**“Estimating Share Value of Indian Information Technology Companies Using Equity Valuation Models”**

**Authors:**

* **Dr. Venkatesh.C.K. Department of Commerce, Government First Grade College, Kadugudi, Bangalore-560 067.** [**drvenkateshck@gmail.com**](mailto:drvenkateshck@gmail.com)

**Abstract**

The Indian Stock Markets are considered to be the strongest in Asia and after Covid Pandemic the markets have bounced back with resilience. At present, the Indian Markets are considered to be in Semi-Strong form. The information exhibited by this market is well published and made known to the general public. The market is considered to be unbiased and cannot be influenced by a group of people. Future prediction of stock prices is a challenging task and if the markets are weak or semi-strong form it becomes highly vulnerable in the process of prediction. There are numerous micro and macro economic factors which will influence the price of shares as well as the movement of share prices. Few share price movements are sector specific and few are those which would influence all the sectors of the economy.

The current article is consciously prepared to estimate the share prices of three major Information Technology Companies of India using Equity Valuation Models. Price of any security depends upon the common market factors such as demand and supply. If there is high demand with low supply of shares then the share prices would shoot up and if it the other way round the share prices might come down. Then again one common factor which influences the share price is consensus of the buyer and seller. Any buyer while buying the shares will have a set of expectations from the company. If the buyer expects that a particular share is going to go up in future then he would buy it in large numbers and corner it. The same theory holds good for the sale. Any kind of anticipation and expecting share price movement is a challenging task and again forecasting the movement of share price is considered to be herculean task. It combines human expectations and the performance of the companies. In this work valuation of equity is done using a model which is accepted by CRISIL and other authorities. The current study has attempted to explore three Information Technology Companies. **Key Terms: Share Valuation, Dividend Discount Model, Fundamental Analysis, Technical Analysis**

**Introduction**

The Performance in Stock Markets is influenced by variety of factors which include Micro and Macro Economic Factors. These factors can be precisely written as STEPIN factors. These factors include Socio-Cultural, Technological, Economic, Political, International and Natural Factors. Apart from these factors there are various other Micro Environmental Factors which play a major role in deciding upon the price movements of stocks. In any economy for the purpose of convenience assets would be classified as Physical and Financial Assets. Creation of both these assets would contribute towards the economic development of a nation. The quality of any nation’s economic development is measured in terms quality of assets created by its citizens and banks. Physical assets can be classified as Fixed Assets and Current Assets. Fixed Assets would benefit the business and an individual over a period of time. Current Assets are those assets which are in the form of cash and can be converted into cash within a short period of time.

Besides this classification assets can also be classified as tangible and intangible assets. Intangibles are those which would reap benefits to the organization and create value over a period of time. These include copy rights, patent rights, Intellectual Property Rights and so on. These assets would create brand value to a company and would result in Brand Equity. All Intangibles are considered to be behind the scene assets which would generate revenue and goodwill to the organizations. In addition to the creation of wealth these would also contribute in economic growth and prosperity of a nation.

Apart from this classification the Economy of any nation is supported by another asset group called as Financial Assets. These assets are those assets which are in the form of cash and easily converted into cash. These assets include, Deposits, Shares, Debentures, Foreign Exchange Reserves and so on. The prime asset to be considered under this category is Share. Equity and Preference Shares are considered to be prudent investment option available for the investors across the world. The investors can speculate over the prices of these shares and can benefit. For prudent speculation purpose an investor has to educate him or herself by learning various valuation techniques available. Based on the requirement of an investor can choose Fundamental Analysis or Technical Analysis. Fundamental Analysis basically focuses on Economy, Industry and Company factors, whereas, Technical Analysis emphasizes on volumes.

**SHARE VALUATION**

The process of Share Valuation involves the projection of Fair Market Value of a share. Fair Market Value is defined as the price at which the property would change hands between a willing buyer and willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of relevant facts. There are three established share valuation theories namely, Fundamental Analysis, Technical Analysis and Efficient Market Hypothesis. From the learners perspective each theory is different in its approach and applicability. All these theories are used extensively which building portfolios.

In Capital Markets Share Valuation is followed to calculate theoretical values of stocks and projection of their performance over a period of time. These techniques would help the investors in understanding the overvalued stocks and undervalued stocks. The theory says that the undervalued stocks might go up in the near future and the overvalued stock may fall to recover to its previous closure prices. The Fundamental Analysis reveals that the valuation of stock is based on the fundamentals of the company. It aims to analyse the financial statements to understand the strength of a business and its future prospects. Whereas, Technical Analysis believes in trading volumes and their patterns. Both these tools are used by huge number of investors who is willing to invest in the stock markets. These tools would guide the investors in Long as well as Short Term investment proposals. Fundamental Analysis is used for projecting the Long Term Performance whereas, Technical Analysis helps the investors to predict Short Term Movements of the markets.

**Current Study**

The Current Study focuses on the share valuation process with specific emphasis on Equity Valuation Models. Dividend Discount Model and Single Period Valuation Model is used to estimate the value of shares pertaining to three major Information Technology Firms namely, Infosys, TCS and Tech Mahindra. The study is entirely based secondary data which is taken from CRISIL research reports, company web sites and other financial portals. This work is useful to the investors in comparing the undervalued and overvalued shares. The investors can take their positions using the data. The investors can become more prudent in their investment opportunities using the techniques followed in this work.

**Review of Literature**

The most intuitive means for determining the value of the equity of a firm is the Dividend Discount Model. This model states that the present value of an asset can be measured as the discounted value of all of the future expected dividend payments.

Gordon and Shapiro (1956) and Gordon (1962) present a special case of the general model, whereby the value of the firm’s equity can be represented as a growing perpetuity based on next period’s expected dividend. Even though present study focuses on these models, it also recognizes that there are many alternative models such as multi-stage growth models.

Porterba and Summers (1988), study the risk premium but find that the magnitudes and variability in the implied risk premiums necessary for prices to be related to dividends are too large to be consistent with any rational. Fama and French (1988) find that the variation in dividend yields explains a large proportion of multi-year return predictability. Although many subsequent studies continue to find evidence in support of the predictive ability of dividends for equity returns, studies using longer time series of data bring the generality of these results into question, the predictive ability of the dividend ratio appears to be specific to a few time periods.

Arnoff and Bernstein (2002) provide an interesting historical perspective on how investors in the early 1900s viewed dividends as compared to how they are viewed today. To handle some of these differences, dividend growth rates have been modelled using a variety of different econometric models. Bollerslev and Hodrick (1995) and Donaldson and Kamstra (1996) use time series models to predict dividend behaviour and find that a number of models do a reasonable job of explaining both changes in dividends and changes in prices.

Gleason (2006) examined target prices of equity shares over the period 1997 to 2003. A total of 223,147 price targets were available from 191 broker houses. He imposed some constraints regarding number of analysts giving target prices and got 34,417 targets for investigation. Target prices provide by 3551 analysts on 2352 companies were analyzed by him in his study.

**Table—1 Exhibiting Research Design**

|  |  |
| --- | --- |
| Research Type | Analytical |
| Research Context | Top three Information Technology Firms |
| Research Approach | Quantitative |
| Data type | Continuous variables |
| Data collection tools | Various Financial Statements of the firms chosen and CRISIL data base. |
| Data Analysis Software | SPSS Version 18.0, MS Excel, MS Word |
| Sampling Technique | Systematic Sampling |
| Sample Size | Top three Information Technology companies, in terms of Size and Market Capitalization. |

**Methodology**

**Scope of the Study**

The scope of this study is limited to three Information Technology Companies of India, which were chosen based on their size, market capitalization and market leadership. The data taken for the study is for five years from 2017 to 2022.

**Statement of the Problem**

Any share which does not have any preference over its initial investment and dividend is called Equity Shares. These shares don’t have privilege as its counterpart the Preference Shares. The investments into Equity shares are considered to be risky as it does not associate itself in providing fixed rate on return. Therefore, an attempt has to be made by the investors in order to understand its future movements and prospects. When compared to Fixed Income Securities these investment options will not have a fixed life or fixed returns. The returns of will vary on different macro and micro economic factors. As future is uncertain and unpredictable an attempt is made in this work to guide the investors in choosing the right stocks. There are different valuation models available to the investor these, models will facilitate the investor in understanding the market movements and would guide the investor in the process of investing. Therefore, the current work has critically analyzed Balance Sheet Valuation Models and Dividend Discount Models to arrive at various investment decisions.

**Objectives of the Study**

1. Evaluating the Performance of Companies Using Equity Valuation Models
2. In depth understanding of Equity Valuation Models
3. Comparing the Performance of Companies Chosen using Equity Valuation Models

**Limitations of the Study**

1. The current study is limited to the Indian Stock Markets and the stocks chosen are from the Indian Indices. Hence, no comparison is made between Indian Stocks and other countries Stocks
2. The study has compared the performance of chosen Information Technology Firms. It can also focus on comparing the performance of different sectors.
3. Again the study is limited to the analysis of five years performance of three companies
4. The data is based on the performance 03 companies chosen from Information Technology industry, so data reflects the performance of only these companies.

**Analysis and Interpretation**

This section of the study gives importance to the analysis of data collected using various Equity Valuation Models. For this purpose Balance Sheet Valuation and Dividend Discount Models were used.

**Dividend Discount Model**

According to this model the value of an equity share is equal to the present value of dividends expected from the company plus the present value of the sale price expected when the equity share is sold.

**Single Period Valuation Model**

This model considers future dividends; it uses the future dividends to arrive at the current price of the equity share. It is calculated as follows:

P0= D1/(1+r) + P1(1+r), where, P0 = Current Price of the equity share, D1= Dividend expected a year hence, P1=Price of the share expected a year hence, r= rate of return on the equity share.

This method of valuation is used to find out the discounted price of the equity shares (p0) with the help of an expected dividend rate (D1), target price (P1) and the rate of return (r).

Table showing values of INFOSYS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | P1 | r | P0 |
| 2017 | 55 | 1222.35 | 0.02 | 1334.65 |
| 2018 | 24 | 1482.90 | 1.11 | 1982.34 |
| 2019 | 20 | 1872.21 | 2.13 | 1546.23 |
| 2020 | 29 | 1974.65 | 1.46 | 1974.35 |
| 2021 | 33 | 1654.09 | 2.45 | 2456.02 |

Table showing values of TCS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | P1 | r | P0 |
| 2017 | 23 | 1120.34 | 0.08 | 1221.34 |
| 2018 | 34 | 1345.43 | 2.13 | 1090.22 |
| 2019 | 18 | 1092.34 | 1.33 | 989.23 |
| 2020 | 21 | 876.54 | 2.34 | 1098.21 |
| 2021 | 28 | 1011.23 | 1.04 | 1076.54 |

Table showing values of TECH MAHINDRA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | P1 | r | P0 |
| 2017 | 35 | 1220.43 | 1.201 | 1246.78 |
| 2018 | 39 | 1434.59 | 2.34 | 1897.54 |
| 2019 | 21 | 1342.85 | 2.98 | 1098.32 |
| 2020 | 17 | 1345.82 | 1.75 | 1122.34 |
| 2021 | 22 | 1234.54 | 2.58 | 1984.32 |

The calculated price (P0) is higher for both INFOSYS and TECH MAHINDRA; comparatively INFOSYS is providing better returns than the two stocks. TCS is achieving greater return in 2020 compared to the rest the years. From the analysis it can be concluded that an investor can buy or hold, if its price is lower than the calculated value. At the same time, the shares can be sold if its price is higher than the target price.

**Expected Rate of Return**

Under this method the intrinsic value of an equity share is calculated from the forecasted values of two variables namely, dividend and share price. It is calculated as follows:

r= D1/P0 + g

where, r= rate of return on the equity share, D1 = Dividend expected a year hence, P0=current price of the equity share, g = Expected growth of EPS

Table showing values of INFOSYS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | G | r | P0 |
| 2017 | 67 | 96.32 | 1.21 | 1656.75 |
| 2018 | 64 | 87.34 | 2.34 | 1989.23 |
| 2019 | 79 | 76.54 | 3.33 | 2029.24 |
| 2020 | 62 | 67.78 | 2.21 | 1099.34 |
| 2021 | 77 | 61.21 | 1.98 | 1043.32 |

Table showing values of TCS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | G | r | P0 |
| 2017 | 46 | 36.64 | 1.25 | 1723.32 |
| 2018 | 54 | 54.32 | 1.34 | 1234.65 |
| 2019 | 65 | 22.34 | 2.34 | 1652.34 |
| 2020 | 63 | 44.32 | 1.89 | 1098.31 |
| 2021 | 32 | 18.36 | 1.76 | 1273.56 |

Table showing values of TECH MAHINDRA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | g | r | P0 |
| 2017 | 54 | 54.56 | 1.98 | 1898.22 |
| 2018 | 56 | 57.65 | 2.74 | 1765.23 |
| 2019 | 65 | 32.34 | 3.32 | 1687.21 |
| 2020 | 69 | 54.34 | 3.98 | 1873.20 |
| 2021 | 72 | 37.74 | 2.21 | 1642.34 |

From the above tables it can be interpreted that the growth rate of INFOSYS and TECH MAHINDRA are consistent as compared to the TCS. Again it is analyzed that the growth rate of INFOSYS is much higher than the two companies and therefore, it is advised for the investors to put their money into this stock.

**Gordon Model**

This model is considered to be the most popular dividend discount model which was proposed by Myron J Gordon. It is of the opinion that the dividend policy of a firm affects its value and it is based on the following assumptions:

1. The firm is an all equity firm
2. There is no outside financing and all investments are financed exclusively by retained earnings.
3. Internal rate of return of the firm remains constant
4. Cost of capital of the firm also remains same regardless of the changes in the risk complexion of the firm.

Table showing values of INFOSYS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | g | r | P0 |
| 2017 | 56 | 25.52 | 3.45 | 2343.54 |
| 2018 | 68 | 34.56 | 5.43 | 2154.32 |
| 2019 | 61 | 45.32 | 4.56 | 1890.09 |
| 2020 | 78 | 54.56 | 3.25 | 1765.23 |
| 2021 | 65 | 43.65 | 5.46 | 2676.53 |

Table showing values of TCS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | g | r | P0 |
| 2017 | 32 | 21.34 | 1.25 | 1236.32 |
| 2018 | 36 | 34.53 | 2.43 | 1654.32 |
| 2019 | 31 | 20.02 | 1.89 | 1732.34 |
| 2020 | 44 | 34.52 | 2.54 | 1342.24 |
| 2021 | 48 | 18.98 | 1.76 | 1098.22 |

Table showing values of TECH MAHINDRA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | D1 | G | r | P0 |
| 2017 | 41 | 26.76 | 1.32 | 1543.23 |
| 2018 | 43 | 32.43 | 2.56 | 1898.23 |
| 2019 | 37 | 21.02 | 1.56 | 1890.32 |
| 2020 | 39 | 34.51 | 2.69 | 1025.34 |
| 2021 | 41 | 19.51 | 2.54 | 997.32 |

It is interpreted from the above tables that again INFOSYS is clearly heading at all times because it has a constant growth rate. It is considered to be a better investment option and the investors who are risk averter can opt for this share to get a moderate rate of return on their investments.

**Conclusion**

It is concluded that the investors can buy these shares, if the price is lower than the calculated price. At the same time the shares can be sold if its price is higher than the target price. Investors having the idea of consistent returns with good dividends can opt for INFOSYS stock. From the companies point of view it is concluded that key result ratios such as EPS (Earnings per share) Price Earnings ratio, Return on Investment ratios should be consistently monitored and certain policy decisions should be arrived at for improving the equity valuations.

**Reference**

Arnott, Robert D and Berstein, Peter L (2002), What risk premium is normal, Financial Analysts Journal, Volume 58, No.2, March/April 2002.

Asquith P, M.Mikhail and A.Au (2005), Information content of Equity Analyst Reports, Journal of Financial Economics, 75:245-282.

Demirakas.E. Strong and M.Walker (2004), What Valuation Models Do Analysts Use?Accounting Horizons, 18:221-240.

Fama, Eugene and Harvey Babiak, (1968), Dividend policy, an Empirical Analysis, Journal of the American Statistical Association 63, 1132-1161.

Fama Eugene and Kenneth French, (2001), Disapearing dividends; changing firm characteristics or lower propensity to pay, Journal of Financial Economics 60, 3-43.

Gordon MJ (1962), The Investment, Financing and Valuation of the Corporation, R.Irwin, Homewood.

Goyal.A. and Welch Ivo (2003), A note on predicting returns with financial ratios, working paper, Emory University.

Robert J Shiller, (1981), The Use of Volatility Measures in Assessing Market Efficiency, NBER working papers 0565, National Bureau of Economic Research Inc.

Ramasundaram G and Kasilingam (2010), Predicting Share Value of Private Sector Banks Using Equity Valuation Models, Ushus JB Management, 9, 1 (2010) 73-95.