



## Dupont Analysis To Measure Return On Equity Of Satyam Computer Services Limited (Now Known As Mahindra Satyam Limited)

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### ABSTRACT

Return on equity can be measured by traditional method as well as using DuPont chart. Here is an attempt to calculate the Return on Equity Satyam Computer Services Limited (now known as Mahindra Satyam Limited) hereinafter refer to as Satyam using 3 step and 5 step DuPont model for the financial year 2010- 2011 and 2011-2012 to measure efficiency of the Company in respect of profit earning capacity as well as managerial effectiveness. The data analysis is made on the basis of annual report of the Company for the financial year 2011 – 2012. Conclusion is drawn by comparing the ROE of peer group (Average of TCS, INFOSYS & WIPRO) with The Company's Return to measure the efficiency.

### Keywords: DuPont, Return on Equity

#### Introduction:

Investors use return on equity (ROE) to measure the earnings that a company generates from its assets/ Equity. With it, one can determine whether a firm is a profit-creator or a profit-burner and management's profit-earning efficiency. In its simplest manner, return on equity can be calculated as follows:

$$\text{ROE} = \frac{\text{Net income}}{\text{Shareholders' equity}}$$

Here, Satyam is selected for the ROE calculations and interpretation as it remained in news due to some financial manipulations by the Management which has created unexplained differences in Balance sheet items. As a result of this, the forensic related amount for Rs. 11387 million stood in the Balance Sheet which is duly provided for. So here is an attempt to measure the profit earning efficiency of the Company to explore the investment opportunity.

#### In this article the contents are ..

- ❖ What is Return on Equity
- ❖ What is DuPont
- ❖ Three-Step DuPont Model
- ❖ Five-Step DuPont Model
- ❖ DuPont Analysis Spreadsheet of Satyam
- ❖ Conclusion

#### Return on Equity:

Shareholders' equity is also called Net Assets that is the difference between Total Assets and Total Liabilities. Generally the users of financial statements calculate return on equity to measure efficiency of the Management in utilizing the funds and creating profit

An increasing return on equity can suggest that the company is able to grow profits without adding new equity into the business, which dilutes the ownership share of existing shareholders. The higher a company's return on equity, the better management is at employing investors' capital to generate profits.

However, relying on the formula above to derive return on equity is not a complete story about the company. For example, a company can increase its ROE by raising additional debt. If its debt load becomes excessive, it may force the company

into bankruptcy. As a result, it is a good idea to examine the drivers of ROE. In order to do that, E.I. du Pont Nemours and Company came up with a system to deconstruct ROE. Over the years, this system has become known as the DuPont model.

#### DuPont Model:

The DuPont Corporation created its method for analyzing return on equity in the 1920s. Today, two variants are taught i.e. the original three-step model and an extended five-step model. The original three step model deconstruct the above formula in three parts and at each point we can measure different efficiency. The five step model further add two more parts just to enhance the measurement.

In this vary analysis, I begin by discussing the three-step model and then expand into the five-step model. I then use a spreadsheet to calculate the components of ROE.

#### Three-Step DuPont Model:

The three-step DuPont model is expressed as follows:

ROE = Net profit margin × Asset Turnover × Equity Multiplier  
Where:

Net Profit margin = Net Profit ÷ sales

Asset Turnover = Sales ÷ Total Assets

Equity Multiplier = Total Assets ÷ Shareholders' Equity

The three-step DuPont model measures Management's effectiveness at

Generating profits (Net Profit margin), Managing assets (asset turnover) and Finding an optimal amount of leverage (equity multiplier).

#### Net Profit Margin

The net profit margin (or net margin) of a company reflects management's pricing strategy by showing how much earnings they can generate from a single rupee of asset.

Net Profit margins are also an expression of the amount of competition a company faces—the more competitive the industry, all else being equal, the lower the profit margins for the companies in the industry. Companies with high profit margins indicate that they have a highly proprietary product or service that carries with it a price premium.

Net margins vary from company to company, and, historically, certain ranges can be expected across industries. Therefore, it is important to compare the ROEs and other financial ratios of companies in similar lines of business, as similar business constraints exist in each distinct industry.

**Asset Turnover**

Asset turnover measures how much sales a company generates from each rupee of asset. It helps us to measure management's effectiveness in using assets to force sales.

The majority of high-margin companies also tend to have low asset turnover. This is because an organization can only do a certain amount of business without incurring additional costs that would adversely impact profit margins. On the other hands, low-margin organizations tend to have high asset turnover, as they rely on high sales volume to generate profits. By improving its asset management policies, a company can increase shareholders' returns without necessarily increasing profit margins.

**Equity Multiplier**

The final component of the three-step DuPont Model is the equity multiplier, which helps us to examine how an organization uses debt to finance its assets. A higher equity multiplier indicates higher financial leverage, which means the company is relying more on debt to finance its assets.

An organization can boost its return on equity by raising its equity multiplier (increasing the amount of debt it carries). If a company is already sufficiently levered, taking on additional debt increases the risks of not being able to fulfill its obligations to creditors and going bankrupt.

**Five-Step DuPont Model:**

The three-step DuPont Model helps us to check what is driving a company's return on equity. We can see if a company is boosting its ROE by improving its profitability, by using its assets more efficiently, or by taking on additional leverage. However, companies that boost ROE by adding leverage will eventually reach a point where the cost of debt will diminish profit margins and decrease asset turnover.

This "limitation" with the three-step model led to the development of an expanded, five-step model of DuPont analysis, which breaks down the net profit margin even further to assess the impact of higher borrowing costs associated with increased leverage. If a company has a high cost of borrowing, its interest expense on more debt could offset the positive effects of increased leverage. In addition, interest expenses for most companies are tax-deductible, so the extended model considers interest charges and the company's tax burden.

The extended five-step DuPont Model breaks return on equity down into five components:

- Pre-interest pretax profit margin = earnings before interest and taxes (EBIT) ÷ sales;
- Asset turnover = Sales ÷ Total assets;
- Interest burden = (EBIT – interest expense) ÷ EBIT;
- Tax efficiency = [1 – (tax expense ÷ (EBIT – interest expense))]; and
- Leverage ratio (equity multiplier) = Total Assets ÷ Shareholders' equity.

When multiplied together, the pre-interest pretax margin, the interest burden ratio, and the tax efficiency ratio give us net profit margin (net income ÷ sales). Multiplying all five ratios together gives us return on equity.

**Interest burden:**

It indicates as to what percentage of Earning before tax is generated with respect to Earnings before interest and tax

**Tax efficiency**

It measures the percentage of Earning after Tax with respect

to Percentage of Earning before Tax alternatively, 100 – percentage of tax expenses with respect to Earning before Tax.

**DuPont Analysis Spreadsheet:**

DuPont Analysis of Satyam Computer Services Limited (now Mahindra Satyam Limited)		
	(Amt. in Rs. Million)	
Financial Statement Data	2011-2012	2010 – 2011
Sales (Net)	59,643	47,761
EBIT	12,679	(647)
Interest Expense (Non-Operating)	112	92
Tax Expense	539	537
Net Income (Income for Primary EPS)	12,028	(1,276)
Assets	70,317	59,332
Equity	33,142	21,612
Three-Step DuPont Model:		
Net Profit Margin (Net Income ÷ Sales)	20.2%	-2.7%
Asset Turnover (Sales ÷ Total Assets)	0.85	0.80
Equity Multiplier (Total Assets ÷ Equity)	2.12	2.75
<b>Return on Equity</b>	<b>36.3%</b>	<b>-5.9%</b>
Five-Step DuPont Model:		
Pre-Interest Pretax Margin (EBIT ÷ Sales)	21.3%	-1.4%
Asset Turnover (Sales ÷ Total Assets)	0.85	0.80
Interest burden [(EBIT - Interest Expense) ÷ EBIT]	99.1%	114.2%
Tax Efficiency [1 - (Tax Expense ÷ (EBIT - Interest Expense))]	95.7%	172.7%
Equity Multiplier (Total Assets ÷ Equity)	2.12	2.75
<b>Return on Equity</b>	<b>36.3%</b>	<b>-5.9%</b>

**(Data taken from Annual Report of Satyam Computer Services Limited for the year 2011- 2012)**

**Notes:**

- Revenue from operations taken as sales
- EBIT is after adjusting exceptional items
- Entire finance cost (interest) assumed to be non-operating
- Assets Includes total non-current and total current assets
- Equity includes share capital, reserves and surplus (net worth)

The average ROE of the peer group is calculated as under on the basis of financial data taken from the web site – [www.moneycontrol.com](http://www.moneycontrol.com)

Here, I have taken mean of ROE of 3 peer companies i.e. TCS, INFOSYS AND WIPRO and simple average ratio is calculated for comparison.

COMPANY	ROE 2011-2012	ROE 2010-2011
TCS	44.24%	38.80%
INFOSYS	26.56%	26.13%
WIPRO	19.23%	20.41%
AVERAGE (MEAN)	30.01%	28.45%

**Conclusion:**

Return on equity is one financial metric that can be used to judge a company's effectiveness to translate investor equity into profits. Here the Company was having negative ROE in year 2010-2011 which of course lead to reduction in equity but in the subsequent year ROE is positive and seems good enough looking to the type and nature of business as peer average is quite below the ROE of Satyam hence one cannot rely upon only ROE as some other factors can also be influencing the profitability which may be the manipulation/ forensic in the cited case.

In year 2010 – 2011, the exceptional expense item of 6411 million has taken the company to the situation of loss which

results in more than 100% interest burden and tax efficiency. The three step analysis would not have given such type of measurement.

However, as I have shown, relying solely on ROE means making decisions based on incomplete information, which can be risky. Breaking down return on equity into its components gives insights into the drivers of return on equity. We are then able to judge whether a company's return on equity growth points to a strong future or if it is merely masking storm clouds on the horizon.

The return on Equity earned by Satyam is above the average return earned by peer companies hence in my opinion

one can consider Satyam Computer Services Limited as an investment option as the situation before 2 years (forensic) seems to be diluted and the company has lower financial leverage and efficient in making profitability with superior ROE.

This is just an attempt to measure ROE and drawing the opinion which is to the best of my knowledge. One should consider other factors also for investment and result / analysis shown above may require some adjustments. One can also consider Average Assets and Average Equity to calculate ROE. One must not solely rely upon the analysis present here for any kind of investment decisions. The author is not responsible for any loss incurred by using above analysis.

## REFERENCES

- Annual Report of Satyam Computer Services Limited for the year 2011-2012 ▪ [www.moneycontrol.com](http://www.moneycontrol.com)▪ An article on Deconstructing ROE: DuPont Analysis by Wayne A. Thorp, CFA from AAIL journal