The Study of Valuation Models IT Sector

Abhijit Dutta
Faculty Member,
The Business School,
Bhubaneshwar.

This article features valuation models and explains why the Economic Valuation Approach (EVA) is considered to be the best for shareholders and investors.

There have been several studies done for the corporate valuation using different models. The importance, more than ever, has emerged because the corporate executives are under increasing pressure to demonstrate on a regular basis that they are able to create shareholder value. This pressure has led to the emergence of a variety of measures of value creation in business.

Creating value for shareholders is now a widely-accepted corporate objective. The interest in value creation has been stimulated by several developments, some of which are listed below:

- Capital markets are becoming increasingly global. Investors can readily shift investments to higher-yielding, often foreign opportunities.
- Institutional investors, who traditionally were passive investors, have begun exerting influence on corporate managements to create value for shareholders.
- Corporate governance is shifting with owners now demanding accountability from corporate executives. Manifestations of the increased assertiveness of shareholders include the necessity for executives to justify their compensation levels and well-publicized lists of underperforming companies and overpaid executives.
- Business press is emphasizing shareholder value creation in performance rating exercises.
- Greater attention is being paid to link top management compensation to shareholder returns.

The corporate valuation has two important roles to play. First, to assess correctly the wealth creation and second, to instill confidence in corporate investors on the value arrived at.

Valuation is being done by different groups of professionals from different institutes or associations with varying background and skills. This is a serious hurdle. The answer is to adopt a unified approach, but for consolidation, a systemic control in the right direction is needed. Problems

of independence of valuers and confidentiality, as well as disputes on methodology or the value arrived at could lead to a stressful situation for corporate users. But as for the present system of corporate valuation it lacks a disciplined, systematic and scientific approach, which is much needed for consistency, says Chandra Wadhwa, President of the Institute of Cost and Works Accountants of India, in an interview with the *Business Line,* he says, "The absence of valuation discipline is damaging corporate governance and its health." This problem can be fixed by having a proper regulatory body, and laying out a well-planned a scientific approach towards valuation. This can bring all the valuation professionals under one umbrella and make them adhere to valuation standards adapting themselves to a set of standardized practices for uniformity and consistency.

In a study, investment analysts the world over have contended drilled into our minds that it pays to be invested in companies whose managements are perceived to be focused and proactive. A good management always commands premium valuation for the stock. The logic is justified given the fact that the management's attitude towards the company determines the growth curve it takes. It tests this reasoning and sees whether the logic really holds good for Indian companies.

The valuations of Indian software firms are rich compared to their global peers, but such value is justified given their better growth rates and prospects, said Citigroup Global Markets in a recent report post January-March earnings. "Management commentary across the sector remained positive. All the companies remained positive on the pipeline and the hiring remained robust. We believe that while 4Q was below expectations, the outlook remains strong, as highlighted by Infosys, Satyam guidance and management commentary from other majors", it said.

Citigroup prefers top-tier software firms such as Infosys Technologies, Tata Consultancy Services and HCL Technologies to the smaller ones. "Our view remains that companies with size, and a diversified presence across verticals and horizontals are better placed from a demand-and-supply perspective," the investment bank said.

Review of Literature

Marakan Associates (1978), an international management-consulting firm, has done pioneering work in the area of value-based management. This measure considers the difference between the Return on Equity (ROE) and the required ROE (cost of equity) as the source of value creation. This measure is a variation of the EV measures.

Instead of using capital as the entire base and the cost of capital for calculating the capital charge, this measure uses equity capital and the cost of equity to calculate the capital (equity) charge. Correspondingly, it uses economic value to equity holders (net of interest charges) rather than total firm value.

According to Marakan model, shareholder wealth creation is measured as the difference between the market value and the book value of a firm's equity. The book value of a firm's equity, B, measures approximately the capital contributed by the shareholders, whereas the market value of equity, M, reflects how productively the firm has employed the capital contributed by the shareholders, as assessed by the stock market. Hence, the management creates value for shareholders if M exceeds B, decimates value if M is less than B, and maintains value it M is equal to B.

According to the Marakon model, the market-to-book values ratio is function of the ROE, the growth rate of dividends and cost of equity.

For an all-equity firm, both Equity Valuation (EV) and the equity-spread method will provide identical values because there are no interest charges and debt capital to

consider. Even for a firm that relies on some debt, the two measures will lead to identical insights provided there are no extraordinary gains and losses, the capital structure is stable, and a proper re-estimation of the cost of equity and debt is conducted.

A market is attractive only if the equity spread and economic profit earned by the average competitor are positive. If the average competitor's equity spread and economic profit are negative, the market is unattractive.

For an all-equity firm, both EV and the equity spread method will provide identical values because there are no interest charges and debt capital to consider. Even for a firm that relies on some debt, the two measures will lead to identical insights provided there are no extraordinary gains and losses, the capital structure is stable, and a proper re-estimation of the cost of equity and debt is conducted.

The Alcar group Inc., a management and software company, has developed an approach to value-based management which is based on discounted cash flow analysis. In this framework, the emphasis is not on annual performance but on valuing expected performance. The implied value measure is akin to valuing the firm based on its future cash flows and is the method most closely related to the Discounted Cash Flow (DCF/ Net Present Value (NPV) framework.

With this approach, one estimates future cash flows of the firm over a reasonable horizon, assigns a continuing (terminal) value at the end of the horizon, estimates the cost of capital, and then estimates the value of the firm by calculating the present value of these estimated cash flows. This method of valuing the firm is identical to that followed in calculating NPV in a capital-budgeting context. Since the computation arrives at the value of the firm, the implied value of the firm's equity can be determined by subtracting the value of the current debt from the estimated value of the firm. This value is the implied value of the equity of the firm.

To estimate whether the firm's management has created shareholder value, one subtracts the implied value at the beginning of the year from the value estimated at the end of the year, adjusting for any dividends paid during the year. If this difference is positive (i.e., the estimated value of the equity has increased during the year) the management can be said to have created shareholder value.

The Alcar approach has been well received by financial analysts for two main reasons:

- It is conceptually sound as it employs the discounted cash flow framework.
- Alcar has made available computer software to popularize it approach.

However, the Alcar approach seems to suffer from two main shortcomings: (1) In the Alcar approach, profitability is measured in terms of profit margin on sales. It is generally recognized that this is not a good index for comparative purposes. (2) Essentially, a verbal model, it is needlessly cumbersome. Hence, it requires a fairly-involved computer program.

McKinsey & Company, a leading international consultancy firm, has developed an approach to value-based management which has been very well articulated by Tom Copeland, Tim Koller and Jack Murrian of McKinsey & Company. According to them properly executed, value-based management is an approach to management whereby the company's overall aspirations, analytical techniques and management processes are all aligned to help the company maximize its value by focusing decision-making on the key drivers of value.

The key steps in the McKinsey approach to value-based maximization are as follows:

- Ensure the supremacy of value maximization
- Find the value drivers

- Establish appropriate managerial processes
- Implement value-based management philosophy.

Consulting firm Stern Steward® (1989) has developed the concept of Economic Value Added (EVA). Companies across a broad spectrum of industries and a wide range of companies have joined the EVA bandwagon. The EVA is a useful tool to measure the wealth generated by a company for its equity shareholders. In other words, it is a measure of residual income after meeting the necessary requirements for funds.

Discounted Cash Flow (DCF) is the most widely used technique to value a company. It takes into consideration the cash flows arising to the company and also the time value of money. In DCF method, the cash flows are calculated for a particular period of time (the time period is fixed taking into consideration various factors). These cash flows are discounted to the present at the cost of capital of the company. These discounted cash flows are then divided by the total number of outstanding shares to get the intrinsic worth per share.

The true economic value of a firm or a business or a project or any strategy depends on the cash flows and the appropriate discount rate (commensurate with the risk of cash flow). There are several methods for calculating the present value of a firm or a business/division or a project. In following pages, we will discuss three main methods that are mostly used under discount cash flow approach.

The first method uses the weighted average cost of capital (WACC) to discount the net operating cash flows. When the value of a project with an estimated economic life or of a firm or business over a planning horizon is calculated, then an estimate of the terminal cash flows or value will also be made. Thus, the economic value of a project or business is:

Economic value = Present value of net operating cash flows + Present value of terminal value

The second method of calculating the economic value explicitly incorporates the value created by financial leverage. The steps that are involved in this method of estimation of the firm's total value are as follows:

- Estimate the firm's unlevered cash flows and terminal value.
- Determine the unlevered cost of capital.
- Discount the unlevered cash flows and terminal value by the unlevered cost of capital.
- Calculate the present value of the interest tax shield discounting at the cost of debt.
- Add these two values to obtain the levered firm's total value.
- Subtract the value of debt from the total value to obtain the value of the firm's shares.
- Divide the value of shares by the number of shares to obtain the economic value per share.

The third method to determine the shareholder economic value is to calculate the value of equity by discounting cash flows available to shareholders by the cost of equity. The present value of equity is given as below:

Economic value of equity = Present value of equity cash flows + Present value of terminal investment

Accordiong to valuation analysts, investment bankers make extensive use of financial statements when rendering fairness of opinions in conjunction with management buyouts. For example, the discounted cash flow techniques used to value target firms rely heavily on accounting data.

Objectives

There are five valuation models out of which three will be considered to carry out this study. Here, cash value will be determined of Infosys and then using any three

valuation models an appropriate conclusion will be drawn. Basically, in this article, we look at how to value a firm and its equity, given what we know about its investment, financing and dividend decisions.

Limitations

- Primary data is difficult to get, even primary data collected has to be standardized and made into static data, and then analyzed.
- Market volatility.

Data and Methodology

In this part of the article, we look at how to value a firm and its equity given the financial statements. We consider two approaches to valuation. The first and most fundamental approach is discounted cash flow valuation. We then consider how to extend this analysis to look at the way equity in a firm is valued.

Value of a firm = Value of currently held asset + Value of cash flow + Value of the net change in Working Capital

Free Cash Flow to Equity (FCFE) = Net Income - (Capital Expenditures- Depreciation) - Change in non-cash Working Capital- Principal Payments on debt + New Debt issues

The following is the data available in form of financial statements both in the form of audited and unaudited

Table 1: Income Statement

Currency in Millions of US Dollars	March 31, 2004 Restated	March 31, 2005	March 31, 2006	March 31, 2007
Revenues	1,063.0	1,592.0	2,152.0	3,090.0
Total Revenues	1,063.0	1,592.0	2,152.0	3,090.0
Cost of Goods Sold	603.0	904.0	1,244.0	1,777.0
Gross Profit	460.0	688.0	908.0	1,313.0
Selling General & Admin Expenses, Total	160.0	230.0	309.0	458.0
Depreciation & Amortization, Total	7.0	2.0	--	3.0
Other Operating Expenses, Total	167.0	232.0	309.0	461.0
Operating Income	293.0	456.0	599.0	852.0
Interest and Investment Income	22.0	26.0	48.0	71.0
Net Interest Expense	22.0	26.0	48.0	71.0
Currency Exchange Gains (Loss)	8.0	-2.0	-18.0	8.0
Other Non-Operating Income (Expenses)	--	--	1.0	4.0
EBT, Excluding Unusual Items	323.0	480.0	630.0	935.0
Gain (Loss) on Sale of Investments	-2.0	11.0	--	1.0
EBT, Including Unusual Items	321.0	491.0	630.0	936.0
Income Tax Expense	51.0	72.0	70.0	84.0
Minority Interest in Earnings	--	--	-5.0	-2.0
Earnings from Continuing Operations	270.0	419.0	555.0	850.0
Net Income	270.0	419.0	555.0	850.0
Net Income to Common Including Extra Items	270.0	419.0	555.0	850.0
Net Income to Common Excluding Extra Items	270.0	419.0	555.0	850.0

Source: www.technoresearch.com

Table 2: Balance Sheet				
Currency in Millions of US Dollars	March 31, 2004 Restated	March 31, 2005	March 31, 2006	March 31, 2007
Assets				
Cash and Equivalents	445.0	410.0	889.0	1,403.0
Short-term Investments	218.0	278.0	170.0	6.0
Total Cash and Short-term Investments	663.0	688.0	1,059.0	1,409.0
Accounts Receivable	174.0	335.0	409.0	639.0
Notes Receivable	13.0	15.0	20.0	24.0
Total Receivables	187.0	350.0	429.0	663.0
Prepaid Expenses	13.0	11.0	12.0	13.0
Deferred Tax Assets, Current	--	2.0	1.0	2.0
Other Current Assets	10.0	9.0	8.0	11.0
Total Current Assets	873.0	1,060.0	1,509.0	2,098.0
Gross Property Plant and Equipment	405.0	579.0	790.0	1,165.0
Accumulated Depreciation	-178.0	-227.0	-299.0	-427.0
Net Property Plant and Equipment	228.0	352.0	491.0	738.0
Goodwill	3.0	8.0	8.0	128.0
Loans Receivable, Long-term	14.0	10.0	8.0	4.0
Deferred Tax Assets, Long-term	7.0	8.0	13.0	19.0
Other Intangibles	2.0	--	--	20.0
Other Long-term Assets	--	16.0	37.0	66.0
Total Assets Liabilities & Equity	1,132.0	1,454.0	2,066.0	3,073.0
Accounts Payable	1.0	1.0	3.0	6.0
Accrued Expenses	82.0	85.0	108.0	161.0
Current Income Taxes Payable	22.0	23.0	--	4.0
Other Current Liabilities, Total	17.0	39.0	52.0	111.0
Unearned Revenue, Current	30.0	27.0	46.0	73.0
Total Current Liabilities	152.0	175.0	209.0	355.0
Minority Interest	22.0	21.0	15.0	--
Other Non-Current Liabilities	5.0	5.0	5.0	1.0
Total Liabilities	179.0	201.0	229.0	356.0
Common Stock	9.0	31.0	31.0	64.0
Additional Paid in Capital	157.0	266.0	410.0	692.0
Retained Earnings	748.0	923.0	1,387.0	1,871.0
Comprehensive Income and Other	39.0	33.0	9.0	90.0
Total Common Equity	953.0	1,253.0	1,837.0	2,717.0
Total Equity	953.0	1,253.0	1,837.0	2,717.0
Total Liabilities and Equity	1,132.0	1,454.0	2,066.0	3,073.0

Source: /www.technoresearch.com

Table 3: Financial Performance			
	2007	2006	Growth (%)
Income	13149	9028	45.6
Export income	12939	8864	46.0
Gross profit	5871	4141	41.8
Operating profit (PBIDTA)	4225	2980	41.4
Profit after tax			
Before exceptional items	3777	2421	56.0
After exceptional items	3783	2421	56.3
EPS before exceptional item (per value of Rs. 5 each)			
Basic	67.82	44.34	53.3
Diluted	66.33	43.10	57.5
Dividend (excluding silver jubilee special dividend in 2006)			
Per share	11.50	7.5	
Amount	649	412	
Gross profit margin (%)	44.6	45.9	
Operating profit margin (%)	32.1	33.1	
PAT before exceptional items/total income (%)	28.7	26.8	
PAT after exceptional items/total income (%)	28.8	26.8	
Return on average networth (%)	41.9	39.9	
Capital expenditure	1443	1048	37.7
Financial position			
Fixed assets	3107	2133	45.7
Cash and cash equivalents (including liquid mutual funds)	5650	4463	26.6
Net current asset	7137	3832	86.3
Total asset	11162	6897	61.8
Debt			
Equity	286	138	107.3
Networth	11162	6897	61.8
Debt equity ratio (%)			
Cash and cash equivalents/total assets (%)	50.6	64.7	
Market capitalization	115,307	82154	40.4

Source: www.technoresearch.com

Methodology

Methodology for cash flow calculation:

Value of cash flow = Earnings before interest and taxes (1- tax rate) – (Capital Expenditure - Depreciation) – (Change in non-cash Working Capital)

Or,

FCFE (Free Cash Flow to Equity) = Net Income - (Capital Expenditures- Depreciation) - Change in non-cash Working Capital - Principal payments on debt + New debt issues

Table 4: Statement of Cash Flow

Currency in Millions of US Dollars	March 31 2007
Net Income	850.0
Depreciation & Amortization	115.0
Amortization of Goodwill and Intangible Assets	3.0
Depreciation & Amortization, Total	118.0
(Gain) Loss on Sale of Investment	-3.0
Other Operating Activities	-6.0
Tax Benefit from Stock Options	--
Minority Interest	2.0
Change in Accounts Receivable	-208.0
Change in Accounts Payable	3.0
Change in Unearned Revenues	25.0
Change in Income Taxes	-15.0
Change in Other Working Capital	91.0
Cash from Operations	862.0
Capital Expenditure	-336.0
Cash Acquisitions	-148.0
Divestitures	2.0
Sale (Purchase) of Intangible Assets	-3.0
Investments in Marketable & Equity Securities	162.0
Cash from Investing	-334.0
Issuance of Common Stock	277.0
Common Dividends Paid	-71.0
Total Dividend Paid	-71.0
Special Dividend Paid	-265.0
Other Financing Activities	4.0
Cash from Financing	-55.0
Foreign Exchange Rate Adjustments	41.0
Net Change in Cash	514.0

Source: www.technoresearch.com

Now, if we start working with the 2007 data,

(All figures in US$)

Value of a firm = Value of currently held asset + Value of cash flow + Value of the net change in Working Capital

= 3073.0 + 514.0 + (1843-1300)

= 4130

Expected Growth $_{EBIT}$ = Reinvestment Rate x Return on Capital

Reinvestment Rate =

$$\frac{\text{Capital Expenditure} - \text{Depreciation} + \Delta \text{ Non Cash WC}}{\text{EBIT}(1 - \text{Tax rate})}$$

$$= \frac{(339-118)+104}{852} = 38\%$$

$$\text{Return on Capital} = \frac{\text{EBIT}(1-T)}{\text{Capital Invested}}$$

$$= \frac{852}{953} = 89.4\%$$

Expected Growth $_{EBIT}$ = .38 x .894 = 33.97%

Since, it is an all equity firm;

K_e (i.e., Cost of Equity) = Cost of Capital

K_e= Div/ P_0 + Growth $_{equity}$

= 0.53/48 + 11.08%

=12.18%

Growth $_{equity}$ = Retention Ratio x ROE

= 11.08%

Since, it is an all equity firm ROE becomes ROA

ROA= Return on Assets = EBIT (1 – t)/ BV of Equity

= 852/2,717.0 = 31.36%

$$\text{Retention Ratio} = \frac{\text{DPS}}{\text{EPS}}$$

$$= \frac{.53}{1.5} = 35.33\%)$$

Market capitalization = No. of outstanding shares x Price of share

= 571.21 x 47.42

=27087

Marakon approach: Shareholder wealth creation is measured by difference between market value and book value of a firm's equity.

Book value of equity = Rs. 11162 cr

Market value of equity = Rs. 115307 cr

Value creation = 115307 – 11162 = Rs. 104145 cr

Alcar Approach: It is the DCF method.

Stern Steward® Approach: The approach is called Economic Value Added (EVA)

EVA = ((NOPAT/Capital) - Cost of Capital) * Capital

Cost of capital

Return on risk free investment = 8%

Market premium = 7%

Beta variant = 0.99

Cost of equity = 14.97%

Average debt/total capital = –

Cost of debt – net of tax = NA

Weighted Average Cost of Capital (WACC) = 14.97%

Average capital employed = Rs. 9,147 cr

Economic Value Added (EVA)

Operating profit (excluding extraordinary income) Rs. 3,877 cr

Less: Tax Rs. 386 cr

Cost of capital Rs. 1,369 cr

Economic Value Added Rs. 2,122 cr

Enterprise Value

Market value of equity Rs. 1,15,307 cr

Add: Debt – – – – –

Less: Cash and cash equivalents Rs. 6,073 cr

Enterprise value Rs. 1,09,234 cr

Return ratios:

PAT/average capital employed = 42.2%

EVA/capital employed = 23.2 %

Enterprise value/average capital employed = 11.9%

Table 5: Valuation Through the Three Models

Methods	Marakon	Alcar	Economic Value Added
Valuation (Rs. in cr)	104145	9147	2122

Interpretation and Analysis

Analysis

Marakon

IT is a fast-growing industry. So the market has high expectations about the future performance of an IT company. The market value-to-book value ratio is more than 10.

The value of Infosys in the market is very high compared to the book value, implying value creation for the shareholders.

Economic Value Added

Economic value-added measures the profitability of a company after taking into account the cost of capital. It is the post-tax return on capital employed (adjusted for the tax shield on debt) less the cost of capital employed. Companies which earn higher returns than cost of capital create value. Companies which earn lower returns than cost of capital are deemed destroyers of shareholder value.

Conclusion

The three different valuation models like the Marakon approach, The Alcar approach and the EVA approach have been used. But EVA is the considered to be the best approach because the shareholders and the debtholders expect a return. It actually states what the investors expect and what they get or how much more they want.

For example, the shareholders want a return of 15% whereas the value return of equity is 25%, so the difference of 10% is the Economic Value Added, like it states having more than what is expected.

Reference # 6M-2008-04-11-01