the security moves in a random manner depending on the information given in the market.

If the information given into the market has a positive effect in valuation of security, then security price will increase and vice versa. Hence the price of the security moves in a random manner depending on the information given to the market.

According to Efficient market hypothesis

Efficient Market Hypothesis

Stock market is said to be efficient if it has the following x-tics

Characteristics of Efficient stock market

1. Information once received in the market, it is immediately incorporated in the security prices.
2. There is continuous trading of securities
3. There should be no speculation in the market.
4. No investor should receive information earlier than others i.e Insider trading.
5. Expert or knowledgable investors should not take advantage of their knowledge to make abnormal gains
6. The transaction cost like commission paid to the brokers should be minimum so that they do not discourage the investors buying and selling securities

Forms of market Efficiency

1. Weak form Efficiency
This is where the securities prices reflects all the historical information concerning the performance of the company, therefore in this case when determining the security prices, only historical data will be applicable.

2. Semi-strong form Efficiency
In this case, the share price will reflect all the past and present information concerning the performance of the company.

3 Strong form Efficiency
Security prices reflects all the past, present and future information concerning the performance of the company. Under this form of market efficiency, confidential information is normally given to the market hence there will no insider trading.

Market Anomalies (MA)

These are events which makes the market to be inefficient. They include

1. Insider Trading
This occurs when some investors get information earlier than others by their position in the organization.

2. January Effect
Evidence suggest that market normally performs poorly during the month of January and therefore, this makes the investors to buy the securities at the end of December or start of Jan and sell them during the month of March to realize abnormal gains.

3 Monday Effect
The market prices of the securities are normally lower on Mondays due to low demand of securities.

4. Announcement Effect
Evidence suggest that securities prices changes for some time after the initial announcement.

5. Size effect
Small companies interms of total asset to the market value are normally effected by well established company who dominate the market.

Valuation of ordinary shares

Ordinary shares are classified into 3 categories for the purpose of valuation:

a) Zero-dividend growth rate ordinary shares
b) Constant dividend growth rate ordinary shares
c) Non-Constant dividend growth rate ordinary shares

(a) Zero-dividend growth rate ordinary shares

In this case the company promises constant dividend per share for each period i.e

$$D_0 = D_1 = D_2 = D_n$$

In this case, ordinary shareholders are treated as if they are preference shareholders.

The constant dividend per share in this case will represent an annuity until infinity and therefore the theoretical value will be calculated as follows

$$\text{Intrinsic value} = PVA\infty = \frac{A}{r} = \frac{D}{r} = \frac{DPS}{\text{cost of capital}}$$

(b) Constant dividend growth rate ordinary shares

This is where the dividend will increase at a constant growth rate until infinity. In this case, the DPS will be computed as follows:

$$D_1 = D_0(1+g)^1$$
$$D_2 = D_0(1+g)^2$$
$$D_n = D_0(1+g)^n$$

$$\text{Intrinsic value} = \frac{D_0(1+g)}{r-g}$$

Dec 2006 Q 2a

An investor received a dividend of sh 1.5 in the current financial year per share. The par value of the share is sh 20. The annual growth rate of dividends is 8%. The current market price per share is sh 150 while the investors required rate of return is 20%. Calculate the intrinsic value of each ordinary share

Solution:

$$\text{Intrinsic value} = \frac{D_0(1+g)}{r-g} = \frac{1.5(1+0.08)}{0.2-0.08} = \text{sh } 13.5$$

Methods of calculating growth rate

There are 2 methods

1. Retention Ratio method

Under this method, the constant growth rate will be:

$g = Rb$ where R → Retention ratio of profits
b → Return on Equity

2. Compounding Method

Under this method, the constant growth rate will be determined by comparing the DPS for two periods

$$g = \sqrt[n]{\frac{Dn}{Do}} - 1$$ where Dn → Most recent DPS, Do → 1st DPS to be paid

Illustration

A co has been paying the following dividend for the last 5 years.

year	1	2	3	4	5
DPS	5.23	5.5	5.85	6.25	6.6
	D_0	D_1	D_2	D_3	D_4

Required: Determine the growth rate

Solution

$$g = \sqrt[n]{\frac{Dn}{Do}} - 1 \Rightarrow \sqrt[4]{\frac{6.6}{5.23}} - 1 = 6\%$$

Dec 2013 Q5c

Solution

year	2008	2009	2010	2011	2012
EPS	4	4.2	4.41	4.63	4.86
DPS 40%	1.6	1.68	1.764	1.852	1.944
	D_0	D_1	D_2	D_3	D_4

$$g = \sqrt[n]{\frac{Dn}{Do}} - 1 \Rightarrow \sqrt[4]{\frac{1.944}{1.6}} - 1 = 5\%$$

Theoretical value $= \frac{Do(1+g)}{r-g} \Rightarrow \frac{1.944(1+0.05)}{0.13-0.05} = 25.515$

June 2006 Q3a (Nov 2019 Q3c)

(i) $g = \sqrt[n]{\frac{Dn}{Do}} - 1 \Rightarrow \sqrt[4]{\frac{7.3}{5}} - 1 = 10\%$

$MPS = \frac{Do(1+g)}{r-g} = \frac{7.3(1+0.1)}{0.16-0.1} = Sh\ 133.8$

(ii) $MPS = \frac{D1}{r-g} = \frac{5}{0.16-0.14} = Sh\ 250$

(iii) At BEP, MPS by the change = MPS after the change

$$133.8 = \frac{5}{0.16-g}$$

$$133.8(0.16-g) = 5$$

$$21.408 - 133.8g = 5$$

$$16.408 = 133.8g$$

$$g = 12.26\%$$

(C) Non-Constant dividend growth rate shares

This is where the dividend will increase at different rates during the earlier period of the economic life of the project before the growth rate becomes constant until Infinity.
The theoretic value in this case is calculated as follows:

Theoretical value of the share (P_0) = PV of dividend during non-constant period + PV of Dividends during constant growth period.

PV of dividend during constant period $= \frac{D_0(1+g)}{r-g} \times PVIF_r^n$.

May 2012 Q 3b

Solution.

Present value of dividends during non-constant period

Period	DPS = $D_0(1+g)$	$PVIF^n_{15\%}$	Present value
1	2 (1+0.18) = 2.36	0.8696	2.05
2	2.36 (1+0.18) = 2.78	0.7561	2.11
3	2.78 (1+0.18) = 3.2861	0.6575	2.16
4	3.2861 (1+0.18) = 3.8716	0.5718	2.22
5	3.8716 (1+0.12) = 4.3362	0.4972	2.16
6	4.3429 (1+0.12) = 4.8641	0.4323	2.1028
7	4.8641 (1+0.12) = 5.4477	0.3759	2.05
8	5.4477 (1+0.12) = 6.10	0.3269	1.995
			16.84

Present value of dividend during constant growth period.

$\frac{D_0(1+g)}{r-g} \times PVIF^8_{15\%} \Rightarrow \frac{6.1(1+0.06)}{0.15-0.06} \times 0.3269 = 23.49$

Theoretical value (P_0) = 16.84 + 23.49 = 40.33

Dec 2009 Q4c

Solution

Period	DPS	$PVIF_{15\%}$	PV
1	0	0.8696	0
2	0	0.7561	0
3	1	0.6575	0.6575
4	1(1+0.5) 1.5	0.5718	0.8577
5	1.5(1+0.5) 2.25	0.4972	1.1187
			2.6339

PV during constant growth period $= \frac{D_0(1+g)}{r-g} \times PVIF^5_{15\%} \Rightarrow \frac{2.25(1+0.08)}{0.15-0.08} \times 0.4972 = 17.26$.

$P_0 = 2.6339 + 17.26 = 19.89$

NOV 2016 Q4g

Total dividend = 50 x 40% = 20M.

DPS = $\frac{20m}{10} = 2$

Period	DPS	PVIF 18%	PV
1	2(1+0.1) = 2.2	0.8475	1.8645
2	2.2(1+0.1) = 2.42	0.7182	1.738
3	2.42(1+0.1) = 2.662	0.6086	1.6201
			5.223

During constant growth period = $\frac{2.662(1+0.05)}{0.18-0.05} \times 0.6086 = 13.085$

$P_0 = 5.223 + 13.085 = 18.31$

Assign June 2013 Q3b
NOV 2019 Q3c
Dec 2005 Q1c

Reasons why valuation of ordinary share is complicated as compared to valuation of fixed return securities (bonds)

1. The valuation of ord shares normally assumes that there will be a constant growth rate until infinity. However in reality the growth rate keeps on changing from one period to another.
2. The valuation of ordinary share ignores the taxation of dividends
3. The valuation of ordinary shares is normally affected if the company does not pay dividends.
4. The valuation of ord shares cannot be carried out incase the cost of equity (r) is less than constant growth rate.
5. Ordinary shares are subjected to the right issue which complicates its valuation.
6. The existence of Market anormalies affects the valuation of ordinary shares.