VALUATION OF FIRMS UNDER NI AND NOI APPROACHES:
A CASE STUDY OF TATA POWER AND GE POWER

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Abstract

Financial managers often try to achieve optimum capital structure as it influences the firms' value. In addition, this is also helpful in increasing the expected earnings and to reduce the cost of capital. Indeed, there are various views on how capital structure influences the value of the firm. A few argued that increase in financial leverage increases the firm's value (relevant theory) while a few other opined that there is no relationship between capital structure and value of the firm (irrelevant theory). An attempt is made in this paper to find out the value of the firm based on such relevant and irrelevant theories stated by Durand. To achieve the objectives of the study, two companies in Power Sector namely, Tata Power and GE Power have been selected and a detailed analysis has been presented with suggestions.

Key Words: Value of the Firm, Capital Structure, Relevant and Irrelevant theories, Leverage.

Introduction

Financial managers often try to achieve optimum capital structure as it influences the firms' value. In addition, this is also helpful in increasing the expected earnings and to reduce the cost of capital. Indeed, there are various views on how capital structure influences the value of the firm. A few argued that increase in financial leverage increases the firm's value (relevant theory) while a few other opined that there is no relationship between capital structure and value of the firm (irrelevant theory).

Statement of the Problem

It is always a difficult task for the finance manager to find an optimum capital structure since it operates in a highly volatile market. Further, it has a direct impact on the value of the firm. It is more challenging for the finance manager in the contemporary business world in view of changing Government policies, competitor's strategies, foreign markets, etc. Higher equity in capital structure increases the business risk while the higher proportion of debt increases the financial risk of the firm.

Need for The Study

The profitability of the company may be affected due to inefficiency of the company while using its resources. So, this study will help to take suitable measures to increase the efficiency of the company in using the resources.

Objectives of the Study

- ❖ To compute the value of the selected firms using Net Income and Net Operating Income Approach; and
- ❖ To analyze the impact the capital structure on the firm's profitability.

Data Sources

The data is collected from secondary data sources, such as Annual reports of the companies and referring various websites such as moneycontrol.com, nseindia.com

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and websites of sample companies, etc., were browsed.

Sample

Two companies in power sector namely, Tata Power and GE Power have been selected for the current study.

Tools used for Analysis of Data

❖ Ke= EPS/ Market price of the share*100
❖ Market value of equity=Net income/Ke*100
❖ Market value of debt = Face value of debt
❖ Value of the firm under NI = market value of equity + market value of debt
❖ Value of the firm under NOI =EBIT/Ko*100 (WACC)
❖ Cost of retained earnings = Ke (1-Ti) (1- Tb)

Where

  ❖ Ti = marginal tax rate applicable to the individual
  ❖ Tb = cost of purchase of the new securities

Period of Study

A Study is conducted for a period of five years commencing from 2012-13 to 2016-17 for the Computation of the value of the Firm.

Limitations of The Study

The study is conducted only for the past five years (i.e. from 2012-2013 to 2016-2017). Further, the valuation of the firm's value is based on the data available on the websites of sample companies. The results arrived in this study may not be applicable in other industries at a different time.

Computation of Value of the Firm Using NI & NOI Approach

VALUATION OF THE FIRM

Net Income Theory: According to NI theory, the firm can increase the value of the firm by increasing the proportion of debt in its capital structure to the maximum possible extent. By doing so the company reduces its overall cost of capital.

Value of the firm under NI = Market Value of Equity + Market value of Debt

1. **Computation of Value of Tata Power**
         Insert table 1
Working notes
1.1 Computation of Market Value of Equity
         Insert table 1.1
1.2 Computation of Market Value of Debt:
Market Value of Debt = Par value of the Debt
         Insert graph 1
Interpretation
Table 1 shows the computation of value of the firm – Tata Power under NI Approach. It reveals that the value of Tata Power has been fluctuating during the period of the study. It was 35,009.22 Cr in 2012-13 and decreased to 30,090.43 Cr in 2013-14. But it was increased to 36,315.08 Cr in 2014-15 and declined to 30,351.48 Cr in 2015-16. Nevertheless, it was increased to 33,351.48 Cr in 2016-17. These fluctuations were because of considerable drop in the value of net sales every year, sudden increase in the cost of raw material in 2016-17 and consistent increase in interest payments.

2 Computation of Value of GE Power
         Insert table 2
Working notes:
2.1 Computation of Market Value of Equity
         Insert table 2.1
2.2 Computation of Market Value of Debt:
Market Value of Debt = Par value of the Debt
         Insert graph 2
Interpretation
Table 2 shows the computation of value of the firm – GE Power under NI Approach. It reveals that the value of GE Power has been fluctuating during the period of the study. It was 1,051.71 Cr in 2012-13 and decreased to 855.62 Cr in 2013-14. But it was increased to 1,481.83 Cr in 2014-15

and declined to Zero in 2015-16 and remains zero in 2016-17. These fluctuations were because of continuous decrease in the sales revenue and other income. In addition, the cost of raw material was increased considerably during the study period.

3. Comparison of Value of Tata Power and GE Power

Insert table 3
Insert graph 3

Interpretation

Table 3 shows the comparison of value of the firms Tata Power and GE Power under NI Approach. It reveals that the value of Tata Power was fluctuated slightly as against the value of GE Power. The value of GE Power has become zero by 2015-16 and continued to be zero even in 2016-17.

Net Operating Income Theory (NOI Theory)

According to this theory the value of the firm is not affected by the change in capital structure of the firm. The cost of capital of the firm remains unchanged irrespective of the debt equity mix of the firm.

Formula: $V = EBIT/Ko$

4 Computation of Value of Tata Power

Insert table 4

Working notes

Insert table 4.1
Insert graph 4

Interpretation

Table 4 shows the computation of value of the firm – Tata Power under N0I Approach. It reveals that the value of Tata Power has been fluctuating during the period of the study. It was 78,343.09 Cr in 2012-13 and decreased to 61,441.93 Cr in 2013-14. Further, it was decreased to 60,593.62 Cr in 2014-15 and to 48,782.23 Cr in 2015-16 and to 37,304.56 Cr in 2016-17. These fluctuations were because of variations in the EBIT (Earnings Before interest and tax).

5 Computation of Value of GE Power

Insert table 5

Working notes

Insert table 5.1
Insert graph 5

Interpretation

Table 5 shows the computation of value of the firm – GE Power under N0I Approach. It reveals that the value of GE Power has been fluctuating during the period of the study. It was 2,295.32 Cr in 2012-13 and decreased to 1,697.43 Cr in 2013-14. But it was increased to 3,203.4 Cr in 2014-15 and decreased to Zero in 2015-16 and remained Zero even in 2016-17. These fluctuations were because of fluctuations in the EBIT (Earnings Before interest and tax).

6 Comparison of Value of Tata Power and GE Power

Insert table 6
Insert graph 6

Interpretation

Table 6 shows the computation of value of the firm – Tata Power under N0I Approach. It reveals that the value of Tata Power was drastically decreased from 76,398.36 crore in 2015-16 to 59,270.07 crore in 2016-17. While the value of GE Power fluctuated during the period of the study. It was 2,295.32 Cr in 2012-13 and decreased to Zero in 2015-16 and remained Zero in 2016-17 which was nowhere near to the value of Tata Power.

Insert table 7

Findings & Suggestions

Findings

Under Net Income Approach, the value of Tata Power has been fluctuating during the period of the study. It was 35,009.22 Cr in 2012-13 and decreased to 30,090.43 Cr in 2013-14. But it was increased to 36,315.08 Cr in 2014-15 and declined to 30,351.48 Cr in 2015-16. Nevertheless, it was increased to 33,351.48 Cr in 2016-17. These fluctuations were because of considerable drop in the value of net sales every year, sudden increase in the cost of raw material

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in 2016-17 and consistent increase in interest payments.

The value of GE Power under Net Income Approach has been fluctuating during the period of the study. It was 1,051.71 Cr in 2012-13 and decreased to 855.62 Cr in 2013-14. But it was increased to 1,481.83 Cr in 2014-15 and declined to Zero in 2015-16 and remains zero in 2016-17. These fluctuations were because of continuous decrease in the sales revenue and other income. In addition, the cost of raw material was increased considerably during the study period.

As per Net Operating Income Approach, the value of Tata Power has been fluctuating during the period of the study. It was 78,343.09 Cr in 2012-13 and decreased to 61,441.93 Cr in 2013-14. Further, it was decreased to 60,593.62 Cr in 2014-15 and to 48,782.23 Cr in 2015-16 and to 37,304.56 Cr in 2016-17. These fluctuations were because of variations in the EBIT (Earnings Before interest and tax).

The value of GE Power under Net Operating Approach has been fluctuating during the period of the study. It was 2,295.32 Cr in 2012-13 and decreased to 1,697.43 Cr in 2013-14. But it was increased to 3,203.4 Cr in 2014-15 and decreased to Zero in 2015-16 and remained Zero even in 2016-17. These fluctuations were because of fluctuations in the EBIT (Earnings Before interest and tax).

Suggestions

❖ As the study reveals that the value of Tata Power has been fluctuating, the firm may focus on revising its various policies of working capital management, capital structure policies and dividend policies. Necessary modifications may be made to enhance the confidence levels of investors which

may ultimately result in increasing the market price of the share.

❖ The analysis reveals that the value of GE Power has been fluctuating; it may revise its policies with respect to utilization of its long-term financial resources. Further, firm may try to extend its business operations to increase its earnings. In addition to this, precautions may also to be taken to reduce its operating expenses by establishing standards.

❖ As the firm's value is mostly affected by the market value of equity, the firms may focus on maximizing its operating and non-operating income as well. This in turn may enhance the earnings per share of the company and ultimately result in maximizing the market value of equity.

❖ Efficient utilization of financial resources towards purchase of fixed assets, replacement of old assets, maintenance of assets, etc., may help the company to improve its productive efficiency. This may result in increased earnings. Therefore, the optimum capital structure is meaningful only when there is effective utilization of finance raised from various sources.

References

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3. www.google.com
4. www.moneycontrol.com

Table 1 - Value of TATA Power under Net Income Approach (NI)

Rs. in Crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Market value of Equity	23,884.50	19,834.91	24,254.67	18,331.76	20,518.87
Market value of Debt	11,124.72	10,255.52	12,060.41	12,019.72	12,739.84
Value of the Firm	35,009.22	30,090.43	36,315.08	30,351.48	33,258.71

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

Working notes
1.1 Computation of Market Value of Equity
Table 1.1 – Market Value of Equity

Rs. in Crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EAES/NI	1,024.69	954.08	1,010.29	771.62	283.45
Ke= EPS/ Market price per share*100	4.290187487	4.810104954	4.165341331	4.209197406	1.381411179
Market value of Equity	23,884.50	19,834.91	24,254.67	18,331.76	20,518.87

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

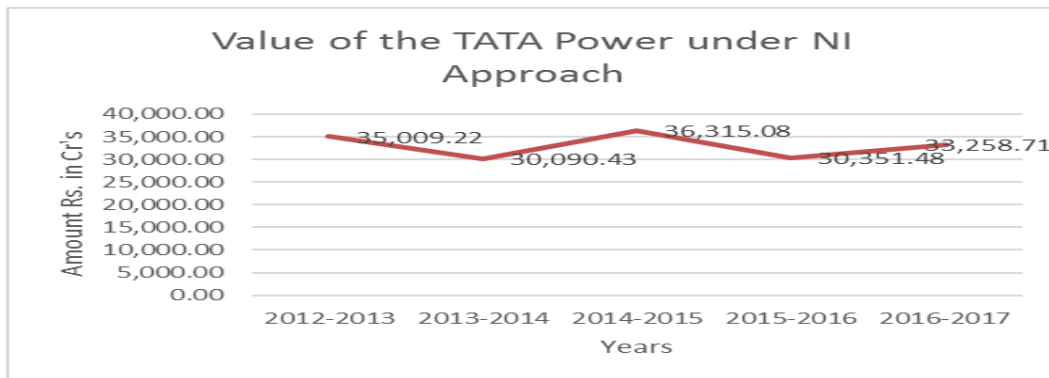## Graph 1 - Value of TATA Power under Net Income Approach (NI)

Table 2 - Value of GE Power under Net Income Approach (NI)

Rs. in Crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Market value of Equity	1,051.70	855.62	1,481.83	0.00	0.00
Market value of Debt	0.00	0.00	0.00	0.00	0.00
Value of the Firm	1,051.70	855.62	1,481.83	0.00	0.00

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

Table 2.1 – Market Value of Equity

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EAES/NI	186.22	234.61	178.11	-75.26	51.12
Ke= EPS/ Market price per share*100	17.70663	27.41988816	12.01956	0.00	0.00
Market value of Equity	1,051.70	855.62	1,481.83	0.00	0.00

Source: Researcher's Calculations and Annual Reports of GE Power from 2012-13 to 2016-17.

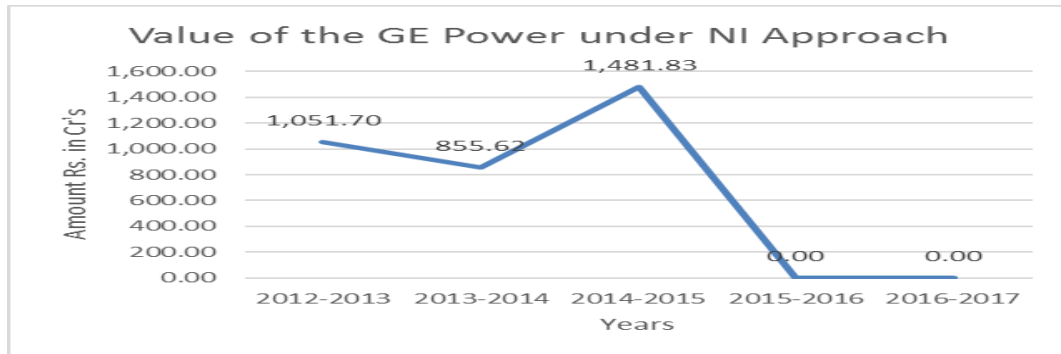**Graph 2 - Value of GE Power under Net Income Approach (NI)**

Table 3 - Value of TATA Power& GE Power under Net Income Approach (NI)

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
TATA Power	35,009.22	30,090.43	36,315.08	30,351.48	33,258.71
GE Power	1,051.70	855.62	1,481.83	0.00	0.00

Source: Researcher's Calculations and Annual Reports of TATA Power & GE Power from 2012-13 to 2016-17.

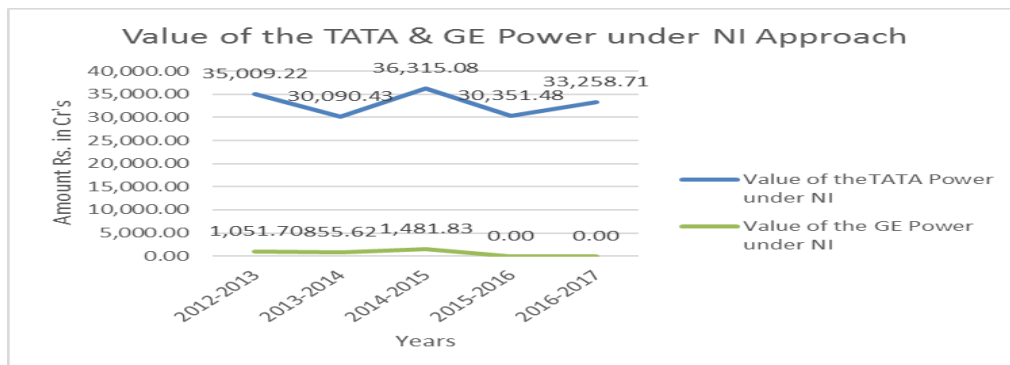**Graph 3 - Value of TATA & GE Power under Net Income Approach (NI)**

Table 4 - Value of TATA Power under Net Operating Income Approach (NOI)

Rs. in Crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EBIT	2,381.63	2,359.37	2,563.11	2,322.51	1,801.81
Ko (WACC)	3.04	3.84	4.23	4.76	4.83
Value of the firm under NOI =EBIT/Ko*100 (WACC)	78,343.09	77,610.86	84,312.83	76,398.36	59,270.07

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

Table 4.1 – Computation of EBIT

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EBDIT	2,745.73	2,946.51	3,138.40	2,988.16	2,436.02
Less: Depreciation	364.1	587.14	575.29	665.65	634.21
EBIT	2,381.63	2,359.37	2,563.11	2,322.51	1,801.81

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

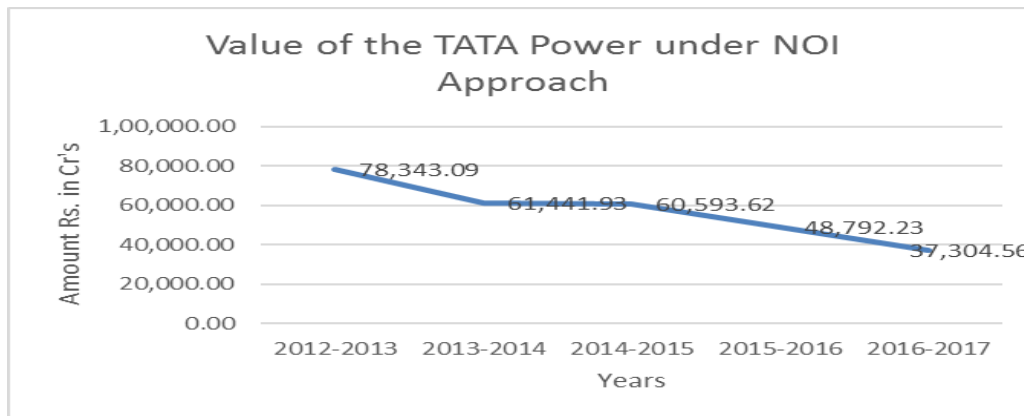**Graph 4 - Value of TATA Power under Net Operating Income Approach (NOI)**

Table 5 - Value of GE Power under Net Operating Income Approach (NOI)

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EBIT	284.39	323.87	267.37	-123.05	79.28
Ko (WACC)	12.39	19.08	8.35	0.00	0.00
Value of the firm under NOI =EBIT/Ko*100 (WACC)	2,295.32	1,697.43	3,202.04	0.00	0.00

Source: Researcher's Calculations and Annual Reports of TATA Power from 2012-13 to 2016-17.

Table 5.1 – Computation of EBIT

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
EBDIT	339.47	384.95	340.42	-51.65	139.07
Less: Depreciation	55.08	61.08	73.05	71.4	59.79
EBIT	284.39	323.87	267.37	-123.05	79.28

Source: Researcher's Calculations and Annual Reports of GE Power from 2012-13 to 2016-17.

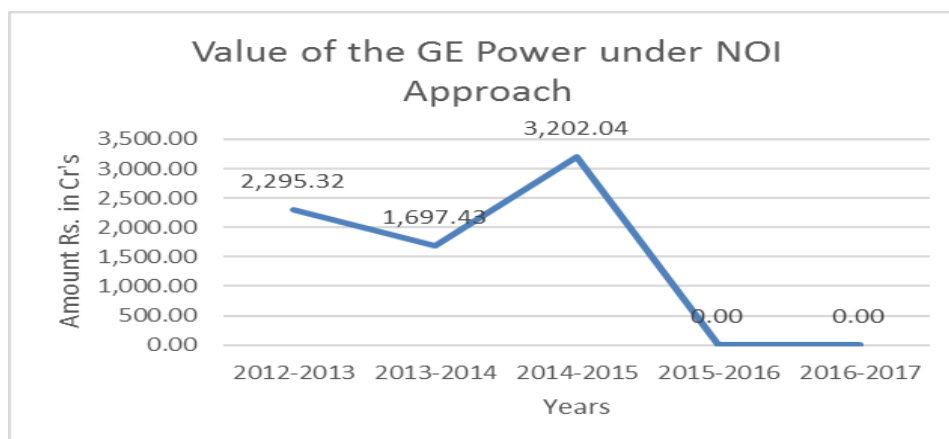**Graph 5 - Value of GE Power under Net Operating Income Approach (NOI)**

Table 6 - Value of TATA Power & GE Power under Net Operating Income Approach (NOI)

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
TATA Power	78,343.09	77,610.86	84,312.83	76,398.36	59,270.07
GE Power	2,295.32	1,697.43	3,202.04	0.00	0.00

Source: Researcher's Calculations and Annual Reports of TATA Power & GE Power from 2012-13 to 2016-17.

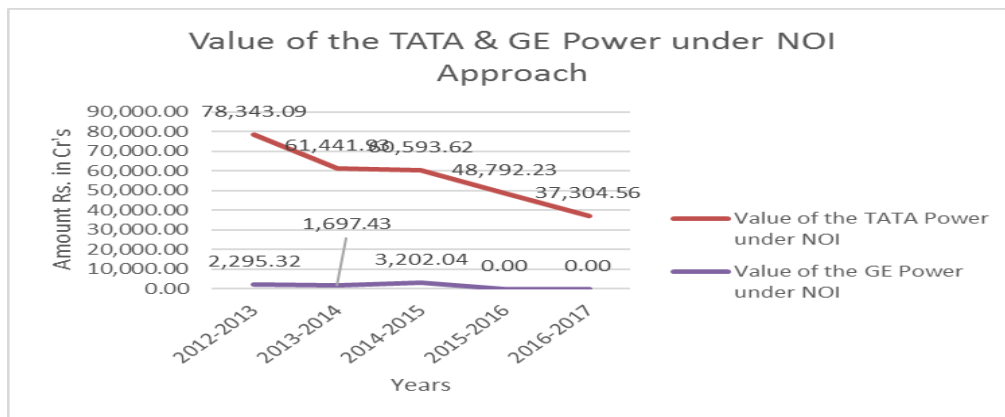**Graph 6 - Value of TATA & GE Power under Net Operating Income Approach (NOI)**

Table 7 – Summary of Result

Rs. in crore

Particulars	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Value of the TATA Power under NI approach	35,009.22	30,090.43	36,315.08	30,351.48	33,258.71
Value of the TATA Power under NOI approach	78,343.09	61,441.93	60,593.62	48,792.23	37,304.56
Value of the GE Power under NI approach	1,051.70	855.62	1,481.83	0.00	0.00
Value of the GE Power under NOI approach	2,295.32	1,697.43	3,202.04	0.00	0.00

Source: Researcher's Calculations and Annual Reports of TATA Power& GE Power from 2012-13 to 2016-17.