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Fundamental Analysis Model for the Prediction of Stock Prices

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Abstract

Investors invest money in different financial instruments to get a return on investment. Every investor is deliberate to know the proper time to enter the market which would help the investor to get the maximum return from the invested amount. Selecting the right stock for the investment is based on the interpretation and analysis applied for value of the stock. The fundamental value of the stock is useful for the investor to analyse the intrinsic value of the stock. The intrinsic value of stock determines the investors whether stock is under-valued or overvalued stock. There is different model for fundamental value analysis model like economic value added, market value added and intrinsic value of the stock. Economic value-added models are used for the financial performance measurement tools which analyse how much wealth the company had created to the investors after deducting the net operating profit and cost of capital. Market value added is a measure of wealth a company has created for its investors. It is a cumulative measure of corporate performance that looks at how much a company's stock has added to (or taken out of) investors. The intrinsic value model is the worth of the shares as measured by their return-generating potential. The research aims to analyse the intrinsic value of the stock based on the residual income model, one stage model and market value-added model.

Keywords: Fundamental Analysis, Economic Value Added, Market Value Added, Intrinsic Value, Portfolio Construction, Overvalued, Undervalued

Introduction

Generating the return on investment of shareholder's wealth is an important aspect of the organisation. Corporate organisations were giving the least preferences to the maximisation of the shareholders. Shareholders' return on investment is determined can be analysed on the basis of return on investment earned by the investors. The efficient market hypothesis theory concludes that market price of the stock reflects the organisational information and the financial reports of the company published. The financial reports of the organisation is used by the researcher to measure the financial performance of the organisation.

The fundamental analysis is used to analyse the financial report of the organisation. Economic value added (EVA) model was developed by Stewart and Company in year 1990. The organisation was based at the New York. The EVA model is used to calculate the incremental return earned by the investor by investing the investment in the organisation. The fundamental factors that affect to the calculation of EVA are operating profit, cost of capital, return earned by the investors and return earned by the equity shareholders.

Market value added (MVA) model helps to calculate the value of stock on the basis of the is the difference between the company's market value and the book value of the company. As per the model, if the total market value of the company is more than the capital invested in the organisation, the organisation has created the shareholder's value. If the value of company on the basis of MVA model has positive value, the company has created wealth for its shareholders and if the value of the company is negative it discloses that the company had not generated the value to the investors.

The intrinsic value of stock analyses the fundamental value of stock. The intrinsic value determines that whether the stock is overvalued or undervalued stock. Hence, if the intrinsic value of the stock is less than the

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market value of the stock investors is suggested to exit the market by selling that security and if the intrinsic value of the stock is higher than the fundamental value then it is considered as the undervalued stock hence it is suggested to include that stock in the portfolio. The intrinsic value of the securities can be calculated by the various methods of calculating the intrinsic value.

The method to calculate the intrinsic value of the stock are:

- *Residual Income Model:* The intrinsic value of equity share in residual income model determines the fundamental value of the stock on the basis of the residual income generated by the company. Residual income model generates intrinsic value of the stock that determines the fundamental value of the stock on the basis of the residual income earned by the company.
- *Discounted Cash Flow Model:* The intrinsic value of equity share in discounted cash flow method is determined on the basis of the cash flow in the company. In the model the cash flow earned by the company is discounted by the present value factor to get the present value of the company.
- *Dividend Discount Model:* The intrinsic value of equity shares in DDM is determined by the dividend paid by the company to their shareholders. The model works on the certain assumption for calculating the intrinsic value of the stock.

Literature Review

Jumran and Hendrawan (2021), conducted the research and analysed that there is a significant difference between the results of intrinsic value calculation and current market value, the expected growth of real GDP continues to show a positive growth condition. The FCFE analysis shows the results show undervalued conditions for all scenarios. Hence, it recommends to be owned by investors. As per PBV with an optimistic scenario, only BBNI shows an undervalued condition. Three state-owned banks show an overvalued condition. On the other hand, in the moderate and pessimistic scenario, only BBRI shows an overvalued condition. Even so, the existence of positive economic growth conditions caused the four shares of state-owned banks to be highly recommended to be owned.

Haritha, Ravi and Ravisankar (2013), conducted the research and analysed that, HUL and Hero Moto Corp are giving the return on investment to their investors from their earnings and retain very less money. Intrinsic values of BHEL, Infosys, Reliance and SBIN is in higher stage and HUL intrinsic value is lower stage, which states that stocks were not chosen by higher or lower intrinsic values and going to choose by comparing intrinsic valves with concern company market value.

Awad, Murray and Ayyad (2012), conducted the research and concluded the positive correlation between intrinsic value and market value and also concludes that increase in one variable will lead to an increment in another variable. The research study was based on the results of the empirical results, so that we rejected the null hypothesis which means the market value of common stock has direct relationship with the intrinsic value of common stock in Palestine Exchange. To remove the limitation of correlation test, a causality test, has been approached. Within the boundaries of PEX, using the casualty test, it analysed that market value derives the change in intrinsic value, reflects that rejecting the null hypotheses, which analysed that the market value of common stock causes the intrinsic value of common stock in Palestine Exchange.

Mehta and Shah (2018), conducted the research and analysed that the dividend discount model (DDM) had applied to calculate the intrinsic value of stock of oil marketing companies and the values received are compared with the market values of the stocks. With this comparison, the investors and research analysts can take a decision of investing in a r company selected by applications of the DDM. Two-stage growth model was applied as dividends paid per share by the all four companies are growing, but not at a constant rate.

Gottwald (1913), conducted the research and concluded that Results of the empirical are analysed the dependency especially on used samples of stocks, time period and method. Mostly they do not incorporate different types of stocks: common stocks, preferred stocks, staff stocks, etc. Research was focused on relation between theoretical price and market price is important not only for academic workers and investors. Describing fundamental analysis and intrinsic value of a stock, some empirical researches were cited. The research was related to dependence of stock price and intrinsic value of a stock. Results of

statistical analyses presented in the paper makes investors decision how to invest easier.

Mensah, Peprah, Owusu-Sekyere, Ayaa and Daniel (2022), had conducted the study and concluded that use of the discounted cash flow model as a measure of intrinsic value and concludes that the internal rate of return and net present value are major estimators of the intrinsic value of stocks which significantly influence investment decision-making.

Marisetty and Sudha (2012), had conducted the study and concluded that investor is interested in knowing the appropriate timing for investment and getting return on investment. Selecting the right stock at the right price and time plays a vital role in investing in the stock market. Fundamental analysis will help the investor when to purchase the stock at a real worth value of the stock. The research was conducted to know the stock's fundamental value in the intrinsic value to select the stock by comparing the market value. In this research, intrinsic value is calculated purely based on company analysis and not considered economic factors and industry factors. This research concludes that intrinsic value tools can be used for selecting stocks to buy or sell.

Joshi and Goel (2000), had conducted the study and analysed that MVA and MVA per share are better performance measures influencing the share price behaviour. However, MVA/MVAPS nor any single measure alone could explain stock price variance more satisfactorily. The study implies on combination of performance measures has to be used to understand the impact on share price behaviour. The MVAPS performance measure resulted into strong measure influencing share prices and hence attempt should be taken by companies to improve MVAPS to improve the stock prices. The companies and investors should change their mind set and focus on MVAPS, for assessing the corporate performance.

Alipoura and Pejmanb (2015), had conducted the study and analysed that the EVA has no superiority over other performance measures, and that return on sales and return on assets are more powerful than EVA in explaining firm market value. Due to EVA's lack of correlation with market value, investors cannot use it as an internal value creation measure along with the traditional performance measures. This paper is one of the first studies on the relevance of traditional accounting and value-based performance measures in explaining TSE market values. The results extend EVA's role in explaining market values, and address its effect on investors' decisions in a continental Asian market with characteristics similar to that of Iran.

Gélinas (2013), had conducted the study and analysed that a firm that remains marketable after it has been acquired has a value greater than, or equal to, a similar firm whose operations must be integrated permanently and "destructively" into the operations of its acquirer to deploy synergies. Second, firm that is more likely to be acquired has a value greater than, or equal to, a similar firm less likely to be acquired because and are monotonically non-decreasing as P[A] increases.

Akgun, Samiloglu and Oztop (2018), had conducted the research and concluded that the financial information content of MVA and three traditional accounting performance measures. Further, this study also examines the profitability and its effect on MVA of Turkish informative and technology firms listed on the BIST, covering a 10 years' period in Turkey (2004–2015). Based on the findings of this paper EVA has a negative and significant relationship with MVA, while ROA and ROE have no significant relationship MVA.

Effendy and Surjandari (2022), had conducted the research and concluded that a. The MVA has no significant effects on stock returns. The liquidity ratio (CR) has a significant effect on stock returns. The solvency ratio (DER) has no significant effects on stock returns. The dividend policy (DPR) has a significant effect on stock returns. The firm size cannot moderate the relationship between the effects of market value-added and stock returns. The firm size can moderate the relationship between the effects of the CR and stock returns. The firm size cannot moderate the relationship between the effects of DERs and stock returns. The firm size can moderate the relationship between the effects of DPR and stock returns.

Research Methodology

Problem Statement

"To analyse the fundamental value of stock using intrinsic value and MVA of selected stock of BSE-SENSEX30".

Research Objectives

- To examine the fundamental value of stock using the MVA and intrinsic value model.
- To compare the fundamental value of the stocks on the basis of intrinsic value and market value model.
- To prepare the portfolio on the basis of the intrinsic value of stock and MVA model.

Data collections

There are two types of the data collection method viz: primary data and secondary data.

Primary data refers to data collected by the first handed by the researcher for the research or the project purpose. The example of primary data are questionnaire, interviews, surveys, observations, experiments, case studies and action research.

Secondary data refers to the data that has been collected, processed and published by the researcher. The example of the secondary data is journals, magazines, websites, publications, newspapers, books, etc. In this research the secondary data will be used. The data will be collected from the website of BSE, NSE, money control and annual reports of the company.

Formula to Calculate Market Value Added

Market value added = company's total market value – capital invested

Formula to calculate intrinsic value of stock using discounted cash flow method:

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \cdots + \frac{CF_n}{(1+r)^n}$$

Where,

DCF: Discount Cash Flow or The Present Intrinsic Value of the company.

CF: Cash flow in years one, two and so on.

R: Interest Rate.

N: Time in years before the future cash flow occurs.

Sample Size: In this research total 10 companies of IT Sector on the basis of the market capitalisation is taken as the sample size for the fundamental analysis.

Statistical Tools: Microsoft Excel.

Analysis and Interpretation

Sample Taken for Analysis

Table 1

Sr. No.	*Company Name*	*Market Price on Stock Exchange*
1	Tata Consultancy Services	3602.50
2	Infosys Limited	1496.15
3	HCL Technologies Limited	1273.15
4	Wipro Limited	418.65
5	LTI Mind tree	5427.75
6	Tech Mahindra	1305.00
7	M-phasis Limited	2484.50
8	Persistent Limited	5849.50
9	Oracle financial services software limited	4195.30
10	Coforge Limited	5283.70

Market Value Added

MVA model is used to analyse wealth a company has created for the investors. The model is considered as a cumulative measure of corporate performance which analyse that how much a company's stock has added to (or taken out of) investors. MVA is a cumulative measure of the value created by management is excess of the capital invested by shareholders.

Steps for Calculation of MVA

- Calculate the total number of outstanding equities share of the company.
- Collect the market price of the equity share.

- Multiply total number of outstanding shares with the market price of the equity share.
- Collect the total capital invested by the company.
- Deduct total value of firm out of the total capital invested, that will give you the total firm value.
- Divide the total value of firm by the number of outstanding equity share.
- It will give the market value of the stock.

Intrinsic Value of the Stock Using Market Value Added

The 10 IT Sector companies on the basis of capitalisation of India is selected as a sample. All the amounts are taken from the google finance and yahoo finance it was available in thousand, billions or millions hence all the numbers it is converted into thousands.

Table 2

Company Name	*Total Number of Outstanding Share*	*Market Value of Share*	*Total Value of Firm*	*Total Capital Invested*	*Market Value of Firm*	*Intrinsic Value of Stock*
Tata consultancy services	3660000	3602.65	13185699000	904240000	12281459000	3355.59
Infosys	4140000	1496.15	6194061000	9172000	6184889000	1493.93
HCL Technologies	2710000	1273.15	3450236500	676560000	2773676500	1023.5
Wipro Ltd	5480000	418.65	2294202000	931257000	1362945000	248.71
LTI Mindtree	295860	5427.75	1605854115	167174000	1438680115	4862.71
Tech Mahindra Ltd	883290	1305	1152693450	295027000	857666450	970.99
M-Phasis	188550	2484.5	468452475	81333150	387119325	2053.14
Persistent Ltd	73350	5849.5	429060825	43935880	385124945	5250.51
Oracle financial Services Ltd	86490	4195.3	362851497	74589070	288262427	3332.90
Coforge Ltd	61090	5283.7	322781233	34207000	288574233	4723.76

Interpretation

The following table interprets the intrinsic value of the equity share on the basis of the MVA of the stock. From the above interpretation we can conclude whether the equity share had given positive return on investment or not. The model examines that if the intrinsic value of stock as per MVA model had arrived the positive value it had generated the positive return on investment to the investor and if the intrinsic value of equity share as per the MVA model have the negative value it states that the company has not given the return on investment to the investor.

Market Value Added Stock on the Basis of the Intrinsic Value

Table 3

Company Name	*Market Value of Share*	*Intrinsic Value of Stock*	*Positive/Negative Return*
Tata Consultancy Services	3602.65	3355.59	Positive return
Infosys	1496.15	1493.93	Positive return
HCL Technologies	1273.15	1263.70	Positive return
Wipro Ltd	418.65	248.71	Positive return
LTI Mindtree	5427.75	4862.71	Positive return
Tech Mahindra Ltd.	1305.00	970.99	Positive return
M-Phasis	2484.5	2053.14	Positive return
Persistent Ltd.	5849.5	5250.51	Positive return
Oracle Financial Services Ltd.	4195.3	3332.90	Positive return
Coforge Ltd.	5283.7	4723.76	Positive return

The table interprets that the company had generated the positive return to the investors. The company had generated the return on investment to the investors. The positive value concludes that the company had given the positive value to the investors.

Market Value of the Company in Billion

Table 4

Company Name	*Market Value of Firm*	*Market Value in Billion*
Tata Consultancy Services	12281459000	12281.46
Infosys	6184889000	6184.89
HCL Technologies	2773676500	2774
Wipro Ltd	1362945000	1362.94
LTI Mindtree	1438680115	1438.68
Tech Mahindra Ltd	857666450	857.67
M-Phasis	387119325	387.12
Peraistent Ltd	385124945	385.12
Oracle financial Services Ltd	288262427	288.26
Coforge Ltd	288574233	288.26

The above table interprets the market value of the companies on the basis of the MVA model. The model states that if the value of the company is in the positive it had generated the return to the investors and if the market value of the company is negative than it states that the company had not generated the return to the investors. From the above table it shows that the value of all the selected samples is positive which interprets that it had generated the return on investment to the investor.

Intrinsic Value of Stock

Intrinsic Value of Stocks: Intrinsic value model analyses the perceived or the calculated value of the stocks derived by company's financial factors using the fundamental analysis model. If the market value of the stock is higher than the intrinsic value than the stock is considered as the overvalued stocks and if the market value of the stocks is lower than the intrinsic value of the stocks it is considered are the undervalued stocks**.**

Steps for Calculating Intrinsic Value of Stock Discounted Cash Flow by Single Stage Model:

Step-1: Collect the data of free cash flow of the company at the end of the financial term.

Step-2: Collect the data of the growth rate of the company at the end of the financial term.

Step-3: Select the discounted factor for calculating the present value of the company.

Step-4: Collect the data of the outstanding share of the company.

Step-5: Calculate the present value of the firm.

Step-6: Divide the present value of the firm by the outstanding number of the share.

Intrinsic Value of Stocks using DCF

Table 5

Company Name	*Free Cash Flow*	*Growth Rate (%)*	*Discount Rate (%)*	*Shares Outstanding*	*Present Value of All Cash Flows*	*Market Value of Stock*	*Intrinsic Value*
Tata Consultancy Services	17,61,60,000	12.90	8	3660000	4058870204	3602.65	1108.98
Infosys	51,97,50,000	10.70	8	4140000	2059750000	1496.15	497.52
HCL Technologies	33,67,50,000	9.90	8	2710000	19478328947	1273.15	7187.58
Wipro Ltd.	15,26,90,000	11.50	8	5480000	4864267143	418.65	887.64
LTI Mindtree	40,10,000	14.19	8	295860	73974458.8	5427.75	250.03
Tech Mahindra Ltd.	4,55,68,000	17.00	8	883290	592384000	1305	670.65
M-Phasis	25,80,000	10.00	8	188550	141900000	2484.5	752.58
Peraistent Ltd.	12,40,000	9.10	8	73350	122985454.5	5849.5	1676.69
Oracle financial Services Ltd.	39,10,000	12.50	8	86490	97750000	4195.3	1130.18
Coforge Ltd.	79,23,000	10.30	8	61090	379959521.7	5283.7	6219.19

The above table represents the comparison between the intrinsic value of stock and the market value of the stock. The model represents the data on the basis of the residual income model. The model derives the overvalued and undervalued stocks. The overvalued stocks are not suggested to keep the stock in the portfolio and the undervalued stocks are suggested to add in the portfolio with expectations that the price of the stock will increase in the future.

Overvalued Stocks

Table 6

Company Name	*Market Price*	*Intrinsic Value*
Tata consultancy services	3602.65	1108.98
Infosys	1496.15	497.52
LTI Mindtree	5427.75	250.03
Tech Mahindra Ltd.	1305	670.65
M-Phasis	2484.5	752.58
Peraistent Ltd.	5849.5	1676.69
Oracle financial Services Ltd.	4195.3	1130.18

The overpriced securities whose intrinsic value is less than the market price, which indicates that the price of the securities will be decreased in the near future. So it is suggested to investors that they should sell the stocks to cover the risk of the price volatility. The following stocks should be sell by the investor like, TCS, Infosys, LTI mind tree, Tech Mahindra limited, M-Phasis, Persistent limited, Oracle financial services limited.

Undervalued Stocks

Table 7

Company Name	*Market Price*	*Intrinsic Value*
HCL Technologies	1273.15	7187.58
Wipro Ltd	418.65	887.64
Coforge Ltd	5283.7	6219.19

The underpriced securities whose intrinsic value is more than the market price, which indicates that the price of the securities will be increased in the near future. So, it is suggested to investor that they should buy the stocks to take advantages of the increase in the price. The following stocks should be buy by the investor like, HCL Technologies, Wipro limited and Coforge Ltd.

Findings

The study conducted finds that the MVA model gives the positive returns related to the valued added by the firm to the investors for the capital invested by them as per the model it is suggested that the company that were taken for analysis had given the positive return on investment to the investors and investor can invest in the company's which were taken for the analysis. Intrinsic value analysis model examines that out of 10 sample size seven companies were overvalued company's hence it should not be included in the portfolio and 3 companies are undervalued stock hence it should be included in the portfolio with the assumptions that the prices would be increase in near future because of which the investors would get higher return on investment.

Conclusion

The study concluded regarding "Fundamental analysis model for the prediction of stock prices". The intrinsic value of the share helps investor understand the financial return of a stock in the future. From the above study it was concluded the MVA of the companies where it concluded that all the selected companies had generated the value of the investment to the investors no companies had given negative return to the investors hence it is suggested to keep all the stocks in the portfolio. The intrinsic value model using discounted cash flow model analysed that many stock which are listed in SENSEX 30 overpriced and some of the stocks are under-priced. Overpriced securities indicate that the price of the securities will be decreased in near future and under-priced securities shows the price of securities will be increase in near future. An investor to sell some of the stocks which are overpriced which will save investor loss from the risk and buy those stock which are under-priced. As the intrinsic value gives a future indication for increase or decrease in share price accordingly an investor has to make transaction of buy or sell.

References

Awad, I. M., Murrar, A., & Ayyad, H. (2012). The intrinsic & market value of the common stocks: Evidence from Palestine exchange.

Gottwald, R. (1913). The dependence between stock price and intrinsic value of a stock. *Change, 1871,* 1914-1944.

Joshi, S. K., & Goel, R. (2000). Market value added and share price behaviour: An empirical study of BSE Sensex companies. *Delhi Bussiness Review, 1*(1).

Jumran, A., & Hendrawan Sr, R. (2021). Stock valuation using discounted cash flow method with free cash flow to equity and relative valuation approaches on state-owned banks listed on IDX for 2021 to 2025 period projection. *International Journal of Science and Management Studies (IJSMS), 4,* 191-201.

Marisetty, N. (2012). *Intrinsic value: A tool for selection of the stocks*. In Seventh International Seminar on "Financial Markets: Issues and Challenges" (FIM IC-2012).

Haritha, M., Ravi, V., & Ravisankar, O. (2013). Intrinsic value a base to pick scrip. *IOSR Journal of Business and Management (IOSR-JBM), 15*(3), 1-5.

Mehta, D., & Shah, S. (2018). Intrinsic valuation by two stage growth model: Study of oil marketing companies in India. *ANVESHAK-International Journal of Management, 7*(1), 152-171.

Mensah, M. O., Peprah, W. K., Owusu-Sekyere, A. B., Ayaa, M. M., & Daniel, B. (2022). Influence of stocks intrinsic valuation on investment decision making: A literature review. *International Journal of Academic Research in Business and Social Sciences, 12*(5), 1268-1275.

Alipour, M., & Pejman, M. E. (2015). The impact of performance measures, leverage and efficiency on market value added: Evidence from Iran. *Global Economics and Management Review, 20*(1), 6-14

Gélinas, P. (2013). Discounted cash flow model 2.0. *Modern Economy.*

Akgun, A. I., Samiloglu, F., & Oztop, A. O. (2018). The impact of profitability on market value added: Evidence from Turkish informatics and technology firms. *International Journal of Economics and Financial Issues, 8*(4), 105-112.

Effendy, R. J., & Razmjoo, D. A. S. (2022). The effect of market value added (MVA), liquidity and solvency ratio and dividend policy on stock return with firm size as the moderating variable (study on LQ45 Companies in Indonesia Stock Exchange). *Journal of Economics, Finance and Accounting Studies, 4*(1), 244-253.