

Comparison of Fundamental Value and Market Value: A Case Study of Heromotoco.

Shradhanjali Panda

Asst. Professor (Finance) United School of Business Management Bhubaneswar Odisha India

ABSTRACT: *For a rational stock market investment strategy, every investor should know when to buy the stock and when to sell it. That means he is required to know whether the stock is overvalued or under valued. Here comes the concept of stock valuation. This present case study aims at calculating the fundamental or the intrinsic value of HeroMotoCo or Hero Honda. For estimating the fundamental value of the sample company stock two valuation models are used. First, Equity Free Cash Flow Model and second, Relative Valuation Model using P/E ratio. The calculated values are then compared with corresponding market values and the deviation is examined. To test the significance level between the values, Welch's t-test is conducted.*

I. INTRODUCTION

Just because a stock has a certain price, does not mean that it is worth that much. The efficient market theory of valuation does posit that if a stock exchange trades at a high volume, and is organized well, the price will closely mirror the valuation. But this is not always true. Sometimes price is too high (over valued or undersold) or too low (under valued or oversold) for the true value of a stock. The process of calculating the fair market value of a stock by using a predetermined formulas that factors in various economic indicators. Stock valuation can be calculated using a number of different methods. The most common methods used are the discounted cash flow method, the P/E method, and the Gordon model. Whichever method is chosen must be done accurately so that the price of stock can be valued properly.

II. LITRERATURE REVIEW

The most widely used methods of valuation are Multiples of P/E ratio and Discounted Cash Flow Method. Earnings multiples are commonly used when analysts have high confidence in the quality of historical and projected earnings per share (EPS) and when EPS are expected to grow. The relative asset valuation approach gained on popularity after a study by Fama and French (1992) showing that the B/M ratio is one of the best explanatory variables of historical stock returns. Most commonly used is however the earnings multiple approach (Demirakos, Strong and Walker, 2002). In this method, analysts need to forecast EPS for the year ahead and determine an appropriate price-to-earnings multiple (P/E ratio). Key and at the same time major weakness in this method of common stock valuation is the earnings multiple. It is determined usually in a rather subjective way relative to multiples of other 'comparable' companies and is therefore subject to biases and even manipulation. Bhojraj and Lee (2001) write that "the aura of mystique that surrounds this technique is discomforting from a scientific perspective, limits its coverage in financial analysis courses, and ultimately threatens its credibility as a serious alternative in equity valuation." Another problem associated with the widespread use of relative valuation techniques is an obsessive focus on short-term earnings numbers. While research shows that reported earnings are decreasingly important in explaining stock prices (e.g. Lev and Zarowin, 1999), the market's focus on earnings has steadily increased.¹² Related to this problem of relying too heavily on next year's earnings is the problem of accurately forecasting them.

Several studies have shown that analysts make large mistakes in forecasting earnings (e.g. Dreman, 1998, Karceski and Lakonishok, 2001). Some authors even argue that the mistakes are too large to derive any kind of meaningful information from these forecasts (Dreman, 1998).

Enterprise DCF Model is perhaps the most appropriate and universally accepted model or method of valuing a company and its equity shares.

C. Gilson Stuart, S. Hotchkiss Edith and S. Ruback Richard (Spring 2000), compare the market value of firms that reorganize in bankruptcy with estimates of value based on management's published cash flow projections. Firm values were estimated using models that have been shown in other contexts to generate relatively precise estimates of value. We find that these methods generally yield unbiased estimates of value, but the dispersion of valuation errors is very wide--the sample ratio of estimated value to market value varies from less than 20% to greater than 250%. Cross-sectional analysis indicates that the variation in these errors is related to empirical proxies for claimholders incentives to overstate or understate the firm's value.

Specifically, Levin and Ohlsson (2000) argue that the steady state conditions ensure that the company's forecasted performance remains stable after the valuation horizon and that its expected development, as described by its parameters, holds indefinitely. They also claim that a steady state is a necessary condition for the three models to yield identical results when terminal values are used. Therefore, any steady state condition violation can cause internal inconsistencies in valuation models and thus have a significant effect on the equity value estimates.

1. OBJECTIVE OF THE STUDY

The market sometimes behaves irrationally. It is very difficult to know whether it is true that market value is reflected in share price. Sometimes it is overvalued or undervalued. So, the study has tried to test whether the fundamental value is reflected in market price of the shares or not. The sample company i.e. HeroMotoCo. is taken for the study. Hence the objectives of the study are as follows.

- 1 To make a fundamental Analysis of the selected company.
- 2 To use various models using the variables identified above to determine the probable intrinsic value.
- 3 To compare the values as per Fundamental and Market and interpret the same.
- 4 To check the significance level of both the values.

2. HEROMOTOCO.

Hero MotoCorp (Formerly Hero Honda Motors Ltd.) is the India's largest manufacturer of two wheelers i.e. motorcycle and scooter. In 1984 Hero Honda was created by a joint venture between Hero Cycle of India and Honda of Japan. Hero is the brand name used by the Munjal brothers for their company "Hero Cycles Ltd". A joint venture was established at Dharuhera and Munjal family and Honda group both own 26% stake in the Company. During the 1980s, the company introduced motorcycles that were popular in India for their fuel economy and low cost. A popular advertising campaign based on the slogan 'Fill it - Shut it - Forget it' that emphasized the motorcycle's fuel efficiency helped the company grow at a double-digit pace since inception. The technology in the bikes of Hero Honda for almost 26 years (1984–2010) has come from the Japanese counterpart Honda. In 2010, when Honda decided to move out of the joint venture, Hero Group bought the shares held by Honda. Subsequently, in August 2011 the company was renamed Hero MotoCorp with a new corporate identity. On June 4, 2012, Hero MotoCorp approved a proposal to merge the investment arm of its parent Hero Investment Pvt. Ltd. into the automaker. The decision comes after 18 months of its split from Honda Motors. It is no doubt a blue chip company in Indian Stock market. The performance of the company clearly shows the reason why it is a favorite one with Indian investors. During the fiscal year 2008-09, the company sold 3.7 million bikes, a growth of 12% over last year. In the same year, the company had a market share of 57% in the Indian market. Hero Honda sells more two wheelers than the second, third and fourth placed two-wheeler companies put together. Hero Honda's bike Hero Honda Splendor sells more than one million units per year. On 1st June 2012, Hero MotoCorp reported its highest ever monthly sales at 5, 56,644 units in May, registering a growth of 11.28%.

III. RESEARCH METHODOLOGY

2.1. Data

All data used for the study is secondary in nature. For Financial Statement analysis, key ratios and values are taken from Prowess and CMIE database. For Fundamental Analysis, quarterly data are collected from Company websites and CMIE data base. To calculate the average market price, the closing prices of the shares are taken from the official website of NSE that is www.nseindia.com. Apart from it, the published Annual reports, Balance Sheets and Income Statements of the sample Companies are also studied.

2.2. Period of the Study

The study will cover a period of 10 year time period starting from 1st January 2002 to 31st December, 2011. To provide us enough data point for a meaningful analysis a period of 10 years is taken for the study. Taking these 10 years data, the Equity Free Cash Flow is forecasted for each quarter of the year 2011 and then discounted to each quarter of 2011, to get the intrinsic value of the share.

2.3. Methodology

In this study, two valuation models are used. They are Equity Free Cash Flow Model i.e. EFCF Model and Relative Valuation Model using P/E ratio. In the first method, quarterly financial values are taken. Growth rate is calculated by multiplying ROE with retention ratio. Using the growth rate, the calculated cash flow is forecasted to each quarter of 2012. Then using cost of equity this cash flow is discounted to each quarter of 2011. To compute cost of equity, CAPM Model is used.

In the second method, quarterly P/E ratio is taken for the year 2010 then EPS growth rate is multiplied with it to get the value of each share for every quarter of 2011. To compute the market value of each share, quarterly

closing prices are taken and average is calculated and to calculate EPS growth rate, 10 year time period is taken into account. In Technical Analysis of the study, along with raw share price, MACD chart and RSI chart are also used to show the trend and the overbought and oversold position. To compare the deviation between the calculated intrinsic value and the market value, Welch's t-test is conducted. So, in brief the following methods are used in the study.

2.4. EFCF Model

The following formula has been used in order to calculate the fundamental value.

$$V_0 = \frac{EFCF_1}{(1+K_e)}$$

Where V_0 is value of the share

EFCF1 is Equity Free Cash Flow for year 1 and

K_e is cost of equity

In the study EFCF is calculated by adjusting change in working capital, capital expenditure and Depreciation and amortization with Net profit. Following formula is used for this purpose.

$$EFCF = \text{Net Profit} +/\text{- Change in working capital} + \text{Depreciation \& Amortization} - \text{Capex}$$

For calculating cost of equity Capital Asset Pricing Model is used i.e.

$$K_e = R_f + \beta (R_m - R_f)$$

Where, K_e = Cost of Equity

R_f = Risk free rate

β = Systematic risk of an ordinary share of a company in particular

R_m = the expected market return and

$R_m - R_f$ = Market risk premium

2.5. Relative Valuation Model using P/E ratio

In practical valuation process, P/E ratio is widely used by the broking firms in India. Because, this is the ratio of stock market price and earning per a share. So, using this ratio, calculated intrinsic or fundamental value best reflects the market mechanism in it. In India, major broking firms like Karvy, India bulls use P/E ratio to calculate the value of a share. Because, it is easy to understand and simple in nature. Apart from it, this method is the quickest method of calculating the true value of a share.

So, the following formula is used for the study.

$$P/E \text{ ratio} = \frac{\text{Share Price}}{\text{Earnings per Share (EPS)}}$$

In this study fundamental values are calculated for each quarter of the year 2010. Quarters are named as Q1, Q2, Q3 and Q4 respectively. For each quarter, market value is also calculated and compared with the fundamental values.

IV. STATISTICAL TOOL USED

In the present study, to test the significance level of the difference between the calculated intrinsic value and its corresponding market value, Welch's t-test is conducted. This test is an adaptation of Student's t-test. In this test, two mean values are compared and it is applied where the sample sizes are not overlapping in nature. As in the study, the calculated intrinsic values and the market value, behave independently, this Statistical tool is used.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

\bar{X} = Sample Mean
 s^2 = Sample variance and
 N_1 = Sample size

To test the deviation between the intrinsic and the market value, the null hypothesis is as follows

3. HYPOTHESIS

$H_0_{EFCF:\mu}$, The difference between the calculated Fundamental value derived using the EFCF Model and Market value, is not significant.

$H_0_{P/E:\mu}$, The difference between the calculated Fundamental value derived using Relative Valuation Model using P/E Ratio and Market value, is not significant.

The table value, at 3 degree of freedom at 5% significance level is 3.182. If the calculated value would be less than this value, then the null hypothesis will be accepted, otherwise it would be rejected.

V. ANALYSIS & INTREPRETATION

3.1. Findings of EFCF Model

- The calculated intrinsic value of Hero Honda for the 1st quarter is 1995.89. Market value for this time period is 1820. So, the deviation between these two values is 8.81%.
- The calculated intrinsic value of Hero Honda share for the 2nd quarter of 2010 is 2011. Market value for this time period is 1902 and the deviation between the values is 5.42%.
- For the third quarter of 2010 the calculated value per share is 2002. Market value for this time period is 1920 and the deviation between the values is 4.09%.
- For the 4th quarter calculated intrinsic value per share for the 4th quarter of 2010 is 2085. Market price of the company for this time period is 1956 and the deviation between the values is 6.18%.
- For Hero Honda, in EFCF Model, the t value using Welch's t-test rejects the null hypothesis.

3.2. Findings of P/E ratio Model

- Calculated intrinsic value in this method for the 1st quarter of 2010 is 1761.28. Average market value is 1820 and the deviation between the values is 3.33%.
- In the 1st and 4th week of March, the price is above 1900 that is 11% more than the intrinsic value.
- For the second quarter, the intrinsic value is 1616.94, market value is 1902 and the deviation between the values is 17.6%.
- For the 3rd quarter, intrinsic value is 1655.03, market value is 1920 and deviation is 16%.
- In the last week of July, price is below 1700 and RSI chart shows oversold position which is not supporting the intrinsic value.
- In the 4th quarter, the share price is trading between the levels of 1600 and 2000. Intrinsic value for this quarter is 1737.04 and average market value is 1956.
- T-value for the company in this method is -4.

VI. CONCLUSION

In the present study, the aim was to calculate the fundamental or the intrinsic value of the selected company's shares and for that two valuation models are used. They are, Equity Free Cash Flow Model and Relative Valuation Model using P/E ratio. Using these two models, the quarterly intrinsic values of the sample companies' share is calculated. Average quarterly market value is calculated by taking the average of the closing prices of the concerned company's share. Then the calculated intrinsic value is compared with the corresponding market value. Deviation is expressed in percentage. A t-test is conducted to check the significance level of the deviation between the calculated intrinsic value and the market value. Accordingly the null hypothesis is set. The result shows in case of Hero Honda Relative Valuation Model works more accurately than EFCF Model. So, the robustness of the Relative Valuation Model is more practical.

REFERENCE

- [1]. Adams et al. August 2009, "A Comparison of Alternative Approaches to Equity Valuation of Privately held Entrepreneurial firms", Journal of Finance and Accountancy, vol 1, pp 2-15.
- [2]. Ahmed, A. S., R. M. Morton, and T. F. Schaefer, 2000, "Accounting conservatism and the valuation of accounting numbers: Evidence of the Feltham-Ohlson (1996) model", Journal of Accounting, Auditing and Finance 15, 271-292 (2000).
- [3]. Basu, S., 1977, "Investment performance of common stocks in relation to their price earnings ratios: A test of the efficient market hypothesis", Journal of Finance 32, 6763-6782.
- [4]. Belsky, Gary and Thomas Gilovich, 1999, "Why smart people make big money mistakes and how to correct them", Fireside, New York 1999.
- [5]. Damodaran, A., 1996, "Investment valuation", John Wiley and Sons, New York.
- [6]. Damodaran, A. 1999, "Estimating Risk-free Rates." Working Paper. Stern School of Business, New York
- [7]. Damodaran, A. 2001, The Dark Side of Valuation: Valuing Old Tech, New Tech and New Economy Companies, Prentice Hall, New York.
- [8]. Damodaran, A. 2002a, "Dealing with Distress in Valuation." Working Paper. Stern School of Business, New York.
- [9]. Damodaran, A. 2002b. Investment Valuation, 2nd Edition, John Wiley & Sons, New York.
- [10]. Damodaran, A., 2004, "Investment valuation", preliminary second version, www.damodaran.com.
- [11]. Daniel, Kent, David Hirshleifer, and Avanidhar Subrahmanyam, 1998, "Investor psychology and security market under- and over-reactions", Journal of Finance 53, 1839-1885.
- [12]. Dean J, Capital Budgeting, New York 1951, Columbia University Press.
- [13]. Fama, Eugene F., 1991, "Efficient capital markets: II", Journal of Finance 46, 1575-1617.
- [14]. Fama, Eugene F., and Kenneth R. French, 1992, "The cross-section of expected returns", Journal of Finance, 47 (2): 427-465.
- [15]. Fama, Eugene F., and Kenneth R. French, 1993, "Common risk factors in the returns on stocks and bonds", Journal of Financial Economics, 33 (1993), 3-56.
- [16]. Fama, Eugene F., and Kenneth R. French, 1995, "Size and book-to-market factors in earnings and returns", Journal of Finance 50: 131-155.
- [17]. Fama, Eugene F., and Kenneth R. French, 1996, "The CAPM is wanted, dead or alive", Journal of Finance, 51 (5): 1947-1958.
- [18]. Fama, Eugene F., and Kenneth R. French, 1997, "Industry costs of equity", Journal of Financial economics 43 (February 1997): 153-193.

- [19]. Kaplan.S.N , Ruback.R , 1995 “The valuation of cash flow forecasts: An Empirical Analysis” , Journal of Finance, vol 50, no 4 (September) ,pp 1059-93.
 [20]. Kaufman, Perry J. (2003) A Short Course in Technical Trading, John Wiley & Sons Inc.

ANNEXURE

Table 1: Calculation of cost of equity using CAPM

Company Name	Risk Free Rate (Rf)	β value	Market risk premium	Ke (Cost of Equity)
Hero Honda	6.5%	0.39	6.1	8.8%

Table 2: Calculation of Forecasted Equity Free Cash Flow of Hero Honda for each quarter of the year 2012

Quarters	Net Income	Changes in w.c.	Depreciation & amortization	Capital Expenditure	“g” (ROE×b)	Forecasted EFCF
Q1	2180	902	927	2105	23.1%	2342.2
Q2	2197	911	987	2114	23.17%	2436.5
Q3	2213.2	925	1002	2205	23.13%	2380.56
Q4	2231.83	933.64	1092.2	2245.67	23.27%	2473.56

(Values are expressed in crores)

Table 3 Calculated intrinsic value of Hero Honda for the year 2011 and comparison with market value

Quarters	intrinsic value per share	Market value	Deviation
Q1	1995.89	1820	8.81%
Q2	2011	1902	5.42%
Q3	2002	1920	4.09%
Q4	2085	1956	6.18%

Table 4 Intrinsic value of Hero Honda using P/E ratios of sample companies

Quarters	P/E ratio	EPS growth	Intrinsic value	Market value	Deviation
Q1	22.23	79.23%	1761.28	1820	3.33%
Q2	21.12	76.56%	1616.94	1902	17.6%
Q3	21.43	77.23%	1655.03	1920	16.0%
Q4	22.21	78.21%	1737.04	1956	12.6%

Table 5 t-value of sample companies

Name of the Company	t-test value in EFCF Model	t-test value in P/E Ratio Method
Hero Honda	3.494	-4.649