

Cash Flow Discounted Valuation of CCAP Ltd. with Value enhancement strategies



Submitted to

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Abstract

With the current growth rate of economy in India, there is a tremendous thrust for infrastructure development. The government has come forward to improve the infrastructure with the help of private players. The government gives the construction of infrastructure like roads, bridges, etc. to private companies on a contract basis.

CCAP is one such infrastructure construction company. It has many successful and worthy infrastructure projects to its credit. The financial ratios of the company when compared with Simplex Infrastructure do not seem too strong.

The valuation of the company done on cash flow discounted model is based on certain assumptions. The equity of the company is overvalued when compared with the value of equity as determined, to the current market price.

In order to increase value, the company needs to increase cash flows from projects, improve operating efficiency, reduce capital expenditure relative to depreciation, reduce operating leverage, reduce non-cash working capital and maintain its current financing mix. Here it needs to be stated that the target capital structure of the company was determined on the basis of tangible assets it has which it can pledge as security for securing debt. The company has no further tangible asset which it can pledge as security for loans, further debt would increase the default risk and chances of bankruptcy. It is strongly recommended that the company maintain its current debt-equity ratio.

Ultimately, valuation being based on assumptions, the future of the company has to conform to the predictions being made. The management has to take measures in this regard.

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1. Infrastructure Projects in India

The availability of infrastructure facilities is imperative for the overall development of any country. Today, there is a need to focus on enhancing the quantity as well as improving the quality of infrastructure services provided in India.

Roads constitute an important part of infrastructure of a country. India has the third largest road network in the world. But the growth of road network has not kept pace with the growth of road traffic. The percentage growth of road traffic from the year 1991 to 1995 has been about 42%, whereas the percentage growth of road length has been only 8.7%¹. This has led to severe congestion on the roads. Also, there is a need to improve and maintain the road network. For most of the twentieth century, publicly financed infrastructure was the widely accepted norm. It was only in the closing years of the century that private financing made a huge comeback. It is now well understood that private capital will have to build a large part of the infrastructure that we need in India over the coming years.

Due to funds constraints, the government is assigning several projects on a Build-Operate-Transfer (BOT) basis or simply build and transfer basis. It is a process where in the government invite tenders from the construction companies of the infrastructure construction industry, then the work is awarded on the basis of the bids that are submitted. The project will be built by the company (private player) on behalf of the government and then either it will operate for a specific period of time or it will transfer the finished project on to the government according to the terms of the contract. Presently, given the space of economic development of the country, there is tremendous thrust on infrastructure projects by the government in

¹ Figures from working paper on “Financing Infrastructure Projects” by Rachna Khurana

India and the prospect of the industry seems bright especially as the construction industry is predicted to grow at 25-30% from 2005-2010².

a) Parties to Infrastructure Projects

1. Government Agency

A government department or statutory authority is a pivotal party. The government's co-operation is critical in large projects. It may be required to assist in obtaining the necessary approvals, authorizations and consents for the construction and operation of the project. The government agency is normally the primary party. It will initiate the project, conduct the tendering process and evaluation of tender, and will grant the contract to the suitable party.

2. Construction Contractor

The construction company will take construction and completion risks, that is, the risk of completing the project on time, within budget and to specifications.

3. Other parties

The other parties to the project are financiers, insurers, operation and maintenance contractor, design consultants, etc.

b) Advantages of BOT or build-transfer projects

- The government gets the benefit of the private sector to mobilize finances and to use the best management skills in the construction, operation and maintenance of the project.

² According to a survey done by Research and Markets, a leading source of international market research and market data, on "Indian Construction Industry: An analysis"

- The private participation also ensures efficiency and quality by using the best equipment.
- The projects are conducted in a fully competitive bidding situation and are thus completed at the lowest possible cost.

c) Infrastructure Projects in India

There is a tremendous thrust in the infrastructure sector in India. National Highway Development Programme (NHDP), consisting of The Golden Quadrilateral and The North-South, East-West corridors, has been launched. NHDP is being implemented by National Highways Authority of India (NHAI). The NHDP is India's largest ever highway project. It involves four and six laning of 13,146 Km of roads with a total cost of Rs.54,000 crores. The NHDP consists of nine BOT projects of 456 kms with estimated cost of Rs.2,700 crores. Apart from the BOT projects under NHDP, there are several other such projects being done in India.

2. About the Company

CCAP Limited (formerly Central Concrete & Allied Products Limited) is a construction company, capable of undertaking multi-dimensional projects involving design and construction in Civil, Mechanical & Electrical Engineering. Headquartered in Kolkata, it has a regional office in New Delhi. In recent years they have executed a number of praiseworthy projects in the states of Mizoram, Bihar and West Bengal. The Company's credentials are reflected in their diverse and successful project portfolio. With a successful, experienced and disciplined managerial team along with the right proportion of expertise, wisdom & acumen they have to their credit a large number

of technically challenging projects. Some of the projects that they have successfully executed include – Sealdah flyover in Kolkata, Natural draught cooling tower at Panipat, Haryana, Sintering Plant for 1.7 million tonne in Bokaro Steel Plant, etc.

The company is listed in Bombay Stock Exchange³, Calcutta Stock Exchange and Ahmedabad Stock Exchange.

The current projects of the company are as follows -

- Construction of Major Bridges/Grade Separators/ROB's & Rehabilitation of Existing Bridges in Siliguri-Islampur Section (Km 507.00 to 526.00) - Package II, worth Rs. 9.59 crores.
- Construction of Earthwork, Blanketting, Minor Bridges, etc. in Sec-1 (from Ch. 0.410 Km to Ch. 24.550 Km) in connection with New B.G. Line from Manderhill to Dumka (Phase - 1), worth Rs. 18.85 crores.
- Contract Package No. BR-3615A & 3615B, 3615C and 3616A & 3616B and BR-2325 (Bihar Rural Roads Project under PMGSY), worth Rs. 16.94 crores.
- Constructon of 5 (five) storied M.I.G. Apartment Buildings including Sanitary, Plumbing & Internal water supplying arrangement at Eastern Horizon Housing Project at Action Area II C, New Town, Rajarhat under West Bengal Housing Board, worth Rs. 6.57 crores.

³ The scrip code in BSE for the company being 526839

3. Scope of the Project

The objective in conventional corporate financial theory when making decisions is to maximize the value of business or firm. Consequently, any decision (investment, financial, or dividend) that increases the value of a business is considered a 'good' one, whereas one that reduces firm value is considered a 'poor' one. Given the significance of this objective for both the development and the applicability of corporate financial theory, the purpose of my analysis is to look to the future of the company by doing valuation of the company based on past, present and future business of the company. Initially I will briefly look at the various financial ratios of the company based on its financial statements and then I will proceed with the valuation of the company.

4. Analysis of Financial Statements⁴

To understand why a company is performing the way it is and to forecast where it is heading, one needs to evaluate the accounting statements. If management is to maximize a company's value, it must take advantage of the company's strengths and correct its weaknesses. Financial statement analysis involves –
Comparing the company's performance with that of other companies in the same industry and analyzing the trends.
Here I focus on the current financial position of the company and compare it with another company in the construction industry.

⁴ The Financial statement of the company has been provided in Appendix Table 1 and Table 2

Ratio analysis

In the absence of a proper industry average available for the construction industry, the ratios of the company have been generally benchmarked against Simplex Infrastructures⁵.

A look at the operating performance of the company vis-à-vis Simplex Infrastructures –

Calculated Data: Operating Performance and Cash Flows	Year 2006	Year 2005	Simplex (2006)
Net operating working capital (NOWC)	51,239,100.00	27,765,961.00	4,633,189.00
Total operating capital	154,107,838.00	118,524,209.00	6,855,811.00
Net Operating Profit After Taxes (NOPAT)	10,199,929.57	10,631,243.24	653,077,883.70
Net Cash Flow (Net income + Depreciation + Amortization)	13,584,053.00	13,114,911.00	645,746,000.00
Operating Cash Flow (OCF)	17,351,423.57	16,657,898.24	882,379,883.00

Calculated Data: Per-share Information	Year 2006	Year 2005	Simplex (2006)
Earnings per share (EPS)	1.80	1.99	48.57
Dividends per share (DPS)	1.20	1.40	5.00
Book value per share (BVPS)	19.88	19.55	271.99
Cash flow per share (CFPS)	3.81	3.68	75.31
Dividend Payout Ratio	0.67	0.70	0.10

a) Liquidity Ratios

A liquid asset is one that trades in an active market and hence can be quickly converted to cash. These ratios help to analyze whether the company will be able to pay off its debts over the next year or so.

⁵ Simplex Infrastructure is a premier construction company in India, which is engaged in infrastructure projects

Current Ratio

The current ratio of the company as calculated is 1.84 in 2006 as compared to 1.43 in 2005. The ideal current ratio is 2, as is evident from the current ratio of Simplex. It is used for measuring the short term liquidity or solvency.

Quick or Acid test Ratio

The quick ratio is 1 in 2006 compared to 0.63 in 2005. For Simplex it was 1.6. This ratio is used to measure the short term liquidity or solvency and verify the trend indicated by the current ratio.

b) Asset management Ratios

These ratios measure how effectively the firm is managing its assets. These ratios are designed to answer the question – Does the total amount of each type of assets as reported on the Balance Sheet seem reasonable, too high, or too low in view of the current and projected revenues.

Inventory turnover Ratio

This ratio is 6.26 for 2006 while it was 7.74 in 2005, while Simplex had 12.38. A turnover of 6.26 compared to Simplex's 12.38 suggests that the company is holding too much inventory. Excess inventory is of course unproductive and it represents an investment with a low or zero rate of return. The company's low turnover with decent current ratio suggests that it is actually holding obsolete goods not worth their stated value.

Day sales Outstanding

It is also known as the average collection period. It is 60 days in 2006 and 46 days in 2005 (taking 360 days a year, a convention followed in the financial community). For Simplex the DSO was 146 days. The company in general has been realizing its debts regularly and in time. The debtors of the company being generally the government, realizing the debts is cumbersome. The company has been efficient in this regard.

Fixed Asset Turnover Ratio

It measures how efficiently the company uses its plant and equipment. It is 1.39 times in 2006 and 1.2 times in 2005 compared to Simplex with 4.63. This suggests that the company is not using its fixed assets as intensively as Simplex.

Total Assets Turnover Ratio

This measures the turnover of all firms' assets. It is 0.66 in 2006 and 0.6 in 2005 compared to 0.84 of Simplex. The company's ratio is somewhat below Simplex, indicating that the company is not generating a sufficient volume of business given its total asset investment. Revenue should be increased, some assets sold or a combination of these steps should be taken.

c) Debt Management Ratios

The extent to which firm uses debt financing, or financial leverage has three important implications –

- a) By raising funds through debt, stockholders can maintain control of a firm without increasing their investment,

- b) Creditors look to the equity, or owner-supplied funds, to provide a margin of safety, so the higher the proportion of total capital provided by the stockholders, the less the risk faced by creditors.
- c) If the firm earns more on investments financed with borrowed funds than it pays in interest, the return on the owners' capital is magnified or leveraged.

Debt Ratio⁶

This measures the percentage of funds provided by the creditors. It is 37.35% in 2006 and 24.67% in 2005 compared to 39.5% for Simplex.

Times Interest Earned – Ability to pay interest

This is also known as the interest-coverage ratio. The TIE ratio measures the extent to which operating income can decline before the company is unable to meet its annual interest costs. The company's interest is covered 2.46 times in 2006 while it was 2.78 in 2005. This indicates that the company is covering interest charges by a relatively low margin of safety. This indicates that the company would face difficulties if it attempted to borrow additional funds under the prevailing circumstances.

d) Profitability Ratios

Profitability is the net result of a number of policies and decisions. The ratios examined thus far provide useful clues as to the effectiveness of a firm's operations, but the profitability ratios go on to show the combined effects of liquidity, asset management and debt on operating results.

⁶ Refer to Appendix Figure 1

Profit margin

The profit margin was 4.5% in 2006 and 6.52% in 2005. The margin for the company has decreased over the last year. This sub-par result occurred because costs are high. High costs in turn, generally occur because of inefficient operations. The company's decreasing profit margin is also because of increasing debt (as net income is income after interest).

Basic Earning Power (BEP)

This ratio shows the raw earning power of the company's assets, before the influence of taxes and leverage. It is 7.15% in 2006 compared to 9.18% in 2005. Because of low turnover ratios and low profit margin this year, the company did not get as high a return on its assets as last year.

Return on Assets

It is 2.99% in 2006 compared to 3.88% in 2005. The fall in the ROA results from the company's decreased basic earning power and interest costs resulting from its increased use of debt, both of which cause the net income to be relatively low.

Return on Equity

Stockholders invest to get a return on their money, and this ratio measures that. It is 9.07% in 2006 and 10.17% in 2005 compared to 17.85% for Simplex. This indicates that the company has decreasing return on equity and far less than Simplex.

e) Market Value Ratios

These ratios relate the company's stock price to its earnings, cash flow, and book value per share. They give management an indication of what investors think of the company's past performance and future prospects. If the liquidity, asset management, debt management and profitability ratios all look good, then the market value ratios will be high, and the stock price will probably be as high as can be expected.

Price-Earnings Ratio

This shows how much the investors are willing to pay per rupee of reported profits. It is 13.08 times in 2006 and 9.48 times in 2005 compared to 38.97 times for Simplex. The low P/E ratio of the company suggests that the company is regarded as being somewhat riskier than other companies in the industry.

Price-Cash flow Ratio

In the case of construction industry, stock price is tied more closely to cash flow rather than net income. Consequently investors often look at the price-cash flow ratio. It is 6.19 times in 2006 and 5.12 times in 2005 compared to 25.14 times for Simplex. This low price-cash flow ratio again suggests it is a comparatively riskier investment.

Market-book ratio

The book value per share is Rs.19.88 in 2006 and Rs.19.55 in 2005 compared to Rs.271.99 for Simplex in 2006. The market-book ratio is 1.19 times in 2006 and 0.96 in 2005. Market-book value ratios typically exceed 1. The company had it 0.96 (below 1) in 2005. When compared with Simplex which has it as 6.96 times. M/B ratio of below

1 or around 1 indicates that the book value of assets is overvalued by the accountants.

Operating Leverage

It is used to analyze the effect of fixed cost on the operating profit of the company. It is used as an yardstick for measuring the operating risk of the company. It is 1.84 for the company in 2006.

Financial Leverage⁷

It is used in the analysis of capital structure and financial risk involved in the same. It tells about the extent of change in Profit before tax (PBT) as a result of a change in Earnings before interest and tax (EBIT). It is 1.68 in 2006 and 1.56 in 2005.

5. Cost-Volume Profit Analysis⁸

The total cost of a firm depends on its volume of output. The total cost has two parts – fixed and variable. Fixed cost remains fixed at all levels of production in the short-run but variable cost proportionately changes with the volume of output. CVP analysis is a managerial tool for profit planning that reveals the inter-relationship among cost, volume of production, revenue and profit earned. It helps in profit planning, preparation of flexible budgets and ascertainment of break-even point (no profit, no loss level).

The Cost-Profit analysis is done to arrive at the BEP and P/V ratio.

Profit-Volume Ratio

This ratio is used to analyze the relation between contribution and sales. The rate of profitability can be measured through this ratio. A

⁷ Operating and financial leverage will be dealt with in detail in valuation of the company

⁸ Refer to Table 3 in Appendix

high ratio indicates high profitability. The P/V ratio for the financial year 2005-06 is 19.82%.

Break-even Point

It is the point of sales volume (in money value) at which total cost is equal to total revenue. It is important for the company to realize its point of break-even in order to cross that level and be profitable. It is that point where the company is neither making profit nor loss. The Break-even point) in sale value for the company is Rs.11,03,956.18 in 2006.

6. Valuation

The objective in corporate finance being maximization of firm value or shareholders' wealth the relationship among financial decisions, corporate strategy and firm value has to be delineated.

The value of a firm can be directly related to decisions that it makes - on which project it takes, on how it finances them and on its dividend policy. Understanding this relationship is the key to making value-increasing decisions and to sensible financial restructuring.

In general terms, there are three approaches to valuation. The first, discounted cash flow valuation, relates the value of an asset to the present value of expected future cash flows on that asset. The second, relative valuation, estimates the value of an asset by looking at the pricing of 'comparable' assets relative to a common variable such as earnings, cash flows, book value or sales. The third,

contingent claim valuation uses option pricing models to measure the value of assets that share option characteristics.

The valuation of the company is based on certain objectives, assumptions and premise –

1. The assets of the company are generating cash flows at present and will continue to do so in the near future as is the case with most publicly traded companies.
2. The company is a going-concern and will last into perpetuity.
3. The purpose of valuation is to estimate the intrinsic value of the assets of the company based on fundamentals.
4. The market prices deviate from intrinsic value but that they correct themselves over long periods.

Based on these assumptions, the discounted cash flow model is ideal for the purpose of valuation of the company. There are three paths to discounted cash flow valuation -- the first is to value just the equity stake in the business, the second is to value the entire firm, which includes, besides equity, the other claimholders in the firm (bondholders, preferred stockholders, etc.) and the third is to value the firm in pieces, beginning with its operations and adding the effects on value of debt and other non-equity claims.

The model used in valuation should be tailored to match the characteristics of the asset being valued. The appropriate model to use in a particular setting will depend upon a number of the characteristics of the asset or company being valued.

a) Free Cash flows to Firm

The value of the firm is the value of all investors who have claims on the firm; thus, it includes lenders and debt-holders, who have fixed claims and equity investors, who have residual claims.

FCFF is a firm valuation model where the focus is on the operating assets of the firm and the cash flows that they generate. This model is generally suitable when the entire firm is valued and then the debt component is deducted to arrive at the equity.

The free cash flow to the firm is the sum of the cash flows to all claim holders in the firm, including stockholders, bondholders and preferred stockholders. There are two ways of measuring the free cash flow to the firm (FCFF). One is to add up the cash flows to the claim holders, which would include cash flows to equity (defined either as free cash flow to equity or dividends), cash flows to lenders (which would include principal payments, interest expenses and new debt issues) and cash flows to preferred stockholders (usually preferred dividends).

$$\text{FCFF} = \text{Free Cash flow to Equity} + \text{Interest Expense} (1 - \text{tax rate}) + \text{Principal Repayments} - \text{New Debt Issues} + \text{Preferred Dividends}$$

A simpler way of getting to free cash flow to the firm is to estimate the cash flows prior to any of these claims. Thus, I begin with the earnings before interest and taxes, net out taxes and reinvestment needs and arrive at an estimate of the free cash flow to the firm.

$$\text{FCFF} = \text{EBIT} (1 - \text{tax rate}) + \text{Depreciation} - \text{Capital Expenditure} - \Delta \text{Working Capital}$$

Cash flows to the firm being pre-debt cash flows and are unaffected by changes in the leverage. Firm valuation will be more straightforward.

The Free cash flow to firm valuation requires estimation of four inputs - current cash flows, an expected growth rate in these cash flows, a point in time when the firm will be growing at a rate it can sustain forever and a discount rate to use in discounting these cash flows. Each will be dealt here in detail for the purpose of valuation.

(i) Cash Flows

The value of an asset comes from its capacity to generate cash flows. When valuing a company, these cash flows should be after taxes, prior to debt payments and after reinvestment needs. The cash flow to the company is computed after reinvestments. Two components go into estimating reinvestment. The first is *net capital expenditures*, which is the difference between capital expenditures and depreciation. The other is *investments in non-cash working capital*.

- Net capital expenditures

In estimating net capital expenditures, we generally deduct depreciation from capital expenditures. The rationale is that the positive cash flows from depreciation pay for at least a portion of capital expenditures and it is only the excess that represents a drain on the firm's cash flows.

- Working Capital

The second component of reinvestment is the cash that needs to be set aside for working capital needs. Increases in working capital tie up

more cash and hence generate negative cash flows. Conversely, decreases in working capital release cash and positive cash flows.

Working capital is usually defined to be the difference between current assets and current liabilities. However, that definition will be modified for measuring working capital for valuation purposes. Cash and investments in marketable securities will be backed out from current assets. This is because cash, especially in large amounts, is invested by firms in treasury bills, short term government securities or commercial paper. While the return on these investments may be lower than what the firm may make on its real investments, they represent a fair return for risk free investments. Unlike inventory, accounts receivable and other current assets, cash then earns a fair return and should not be included in measures of working capital.

While the change in non-cash working capital can be estimated fairly simply for any year using financial statements, this estimate has to be used with caution. Changes in non cash working capital are unstable, with big increases in some years followed by big decreases in the following years. Change in non-cash working capital can be negative. When non-cash working capital decreases, it releases tied-up cash and increases the cash flow of the company. If a company has bloated inventory or gives out credit too easily, managing one or both components more efficiently can reduce working capital and be a source of positive cash flows into the immediate future – 3, 4 or even 5 years.

- Estimating Cash flows to the firm

The Cash flows to the firm are those cash flows left-over after meeting operating expenses and taxes, but before making payments to any claimholders.

b) Estimating Growth

The choice in all discounted cash flow models relates to expected growth patterns. Since the company has an infinite life, the way in which closure is applied is to estimate a terminal value at a point in time and dispense with estimating cash flows beyond that point. To do this in the context of discounted cash flow valuation, this is based on the assumption that the growth rate in cash flows beyond this point in time is constant forever, an assumption that is referred to as "stable" growth. Based on this, the present value of these cash flows can be estimated as the present value of a growing perpetuity. There are three questions that every valuer then has to answer:

1. How long in the future will a company be able to grow at a rate higher than the stable growth rate, if the immediate future growth is high?
2. How high will the growth rate be during the high growth period and what pattern will it follow?
3. What will happen to the firm's fundamentals (risk, cash flow patterns etc.) as the expected growth rate changes?

Growth patterns can broadly be classified into three categories –

- firms which are in stable growth already,
- firms which expect to maintain a 'constant' high growth rate for a period and then drop abruptly to stable growth (2 Stage) and
- firms which will have high growth for a specified period and then grow through a transition phase to reach stable growth at a point in time in the future (3 Stage).

(i) Constant Growth model

The constant growth FCFF model is designed to value firms that are growing at a stable rate and are hence in steady state. The growth rate used in the model has to be reasonable, relative to the nominal growth rate in the economy in which the company operates. As a general rule, a 'stable' growth rate cannot exceed the growth rate of the economy in which the company operates by more than one or two percent.

The assumption that a company is in steady state also implies that it possesses other characteristics shared by stable companies. This would mean, for instance, that capital expenditures, relative to depreciation, are not disproportionately large and the company is of 'average' risk. (If the capital asset pricing model is used, the beta of the equity should not significantly differ from one.)

(ii) 2-stage Growth model

The two stage model is designed to value a firm which is expected to grow much faster than a stable firm in the initial period and at a stable rate after that. This model makes the assumption that the company will grow at a stable rate in perpetuity.

As a firm grows, it becomes more difficult for it to maintain high growth and it eventually will grow at a rate less than or equal to the growth rate of the economy in which it operates. This growth rate, labeled stable growth, can be sustained in perpetuity, allowing estimation of the value of all cash flows beyond that point as a terminal value for a going concern.

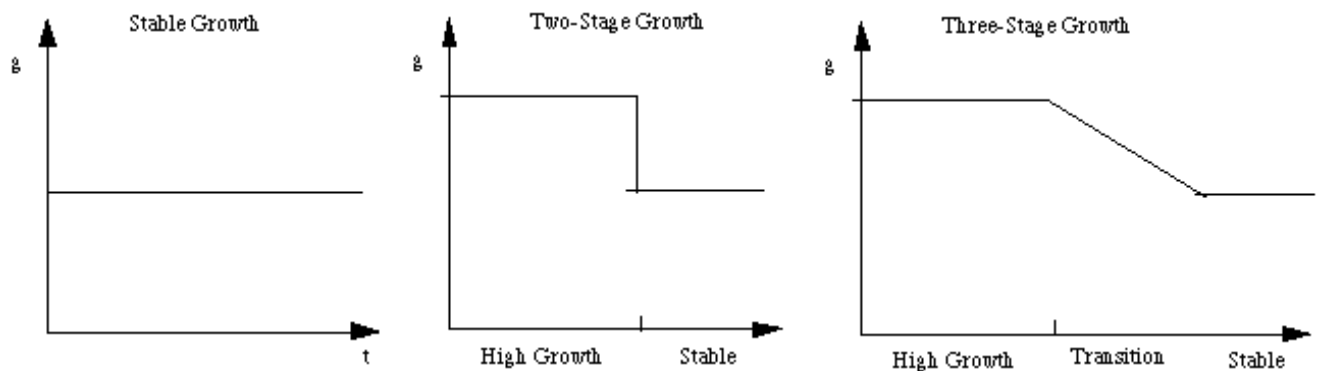
(iii) 3-stage Growth model

The 3-stage model is designed to value firms that are expected to go through three stages of growth - an initial phase of high growth rates, a transitional period where the growth rate declines and a steady state period where growth is stable.

Since the model allows for three stages of growth and for a gradual decline from high to stable growth, it is the appropriate model to use to value companies with very high growth rates currently.

GROWTH PATTERN...

- The Choices



The most critical input in valuation is the growth rate to use to forecast future revenues and earnings. There are three basic ways of estimating growth for any firm; they are historical growth of the firm, analyst estimates and firm's fundamentals.

(iv) Historical Growth

When estimating the expected growth for the company, one needs to begin by looking at the company's history. How rapidly have the company's operations as measured by revenues or earnings grown in the recent past? While past growth is not always a good indicator of

future growth, it does convey information that can be valuable while making estimates for the future.

Estimating Historical Growth

The average growth rates can be different, depending upon how the average is estimated, and whether compounding in the growth over time has been allowed. Estimating growth rates can also be complicated by the presence of negative earnings in the past or in the current period. Historical growth rate can be estimated by arithmetic mean, geometric mean and log-linear regression.

Arithmetic Mean and Geometric Mean - The arithmetic average is the simple average of past growth rates, while the geometric mean takes into account the compounding that occurs from period to period. The two estimates can be very different, especially for firms with volatile earnings. The geometric average is a much more accurate measure of true growth in past earnings, especially when year-to-year growth has been erratic.

The arithmetic mean weights percentage changes in earnings in each period equally and ignores compounding effects in earnings. The geometric mean considers compounding but focuses on the first and the last earnings observations in the series - it ignores the information in the intermediate observations and any trend in growth rates that may have developed over the period.

Log-linear regression - These problems are at least partially overcome in this model.

The arithmetic average of the growth in EPS for the company over the last 10 years is 9.93% while in DPS it is 4.52% over the same period.

An average of both DPS and EPS gives an arithmetic average growth of 7.23%.

The geometric average of the growth in EPS for the company over the same period is 4.23% and 2.04% in EPS and DPS respectively with an average of 3.14%.

The least squares regression considering continuously compounded growth rate is 6.06% for EPS and 3.33% in DPS, while with annual compounding in least squares regression the growth rate is slightly higher at 6.25% in EPS and 3.39% in DPS with an average of 4.82% over the same period⁹.

Taking the average of the averages under AM, GM and least squares regression the growth rate is 5.06%.

Of the 10 years that is taken for considering growth in EPS and DPS, there is negative growth in 4 years. Given the negative growth, these approaches to estimating historical growth rates do not provide any information on whether these growth rates are useful in predicting future growth. It is not incorrect and, in fact, it may be appropriate, to conclude that the historical growth rate is 'not meaningful' when growth is negative and to ignore it in predicting future growth. While there are ways of estimating growth even when earnings are negative, the resulting growth rates are not very useful indicators of past growth and it is best to view the past growth as not meaningful in this case.

Effect of firm size on historical growth

Since the growth rate is stated in percentage terms, the role of size has to be weighed in the analysis. To illustrate – it is much easier for a company with Rs.10 crores in earnings to have 50% growth rate than a company with Rs.500 crores in earnings to generate the same

⁹ Refer to Table 4, 4 (a), and Figure 6 in Appendix for detailed calculations and historical EPS-DPS behavior

growth. It becomes harder for firms to sustain high growth rates as they become larger.

(v) Fundamental determinants of growth

With historical estimates, growth is an exogenous variable that affects value but is divorced from the operating details of the firm. The soundest way of incorporating growth into value is to make it endogenous, i.e., to make it a function of how much the company reinvests for future growth and the quality of its reinvestment.

Growth in Operating Income

Equity income growth is determined by the equity reinvested back into the business and the return made on that equity investment. Growth can also be related to operating income to total reinvestment made into the firm and the return earned on capital invested. The components for determining growth through fundamentals are Return on Capital (ROC) and Reinvestment Rate.

Return on capital¹⁰

The return on capital is based upon the firm's return on existing investments, where the book value of capital is assumed to measure the capital invested in these investments. Implicitly, it is assumed that the current accounting return on capital is a good measure of the true returns earned on existing investments and that this return is a good proxy for returns that will be made on future investments. While predicting future return on capital, any trends in past returns and industry average along with current returns needs to be considered. There are three scenarios for return on capital for companies.

¹⁰ Refer to Figure 4 in Appendix

They are –

- A company can earn high return on capital which it expects to sustain in future,
- The return on capital can be positive which is expected to increase over time, and
- The company expects operating margins to change over time, sometimes from negative values to positive levels.

Reinvestment Rate¹¹

The reinvestment rate measures how much a firm is plowing back to generate future growth. The reinvestment rate is often measured using the most recent financial statements for the firm. Although this is a good place to start, it is not necessarily the best estimate of the future reinvestment rate. A company's reinvestment rate can ebb and flow, especially in companies that invest in relatively few, large projects or acquisitions. For these companies, looking at an average reinvestment rate over time may be a better measure of the future. In addition, as firms grow and mature, their reinvestment needs (and rates) tend to decrease. For companies that have expanded significantly over the last few years, the historical reinvestment rate is likely to be higher than the expected future reinvestment rate. For these companies, industry averages for reinvestment rates may provide a better indication of the future than using numbers from the past. Reinvestment rate can be more than 100%, in such a scenario; the company has negative cash flows as its reinvestment exceeds its earnings.

¹¹ Refer to Appendix Figure 3

$$\text{Expected Growth}_{\text{EBIT}} = \text{Reinvestment Rate} * \text{Return on Capital}$$

where,

$$\text{Reinvestment Rate} = \frac{\text{Capital Expenditure} - \text{Depreciation} + \Delta \text{ Non - cash WC}}{\text{EBIT} (1 - \text{tax rate})}$$

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

The reinvestment rate is a volatile number and often shifts significantly from year to year.

The reinvestment rate and Return on Capital for the company has been calculated below over the last 5 years.

	2002	2003	2004	2005	2006	5 year Total
EBIT	18,616,850.00	18,427,975.00	10,620,704.00	16,765,878.00	15,375,233.00	
Tax rate	0.36	0.37	0.36	0.37	0.34	
EBIT(1-T)	11,970,634.55	11,655,694.19	6,810,526.44	10,630,824.09	10,199,929.57	51,267,608.84
Capital Invested	111,942,180.00	83,050,832.00	108,458,531.00	114,736,599.00	151,165,499.00	569,353,641.00
Capital Expenditure	9,482,533.00	2,051,113.00	13,109,884.00	16,132,303.00	58,387,277.00	99,163,110.00
Depreciation	5,336,578.00	4,766,008.00	5,475,276.00	6,361,866.00	7,276,239.00	29,215,967.00
Current Assets (excluding cash)	110,926,928.00	62,519,123.00	69,775,851.00	72,252,336.00	92,091,893.00	
Current Liabilities	53,547,554.00	61,330,017.00	63,175,710.00	63,984,241.00	60,805,494.00	
Working Capital (non-cash)	57,379,374.00	1,189,106.00	6,600,141.00	8,268,095.00	31,286,399.00	
Change in non-cash working capital	13,268,027.00	(56,190,268.00)	5,411,035.00	1,667,954.00	23,018,304.00	
Return on Capital	10.69	14.03	6.28	9.27	6.75	9.00
Reinvestment	17,413,982.00	(58,905,163.00)	13,045,643.00	11,438,391.00	74,129,342.00	57,122,195.00
Reinvestment Rate	145.47	(505.38)	191.55	107.60	726.76	111.42

The reinvestment rate over the last 5 years has ranged from – (505.38)% (in 2003) to 726.76% (in 2006). Given the volatility, the average reinvestment rate has been computed over the five years, by dividing the total reinvestment over the 5 years by the total after-tax operating income over the last 5 years.

The return on capital also ranges from 6.28% (in 2004) to 14.03% (in 2003) during the period. The average return on capital during the

period is calculated by dividing total after-tax operating income by the total Capital invested during the period.

$$\begin{aligned}\text{Expected future growth rate} &= 111.42\% * 9\% \\ &= 10.03\%\end{aligned}$$

c) Cost of Capital

Companies raise money from both equity investors and lenders to fund investments. Both groups of investors make their investments expecting to make a return. Companies can raise equity in two ways:

1. by issuing new shares, and
2. by retaining earnings.

The expected return for equity investors would include a premium for the equity risk in the investment. This is the cost of equity. Similarly, cost of debt is the return the lenders of debt expect to make on their investments; this can be in the form of loans from banks (both secured and unsecured), debentures, bonds, etc. for the company.

(i) Cost of equity

The cost of equity is the rate of return investors require on an equity investment in a company. A company has to earn more than this return on new external equity to provide this rate of return to investors because there are commissions and fees, called flotation costs, when a company issues new equity. Mature companies hardly issue new shares of common stock because of high flotation costs and investors perceive issuing equity as a negative signal with respect to true value of company's stock.

The Capital Asset Pricing model (CAPM) of determining the expected return (or cost of equity) requires the risk free rate, risk

premium and the company's exposure to market risk in the form of beta.

Expected Return = Risk free rate + Beta (Risk Premium)

- The Risk free rate

An asset is risk free if the expected return on it is known with certainty – i.e. the actual return is always equal to the expected return. There is one basic condition for an asset to be risk free – There can be no default risk. Essentially, this rules out any security issued by a private company, since even the largest and safest companies have some measure of default risk. The only securities that have a chance of being risk free are government securities, not because governments are better run than corporations, but because they control the printing of currency.

In India, the yield on 91 day Government treasury bonds is usually considered to be the risk free rate. The current yield being 7.6435%, will be considered as the risk free rate¹².

- Risk Premium

In CAPM and multi-factor models risk has to be measured from the perspective of the marginal investor in an asset and that this marginal investor is well diversified. Therefore, the argument goes, it is only the risk that an investment adds on to a diversified portfolio that should be measured and compensated. In fact, it is this view of risk that leads models of risk to break the risk in any investment into two components. There is a firm-specific component that measures risk that relates only to that investment or to a few investments like it and a market component that contains risk that affects a large subset

¹² According to report in Economic Times on May 16, 2007, “91 day treasury bill yield at 7.6435%”

or all investments. It is the latter risk that is not diversifiable and should be rewarded. This risk premium is estimated by looking at the historical premium earned by stocks over default-free securities over long time periods.

This approach yields a relatively fair estimate of the risk premium in mature markets and where historical returns are available over a long period. The historical risk premium on geometric mean basis in India is 8.74%¹³.

- Beta

In the CAPM, the beta of an investment is the risk that the investment adds to a market portfolio. There are three approaches available for estimating this parameter. The first is to use historical data on market prices for individual investments. The second is to estimate the betas from the fundamental characteristics of the investment. The third is to use accounting data.

The conventional approach for estimating the beta of an investment is a regression of the historical returns on the investment against the historical returns on a market index. For companies that have been publicly traded for a length of time, it is relatively straight forward to estimate returns that an investor would have made on investing in stock in intervals (such as a week or a month) over that period. In practice, a stock index is used, as a proxy for the market portfolio, beta estimated for stock against the index. It is common to use either 4 to 5 years of monthly returns or 1 to 2 years of weekly returns for the purpose.

The beta of the company is calculated using stock returns and dividend payments for 48 months (1/4/2002 – 1/4/2006) and the

¹³ Based on estimates in IIMA working paper of June 2006, titled “A first cut estimate of equity risk premium in India”.

stock return using the BSE Sensex for the same period¹⁴. The shares of the company being listed in BSE, the BSE Sensex is considered as adequate proxy.

The *slope* of the regression corresponds to the beta of the stock and measures the riskiness of the stock. The beta for the company is 0.97.

The *intercept* of the regression provides a simple measure of performance of the investment during the period of the regression, when returns are measured against the expected returns from the CAPM. The intercept is 0.019 or 1.9%, which means that the company's stock earned 1.9% more than an average stock as a result of factors other than a general increase in stock prices.

The third statistic that emerges from the regression is the *R squared* (R^2) of the regression. While the statistical explanation of the R^2 is that it provides a measure of the goodness of fit of the regression, the economic rationale is that it provides an estimate of the proportion of the risk of a firm that can be attributed to market risk; the balance ($1 - R^2$) can then be attributed to firm-specific risk. R^2 for the company is 0.094 or 9.4%. This indicates that 9.4% of the variance in the company's return is explained by market returns.

The final statistic worth noting is the *standard error of the beta estimate*. The slope of the regression, like any statistical estimate, may be different from the true value; and the standard error reveals just how much error there could be in the estimate. The standard error is 0.2.

$$\begin{aligned}\text{Cost of equity} &= 7.6435\% + 0.97 * 8.74\% \\ &= 16.12\%\end{aligned}$$

¹⁴ The historical stock prices of CCAP has been found out from www.moneycontrol.com, the BSE Sensex was obtained from www.finance.yahoo.com
Refer to Appendix Table 5 and Table 6 for detailed calculations

The expected return on an equity investment in a company, given its risk, has strong implications for both equity investors in the company and the managers of the company. For equity investors, it is the rate they need to earn to be compensated for the risk they have taken in investing in the equity of the firm. If, after analyzing an investment, they conclude they cannot make this return, they would not buy this investment; alternatively, if they decide they can make a higher return, they would make the investment. For managers, the return that investors need to make to break even on their equity investments becomes the return they have to try to deliver to keep these investors from becoming restive and rebellious. Thus, it becomes the rate they have to beat in terms of returns on their equity investments in projects. In other words, this is the cost of equity to the company.

(ii) Cost of debt

The *cost of debt* measures the current cost to the company of borrowing funds to finance projects. Cost of debt for a company is the interest payments that the company needs to make for debt. Interest payments being tax deductible, the cost of debt to the company is less than the rate of interest paid by the company for debt. The effective cost of debt to the company is the after-tax cost of debt. It is the interest rate on debt, less the corporate tax rate. This is the same as interest rate multiplied by $(1-T)$, where T is the company's tax rate.

The company has 2 types of loans, cash credit and term loan from bank. Cash credit constitutes 30% with the remaining as Term loan. Interest on cash credit is 11.5% and interest on term loan being 10.5%.

$$\begin{aligned}\text{Overall interest on loan} &= (30 \times 11.5\% + 70 \times 10.5\%) / 100 \\ &= 10.8\%\end{aligned}$$

The corporate tax rate is 33.66%

$$\begin{aligned}\text{After-Tax Cost of Debt} &= 10.8\% \times (1 - 0.3366) \\ &= 7.16\%\end{aligned}$$

(iii) Weighted Average Cost of Capital

The cost of capital is the weighted average costs of the different components of financing, viz. debt, equity and hybrid securities, used by a company to fund its financial requirements. The weights assigned to equity and debt in calculating the weighted average cost of capital have to be based upon market value, and not book value as the cost of capital measures the cost of issuing securities, stocks as well as bonds, to finance projects and these securities are issued at market value and not book value.

The market value of equity is generally the number of shares outstanding times the current stock price. If there are other equity claims in the company such as warrants and management option, these should also be valued and added on to the value of the equity in the company.

The company's stock price as on 31.03.2006 was Rs.23.60

Total shares outstanding was 3,565,561

$$\begin{aligned}\text{The market value of equity for the company} &= 3,565,561 \times \text{Rs.}23.60 \\ &= \text{Rs. } 84,147,239.60\end{aligned}$$

The company did not issue any security by way debt, the debt component of the capital structure constitutes only bank loan. The

book value of debt will be considered for the weighted average cost of capital.

Book value of debt = Rs. 80,266,536

The capital structure of the company only constitutes debt and equity with no preferred stock.

Debt constitutes 48.82% and equity 51.18% in the capital structure. Taking this as the assigned weights for the WACC –

$$\begin{aligned}\text{WACC} &= 48.82\% * 7.16 + 51.18\% * 16.12\% \\ &= 11.75\%\end{aligned}$$

7. Valuation of CCAP

While valuing a company, I can assume that the company is already in stable growth, assume a constant high growth and then drop the growth rate to stable growth (2-stage growth) or allow for a transition phase to get to stable growth (3-stage growth). However the factors on which I based my choice is hereunder –

1. The company has high capital expenditure relative to depreciation for the last few years which replicate the fact that the company has infrastructure projects in hand and the management perceives a high growth potential for the company.
2. The construction industry in India is predicted to grow at 25-30%¹⁵ from 2005-2010. Taking the general state of the Indian economy as a whole and the construction industry in particular, the company is bound to grow much faster than the current growth rate in the economy.

¹⁵ According to a survey done by Research and Markets, a leading source of international market research and market data, on “Indian Construction Industry: An analysis”

The pure fundamental growth rate of 10.03%, in my opinion does not bring out the true future growth rate of the company. The historical growth in earnings and operating income has been erratic enough to not count on.

a) 3-stage growth model

CCAP is comparatively a small company in a highly growing industry, having huge potential. In doing the valuation, I am basically doing away with the fundamentals and also not relying on the historical figures of the company as the company has huge growth potential. I am assuming here that the company will continue to grow for the next 10 years, 4 years at a high growth rate, followed by 6 years in transition to stable growth. Given the historical performance of the company, it would be unrealistic to assume that the company can sustain the high growth for anything beyond 4 years. As such, the company can ride the high growth potential of the industry in general without having any drastic change in its fundamental characteristics and current mode of operation.

After the high growth phase, it would be unrealistic to assume that the growth will stabilize suddenly. Since my assumption of growth for the company is based on the general characteristics, behavior and future of the industry, the growth after high growth phase is bound to go through a transition to ultimately settle down at the stable growth.

b) Why FCFF?

The company has increased its leverage aggressively over the years in order to finance its projects and for capital expenditure.

c) Inputs for the valuation

(i) Growth rate

I will begin the valuation with the growth rate estimate. I am predicting that the company will be able to grow along with the industry but not exactly at pace with the industry. The construction industry being predicted to grow at 25-30% from 2005-2010, the company will be able to grow at 25%. Given the historical performance of the company, it would be unrealistic to assume a growth rate higher than that. The company will be able to sustain this high growth rate for 4 years.

Given the high growth rate, what about the stable growth rate of the company? The Indian economy is currently growing at 9.4%¹⁶ in real terms; the nominal growth rate comes to around 14-15%. As discussed earlier, the stable growth rate cannot exceed the nominal growth rate of the economy in which the company operates. A stable growth rate of 6% is appropriate for the company. There will be a linear decrease from the 5th year onwards in growth rate from 25% to ultimately settle at 6% in the 10th year.

(ii) Return on Capital and Reinvestment rate

The current return on capital computed from financial statements is as low as 6.75% for the company. Normalized return on capital stands at 9%. But given the high growth potential, it would be unrealistic to assume a return on capital during the high growth phase of either 6.75% or 9%.

The reinvestment rate for the company has also been very volatile, the current reinvestment rate being as high as 726.76%. Normalized

¹⁶ According to Economic Times, 1st June 2007, 'GDP rides 18-year high growth crest'

reinvestment rate comes to 111.42%. A company can have reinvestment more than 100% during the high growth phase. This high reinvestment rate of the company is due to the huge capital expenditure relative to depreciation¹⁷, which I predict will continue for the next 4 years.

Given the high growth rate of 25% and a reinvestment rate of 111.42%, the Return on Capital (ROC) can be calculated using the following formula –

$$\begin{aligned}\text{ROC} &= \frac{\text{High growth rate}}{\text{Reinvestment rate in high growth period}} \\ &= 22.44\%\end{aligned}$$

It is to be noted, that a company which is having a return on capital greater than its cost of capital, is actually earning an excess return which cannot be sustained for longer periods without a competitive advantage. The company is having return on capital greater than its cost of capital not because of any competitive advantage but for the general growth potential of the industry. I assume that this return on capital to be made by the company during the next 4 years of high growth. The company will earn a return on capital of 9% (the normalized return on capital) during the stable period.

Given the stable period return on capital and growth rate, the reinvestment rate for the stable period can be calculated as –

$$\begin{aligned}\text{Stable reinvestment rate} &= \frac{\text{Stable growth rate}}{\text{Stable period ROC}} \\ &= 66.63\%\end{aligned}$$

The reinvestment rate will linearly decrease from 111.42% from the 5th year onwards to settle at 66.63% in the 10th year.

¹⁷ Refer to Figure 2 in Appendix

(iii) Earnings

The earnings (EBIT) have been generally stable for the company. The valuation will be made on the basis of current earnings forming the basis for predicting future earnings using the growth rate.

(iv) Cost of Capital

The cost of capital for the company came to 11.75%. The beta for the company is 0.97. One of the preconditions for a company in stable growth is that the stock of the company becomes average risk, which means that the beta will be very close to one. The cost of equity as estimated with the beta is 16.12%. I am predicting that the beta won't change during the stable period and would remain at its current value (as it is already close to 1). In other words, the cost of equity for the company would remain the same.

The cost of debt for the company is its after-tax cost of debt for secured loans. The company does not have any bonds or debentures. The management does not think of any such issue in the future as well. So the cost of debt for company will remain the cost for secured loans only.

The form of assets held by the company is an important determinant of its capital structure. Tangible fixed assets serve as collateral to debt. In the event of financial distress, the lenders can access these assets and liquidate them to realize the funds lent by them. All such tangible fixed assets of the company have already been pledged as collateral to debt. The company's current debt-equity ratio is at its optimal level. In other words, I assume that the company's current capital structure is its target capital structure and the company should not look to increase its debt. The cost of capital would remain the same throughout - for both high growth and stable growth period.

d) The valuation process

With all the inputs as determined the free cash flows and present value for the high growth and transition period is calculated hereunder¹⁸ -

Year	EBIT(1-T)	Growth rate	Reinvestment Rate	Reinvestment	FCFF	Cost of Capital	Present value
Current	10,199,929.57						
1	12,749,911.97	25.00%	111.42%	14,205,908.45	(1,455,996.48)	11.75%	(1,302,920.14)
2	15,937,389.96	25.00%	111.42%	17,757,385.56	(1,819,995.60)	11.75%	(1,457,421.87)
3	19,921,737.45	25.00%	111.42%	22,196,731.95	(2,274,994.50)	11.75%	(1,630,244.60)
4	24,902,171.81	25.00%	111.42%	27,745,914.94	(2,843,743.13)	11.75%	(1,823,560.83)
5	30,339,145.99	21.83%	103.96%	31,539,131.88	(1,199,985.90)	11.75%	(688,594.43)
6	36,002,453.24	18.67%	96.49%	34,739,062.34	1,263,390.90	11.75%	648,757.78
7	41,582,833.49	15.50%	89.03%	37,019,699.84	4,563,133.64	11.75%	2,096,840.98
8	46,711,382.95	12.33%	81.56%	38,098,729.22	8,612,653.73	11.75%	3,541,577.64
9	50,993,259.72	9.17%	74.10%	37,784,761.87	13,208,497.85	11.75%	4,860,385.12
10	54,052,855.30	6.00%	66.63%	36,017,115.68	18,035,739.62	11.75%	<u>5,938,936.51</u>
					Sum of PV -		<u>10,183,756.17</u>

Finally, I estimate the terminal value based on the growth rate, cost of capital and reinvestment rate estimate previously.

$$\begin{aligned} \text{FCFF}_{11} &= \text{EBIT}_{10} (1-T) (1+g \text{ stable period}) (1-\text{Reinvestment Rate}) \\ &= \text{Rs. } 19,117,884 \end{aligned}$$

$$\begin{aligned} \text{Terminal Value} &= \frac{\text{FCFF}_{11}}{(\text{Cost of Capital in stable growth} - \text{stable growth rate})} \\ &= \text{Rs. } 332,559,414.41 \end{aligned}$$

¹⁸ Refer to "CCAP Valuation.xls" for calculations

Present Value of terminal value =	109,507,527.27
PV of cash flows during the high growth =	<u>10,183,756.17</u>
Value of CCAP =	119,691,283.44
Add: Cash and Marketable securities	<u>19,952,701.00</u>
	139,643,984.44
Less: Market/book value of debt	<u>80,266,536.00</u>
Value of equity	<u>59,377,448.44</u>
Value per share =	16.65

At the time of this valuation on 25th May, 2007, the equity was trading at a market price of Rs.24.05, which makes it overvalued by Rs.7.40.

So far I have discussed the valuation process for the company and its valuation. But what are its implications for the company? How can the company increase its value? Here I will outline some value enhancement strategies which the financial manager of the company can follow.

8. Value Enhancement

The value of a company is the present value of the expected cash flows from both assets in place and future growth, discounted at the cost of capital. For an action to create value, it has to do one or more of the following.

- increase the cash flows generated by existing investments
- increase the expected growth rate in earnings
- increase the length of the high growth period
- reduce the cost of capital that is applied to discount the cash flows

Conversely, an action that does not affect cash flows, the expected growth rate, and the length of the high growth period or the cost of capital cannot affect value.

Here I will consider how actions taken by the company on a variety of fronts – marketing, strategic and financial – can have an effect on value.

1. Increase cash flows from projects the company undertake
The first place to look for value is in the company's existing projects. These projects represent investments the company has already made and they generate the current operating income for the company. To the extent that these investments earn less than their cost of capital or are earning less than they could if optimally managed, there is potential for value creation. As such no project should be accepted which has the potential for returns less than the cost of capital for the company.

2. Improve operating efficiency
A company's operating efficiency determines its operating margin and, thus, its operating income; more efficient companies have higher operating margins, other things remaining equal, than less efficient firms in the same business. If the company can increase its operating margin on existing assets, it will generate additional value. There are a number of indicators of the potential to increase margins, but the most important is a measure of how much a company's operating margin deviates from its industry. Since the operating margin for the company is low, the company has to locate the source of the difference and try to fix it.

The first step in value enhancement can take the form of cost cutting and layoffs. These actions are value enhancing only if the resources that are pruned do not contribute sufficiently either to current operating income or to future growth.

3. Reduce capital expenditure¹⁹

As discussed earlier the company has significant capital expenditure. Fixed Assets are being acquired by the company by increasing the debt component of the company. There is little attention to the debt-equity ratio and optimal capital structure. The company should look for operating lease of fixed assets and not buy them at least for the next 3 years. The main advantage of operating lease being off-balance sheet financing, where in the asset will not be shown but only the expense will appear in the income statement.

As a cash outflow, capital expenditure reduces the free cash flow to the firm. Generally, part of the capital expenditure is designed to generate future growth, but part is to maintain existing assets. If the company can reduce its capital expenditures it will increase value.

4. Reduce non-cash working capital

Non-cash working capital ties up money and cannot be used elsewhere thus; increases in non-cash working capital are cash outflows, whereas decreases are cash inflows. The inventory and working capital requirement can be planned in advance with the source of available data.

¹⁹ Refer to Figure 2 in Appendix

5. Reduce operating leverage

The operating leverage of a company measures the proportion of its costs that are fixed. Other things remaining equal, the greater the proportion of the costs of a firm that are fixed, the more volatile its earnings and the higher its cost of capital. Reducing the proportion of the costs that are fixed will make the company much less risky. The company can reduce its fixed costs by using outside contractors for some projects or part of projects; if business does not measure up, the company will not be stuck with the costs of providing this service.

6. Change in financing mix

The cost of capital can be reduced by a change in the mix of debt and equity used to finance the company. Debt is always cheaper than equity, partly because lenders bear less risk and partly because of the tax advantage associated with debt. This benefit has to be weighed off against the additional risk of bankruptcy created by the borrowing; this higher risk increases both the beta for equity and the cost of borrowing. The net effect will determine whether the cost of capital will increase or decrease as the company takes on more debt. As discussed earlier, the amount of secured loans the company can take is determined by the fixed assets it can pledge as security. The company is at its optimum utilization of secured loans.

However, value will increase as the cost of capital decreases, if and only if the operating cash flows are unaffected by the higher debt ratio. If, as the debt ratio increases, the riskiness of the company increases, and this, in turn, affects the company's operations and cash flows; the firm value may decrease even as cost of capital declines. If this is the case, the objective function when designing the financing

mix for the company has to be restated in terms of value maximization rather than cost of capital minimization.

7. Change in Financing type

The financing of the company should be designed to ensure, as far as possible, that the cash flows on debt match as closely as possible the cash flows on the asset. By matching cash flows on debt to cash flows on the asset, the company can reduce its risk of default and increase its capacity to carry debt, which, in turn, will reduce its cost of capital and increase value. The company should not mismatch cash flows on debt and cash flows on assets by using short term debt to finance long-term assets.

All companies are interested to increase value, but there are very few who can increase value consistently. There are few things, which in my opinion, the company has to look into in order to increase value –

- a) Increasing cash flows requires hard decisions on layoffs and cost cutting. Increasing the reinvestment rate will require that the company analyze new investments with more care and that there is investment in infrastructure which are needed to manage these investments.
- b) Increasing debt-equity ratio will create new pressures to make interest payments and to deal with ratings agencies and banks. In other words, the company should look to maintain the current debt-equity ratio as the optimal.
- c) Every part of the company has a role to play in increasing value. It is not done in isolation by the finance department alone. It has to percolate to all levels for all departments and understand the implications of their actions.

The value enhancement actions outlined above are specific to the company and the company needs to look into these aspects in order to increase value. The financial statement being made by the accountant might show profit being made by the company, but in finance, a company is only profitable if it has been able to increase the shareholders' wealth. In order to increase shareholders' wealth all decisions taken by the company has to be tailored to increase the value of the company.

9. Conclusion

The total process of valuation, as can be seen, is based on assumptions as to how I foresee the future of the company. Valuation is based on the assumption that the company will ride the growth of the industry to grow as well. The extent of the growth of the company will be determined by the factors discussed in value enhancement. If the company can monitor its operations to consistently increase value then its value will be more than what I foresee today, conversely if the company is not taking value enhancement decisions, value will erode from what I valued currently.

APPENDIX

Table 1:

The Financial statement of the company -

Balance Sheet	Year 2006	Year 2005
Assets:-		
Cash and cash equivalents	19,952,701.00	19,497,866.00
Sundry Debtors	23,832,283.00	13,841,574.00
Short term Investments (Loans and Advances)	28,428,208.00	37,240,153.00
Inventories	22,830,033.00	14,046,860.00
Other Current Assets	<u>17,001,369.00</u>	<u>7,123,749.00</u>
Total Current Assets	112,044,594.00	91,750,202.00
Investments	3,500.00	46,920.00
Fixed Assets (Net Block)	<u>102,868,738.00</u>	<u>90,758,248.00</u>
Total Assets	<u>214,916,832.00</u>	<u>182,555,370.00</u>
Liabilities and Equity:-		
Sundry Creditors	23,127,363.00	14,390,648.00
Other liabilities	7,746,879.00	7,806,313.00
Mobilisation Advance against bank guarantee	-	19,446,547.00
Advance without Bank guarantee	14,844,836.00	4,563,361.00
Investor Education and Protection Fund	1,591,286.00	1,388,476.00
Provision for Taxation	9,216,130.00	11,398,896.00
Proposed Dividend	<u>4,279,000.00</u>	<u>4,990,000.00</u>
Total Current Liabilities	60,805,494.00	63,984,241.00
Deffered Tax Liability	2,945,839.00	3,834,530.00
Secured Loans	80,266,536.00	45,037,534.00
Common Stock	35,655,610.00	35,642,860.00
Retained Earnings	<u>35,243,353.00</u>	<u>34,056,205.00</u>
Total Common Equity	<u>70,898,963.00</u>	<u>69,699,065.00</u>
Total Liabilities and Equity	<u>214,916,832.00</u>	<u>182,555,370.00</u>

Table 2:

Income Statement (in Rs.)	Year	Year
	2006	2005
Revenue	<u>142,850,185.00</u>	<u>108,710,515.00</u>
Operating Cost:-		
Expenditure on Contract	104,438,944.00	72,829,469.00
Exp. On Employees	5,512,414.00	4,886,463.00
Exp. On selling and administration	<u>10,372,100.00</u>	<u>8,202,050.00</u>
Total Operating Cost	120,323,458.00	85,917,982.00
Earnings Before Interest, Tax, Depreciation and Amortization (EBITDA)	22,526,727.00	22,792,533.00
Depreciation	7,107,574.00	6,026,548.00
Amortization:-		
Investment, Long term trade, written off	101,500.00	-
Provision for dimution in value of long term investments (Written back / made)	(57,580.00)	107.00
Total Depreciation and Amortization	<u>7,151,494.00</u>	<u>6,026,655.00</u>
Earnings Before Interest and Tax (EBIT)	15,375,233.00	16,765,878.00
Interest	<u>6,240,454.00</u>	<u>6,035,677.00</u>
Profit Before Tax (PBT)	9,134,779.00	10,730,201.00
Provision for Taxation	2,471,309.00	3,430,000.00
Short Provision for earlier years	<u>230,911.00</u>	<u>211,945.00</u>
Profit After Tax (PAT) / Net Income available to Equity shareholders	6,432,559.00	7,088,256.00
Profit brought forward	<u>8,759,276.00</u>	<u>7,730,818.00</u>
Profit available for appropriation	<u>15,191,835.00</u>	<u>14,819,074.00</u>
Appropriation:-		
Proposed Dividend	4,280,085.00	4,989,950.00
Tax on proposed dividend	600,130.00	699,848.00

Retained Earnings - Transferred to General Reserve	160,000.00	370,000.00
Transferred to Balance Sheet	<u>10,151,620.00</u>	<u>8,759,276.00</u>
	<u>15,191,835.00</u>	<u>14,819,074.00</u>

Table 3:

Cost-Volume Profit Analysis for the year 2005-06²⁰

Sales (Revenue):			
Receipt from Jobs		132,683,299.00	
Other Receipts		<u>10,166,886.00</u>	
			142,850,185.00
Less: Variable Expenses -			
Expenditure on Contracts:			
Payment to Sub-contractors	19,816,113.00		
Construction materials consumed	26,552,819.00		
Stores and Spares consumed	1,318,647.00		
Power and Fuel	106,999.00		
Repairs to machinery	3,684,315.00		
Machinery Operation	17,548,205.00		
Site supervision	2,750,609.00		
Insurance	1,127,235.00		
Transport (others)	1,570,013.00		
Machinery Hire charges	7,401,370.00		
Travelling and Conveyance	2,673,704.00		
Staff and Labour Welfare (25% variable)	134,963.00		
Site security	4,307,483.00		
Bank charges and commission	582,254.00		
Rent	357,346.00		
Temporary hutment at sites	71,935.00		
Other expenses	<u>10,344,478.00</u>		
	100,348,488.00		
Add: Opening stock of WIP	<u>1,515,241.00</u>		
	101,863,729.00		
Less: Closing stock of WIP	<u>1,391,530.00</u>		
		100,472,199.00	
Selling and Administration Expenses:			
Travelling and Conveyance	1,016,630.00		
Rent	600,000.00		
Rates and Taxes (10% variable)	24,663.00		
Advertisement	219,432.00		
Subcontractors provident fund	260,317.00		
Office Maintenance	158,716.00		

²⁰ Fixed and variable expenses figures as given by the Accounts department of the company

Consulting fees	991,800.00		
Telephone and Telex (40% variable)	202,268.00		
Printing and Stationery (50% variable)	173,702.00		
Arbitration Expenses	110,650.00		
Business Promotion Expenses	414,376.00		
Tender Paper expenses	421,539.00		
Electric Expenses	1,128,086.00		
Sales tax on works contract	735,084.00		
Bank charges/commission	1,129,935.00		
Legal expenses	301,137.00		
Insurance	83,617.00		
Brokerage	313,060.00		
Miscellaneous expenses	<u>901,379.00</u>		
		9,186,391.00	
Depreciation (30% variable)		2,132,272.00	
Investments written off	101,500.00		
(-)Provision for diminution in value of LT invest.	<u>57,580.00</u>	43,920.00	
Provision for Taxation		2,471,309.00	
Excess/(short) provision for income tax		<u>230,911.00</u>	
			<u>114,537,002.00</u>
Contribution			28,313,183.00
Less: Fixed Cost -			
Contract - Salary		3,561,856.00	
Contract - Staff/Labor Welfare (75% fixed)		404,889.00	
Expenses for Employees:			
Salaries	3,585,227.00		
Director's Remuneration	693,411.00		
Provident Fund Contribution	588,549.00		
ESI and other allied charges	96,311.00		
Staff welfare	244,155.00		
Gratuity premium to LIC	<u>304,761.00</u>		
		5,512,414.00	
Rates and Taxes (90% fixed)		221,963.00	
Directors' Meeting fees		348,000.00	
Registrarship fees		44,076.00	
Payment to Auditors		94,568.00	
Telephone and Telex (60% fixed)		303,401.00	
Printing and Stationery (50% fixed)		173,702.00	
Interest		6,240,454.00	
Depreciation (70% fixed)		<u>4,975,302.00</u>	
			<u>21,880,625.00</u>
Profit			<u>6,432,558.00</u>

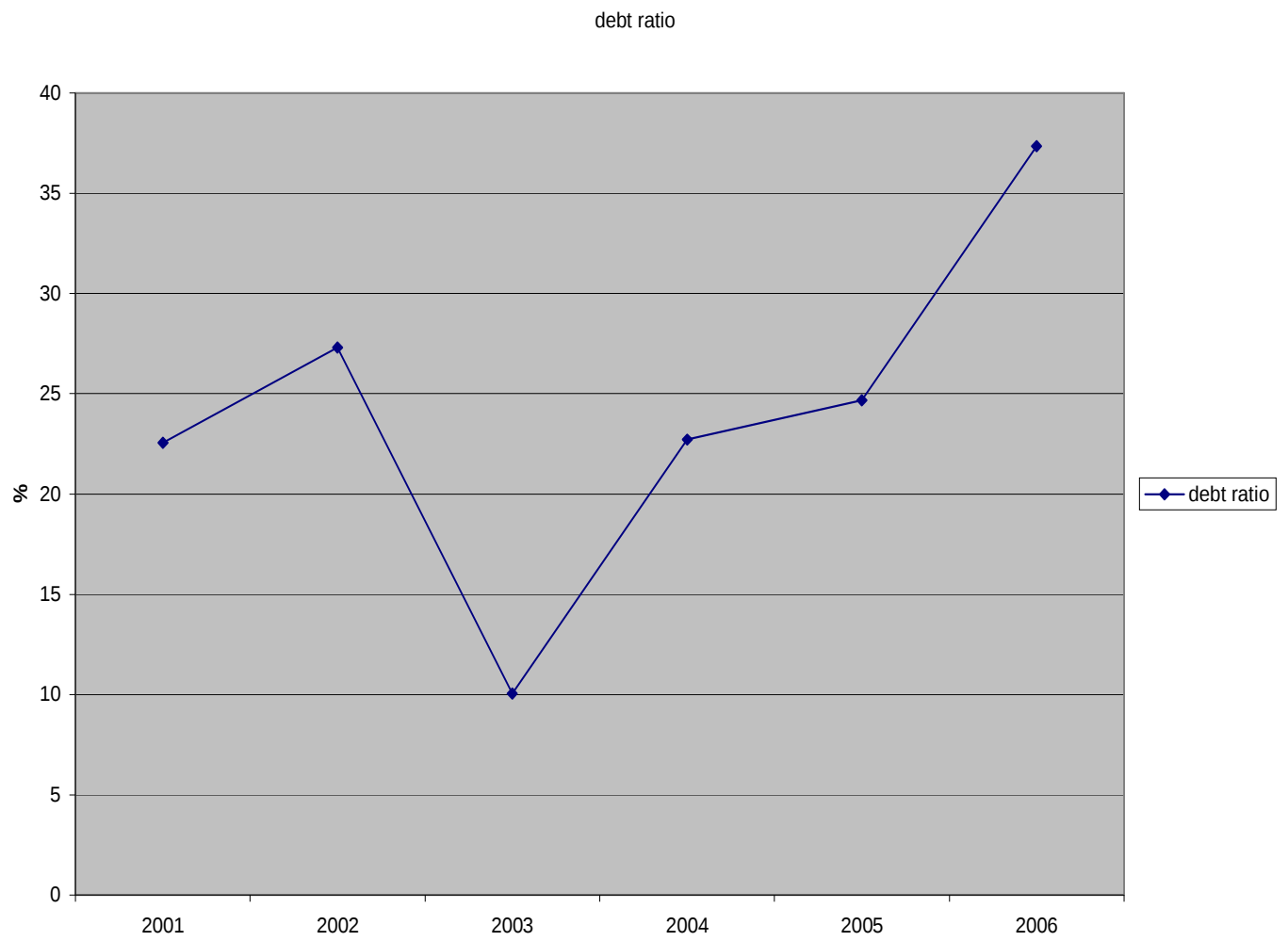


Figure 1: The debt ratio has gradually increased since 2003.

Capex and depreciation of the company over the last 10 years

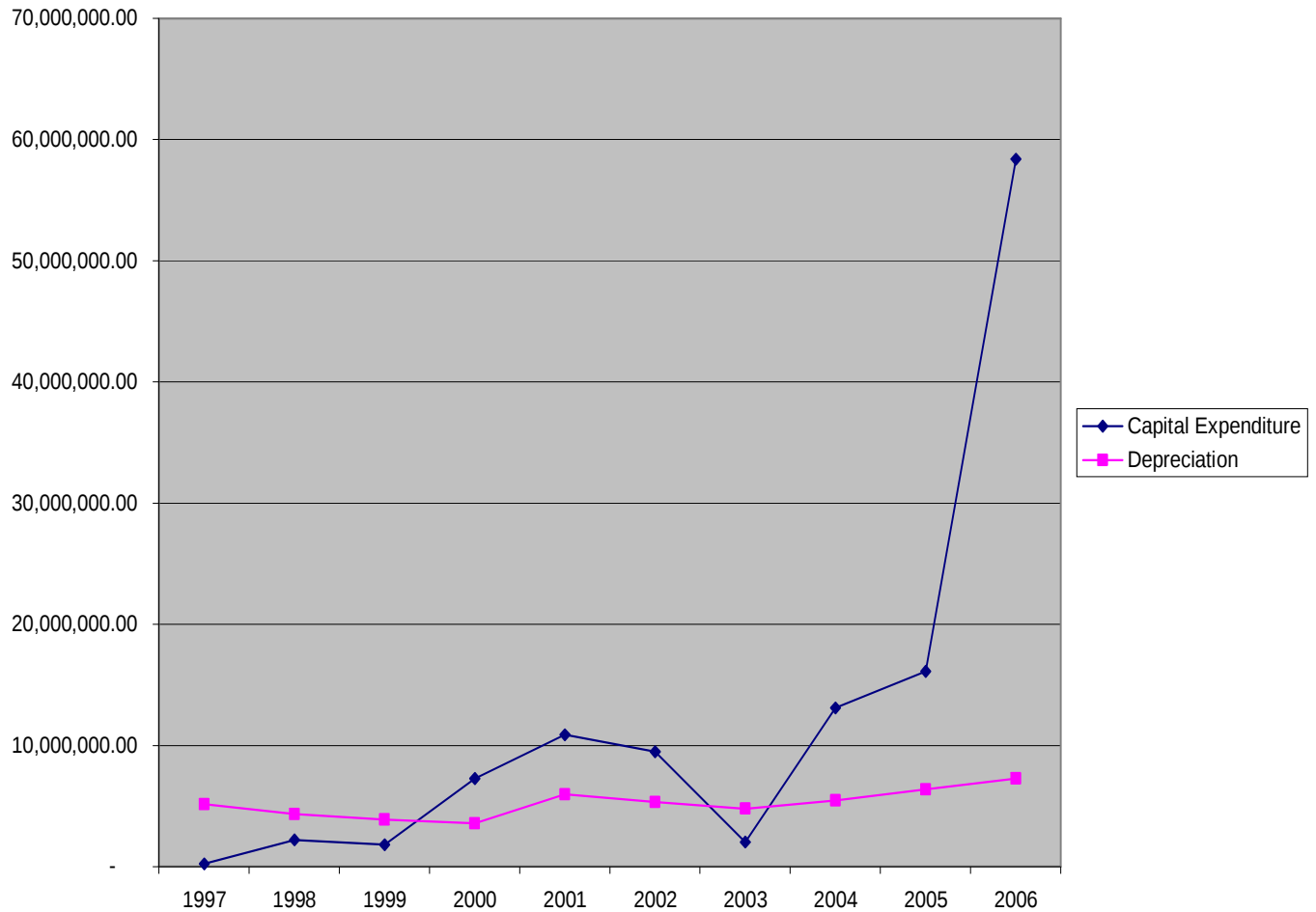


Figure 2: Except few years, capital expenditure has always been more than depreciation, especially for the last 3 years. As can be seen from the graph, there has been a huge increase in capex relative to depreciation in 2006.

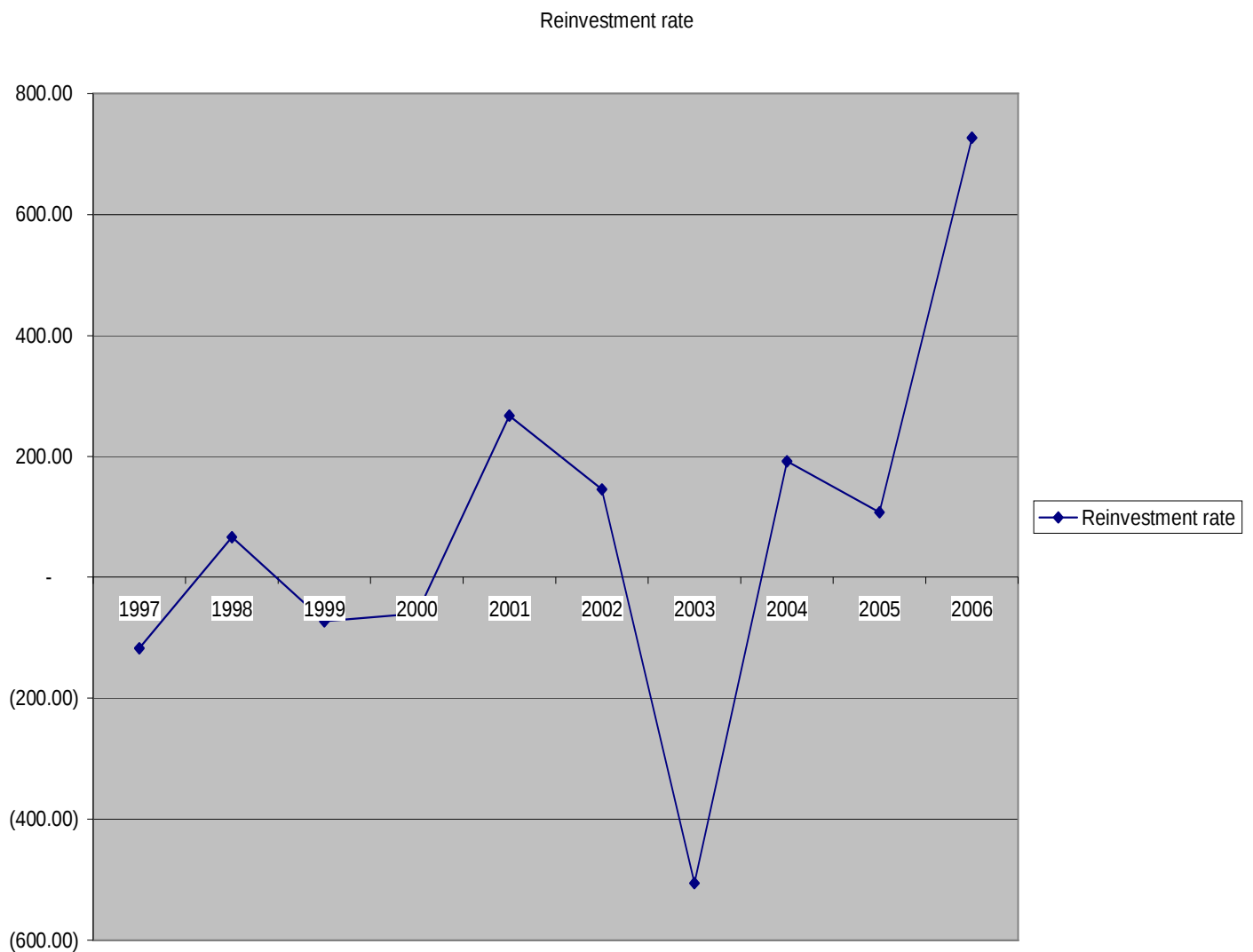


Figure 3: Except 4 years (1997, 1999, 2000 and 2003), the reinvestment rate has been positive in the last 10 years. The reinvestment rate has been very volatile for the company as can be clearly seen from the graph. It has been more than 100% for the last 3 years.

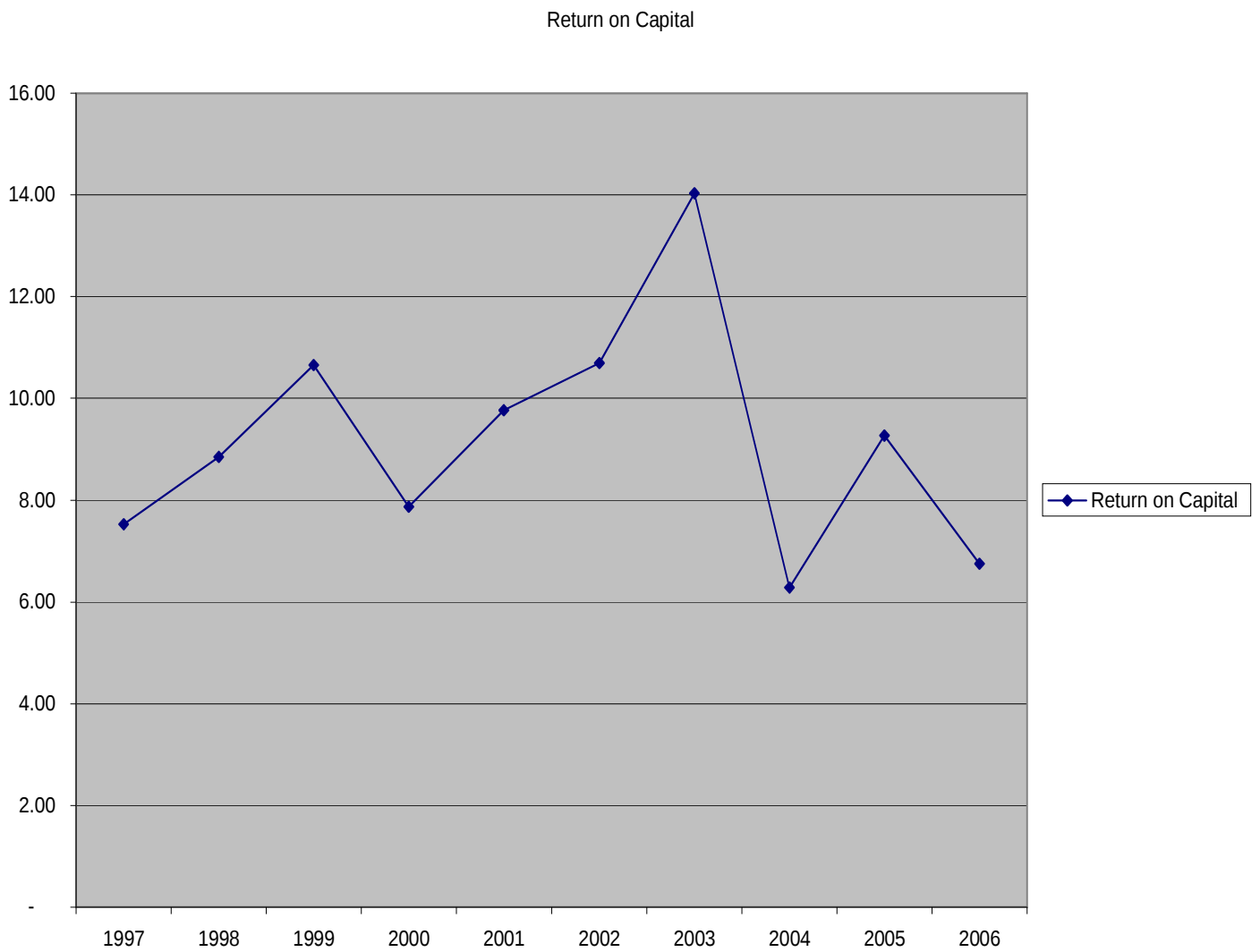


Figure 4: The Company has not earned negative return on capital in the last 10 years. The ROC has been fluctuating for the company.

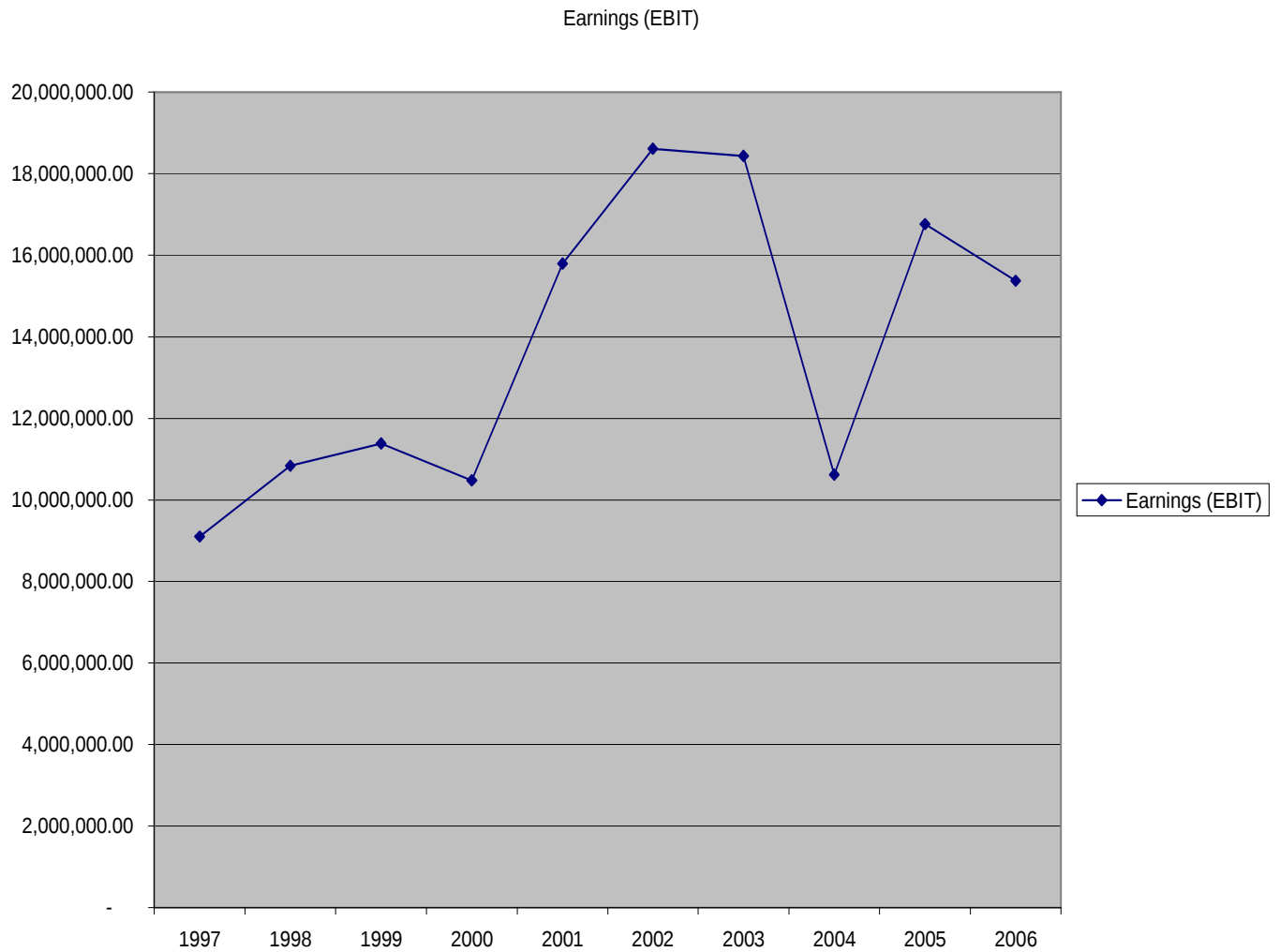


Figure 5: The earnings for the company have been generally stable for the last 10 years. Except in 2000, 2003, 2004 and 2006 where the earnings fell over last year, there has been a steady increase in earnings.

Table 4:

	Year	EPS	Growth rate of EPS	Natural log of EPS	DPS	Growth rate of DPS	Natural log of DPS
1	1997	1.24		0.22	1		0
2	1998	1.05	-15.32	0.05	1	0	0
3	1999	1.39	32.38	0.33	1	0	0
4	2000	1.37	-1.44	0.31	1	0	0
5	2001	1.23	-10.22	0.21	0.9	-10	-0.11
6	2002	1.76	43.09	0.57	1.2	33.33	0.18
7	2003	2.67	51.70	0.98	1.5	25	0.41
8	2004	1.34	-49.81	0.29	1	-33.33	0
9	2005	1.99	48.51	0.69	1.4	40	0.34
10	2006	1.8	-9.55	0.59	1.2	-14.29	0.18

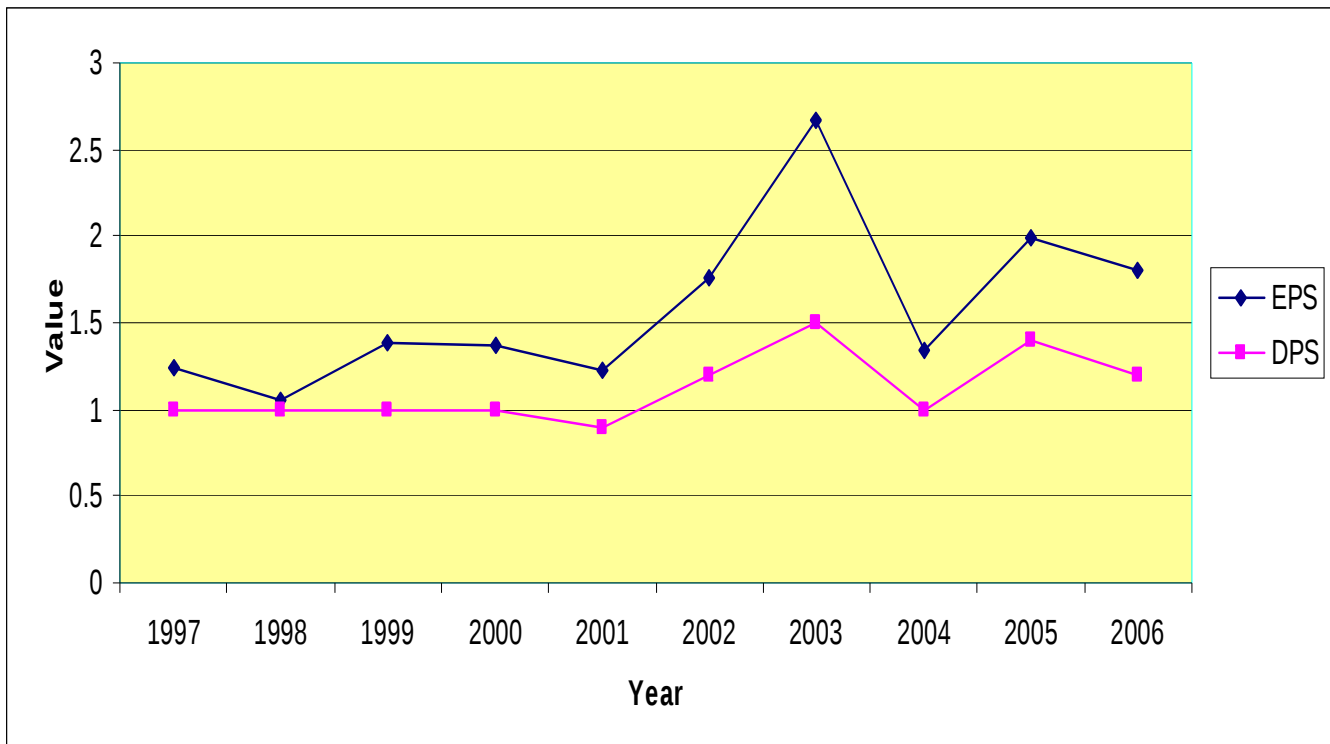


Figure 6: This figure shows how the EPS and DPS of the company have fared over the last 10 years.

Table 4(a):

	Regression slope coefficient (continuously compounded growth rate)		
	EPS	DPS	
Least squares regression (1997-2006)	0.06064498 or 6.06	0.03333501 or 3.33	
	Growth rate (assuming annual compounding)		
	EPS	DPS	Average
Least squares regression (1997-2006)	0.06252163 6.25	0.03389685 3.39	4.82
Arithmetic Mean =	9.93	4.52	7.23
Geometric Mean =	1.4516129 1.04227765 0.04227765 4.23	1.2 1.02046454 0.02046454 2.04	3.135

Expected future growth rate (g) = 5.06010735 or **5.06%**
(average of A.M., G.M. and Log-linear regression)

Table 5²¹:

Date	Market Level (BSE Sensex)	Market Return	CCAP Stock Price	CCAP Dividend	CCAP Return
Apr-06	11279.96	8.8%	23.60	0	0.0%
Mar-06	10370.24	4.5%	23.60	1.2	-6.8%
Feb-06	9919.89	5.6%	26.60	0	5.8%
Jan-06	9397.93	6.9%	25.15	0	-8.5%
Dec-05	8788.81	11.4%	27.50	0	4.4%
Nov-05	7892.32	-8.6%	26.35	0	-24.1%
Oct-05	8634.48	10.6%	34.70	0	-38.2%
Sep-05	7805.43	2.2%	56.15	0	76.9%
Aug-05	7635.42	6.1%	31.75	0	5.0%
Jul-05	7193.85	7.1%	30.25	0	17.0%
Jun-05	6715.11	9.1%	25.85	0	14.9%
May-05	6154.44	-5.2%	22.50	0	14.5%
Apr-05	6492.82	-3.3%	19.65	0	-6.2%
Mar-05	6713.86	2.4%	20.95	1.4	52.0%
Feb-05	6555.94	-0.7%	14.70	0	-22.2%
Jan-05	6602.69	5.9%	18.89	0	35.9%
Dec-04	6234.29	9.9%	13.90	0	15.7%
Nov-04	5672.27	1.6%	12.01	0	-0.2%
Oct-04	5583.61	7.5%	12.04	0	-0.1%
Sep-04	5192.08	0.4%	12.05	0	2.2%
Aug-04	5170.32	7.8%	11.79	0	4.0%
Jul-04	4795.46	0.8%	11.34	0	-3.9%
Jun-04	4759.62	-15.8%	11.80	0	-1.7%
May-04	5655.09	1.2%	12.01	0	0.4%
Apr-04	5590.6	-1.4%	11.96	0	-4.3%
Mar-04	5667.51	-0.5%	12.50	1	0.0%
Feb-04	5695.67	-2.5%	13.50	0	-8.4%
Jan-04	5838.96	15.7%	14.74	0	31.1%
Dec-03	5044.82	2.8%	11.24	0	-2.8%
Nov-03	4906.87	10.2%	11.56	0	6.6%
Oct-03	4453.24	4.9%	10.84	0	-7.7%
Sep-03	4244.73	11.9%	11.75	0	-6.0%
Aug-03	3792.61	5.1%	12.50	0	-2.3%
Jul-03	3607.13	13.4%	12.79	0	50.5%
Jun-03	3180.75	7.5%	8.50	0	5.6%
May-03	2959.79	-2.9%	8.05	0	19.3%
Apr-03	3048.72	-7.2%	6.75	0	-23.7%
Mar-03	3283.66	1.0%	8.85	1.5	18.3%
Feb-03	3250.38	-3.8%	8.75	0	5.4%
Jan-03	3377.28	4.6%	8.30	0	-3.5%

²¹ Refer to CCAP Valuation.xls for calculations

Dec-02	3228.82	9.5%	8.60	0	24.6%
Nov-02	2949.32	-1.4%	6.90	0	20.0%
Oct-02	2991.36	-6.0%	5.75	0	-24.8%
Sep-02	3181.23	6.5%	7.65	0	-7.3%
Aug-02	2987.65	-7.9%	8.25	0	-7.3%
Jul-02	3244.7	3.8%	8.90	0	23.6%
Jun-02	3125.73	-6.4%	7.20	0	-2.7%
May-02	3338.16	-3.8%	7.40	0	-22.9%
Apr-02	3,469.4	na	9.60	0	na

Table 6:

<i>Regression Statistics</i>	
Multiple R	0.306841458
R Square	0.09415168
Adjusted R Square	0.074459326
Standard Error	0.201443403
Observations	48

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.194015542	0.194016	4.781129	0.033897356
Residual	46	1.86665445	0.040579		
Total	47	2.060669992			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.019216808	0.03144705	0.6110846	0.5441516	-0.04408282	0.082516437	-0.04408282	0.08251644
X Variable 1	0.969921591	0.443579447	2.1865792	0.0338974	0.077042489	1.862800693	0.077042489	1.86280069

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